

# *Just Read, Florida!*

Strengthening Brain Connections to Build  
Strong and Effective Readers

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Gloria Staats

# Agenda

- A snapshot of current trends and issues in literacy
- The challenges for students who struggle with literacy
- The Impact of Neuroscience and Learning
- Potential solutions supporting literacy

“The ability to read is what turns a child into a student. When this skill is not taught, a child has not failed the system, the system has failed the child. And that child is often put on a path to frustration and broken confidence. “

President George W. Bush

September 8, 2001

# Literacy

- Literacy refers to the abilities and skills students need in grade 4-12 independently read, write, listen and think about what they learn
- Literacy development is a complex multi-layered and ongoing process that does not end in elementary grades
- Adolescents are expected to process and critically evaluate incredibly large amounts of information in print and multi-media formats Vicki Zygoris-Coe- FASCD 2007

# A Challenge for Changing Literacy

- 40% of high school graduates lack reading and writing skills employers seek
- 8 million of our nations adolescents in grades 4-12 need help in literacy
- 1.4 millions students between 9-12 grade drop out each year
- US Adolescents are not keeping pace with current literacy demands
  - Reading Scores of 12<sup>th</sup> grade students on the National Assessment of Educational Progress have remained flat for the past 20 years

# Who are the struggling students?

*Students who struggle  
generally fall into three categories*

- Some have severe deficits that can be traced to weak decoding skills
- Some may be able to use phonics but have such difficulty in sounding out the words, they lose the meaning of what is read
- Some may have limited vocabulary or lack broad background knowledge to apply to their reading

Schoenbach, Greenleaf, Cziko, & Hurwitz, 1999

# Who are these students in our schools?

- At- Risk Learners who are in the bottom quartile of our assessment rankings
  - Retained students, some of whom have been retained 2 or 3 times
- ELL Students who have not yet mastered the English Language
- Special Education Students
  - Regular Classroom
  - Resource Room

# Challenges for Struggling Learners

- Limited experiences with language
- Limited background and content specific knowledge
- Reading materials become more abstract, and complex
- Decreased motivation to read



# How does this learning gap begin?

- Individuals who do not develop critical language milestones
  - Delay of language
  - Lack of exposure to good language and rich vocabulary experiences
  - Environmental disruptions- transient school experiences
- Challenges with acquisition of critical beginning reading skills
  - Phonemic Awareness
  - Phonics
  - Word Attack
  - Sight Word
  - Comprehension

# Birth to 2 years

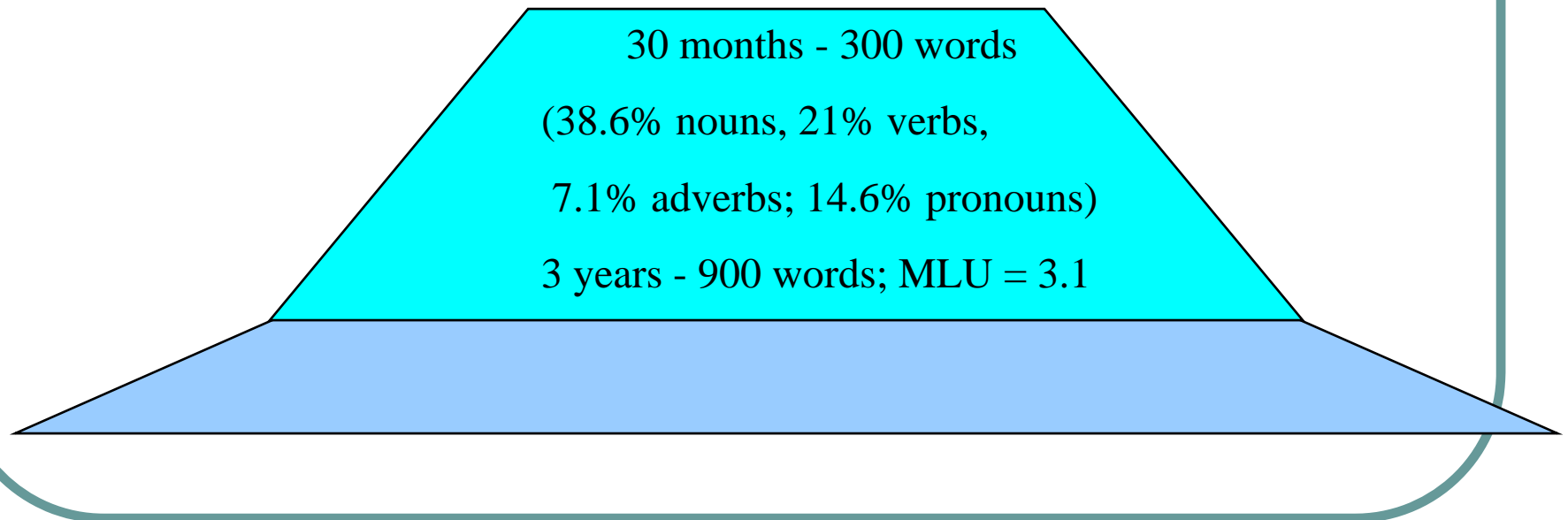
1. Child is born - normal hearing and cognitive potential
2. Makes generalizations about sounds around him/her
  - speech sounds versus environmental sounds
  - recognizes speech sounds of own language
3. Uses own language sounds in babbling then early speech
  - full repertoire of native language phonemes by 18mo.-2 years
  - early adjectives (good, hot), verbs (see, want, go), pronouns (me,you)

**10-12 months - first word**

**18 months - 10-20 words; 2 yr.- two word phrases; 200 words**

# Two to three years-early phonological awareness

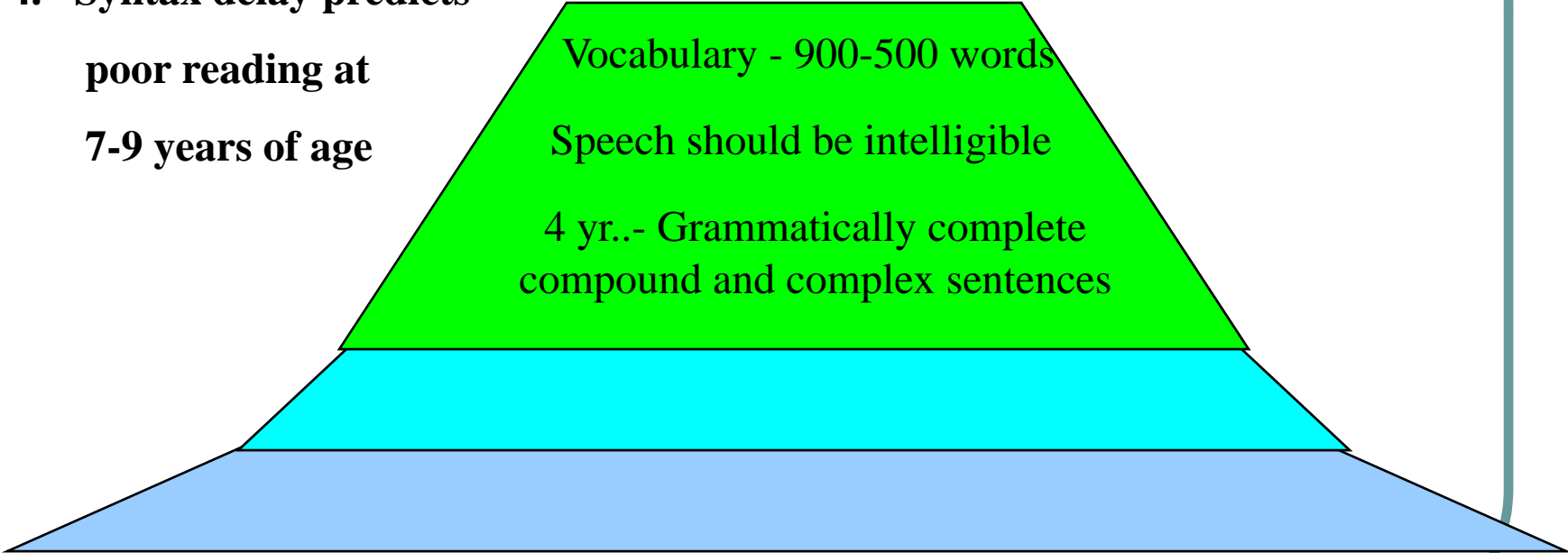
1. Word play - “Higglety, pigglety, pop”; “Hickory, Dickory, Dock”
2. Rhymes and alliterative stories
  - Little Miss Muffett Sat on a tuffett
  - Peter piper picked a peck of pickled peppers
3. Delayed expressive syntax and phonology predict poor reading three years later



# Three to four years

1. **91% can recognize incorrect productions of words they know**
2. **27% can be enticed to do sound play; 25% can rhyme**
3. **Poor speech discrimination will lead to poor phonological awareness**
4. **Syntax delay predicts**

**poor reading at  
7-9 years of age**



**Vocabulary - 900-500 words**  
**Speech should be intelligible**  
**4 yr.- Grammatically complete  
compound and complex sentences**

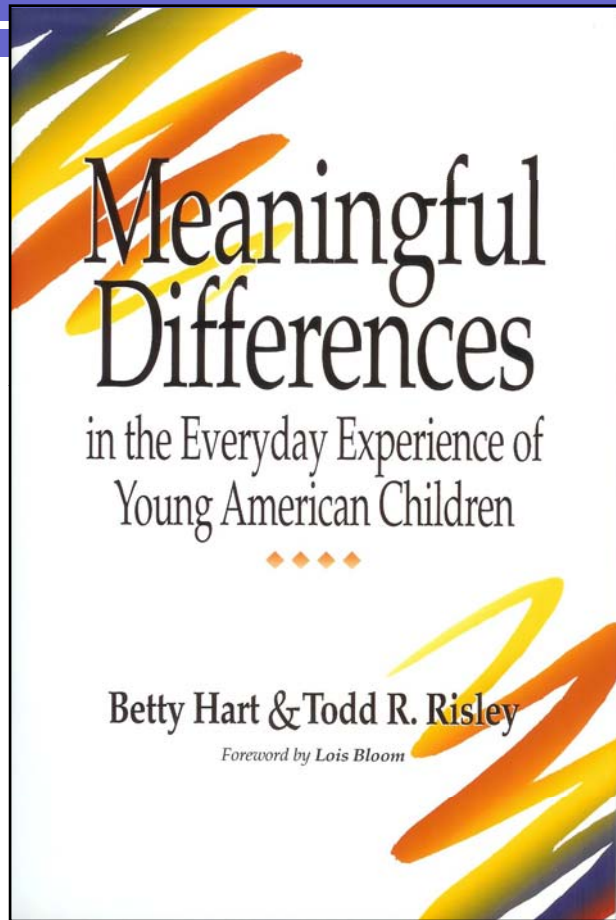
# Kindergarten

**Indicators of potential reading difficulty are reductions in:**

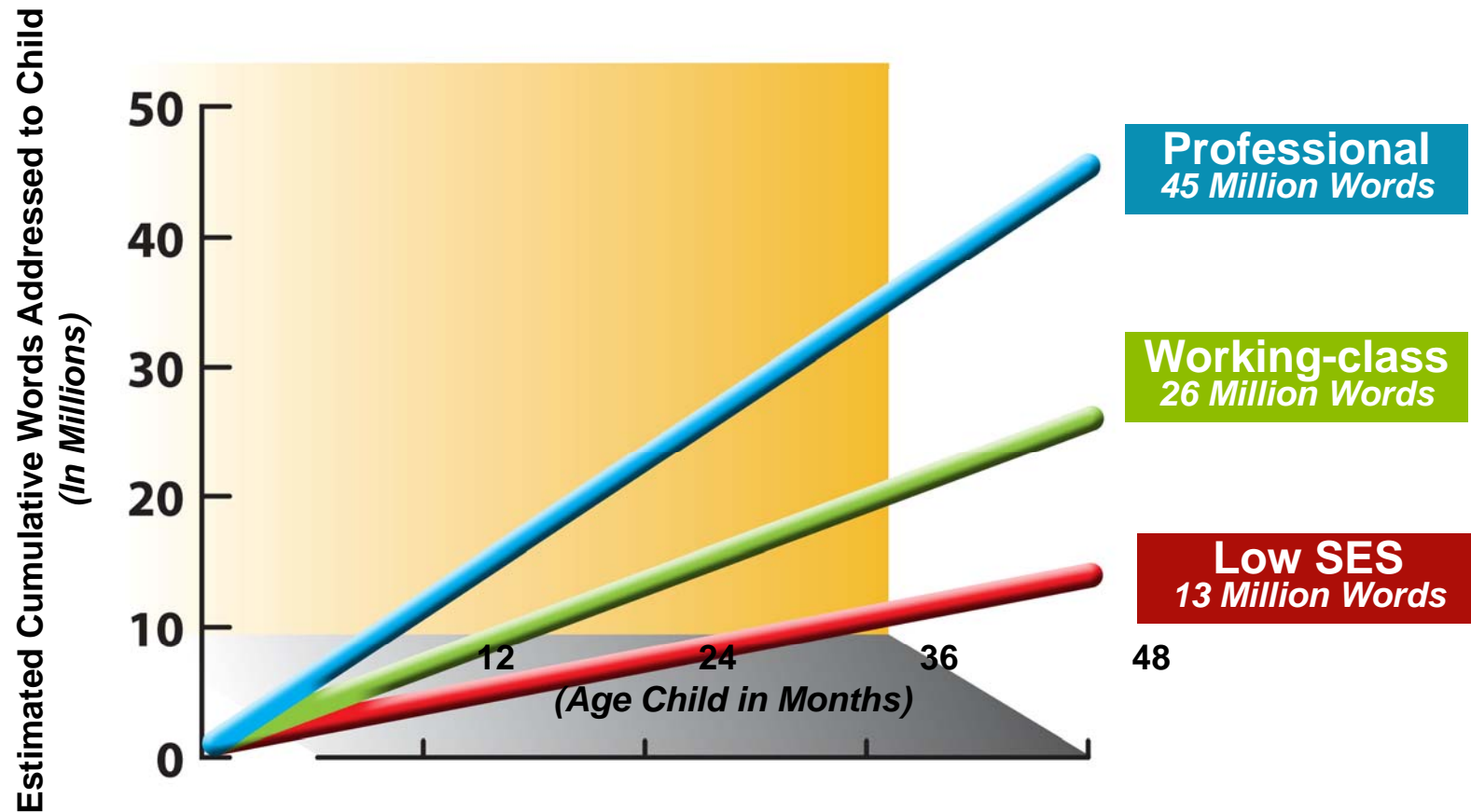
**Understands and uses 2000+ words**  
**Speech is 80% correct**  
**Follows 2-3 step command**  
**MLU = 4.3 words - full complete sentences used with good, but not perfect, grammatical form**  
**Names all upper & lower case letters**

**phonological awareness**  
**verbal memory - sentence repetition and story recall**  
**expressive vocabulary**  
**rapid serial naming**  
**receptive sentence comprehension**

# Language Experiences



# Language Experiences by Group



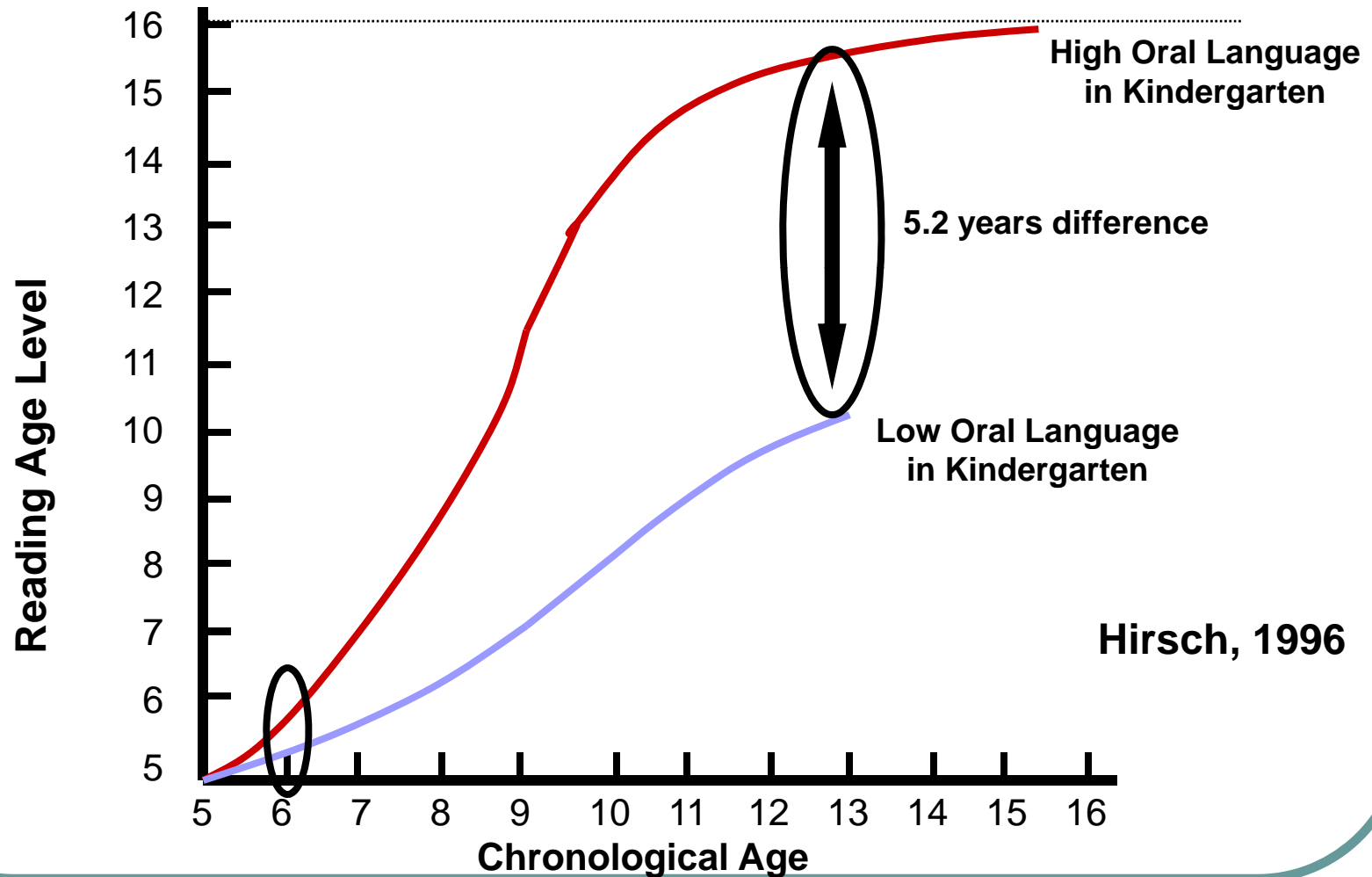
*Meaningful Differences in the Everyday Experience of Young American Children* by Betty Hart & Todd R. Risley. Paul H. Brookes Publishing Co. (1995).

# Language Experiences by Group

	<b>Words Heard per hour</b>	<b>Affirmatives per hour</b>	<b>Prohibitions per hour</b>
<b>Professional Family Child</b>	2153	32	5
<b>Working Class Family Child</b>	1251	12	7
<b>Low SES Family Child</b>	616	5	11

*Meaningful Differences in the Everyday Experience of Young American Children* by Betty Hart & Todd R. Risley. Paul H. Brookes Publishing Co. (1995).

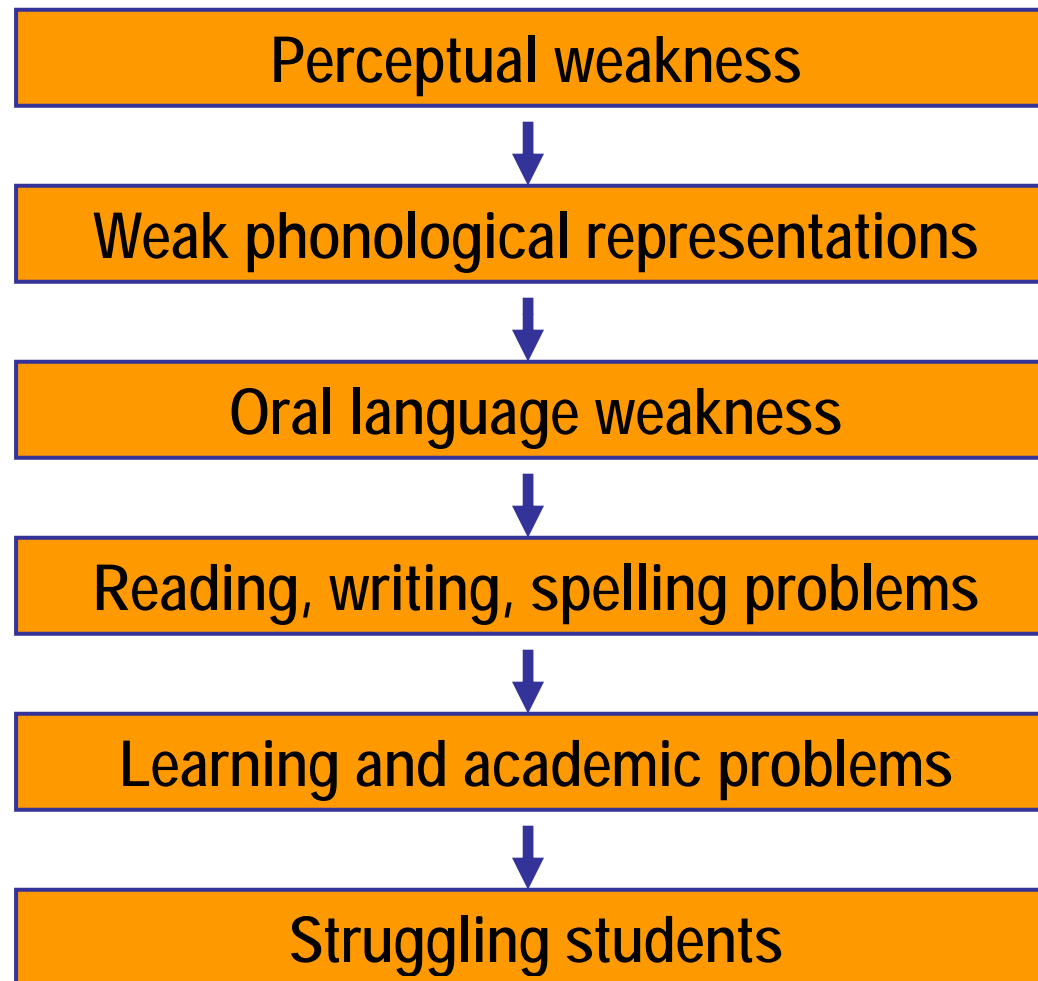
# The Effects of Weaknesses in Oral Language on Reading Growth



# Limited Background and Content Specific Knowledge

- Students arrive in the educational environment with a wide range of experiences, knowledge and skills
- Progression in reading skills
  - Phonological awareness
  - Decoding
  - Vocabulary
  - Comprehension

# Language Literacy Continuum



# THE MANY STRANDS THAT ARE WOVEN INTO SKILLED READING

## LANGUAGE COMPREHENSION

BACKGROUND KNOWLEDGE  
(facts, concepts, etc.)

VOCABULARY  
(breadth, precision, links, etc.)

LANGUAGE STRUCTURES  
(syntax, semantics, etc.)

VERBAL REASONING  
(inference, metaphor, etc.)

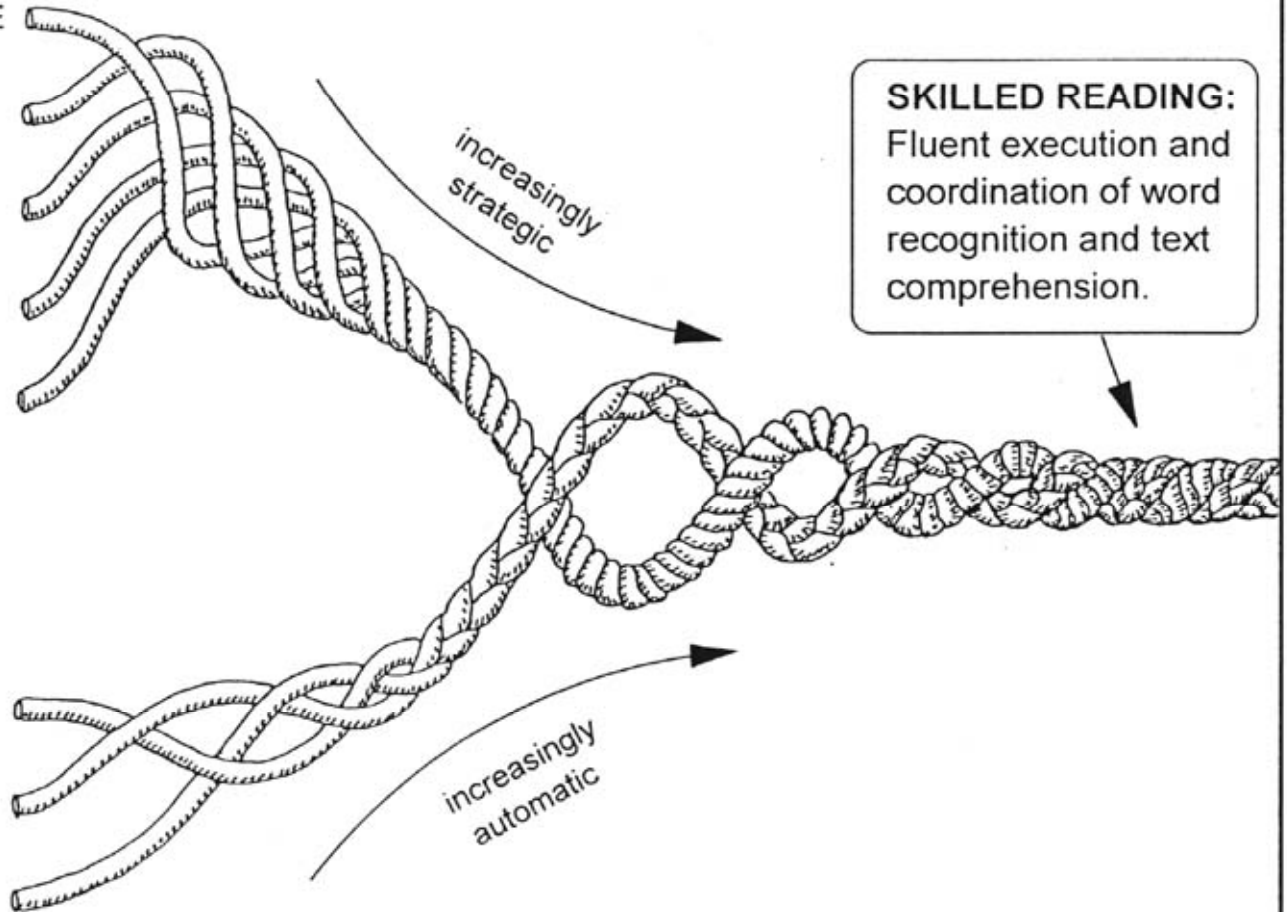
LITERACY KNOWLEDGE  
(print concepts, genres, etc.)

## WORD RECOGNITION

PHONOLOGICAL AWARENESS  
(syllables, phonemes, etc.)

DECODING (alphabetic principle,  
spelling-sound correspondences)

SIGHT RECOGNITION  
(of familiar words)



# Reading Materials are more Complex

- Educational Progression for core curriculum is becoming increasingly more demanding
  - Curriculum selections are more advanced
  - Academic rigor are moving toward preparation for college
  - High Stakes Testing, and Adequate Yearly Progress requires all learners to make significant gains

# Motivation

- External motivation- seeking recognition for advancement in reading
- Internal motivation- seeking of benefits that the reading activity itself will sustain for the student
- Self Efficacy- Student believes that they have the ability to read well. This stage promotes the desire to become knowledgeable through print.

# Challenges with the System

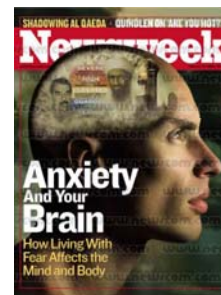
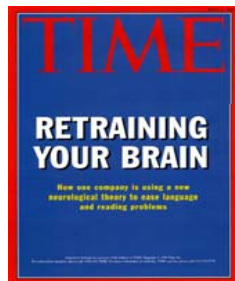
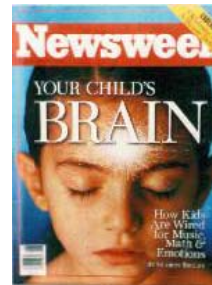
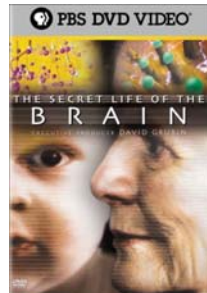
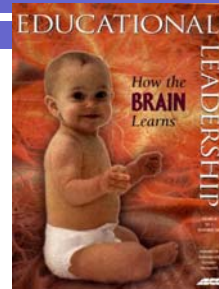
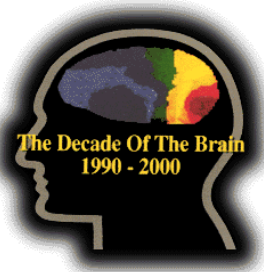
- Pressure of high stakes testing
- Focus on test taking behaviors
- Pressure to cover a large amount of content
- Assumptions about the learner
- Limited resources for ongoing training and professional development

# Instructional challenges

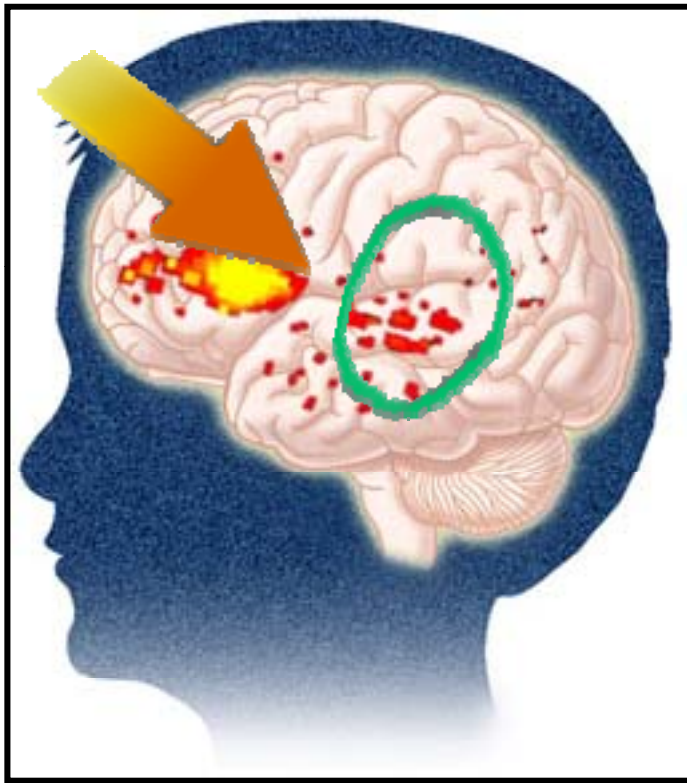
*Students may have difficulty with instruction in the content areas*

- Content area teachers have insufficient training on the process of learning to read and how to teach the “reading” of their content subject
- Occasional instruction in decoding, vocabulary and comprehension
- Lack of opportunity to develop vocabulary

# Neuroscience & Learning In the News

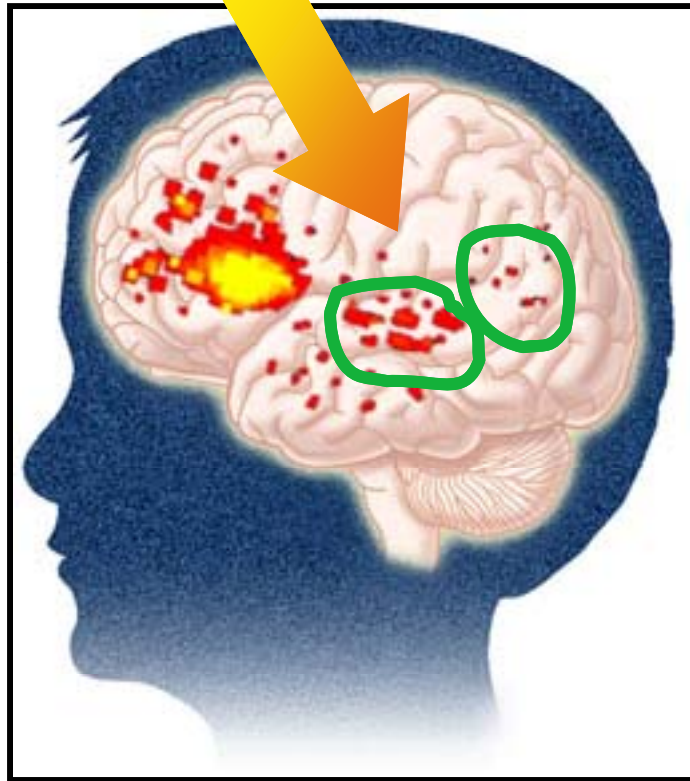


# Looking Inside the Reading Brain

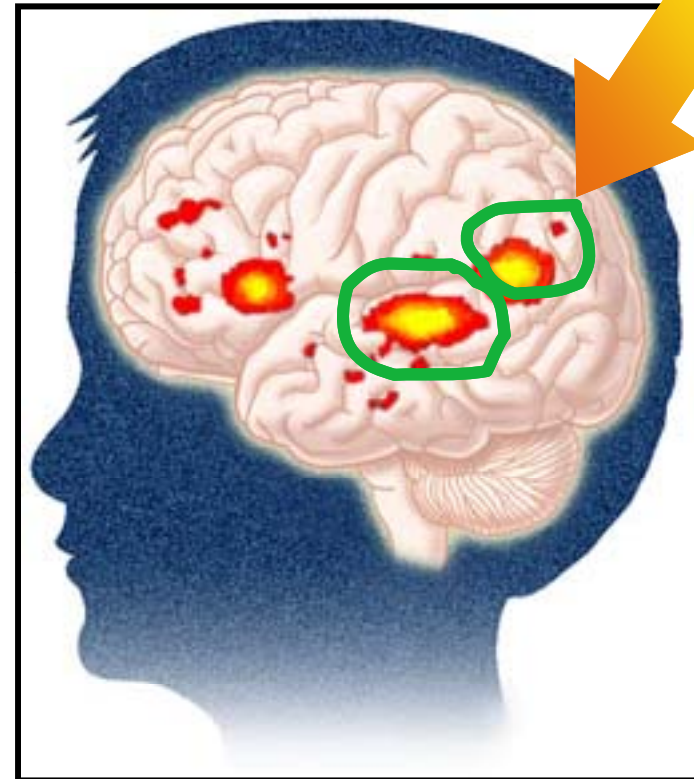


**Not Activated**

# Looking Inside the Reading Brain



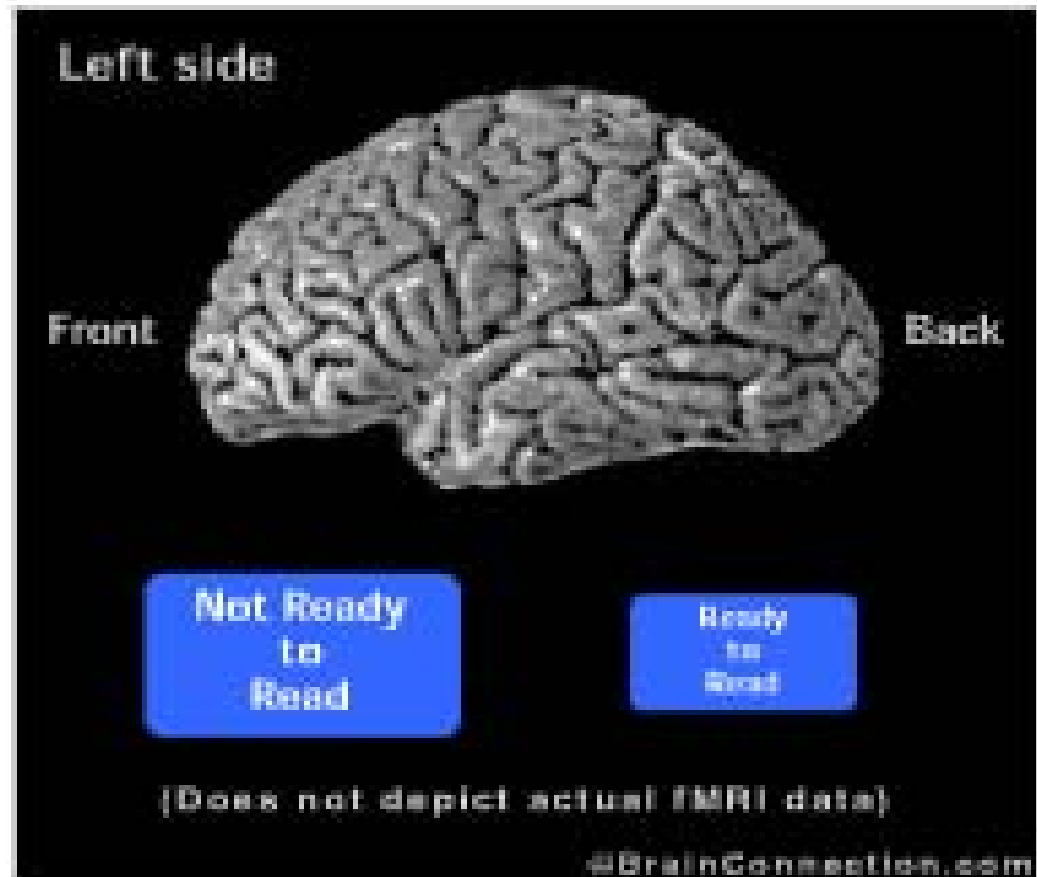
**Not Activated**



**Activated**

# Independent Published Results

- Stanford University Study, *PNAS*, 2003
- Brain activity associated with reading skills



# Research Suggests Opportunity for Improvement

- Vocabulary
  - Explicit instruction in vocabulary of the content areas is highly effective
  - Provide ample practice for students to become confident in the terminology of the subject
- Comprehension
  - Direct instruction of vocabulary results in improvements in comprehension

The Voice of Evidence in Reading  
Research McCardle, Chhabra

# Power to Change the Course of the Future

- According to the Reading Next report, a comprehensive literacy program warrants an “extreme makeover” at different levels
- Biancarosa and Snow (2004) identified key elements of instruction that would contribute to an effective literacy program

# Key Elements for Change

- Direct, Explicit Instruction
- Effective instructional principles embedded in content
- Motivation and self-directed learning
- Strategic tutoring
- Technology component
- Extended time
- Professional Development



# Future Concerns

- Closing the academic achievement gap
- Decreasing the drop out rate
- Successful Mainstreaming
- RTI and collaboration of General Education and Special Education Initiatives, Resources and Funding Sources



# Reading First Initiative

- Five components
  - Phonemic Awareness
  - Phonics
  - Vocabulary Development
  - Fluency
  - Comprehension
- Three Tier Model of instruction consists of three phases of reading instruction
  - Tier 1: Core Classroom Instruction
  - Tier 2: Supplemental Instruction
  - Tier 3: Instruction for Intensive Intervention

# Potential Solutions

## Scientific Learning's *Fast ForWord* Family of Products

- Neuroscience designed
- Technology based
- Explicit instruction
- Language to literacy
- Embedded content material



# Converging Scientific Disciplines

**Cognitive  
Science**

**Neuroscience  
Plasticity**

**Science  
of  
Reading**

**Powerful  
Computers**

• Dr. Paula Tallal

- Board of Governor's Professor of Neuroscience and Co-Director of the Center for Molecular and Behavioral Neuroscience at Rutgers University
- SCIL Board member
- Expert in the neurobehavioral understanding of developmental language disorders

• Dr. Steve Miller

- Formerly research faculty, Center for Molecular and Behavioral Neuroscience at Rutgers University
- Expert in developmental dyslexia and language-based reading disorders.

• Dr. Virginia Mann

- Professor UC Irvine, Associate Dean Graduate Studies & Research
- Expert in the scientific study of reading.

• Dr. Michael Merzenich

- The Francis A. Sooy Professor at the Keck Center for Integrative Neurosciences at UCSF
- Elected member of the National Academy of Sciences
- SCIL Board member
- Expert in the neuroscience of learning and brain-based plasticity

• Dr. William Jenkins

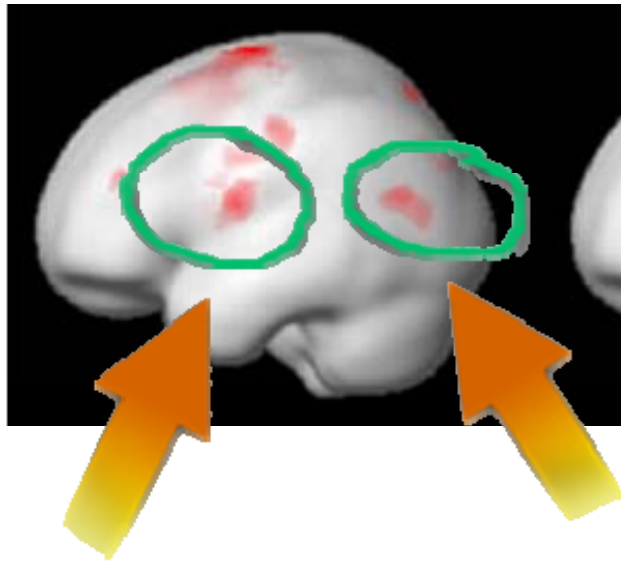
- Formerly an Associate Professor at the Keck Center for Integrative Neurosciences at University of California, San Francisco ("UCSF")
- Expert in the development of neurobehavioral learning paradigms.

# Fast ForWord Family of Products

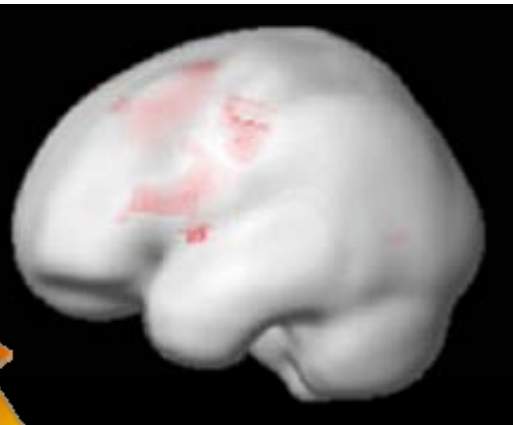
- Based on 30+ years of scientifically-based research
- Develops the cognitive skills of memory, attention, processing rate, and sequencing the foundational skills for learning
- Adapts to individual student needs
- Provides intensive, frequent trials with rapid results
- Provides real time data through continuous progress monitoring
- Supports the National Standards for Reading of phonemic awareness, phonics, fluency, vocabulary, and comprehension
- Offers professional development options which allows the trained interventionist to effectively deliver individualized, targeted instruction for the at-risk student

# Increased Brain Activity

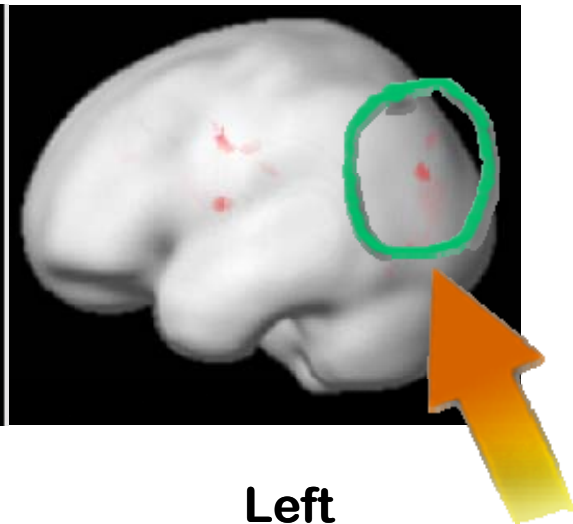
**Average Reader**



**Dyslexic, before Fast ForWord**



**New cortical areas active after Fast ForWord**



**Left  
Difference between  
activity before and  
after Fast ForWord**

Adapted from Temple et al.,  
*Proceedings of the National Academy of the Sciences*, 2003

# Academic Improvements

- Layer Elementary
  - 600 Students
  - 50 minutes of Fast ForWord Programs
  - 60 minutes of direct instruction with classroom teacher-Harcourt Trophies Program
  - Reading Inventory conducted in 4 month interval

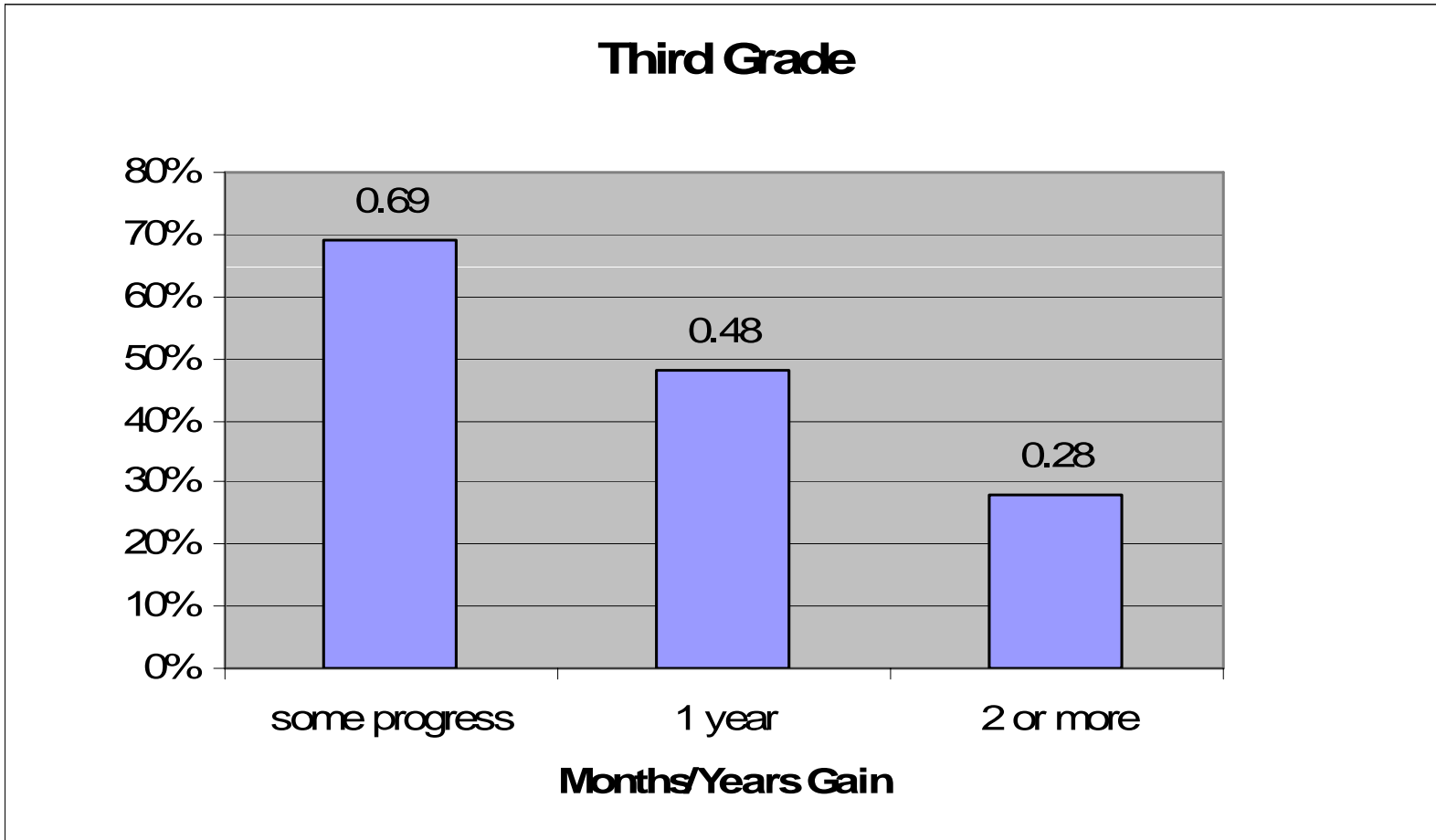
# Results

- Population studied
  - 115 Students in grade 3,4,5
  - 59% Economically Disadvantaged
  - 30% Students with Disabilities
  - 15% English Language Learners

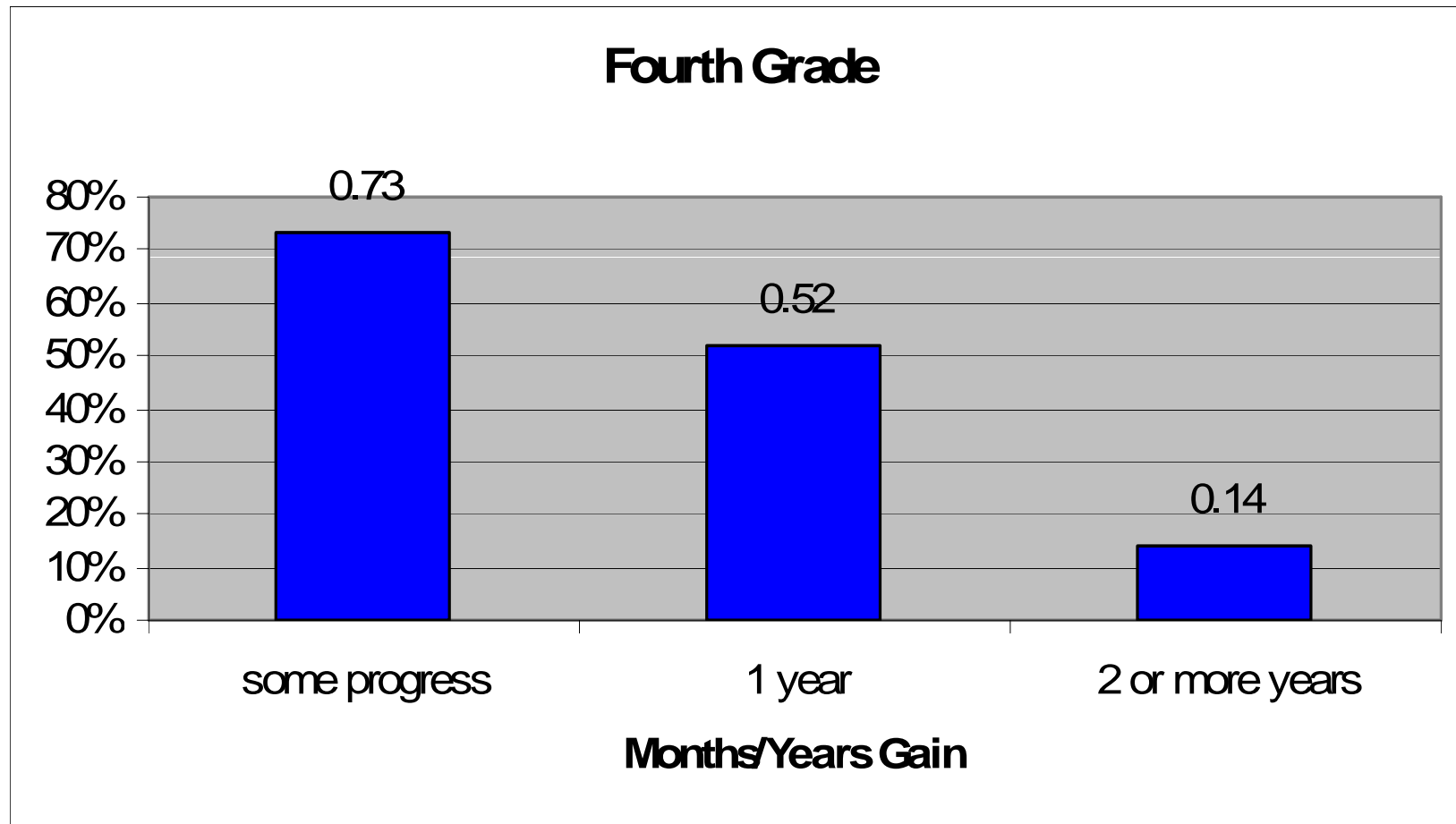
# Assessments

- Scholastic Reading Inventory
- Pre Test Conducted Sept. 4, 2007
- Post Test December 21, 2007
- Assessments conducted by teachers
- Computer-based assessment tool

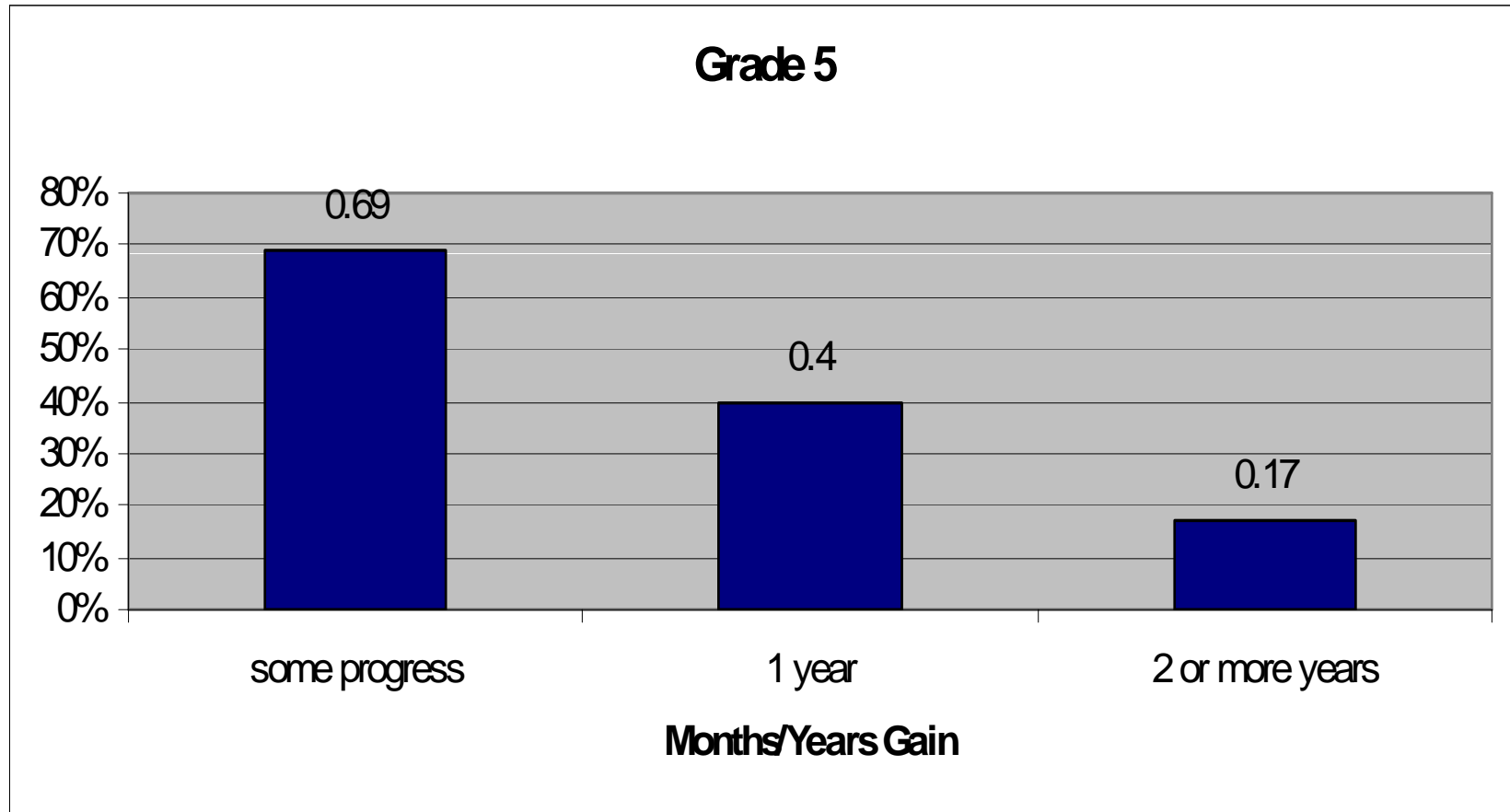
# 29 Third Grade Students



# 44 Fourth grade students

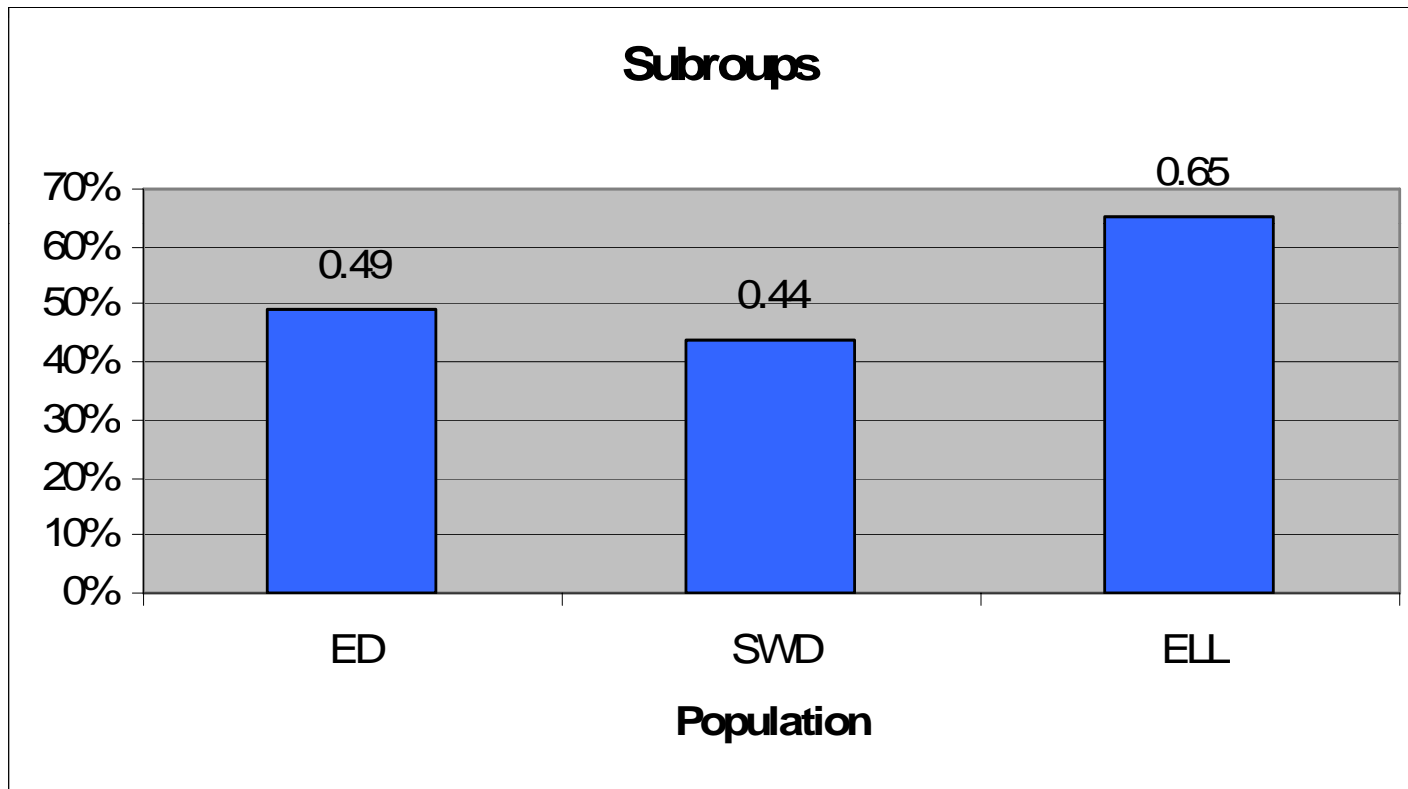


# 42 Fifth grade students



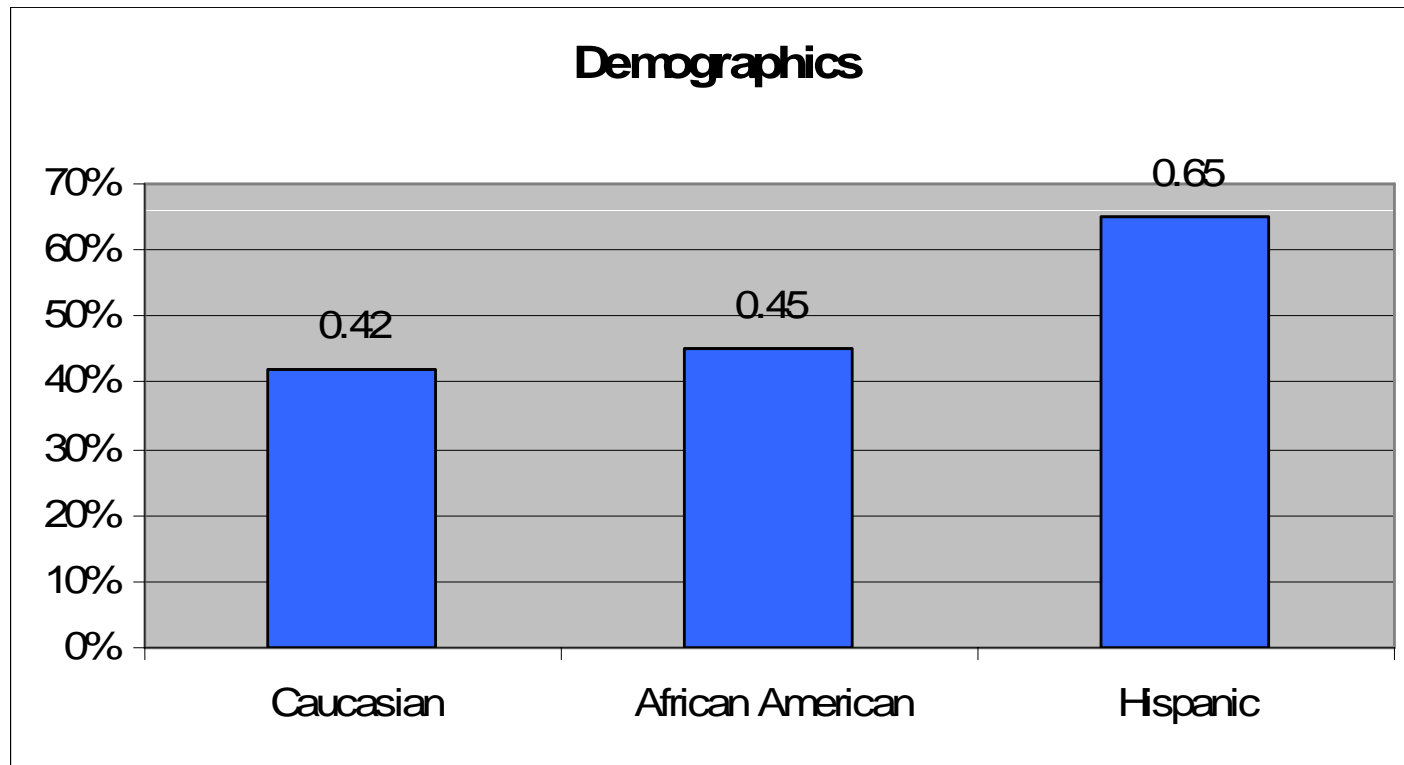
# Subgroup Improvements

## More than one year improvement



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## More than one year improvement



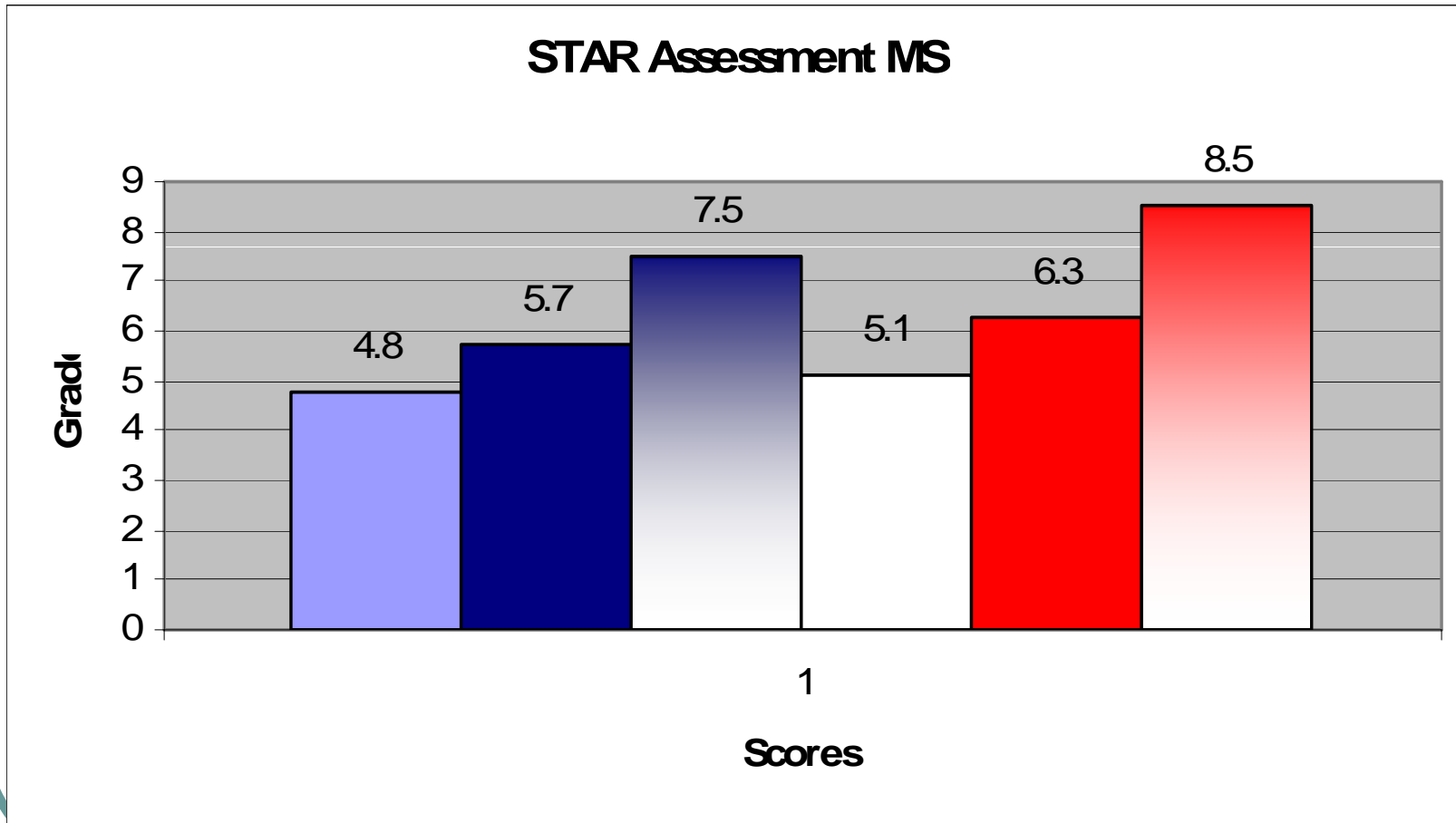
# Academic Improvements

- Bridges Academy
- Population studied
  - 80 Students in grade 2-12
  - 100% Special Education
    - Learning Disabled
    - Language Impaired
    - Auditory Processing Deficit
    - Traumatic Brain Injured
    - Aspergers Syndrome
    - ADD/ADHD

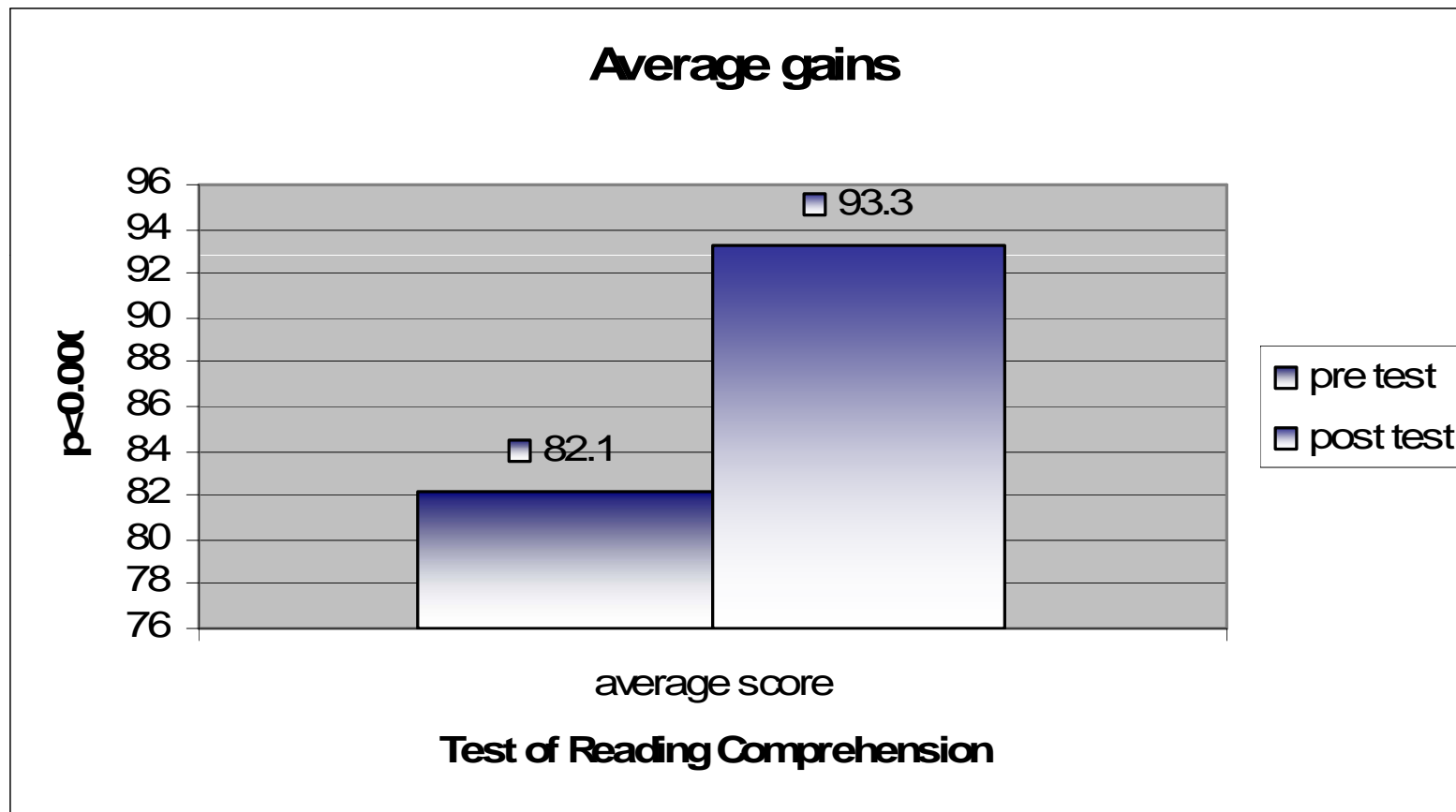
# Assessments

- STAR Assessment- Renaissance Learning
- Test of Reading Comprehension-ProEd
- Woodcock Reading Mastery-AGS

# Middle School S.T.A.R. Assessment

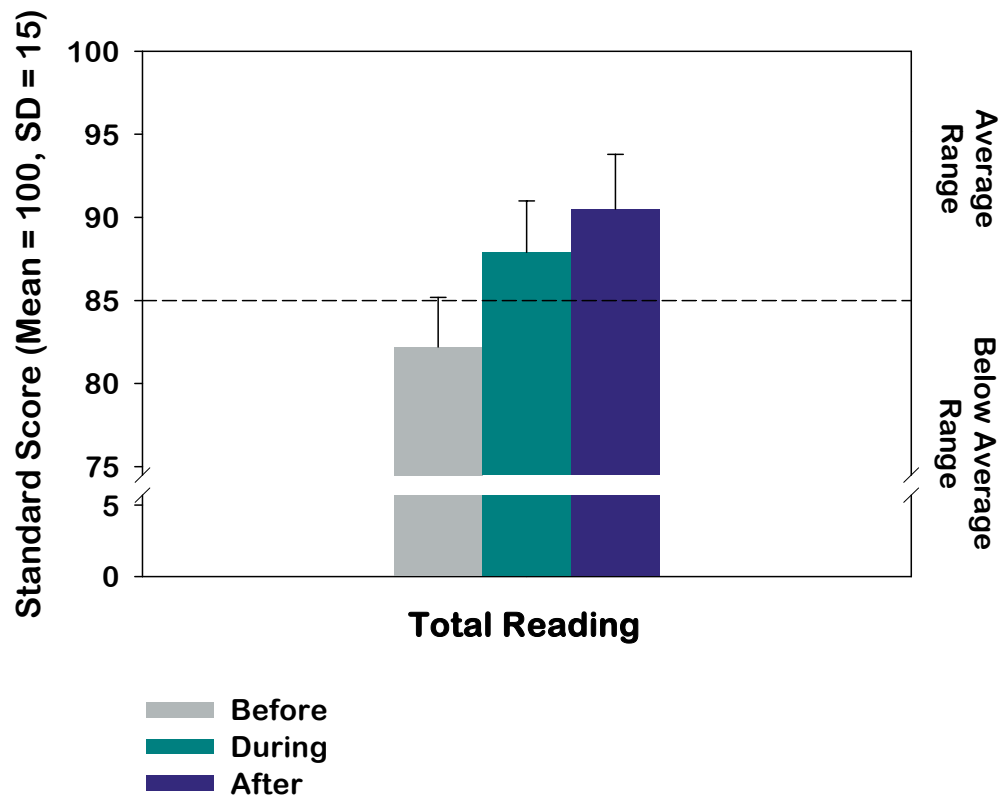


# TORC Study

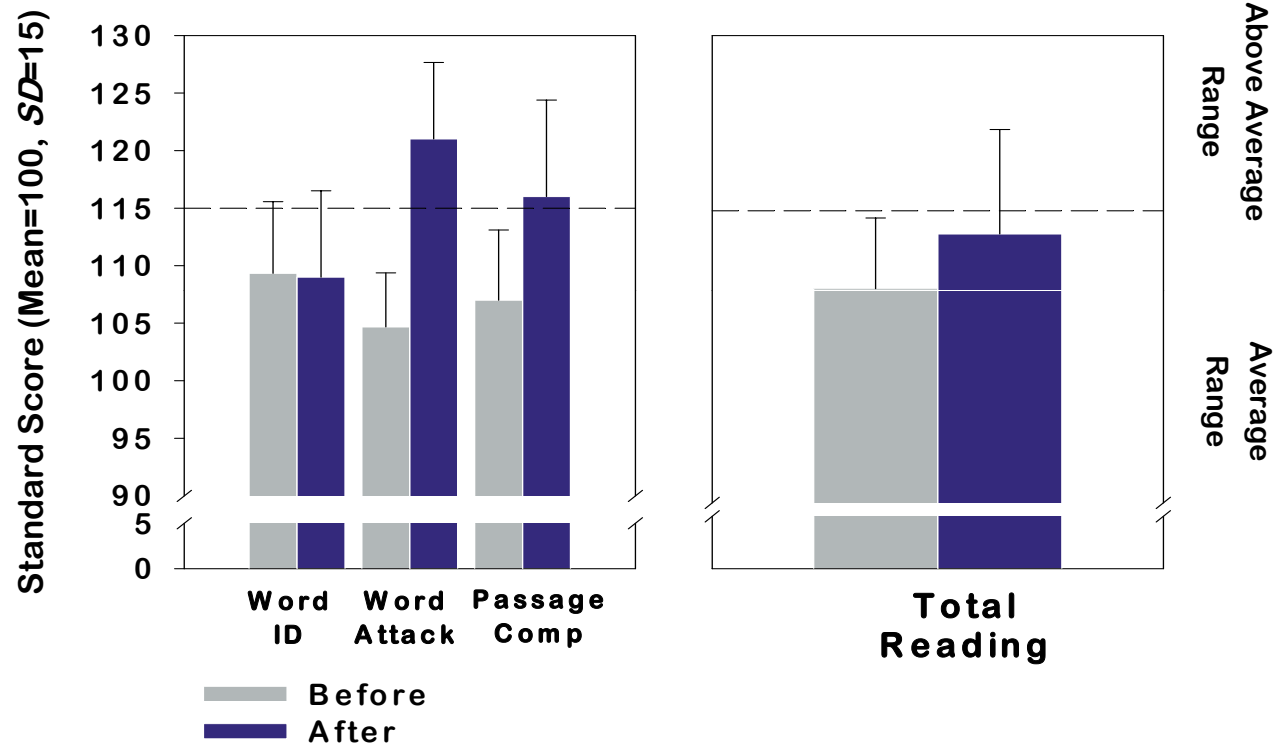


# Total Reading Improvements with Outlined Progression of Fast ForWord

Nov. 2004- Jan. 2006  
(1.1 years of instruction)



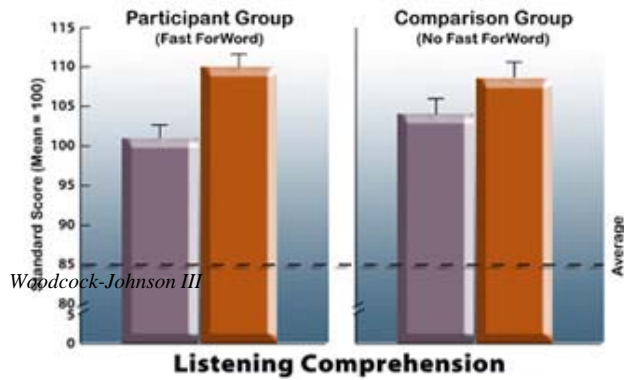
# Improvement in Reading Skills



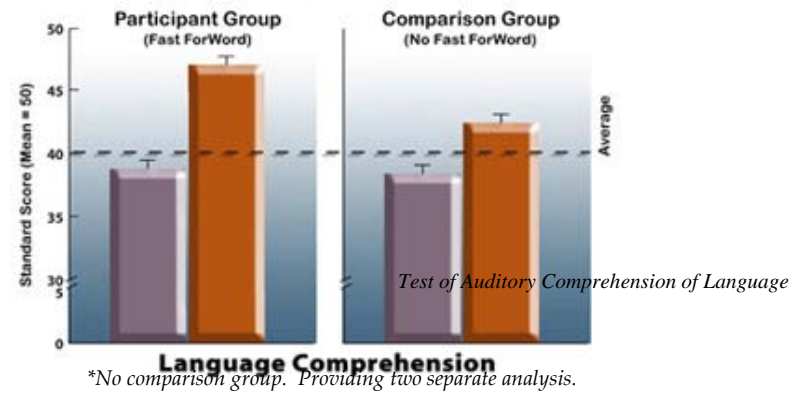
*Improvements in Reading Skills (Woodcock): average Standard Scores of three students before and after Fast ForWord participation. Three students HS Level, AP and Honors Students*

# National Studies

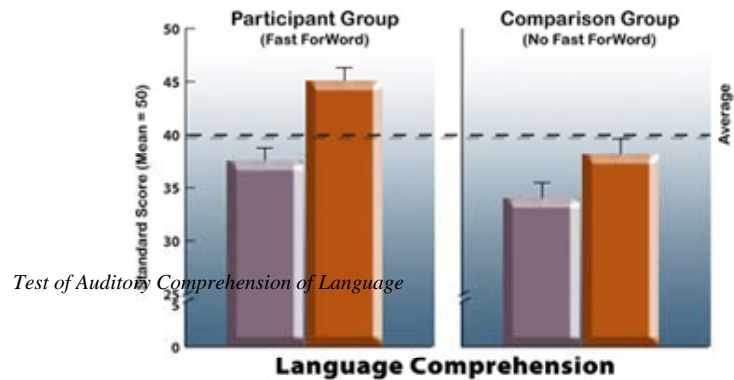
## General Education



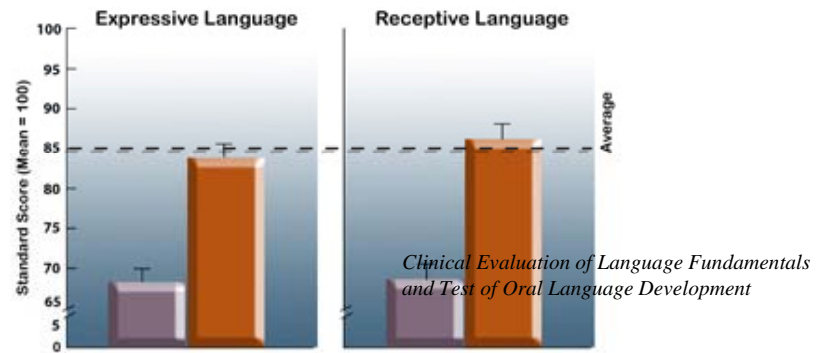
## At-Risk



## Limited English Proficiency



## Special Needs



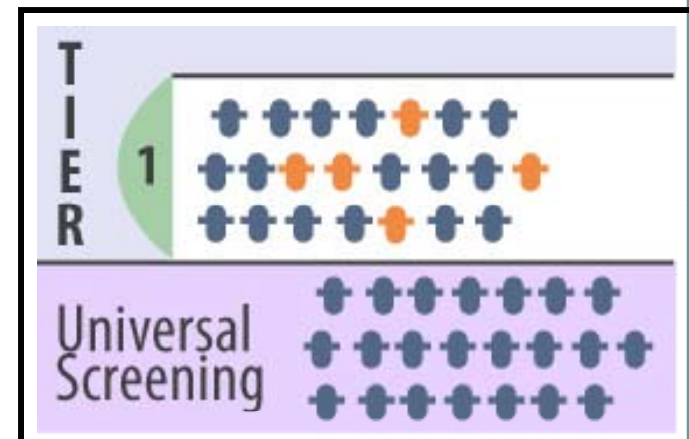
■ Before Fast ForWord ■ After Fast ForWord T Mean Variability

# Implementation

- Keys to Improvement
  - Compliance- follow protocol
  - Collaboration-general ed, special ed
  - Combined approach- reading instruction AND Fast ForWord
  - Cooperation- Student, parent and educators

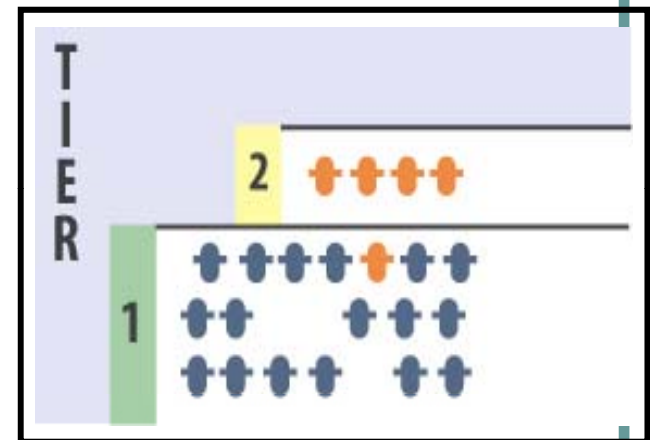
# Rtl Tier 1

- **Focus:** All students
- **Program:** Scientifically based
- **Grouping:** Multiple/flexible formats
- **Time:** 90 minutes per day
- **Assessment:** Benchmarks: beginning, middle, end
- **Interventionist:** General Education teacher
- **Setting:** General Education classroom
- **Professional Development Support**



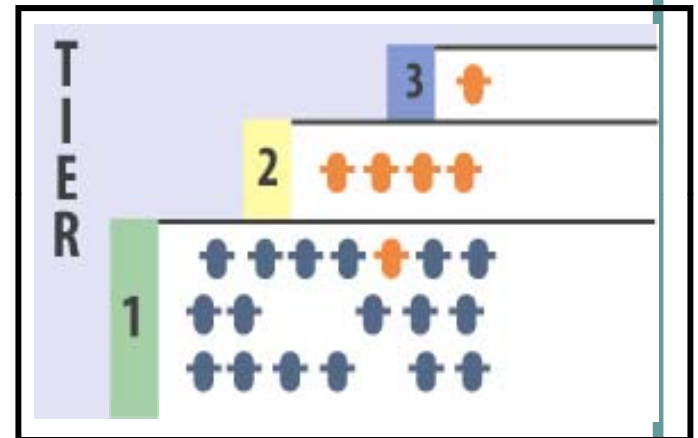
# Rtl Tier 2

- **Focus:** students identified from Tier 1
- **Program:** Scientifically based on target skills and strategies, supplementary procedures
- **Grouping:** Same ability/instructional levels of 1:3, 1:4, 1:5 ratios
- **Time:** 30 minutes additional to core 90 minutes
- **Assessment:** Bi-weekly progress monitoring
- **Interventionist:** Reading, ESL, speech, special education teacher
- **Setting:** Push in or pull out
- **Professional Development Support**



# Rtl Tier 3

- **Focus:** students identified as needing intensive intervention
- **Program:** Scientifically based, instruction is more explicit, intensive and designed for specific deficit
- **Grouping:** Individual or very small group (1:2)
- **Time:** 60 minutes added to core 90 minutes
- **Assessment:** Weekly progress monitoring
- **Interventionist:** Reading, ESL, speech, special education teacher
- **Setting:** Push in or pull out
- **Professional Development Support**



# Reduction in Special Education Referral Rates

## READING INTERVENTION CASE STUDY

### 30% fewer Special Education referrals in Swartz Creek, Michigan, Community Schools.

#### DISTRICT STATISTICS

**Number of Schools:**  
8

**Number of Students:**  
4,239

**Grades:**  
PK-12

**Population:**  
Students with IEPs  
over 13%  
Students eligible for free  
or reduced price meals  
over 22%

Some educators learn about *Fast ForWord* products through word of mouth. Others attend conferences and listen to speakers from Scientific Learning. Sharon Fouts, Assistant Superintendent of Schools for the Swartz Creek, Michigan, Community School District, actually heard about it for the first time while she was driving to work.

"I had just gotten a CD that day from an educational research organization I belong to," she recalled, "and on it they talked about products that were now available that could make a significant impact on learning. And they

"In the beginning, we agreed, we would just do something minimal. So we went before the school board and got them to fund three workstations in three buildings."

The children chosen to participate ranged from second graders, who were facing Michigan Educational Assessment Program testing the following year, to at-risk middle school students hand-picked by principals. Without regard to age or ability, they all made rapid progress from the start.

**STAR RESULTS LOOK GREAT.**  
According to Fouts the results came

# Improving the Future for Adolescents

- Focus on Improving the capacity for learning
- Increase the number of students who remain in school beyond 10<sup>th</sup> grade
- Successful Mainstreaming- Decrease in students staffed in for special services
- RTI and collaboration of General Education and Special Education Initiatives, Resources and Funding Sources



# Questions and Answers

**For more information, please contact us at:**

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