

# Apprenticing Adolescents to Academic Literacy in the Subject Areas

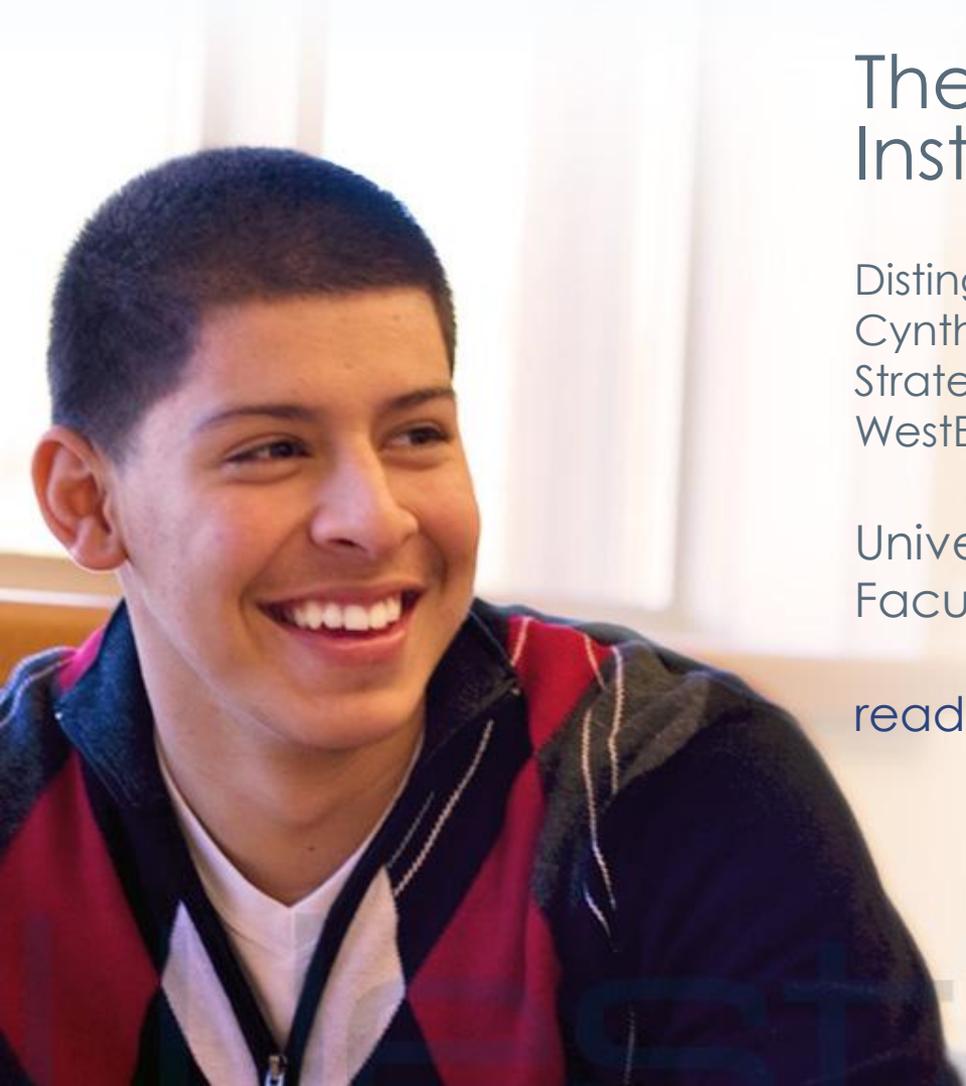
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## The Reading Apprenticeship Instructional Framework

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WestEd

University of Auckland  
Faculty Seminar, March 20, 2014

[readingapprenticeship.org](http://readingapprenticeship.org)



# Strategic Literacy Initiative at WestEd

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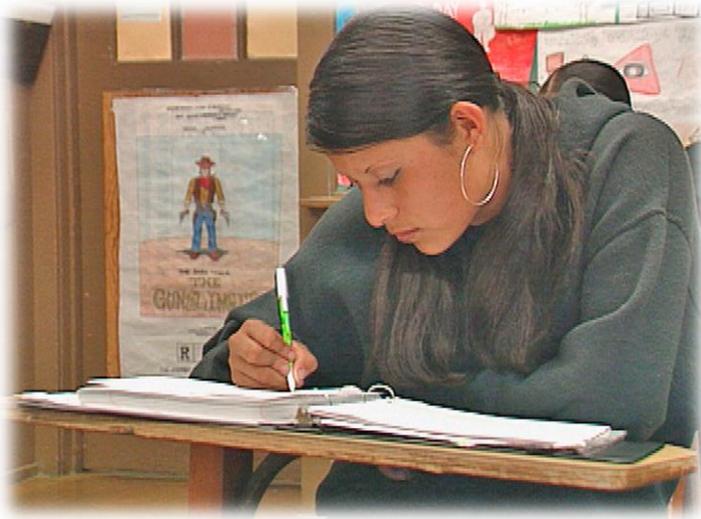


A program of research and development focusing on improving academic literacy across subject areas

*Mission:* To work with communities of educators to support the development of high level academic literacy skills among diverse populations of students, especially academically underperforming youth

# Strategic Literacy Initiative Program of Research and Development

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How can we provide diverse students with the means to participate successfully in the complex literacy practices they encounter in school and beyond?

# Design (Formative) Experimentation

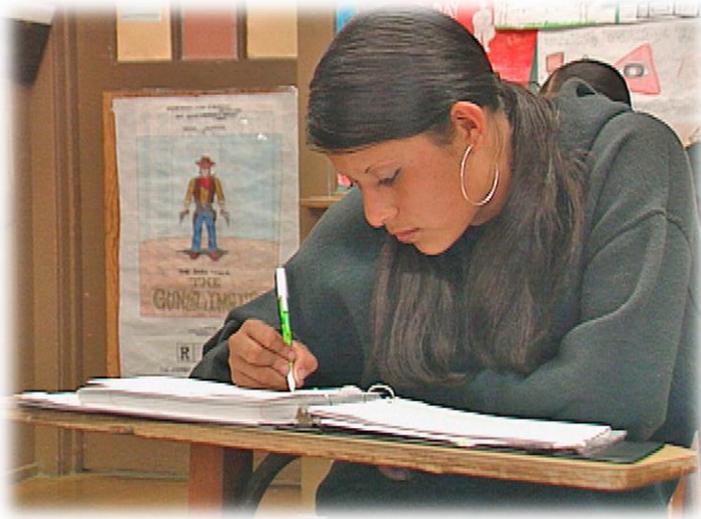
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*“The study of how educational interventions work can never be far removed from the task of engineering them to work better.”*  
(Newman, Griffin, & Cole, 1989, p. 147)

- Theory driven
- Cycles of design, innovation, and study
- Sensitivity to context
- Continuous development
- Informing/reforming theory

# Strategic Literacy Initiative Program of Research and Development

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Reading Apprenticeship  
Instructional Framework

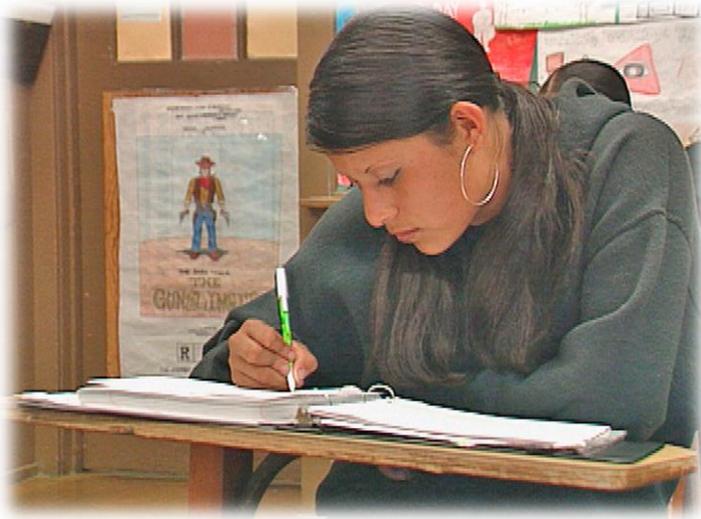
Reading Apprenticeship  
Academic Literacy course

Inquiry-based designs for teacher  
professional development

Ongoing R&D in discipline-  
specific literacy instruction

# Strategic Literacy Initiative Program of Research and Development

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Ongoing studies to refine and improve program impact for teachers and students

- Case studies
- Classroom studies
- NSF & IES Randomized Trials
- Investing in Innovation
  - (RAISE, iRAISE)
- Reading for Understanding
  - (READI)
- SEED
  - (RAWC)

# Reading Apprenticeship in Action

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Central Valley of California

Military and agriculture; High migrant population

Open enrollment in Honors classes

Immigrant students, new citizens

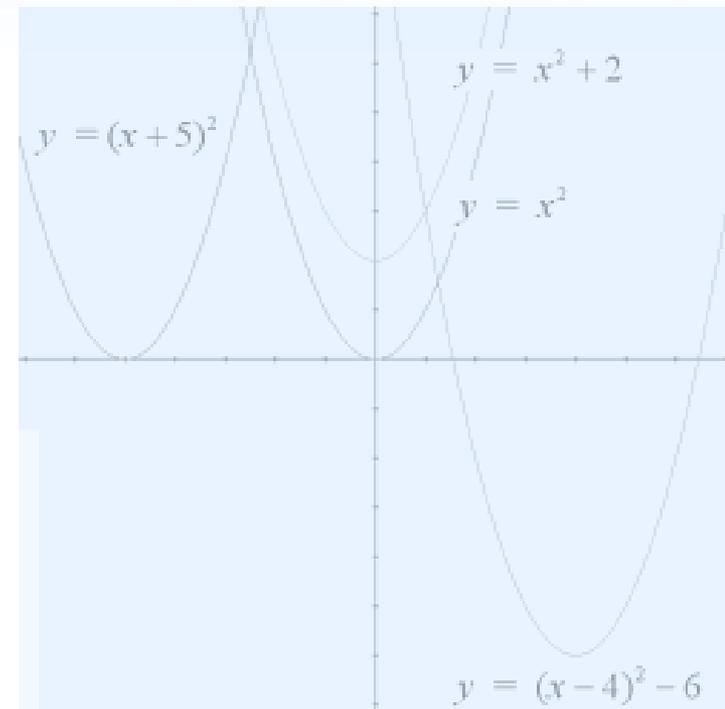
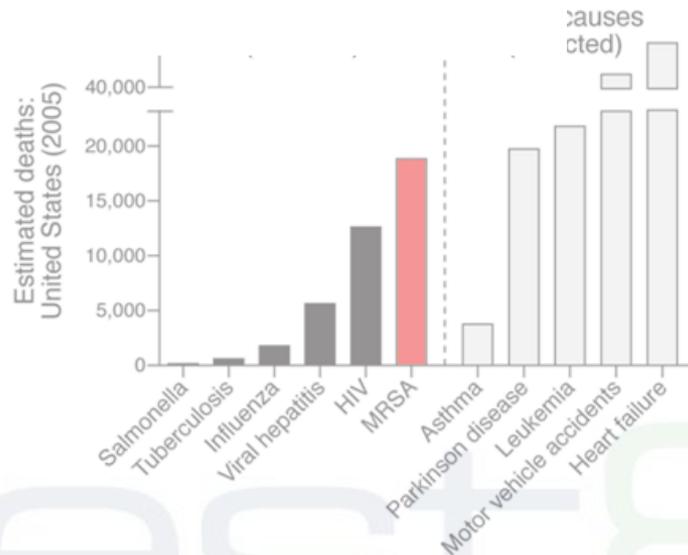
Reading the US Constitution

Considering the constitutionality of the US internment of Japanese in WWII

<http://readingapprenticeship.org/research-impact/videos/classroom/>

# The Challenge of Adolescent Academic Literacy

Antibiotics and similar drugs, together called antimicrobial agents, have been used for the last 70 years to treat patients who have infectious diseases. Since the 1940s, these drugs have greatly reduced illness and death from infectious diseases. Antibiotic use has been beneficial and, when prescribed and taken correctly, their value in patient care is enormous. However, these drugs have been used so widely and for so long that the infectious organisms the antibiotics are designed to kill have adapted to them, making the drugs less effective. People infected with antimicrobial-resistant organisms are more likely to have longer, more expensive hospital stays, and may be more likely to die as a result of the infection.



# High Level Literacy for All A New Focus for the US

The current level of literacy instruction is insufficient to advance the literacy achievement of adolescents (Carnegie Council on Advancing Adolescent Literacy, 2010)

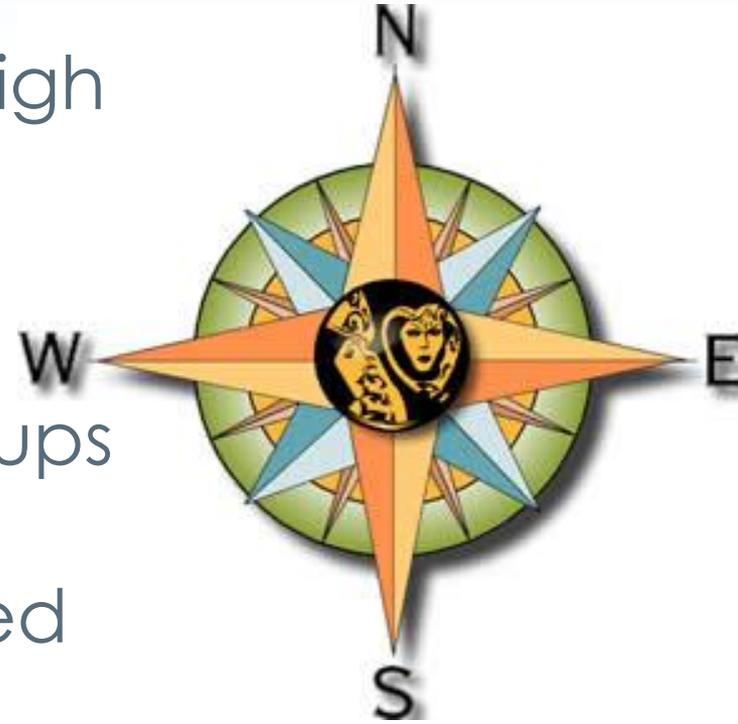
- Language and literacy demands of 21<sup>st</sup> century competencies for deeper learning
- College and career readiness skills
- Critical literacy
- Common Core State Standards for Literacy in the Disciplines
- Next Generation Science Standards

# The Challenge of High Level Literacy for All Students

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The nation must reach for high level literacy skills (Heller & Greenleaf, 2007).

Gaps between student groups at the below basic level of performance have narrowed over time while gaps at the advanced level have widened (Education Trust, 2013).



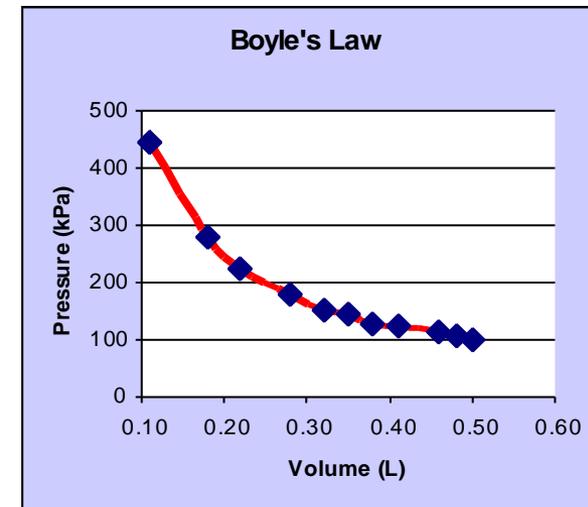
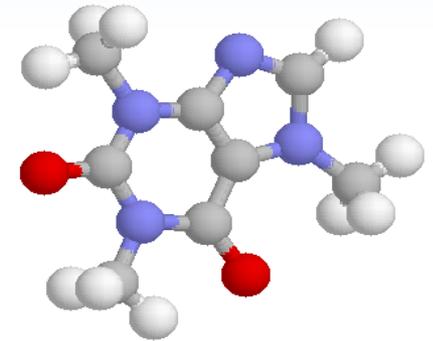
# Academic Disciplines Participate in Distinct Literacy “Practices”

Specialized ways of reading, writing, speaking and reasoning that are specific to an intellectual discipline

- Particular reasons to read and write
- Conventional and multiple forms of text & means of representation

Valued reasoning processes

- Traditions of argumentation: What counts as a good question, evidence, problem, or solution



# Students are Unprepared

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Only 30% of high school students graduate as proficient readers who are college-ready (Greene & Forster, 2003)

Less than 50% of youth who take the ACT are prepared for the demands of college reading (ACT, 2006)

35 - 40% of high school graduates lack the reading and writing skills that employers seek (Achieve, Inc., 2005; Kaestle et al., 2001; National Commission on Writing, 2004)

# A Matter of Equity

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At the secondary level, we have little time remaining before students leave school.

We need to *simultaneously* build students' subject area knowledge, their literacy skills, and their dispositions to engage in rigorous academic learning.

# To Advance Literacy Development, Students Should Be:

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Grappling, inquiring, raising questions

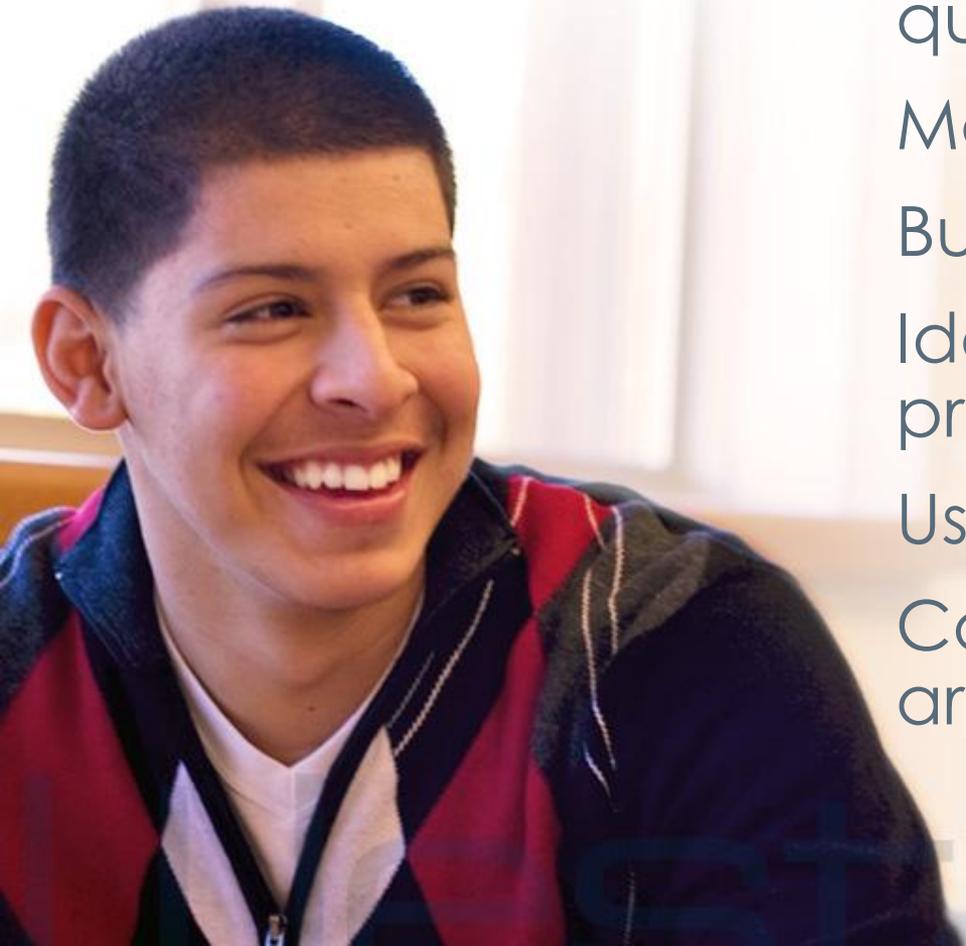
Making meaning

Building knowledge

Identifying and solving problems

Using evidence

Constructing and critiquing arguments



# Practices Common to Secondary Subject Area Teaching (ACT 2006, 2009, 2012)

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## Teaching as Telling

Teaching around the text

Doing the intellectual work *for* students

Lecture & PowerPoints

Explanations & interpretations

Demonstrations

Putting students in passive modes

Students receive information

Students copy, recite, remember

Assigning and hoping for the best



# All That Matters: Beyond Skills and Strategies to Engaged Academic Literacy

Dominance of comprehension strategy instruction in adolescent literacy (Conley, 2008)

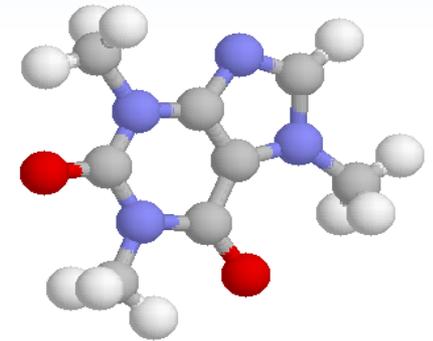
“Metacognition, motivation and engagement, epistemic belief, and self efficacy are all involved in students’ reading development...

Yet these factors may not receive adequate attention in the classroom, taking a back seat to strategy and skill instruction.”

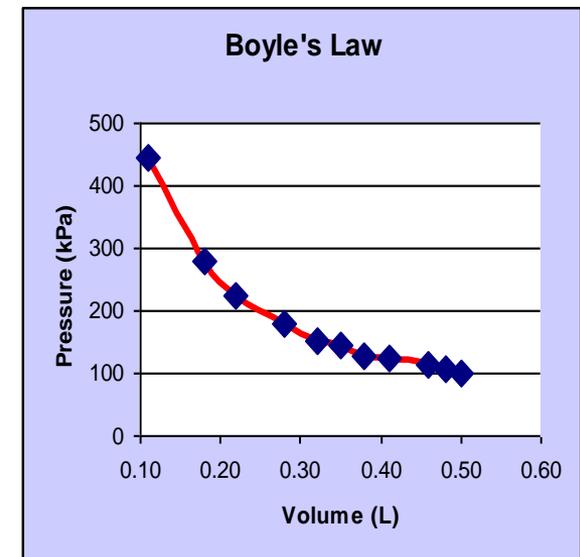
Afflerbach, et al., 2013

# Academic Apprenticeship: A Project of Bringing Outsiders In...

... think about the student who is having difficulty in a certain subject area not as one who is dumb or lacking in aptitude, but rather as someone standing outside of the conventions, rituals, and expectations of discourse in that field—all of which are second nature to the specialist but to a newcomer can be undecipherable.



Tobias, Sheila. (Winter, 1988). Insiders and outsiders. *Academic Connections*. New York, Office of Academic Affairs, The College Board, pp. 275-279.



# Case Studies of Profoundly Inexperienced Students

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# Findings from Case Studies of Literacy Learners

- Students hold powerful misconceptions of reading and learning that do not serve them well
  - “My sister is a good reader – she knows what all the words mean.” --Ericka
  - “Some people can just read the paragraph and know what it means. I can’t do that. I’m just not a reader.” --Matthew
- Students engage in challenging literacy activities outside school that are not tapped in the classroom
  - “I be up reading the dictionary.. I need some words for my poetry... My mind should be more focused on school than on my reading and stuff.” --Matthew
- Students are profoundly inexperienced with advanced academic literacy tasks

# Findings from Case Studies of Literacy Learners

- Students have abundant experience with low level literacy tasks that do not engage them in disciplinary reading and reasoning.
  - “I know the teacher will go over it and tell us what it means, so I don’t have to read it.”
  - “I don’t know if they care, but no one reads the textbook. You just look for the answer to the questions at the end of the section. You can slide by without them knowing.” --Rosa
  - “I’m going to be honest with you: I don’t read the stuff, I just go back to the question...It’ll tell me this word and I’ll be like, ‘Let me go back and find the word.’” --Ericka

# Findings from Case Studies of Literacy Learners

- With support, underachieving students learn to read complex texts and successfully tackle comprehension problems
- Mentoring these students in the reading and reasoning processes of the discipline can change their beliefs about learning and increase their engagement in school

# Ericka

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Learned to read with difficulty as 3rd grade newcomer in English

Scored below the 5th percentile on standardized tests of reading comprehension

Reading experience: “I see I’m still no good at it, I wonder why...I try...I do read a lot of books, but I guess it don’t work.”

Reading chemistry daunting: “The words and everything...”

Determined: “When I get to college, and I do want to go to college, I want to be a better reader there.”

# Matthew

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Enrolled in chemistry as an 18-year-old repeat 10<sup>th</sup> grader

“I don’t like reading...Once I read it, it goes out this, it comes in this ear and goes out”

“I just ain’t got that type of...brain. Like my brain ain’t like your brain, or Dr. Brown’s brain.”

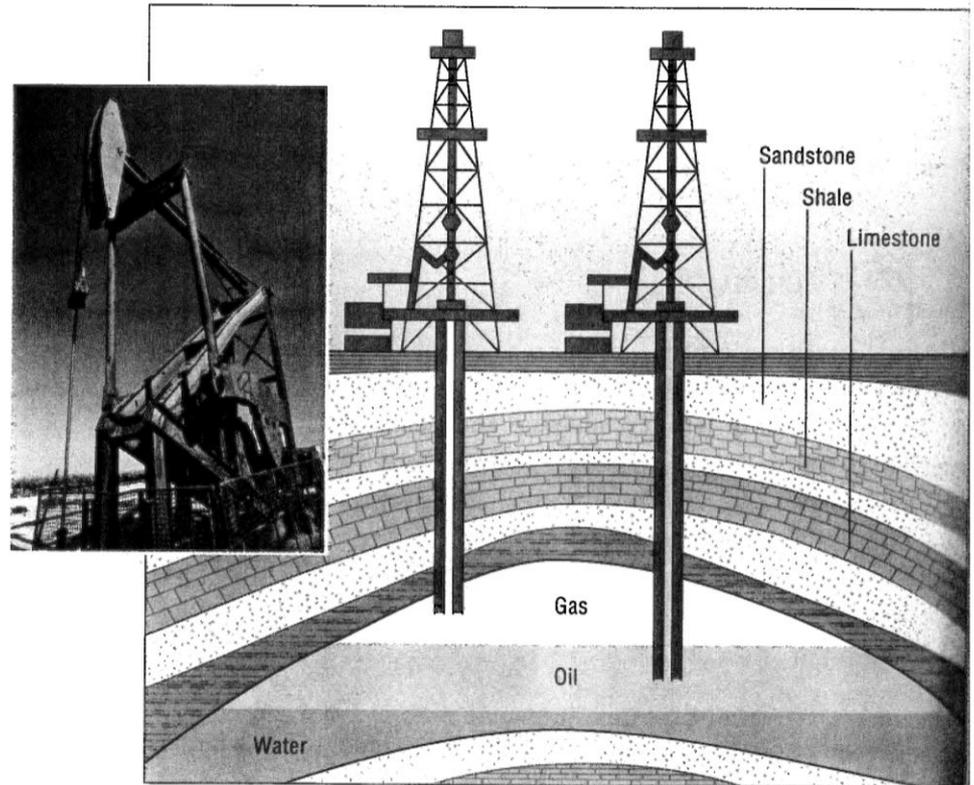
“When I’m at home, I do my career, which is make music. And I feel that school ain’t teaching me how to do none of that.”

Scored below the 5<sup>th</sup> percentile on standardized reading test

# Evidence of Profound Inexperience Reading Science

“Let’s say if I got there, if I was there, in real life, whatever, I would know what it is, what the machine is, how it works, how the oil and gas, where they’re at.”

**Figure 25.16**  
*Natural gas and oil are typically found in dome-shaped geological formations. Petroleum prospectors drill oil wells to tap into the gas and oil. Sometimes the gas is under pressure and will force the oil up the well pipe, but pumping is usually required.*



# Evidence of Profound Inexperience Reading Science

Millions of years ago, marine life settled on the ocean floors and became buried in ocean sediments. Heat, pressure, and the action of bacteria changed this residue into petroleum and gas, which are two important fossil fuels.

Unfamiliarity with the world referenced by the text

*Marine* defined as “people from the army”

Unfamiliarity with how to work with unknown words, referents

*ocean sediments, this residue*

Unfamiliarity with grammatical structures in academic text

“So they are saying that millions, long time ago in the marine life, there were ocean floor that had been buried from the ocean.”

# Evidence of Capability in Metacognitive Conversation

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I: *Does that make sense here?*

Matthew: I know it's another definition...I'm thinking, like fish, fishes and stuff...

I: *How did you figure that out?*

Matthew: I started thinking about Marine World [chuckling]...so it had to be the fish, the fishes and stuff. Then I guess they got buried up under the dirt...[reading] I guess they, as they got buried, it say heat and pressure, I guess the heat and pressure changed, changed they body...

# Chemical Reactivity: Acids and Bases

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## INTRODUCTION

Many of the substances you come into contact with every day have acidic or basic properties. Examples are the foods you eat, the beverages you drink, the cleaning products you use around the house, and so forth. One of the properties of acids is that they generally taste sour; bases usually taste bitter. Another of the properties of acids and bases is that they can cause color changes in certain dyes. These dyes are called indicators. They indicate whether a substance is an acid or a base, depending on what color change it produces in the dye.

A fundamental property of acids and bases is that an acid and a base always react to “neutralize” one another. That is, the products of the reaction do not have acidic or basic properties (or they are substantially reduced compared to the reactant acid and base). One excellent way to tell whether an acid-base reaction has occurred is to use an indicator in the reaction mixture. Look to see whether the final color of the indicator suggests that the solution has substantially reduced acidic and basic properties.

One of the products of acid-base reactions is always water, a very stable compound. Indeed, another way of looking at reactions of acids with bases is as water-forming reactions. The *driving force* for the reactions is the formation of water, and essentially any acid will react with any base. Thus, once you learn to recognize acids and bases, you can predict the reactions they will undergo, including the products formed. Most of the reactions you carry out every day, or in these explorations, are done in aqueous solution, so you usually can't detect the formation of more water, because there is so much already there.

# What Does Discipline-Based Literacy Instruction Look Like?

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- Underperforming high school, Title 1
- ~ Half of the class scored below 10th percentile on standardized reading tests
- Only two students scored above 25th percentile
- Introduction to Chemistry, midway through the academic year

<http://readingapprenticeship.org/research-impact/videos/classroom/>

# Ericka

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It's better for you to go back and try to understand it. You don't keep on going. You stop and remember, you *try* to know it.

Or sometimes it's better if you just stop and think, 'Hey, what does this mean?' 'Wait, let me think,' 'How does it work,' whatever. I mean, like, 'What is this sentence trying to tell me?' And you think about it for a while.

I don't think I've always done that. I think maybe this year you could say.

# Matthew

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“Chemistry cool...I don't really like chemistry, but it ain't, it ain't boring, though. Like if I was to do something like in the future, I'd rather take chemistry than like world history or something like that.”

About reading: “It's just better.”

[In the past] “I just read it, not really focused on what it's saying. Now I read until I find something that's important...”

“It's better when I think.”

# Fostering Engaged Academic Literacy for Adolescents

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Dispositions for engagement in academic tasks

- Curiosity, tolerance for ambiguity, persistence, stamina, confidence

Text-based problem solving capacities

Discipline-based literacy practices

Resilient learner identities

- *Code breaker* stance
- When we ask students to learn something new, we ask them to become someone new (Feldman, 2004)

# The Reading Apprenticeship Approach to Academic Literacy

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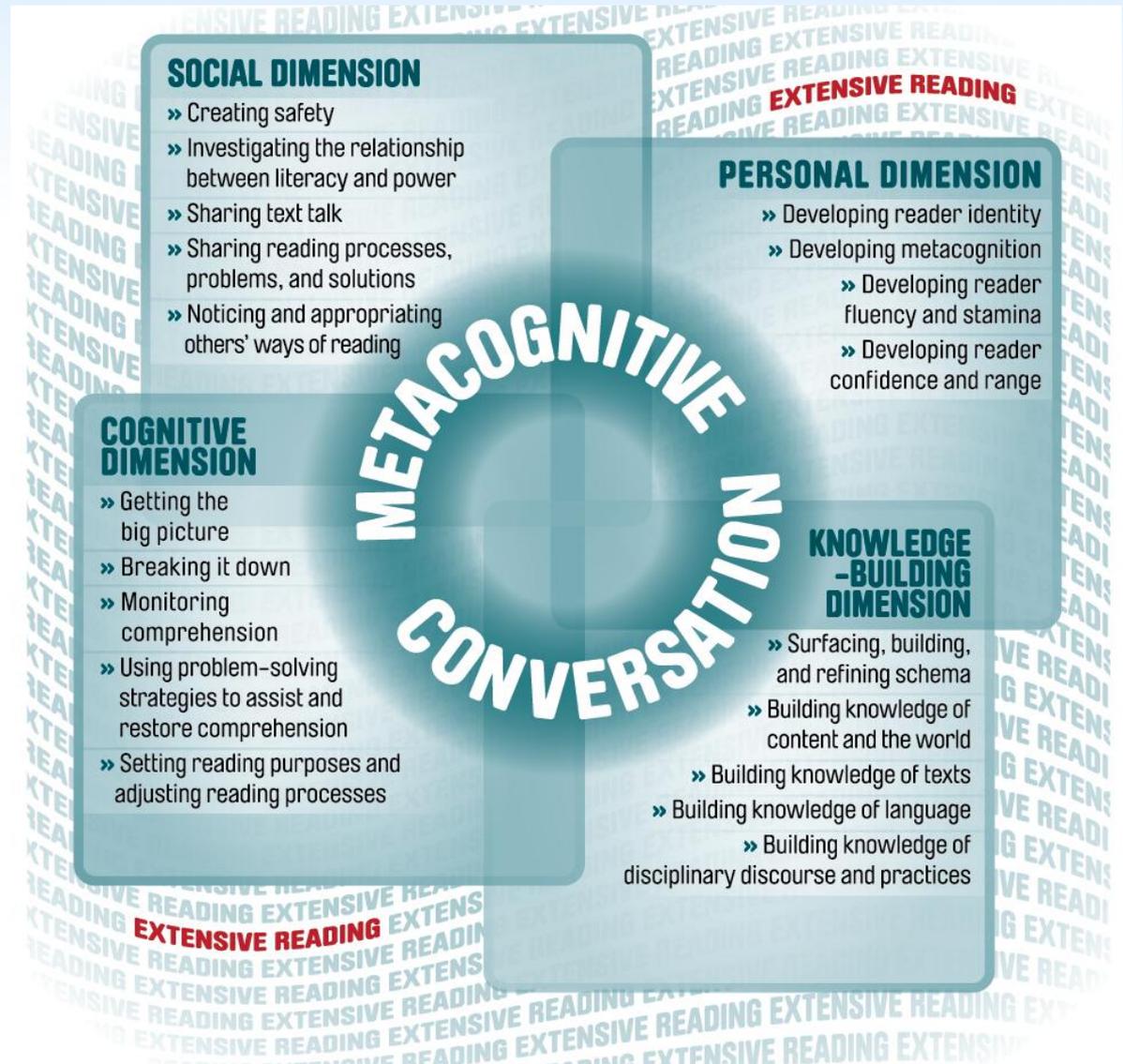
## Transforming Teaching for Student Independence

- Building academic dispositions
- Engaging in worthwhile literacy tasks
- Fostering intellectual engagement
- Close reading to make meaning of complex texts
- Literacy as inquiry to build knowledge



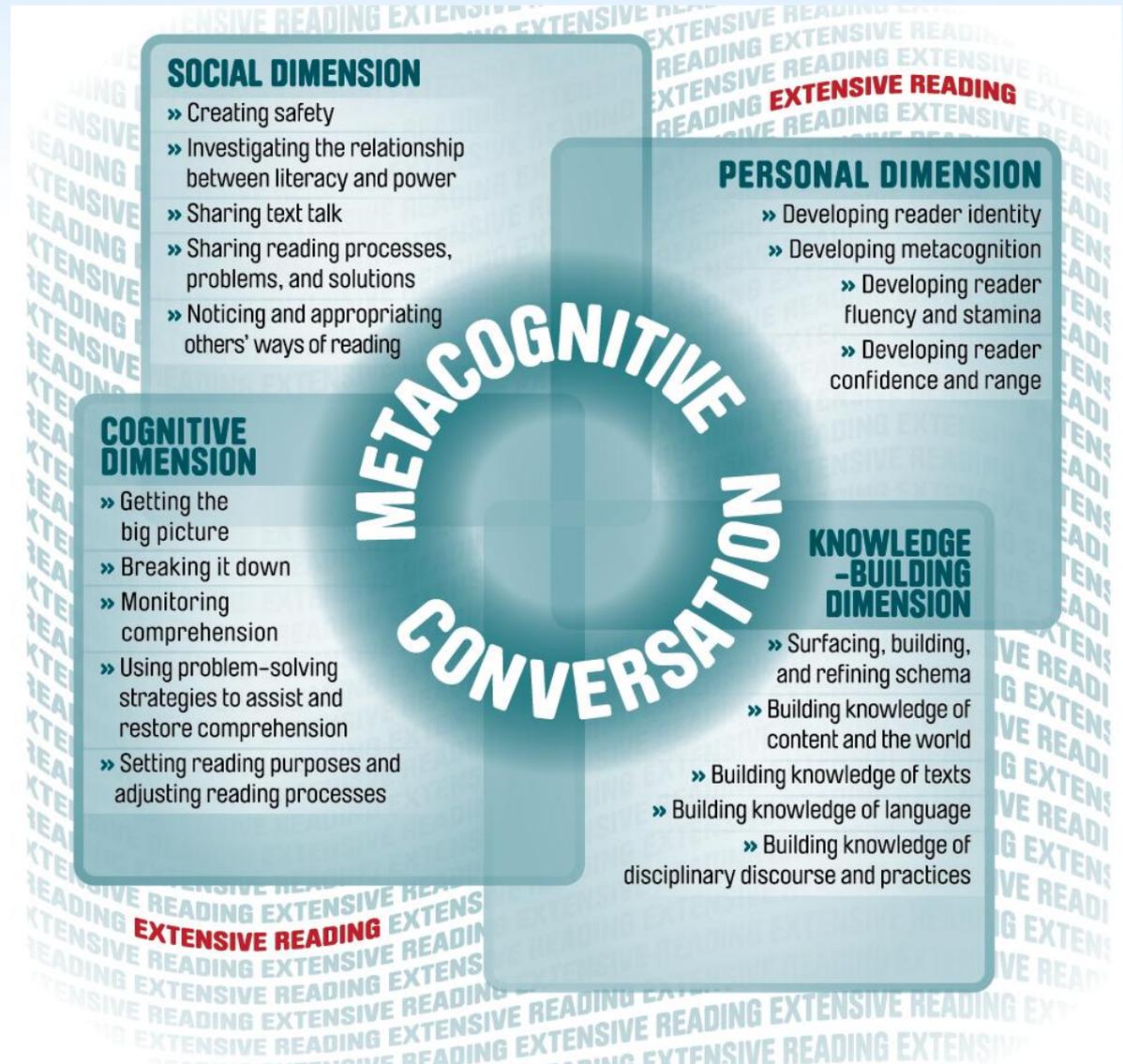
# The Reading Apprenticeship Framework

Metacognitive routines make normally invisible reasoning processes visible and available for assessment, modeling, and coaching during reading, problem solving, and inquiry activities



# The Reading Apprenticeship Framework

Metacognitive Conversation draws on what subject-area teachers know and do as experienced readers in their disciplines, and on adolescents' underestimated strengths as learners



# Modeling and Mentoring with Metacognitive Conversation Routines

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Turning the tables on what “counts”

***What was confusing?***

***How did you figure that out?***

- Think Aloud (Teacher Modeling, Partner Think Alouds)
- Annotation (Talking to the Text followed by Pair/Small Group Problem Solving)
- Reciprocal Modeling of Problem Solving Strategies (I do, we do, you do)
- Collaborative Meaning Making (reading in the classroom)
- Gradual Release of Responsibility

# Reading Apprenticeship

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*A partnership of  
expertise  
between  
teacher and  
students*



# Goals for Students In Reading Apprenticeship Classrooms



Engage in more reading with instructional support

Gain insight into and take control of their own reading processes

Practice problem solving to overcome obstacles in their reading of subject area texts

Develop their own motivations for reading ~ even of very challenging materials

# Features of Effective Adolescent Literacy Instruction in the Disciplines

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- A focus on comprehension
- On-going conversation about *how* students are thinking when they read (not just *what*)
- Skilled coaching and modeling of discipline-specific thinking and reading processes
- Frequent opportunities for supported reading experiences *in class*
- A climate of collaborative inquiry
- Worthy, discipline-based tasks
- An emphasis on *developing student independence*



# Impact on Student Learning Opportunities, Identity, Engagement, and Achievement

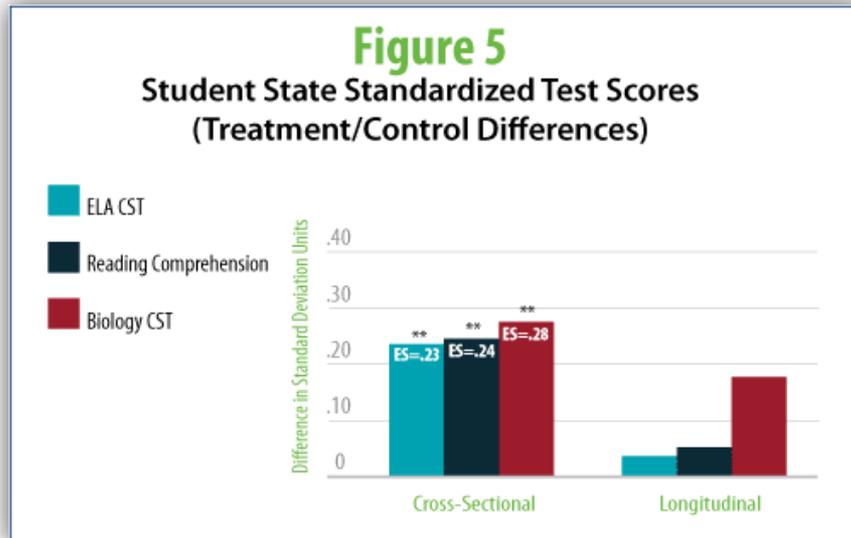
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# Reading Apprenticeship in High School Biology Study

## National Science Foundation Study: Integrating Reading Apprenticeship and Science Instruction in High School Biology

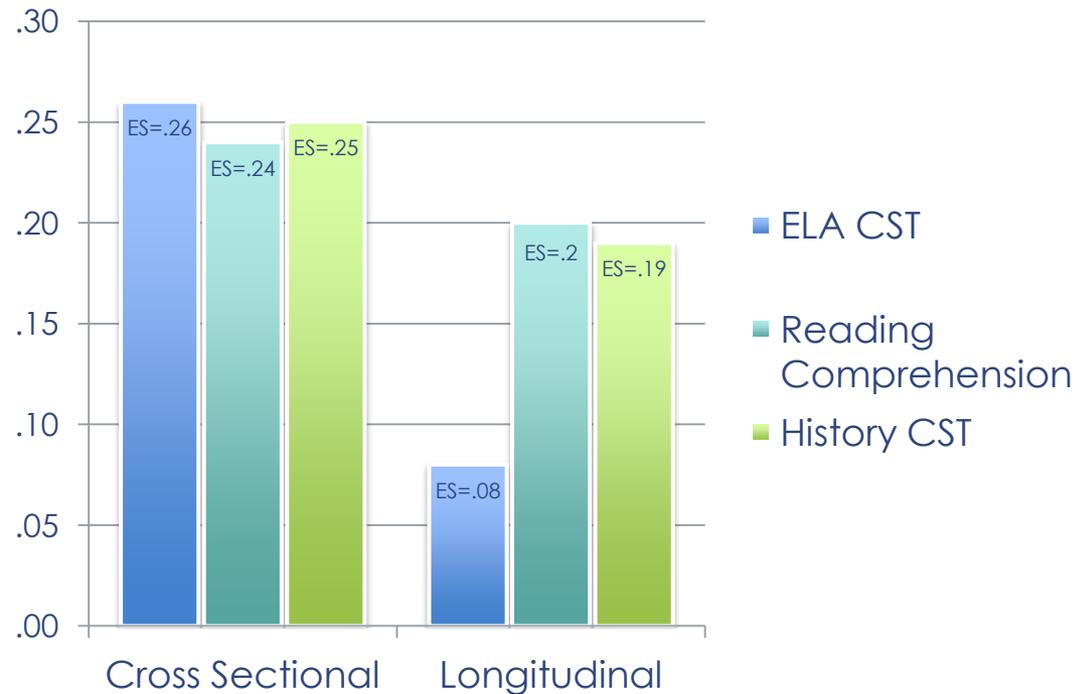
This research study tested the impact of Reading Apprenticeship teacher professional development on teacher knowledge and skills, instructional practices, and on student achievement in science and reading.



Students in Reading Apprenticeship classrooms performed better on state standardized tests in biology *and English language arts and reading comprehension*. An analysis of scores by demographic group found statistically significant increases in test scores for white, Latino, and English learner students in the intervention classes.

# Reading Apprenticeship in High School History Study

Institute of Education Sciences Study: Reading Apprenticeship Professional Development in High School U.S. History



# Increasing Student Achievement & Engagement

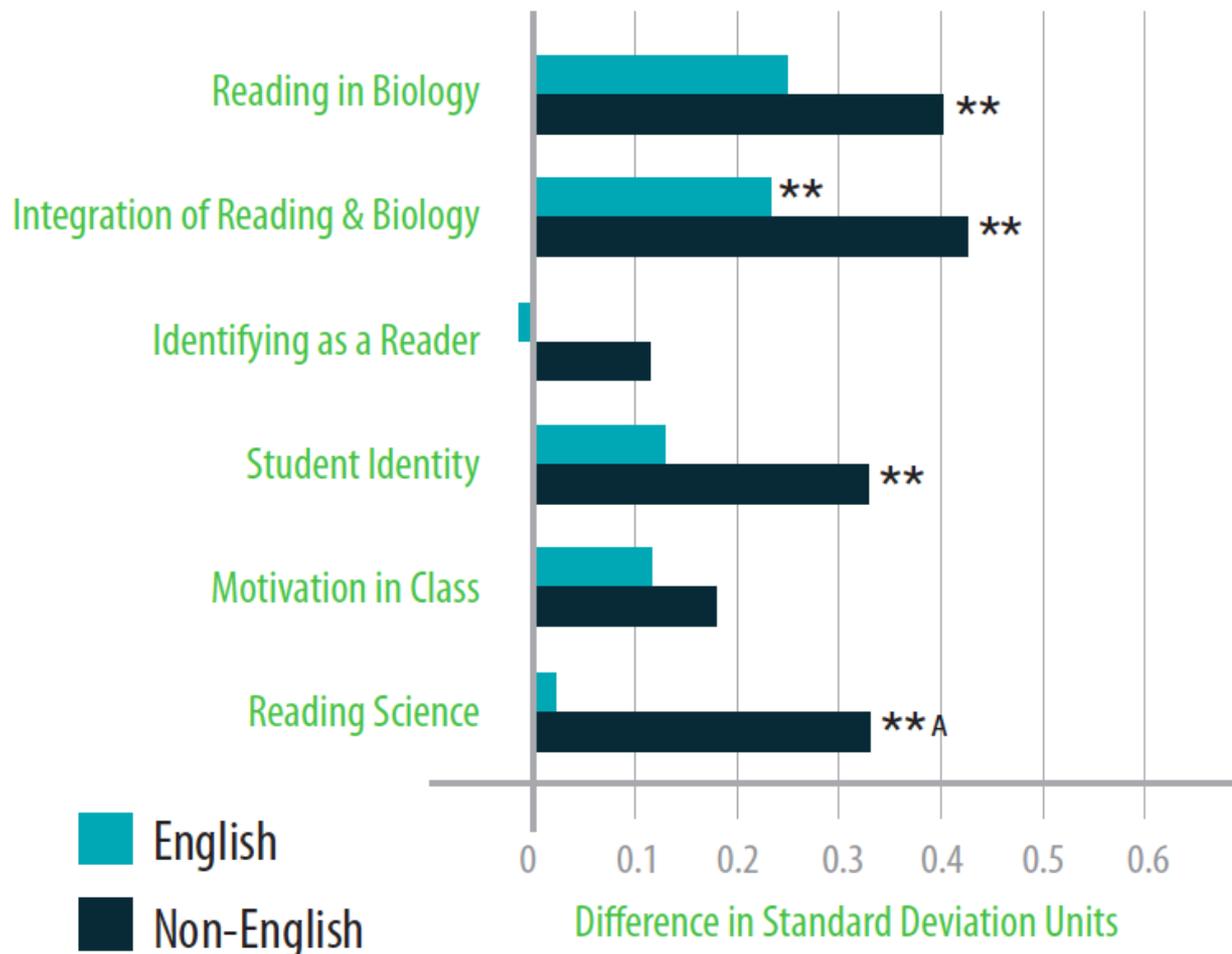
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Student Opportunity to Learn Surveys and Integrated Learning Assessments show significant differences in literacy engagement for intervention students, compared to controls

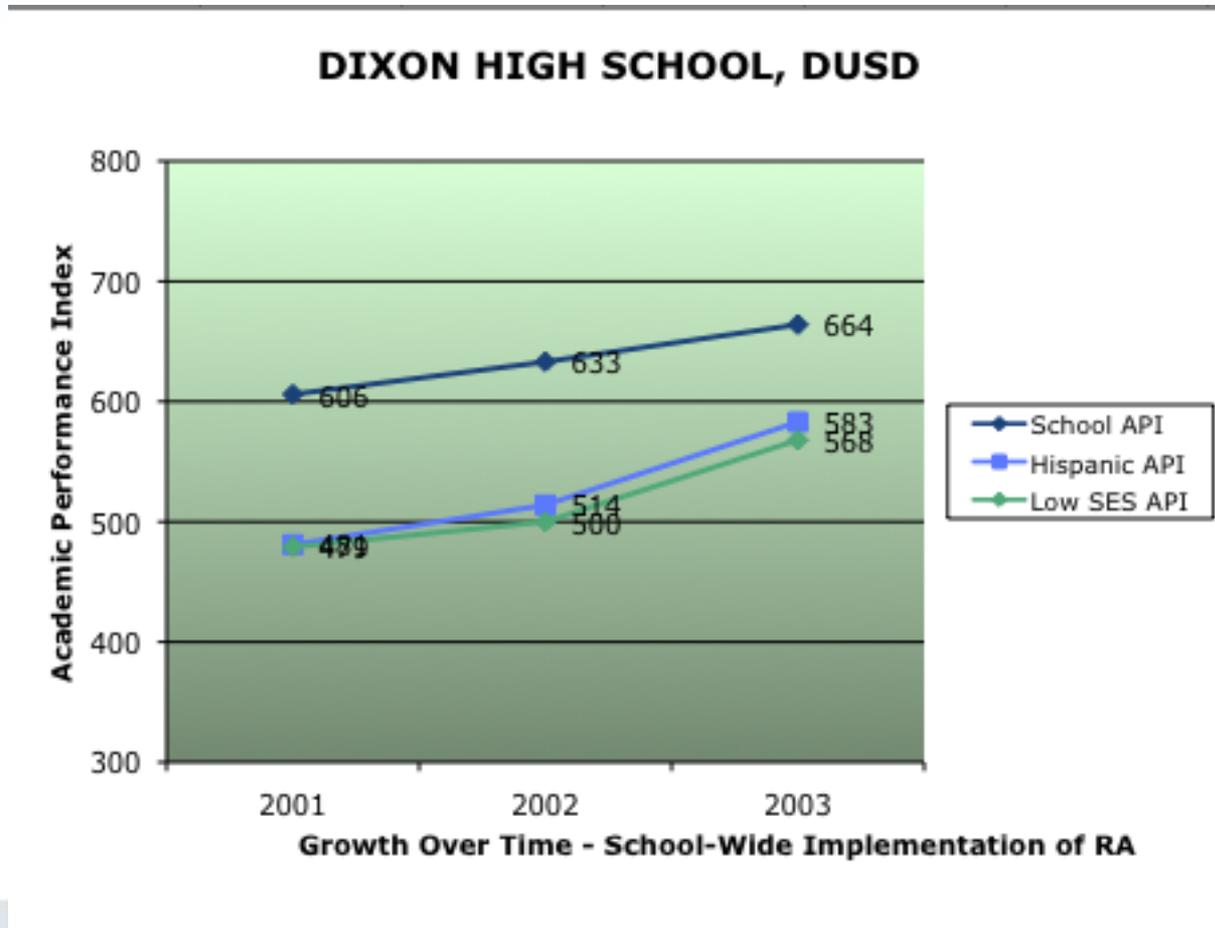
- Increased reading in the subject area
- Increased integration of content and literacy
- Increased learner identity, **especially for students whose home language is not English**
- Increased use of problem-solving strategies that build understanding of content
- Demonstration of **disciplinary thinking**

# Increasing Academic Confidence and Identity, Especially for ELs - Biology

Treatment/Control Differences on Student Opportunity to Learn Surveys



# Closing Achievement Gaps



Central Valley

High Latino,  
Migrant  
population

Schoolwide  
Reading  
Apprenticeship

From  
Underperforming  
in 2000 to  
California  
Distinguished  
School in 2010

# RAISE: Reading Apprenticeship Improving Secondary Education

Investing in Innovations  
Grant from US DOE

## **Scale-Up:**

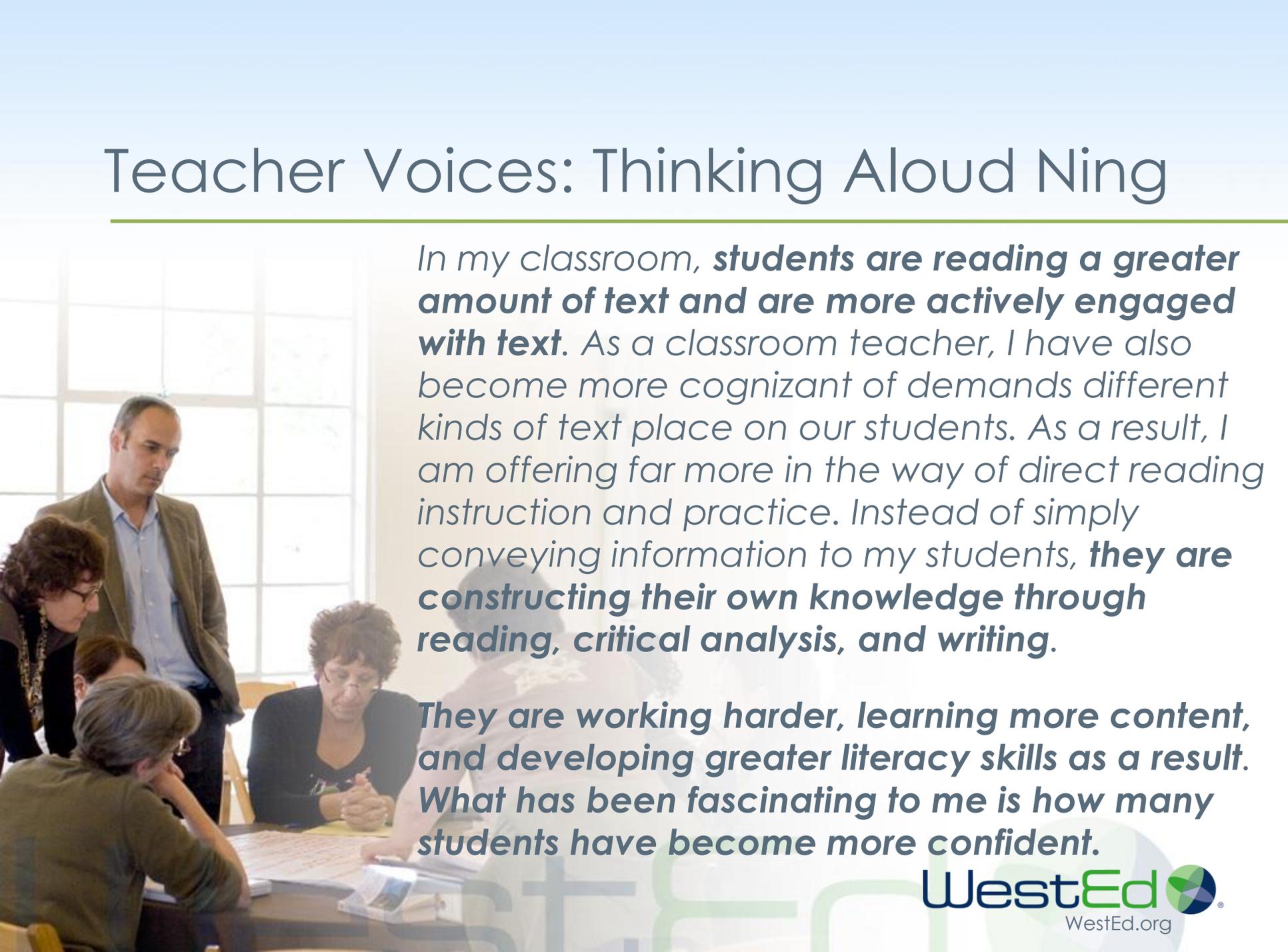
- 5 states (CA, IN, MI, PA, UT)
- 300 schools, 2800 teachers
- 600,000+ high school students
- ELA, biology, US history teachers

## **Support Structures:**

- State RAISE Coordinators
- Monthly site-based team meetings-Teacher Leaders
- Teacher Leader meetings
- Principals' online course

# Teacher Voices: Thinking Aloud Ning

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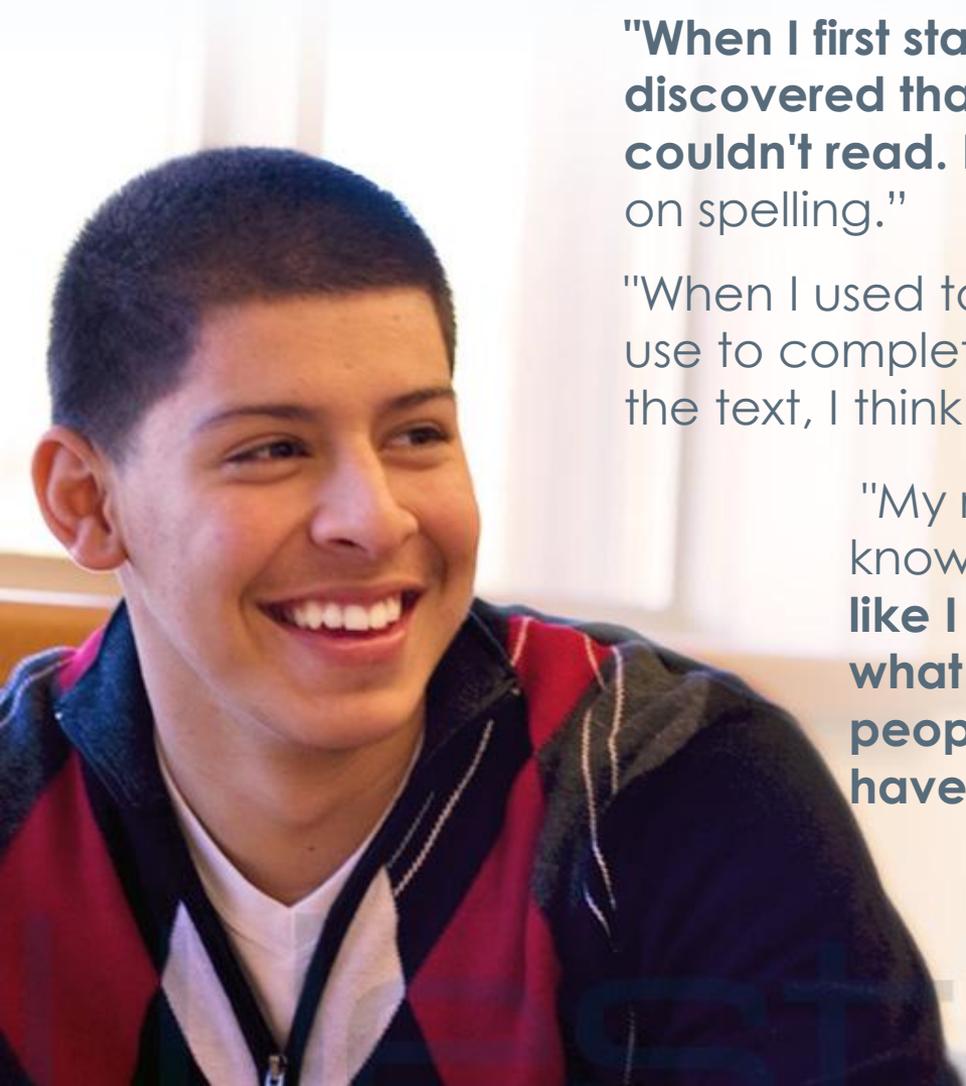


*In my classroom, **students are reading a greater amount of text and are more actively engaged with text.** As a classroom teacher, I have also become more cognizant of demands different kinds of text place on our students. As a result, I am offering far more in the way of direct reading instruction and practice. Instead of simply conveying information to my students, **they are constructing their own knowledge through reading, critical analysis, and writing.***

***They are working harder, learning more content, and developing greater literacy skills as a result. What has been fascinating to me is how many students have become more confident.***

# Student Voices: Written Reflections

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"When I first started this class I was scared. I have discovered that I have the courage to read stuff that I **couldn't read**. I'm more confident. Also I need to work on spelling."

"When I used to read and I didn't really understand it, I use to completely stop. Now when I don't understand the text, I think."

"My reader identity is getting a lot more knowledge into it and that makes me **feel like I am a smart young man who can do what ever I set my mind to and what ever people say will not hurt me because I know I have the knowledge to school them.**"

*Whatever their background, and whatever success or struggles they have experienced so far, adolescents are capable of serious, disciplined, academic work. (Heller & Greenleaf, 2007)*

***What was confusing?  
How did you figure that out?***

[readingapprenticeship.org](http://readingapprenticeship.org)

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**THANK YOU**