

Reading for Understanding: Word Generation, Academic Language, and Deep Comprehension

Catherine E. Snow

Harvard Graduate School of Education

Gateway School

15 February 2011

S E R P

A brief outline

- Word Generation
- Academic Language
- Deep Comprehension

A less brief outline

- Word Generation AND HOW IT GREW OUT OF THE STRATEGIC EDUCATION RESEARCH PARTNERSHIP (SERP)
- Academic Language AND WHAT WE LEARNED ABOUT IT FROM WORD GENERATION
- Deep Comprehension AND HOW IT RELATES TO ACADEMIC LANGUAGE

S E R P

The SERP Context for this work

- SERP is a design proposed by a National Research Council Committee and incubated at the National Academy of Sciences
- Purpose: To build the kind of capacity for problem-solving research and development in practice settings that has fueled innovation in medicine, agriculture, and transportation

S E R P

Why do we need SERP?

➤ To answer two big questions:

- 1. Why has research supported innovation and continuous improvement in medicine, agriculture, and transportation, but not in education?*
- 2. What can be done about it?*

Two telling anecdotes: bottom up and top down failures

S E R P

Origins of this work

- Bruce Alberts' dream
- Convergence in Boston
- Selection of middle school literacy
- Relation to high school success
- Other efforts in Boston: RISE, SARI, Internal coherence, CCDD
- Other SERP Sites: San Francisco, MSAN districts

Word Generation

Where did it come from?

- Payzant's selection of middle school focus
- A year's worth of honing the focus
- Convergence on vocabulary as a ubiquitous problem
- Selection of academic rather than disciplinary vocabulary
- Vocabulary as a benign bacteria, promoting student engagement, opportunities for talk , and school-level coherence

Vocabulary as a Central Problem

- Crucial for comprehension
- Crucial for writing
- Crucial for content-area learning
- An area of weakness for poor or reluctant readers
- An area of weakness for language minority students
- Particularly ‘academic vocabulary’

Academic language is more than academic vocabulary

- Sentence structure
- Text structure
- Complex messages
- Self-presentation as someone with a position on the topic

Nested challenges within a communicative event

(Snow & Uccelli, 2009)

REPRESENTING THE SELF AND THE AUDIENCE

REPRESENTING THE MESSAGE

ORGANIZING DISCOURSE

CONSTRUCTING
CLAUSES

Word Generation

Design Constraints from Research:

- Multiple, recurrent exposures
- Need to hear words in varied contexts
- Opportunities to use the words in speaking and writing
- Some targeted direct teaching
- Word learning strategies
 - Morphological analysis
 - Attention to polysemy
 - Attention to etymology/cognates

Word Generation

Design Constraints from Reality:

- Share the responsibility across all content area teachers, not just ELA teachers
- Limit time taken from “required work” to focus on language or general literacy skills
- Ensure disciplinary respectability in math, science, and social studies activities (e.g., by including maps, charts, figures)
- Build flexibility into program, to facilitate travel to other sites

Word Generation Design Features

- High interest topic ‘launch’ paragraph with 5 target words
- 15 min/day, responsibility rotates in weekly cycle among teachers
- Math, science, and social studies use words in a discipline-specific context
- Math, science, and social studies activities develop discipline-relevant skills: math problem solving, scientific thinking, debating
- Friday: “taking a stand” essay
- Three years of materials allow for a whole school implementation
- Vocabulary designed as a “Trojan horse” for reading, knowledge, and discourse skills

Word Generation: Instructional Activities

Monday

**Dilemma and
words presented**

Tuesday-Thursday

**Content-area
activities**

Friday

**Writing with
focus words**

Should the government impose a mandatory year of service after high school?

Should schools protect kids from cyberbullying?

Should the use of trans fats in foods be regulated?

Should schools require a minimum GPA for participation on a sports team?

Should it be mandatory to get a parenting license?

WHEREAS ESTIMATE INFLUENCE ESTABLISH

FACTOR PREDOMINANT DECLINE

SPECULATE FORTHCOMING OUTWEIGH

INTRINSIC DURATION STRATEGIES PRESCRIBE

FACILITATE COMPONENT DESIGN PURSUE RELY

UNMONITORED COMPILE ANONYMOUS

INSTITUTE ECONOMIC PLAUSIBLE BANNED

INTERACT MEDIATE ACQUIRE APTITUDE

DISTRIBUTION CIVIC ORIENT MAINTAIN

DENY APPROACH SUSTAIN POLICY

ATTRIBUTE CORPORAL PREREQUISITE

REINFORCE REGULATE PREDICT EVALUATE

DISCRIMINATE VARIABLE

S E R P

Midweek activities

- Social studies: debates of various sorts, social-studies-specific uses of the words
- Math: studying graphs, math problem of the week, math-specific uses of the words
- Science: gedankenexperiments, science-specific uses of the words

Word Generation Goals

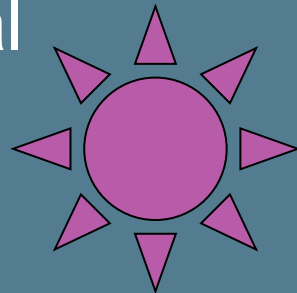
- Student level: Build knowledge of high frequency academic words, skills at academic discourse, and world knowledge
- Teacher level: Promote regular use of effective strategies usable in everyday instruction
- School level: Facilitate faculty collaboration across grades, across departments

Year 1 Pilot Schools

Westfield

Middle School

- 80 % Black
- 16% Hispanic
- 1.8 White
- 1.6 Asian
- 29% Special Education
- MCAS



Reilley

Middle School

- 62% Black
- 18.1 % Hispanic
- 9.3% White
- 8.9 % Asian
- 25% Special Education
- MCAS



Multiple Choice Test Results

Grade	n	Mean percent Correct 1 st 12 week words	
		Pre	Post
Six	29	65.09	77.82
Seven	46	68.20	82.75
Eight	64	74.67	85.02
Six	104	68.28	77.02
Seven	109	72.24	79.04
Eight	120	75.03	83.96



Multiple Choice Test Results

Grade	n	Mean percent Correct 1 st 12 week words	
		Pre	Post
Six	29	65.09	77.82
Seven	46	68.20	82.75
Eight	64	74.67	85.02
Six	104	68.28	77.02
Seven	109	72.24	79.04
Eight	120	75.03	83.96



Intervention Effect Sizes by Grade, all words (using pooled SD)

Westfield



Grade 6: 0.45

Grade 7: 0.57

Grade 8: 0.71

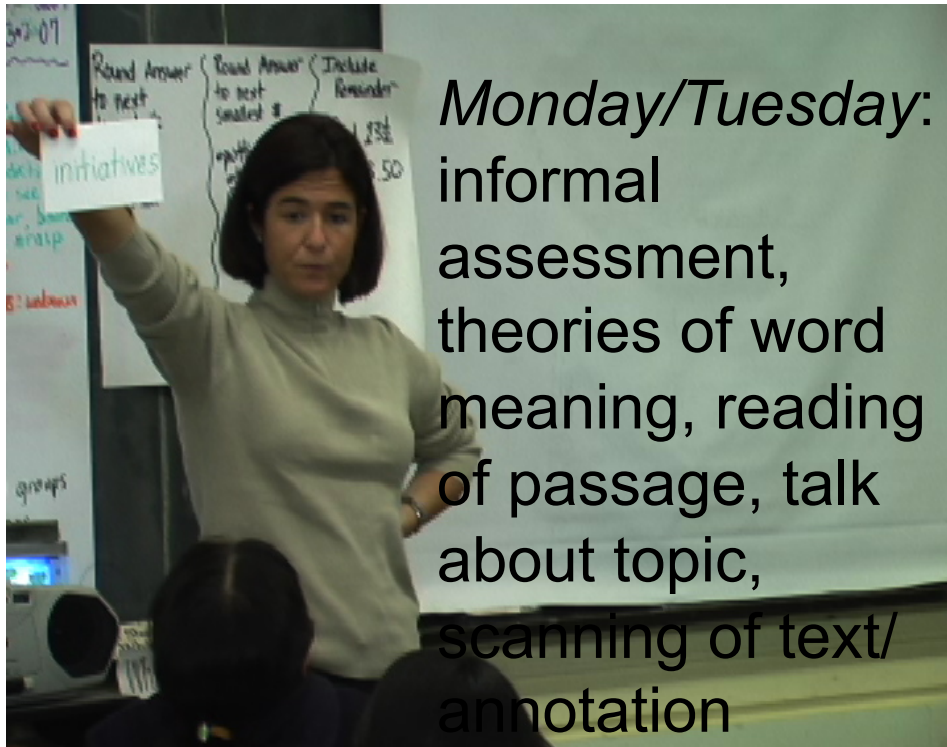
Reilly



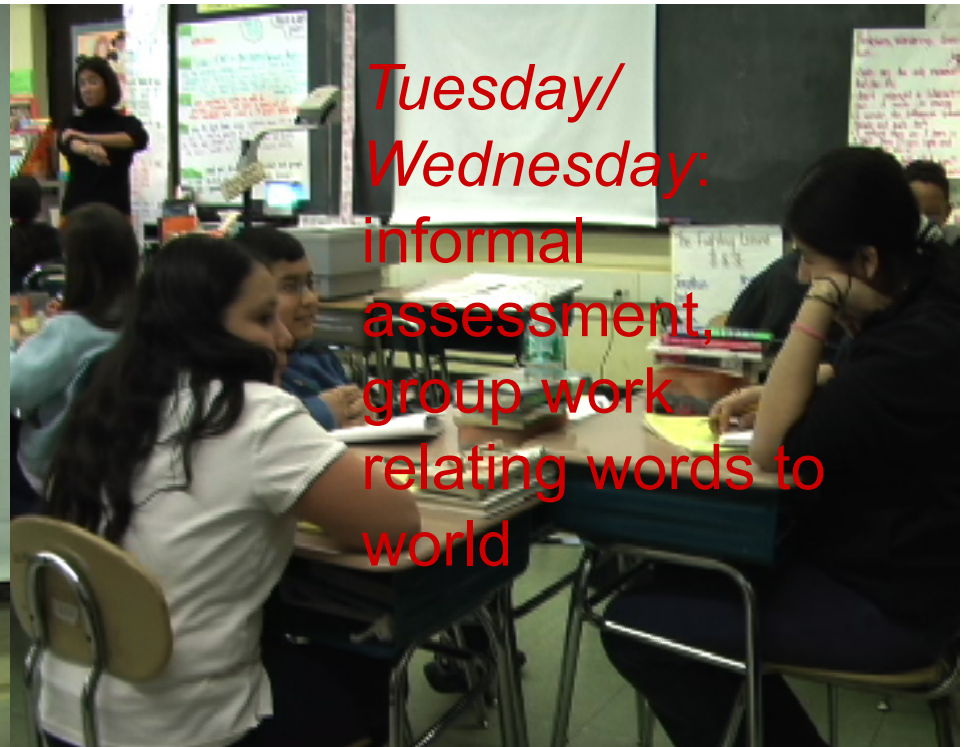
0.25

0.33

0.45



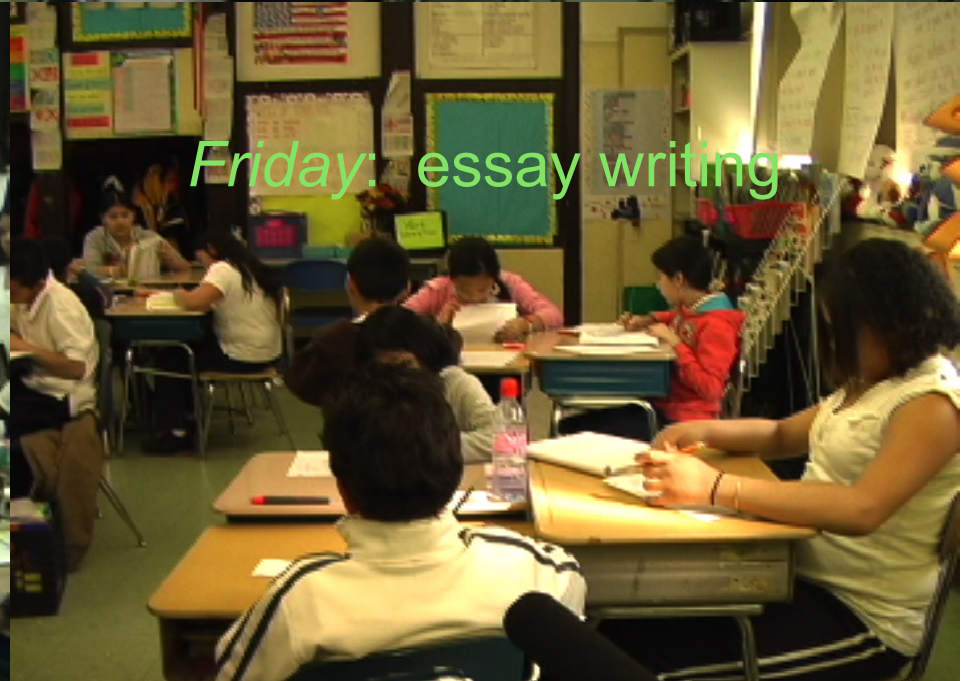
Monday/Tuesday:
informal
assessment,
theories of word
meaning, reading
of passage, talk
about topic,
scanning of text/
annotation



*Tuesday/
Wednesday:*
informal
assessment,
group work
relating words to
world

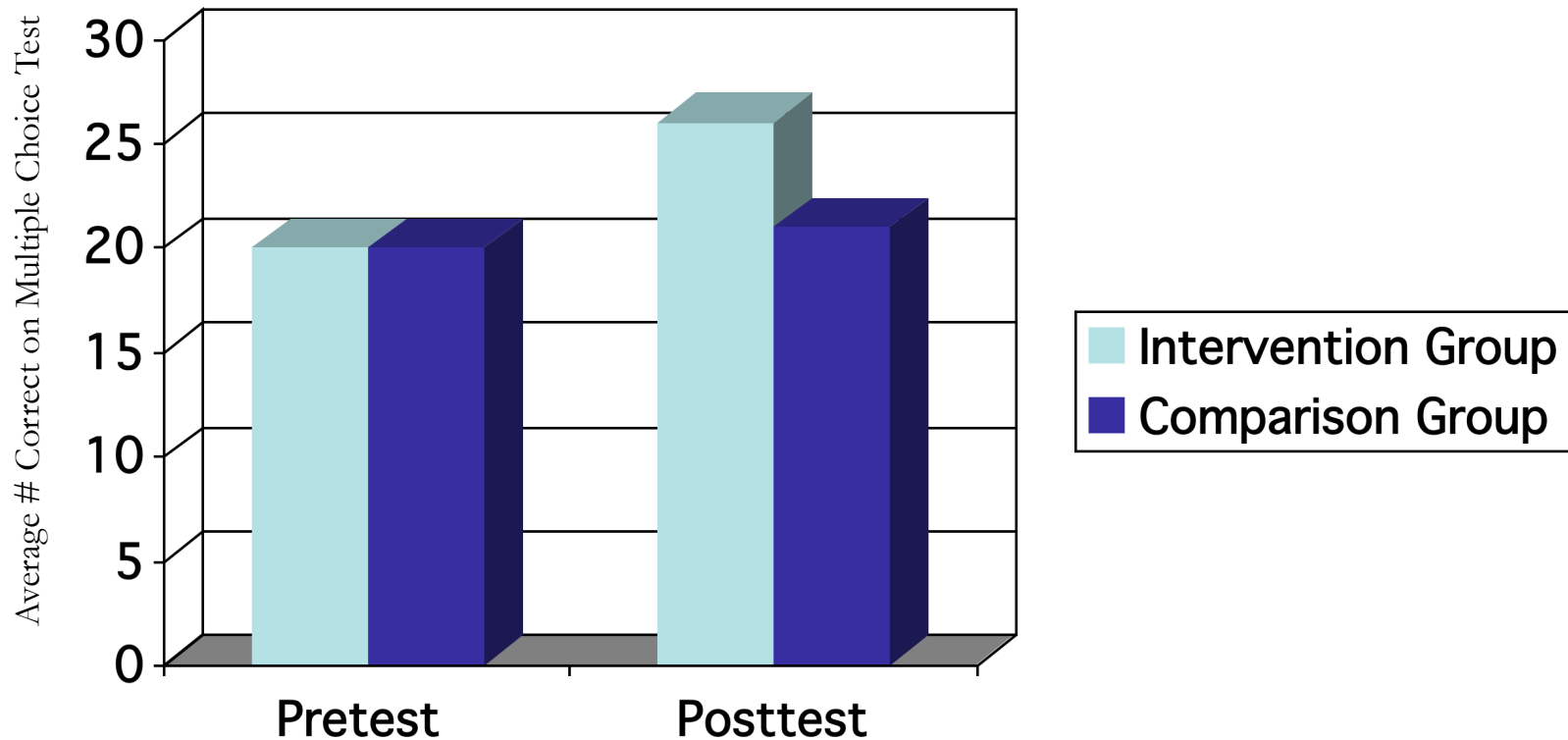


Wednesday/Thursday:
debate

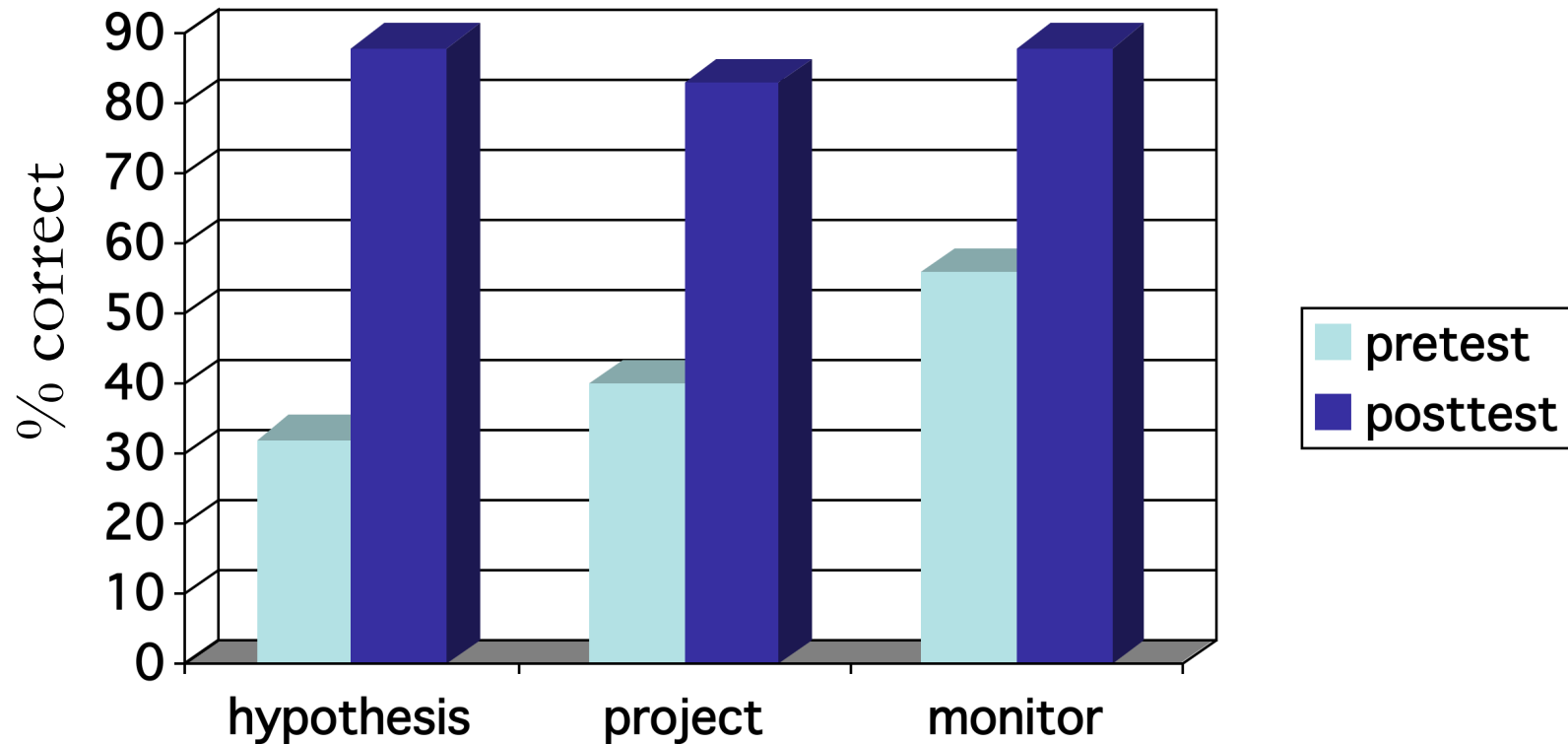


Friday: essay writing

Multiple Choice Test Comparison, Mystic School



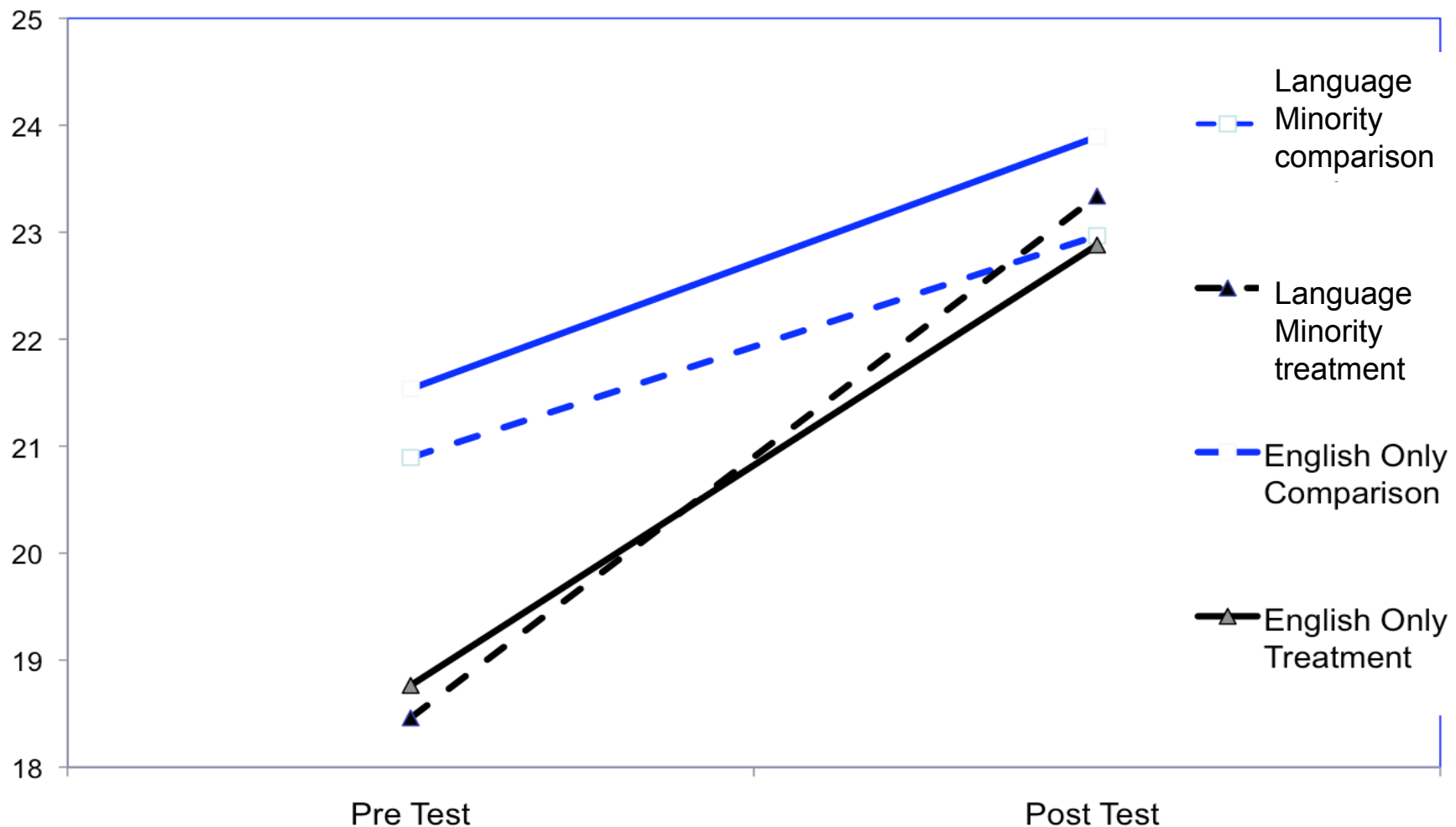
Top 3 Words Mystic Students Learned



In other words

- Effects were significant both statistically and educationally
- Furthermore, teachers liked the program and chose to do it again
- So we expanded in 2007-2008 to five implementation and three comparison schools, in 2008-2009 to eight and five.
- And launched a cluster randomized trial in three cities

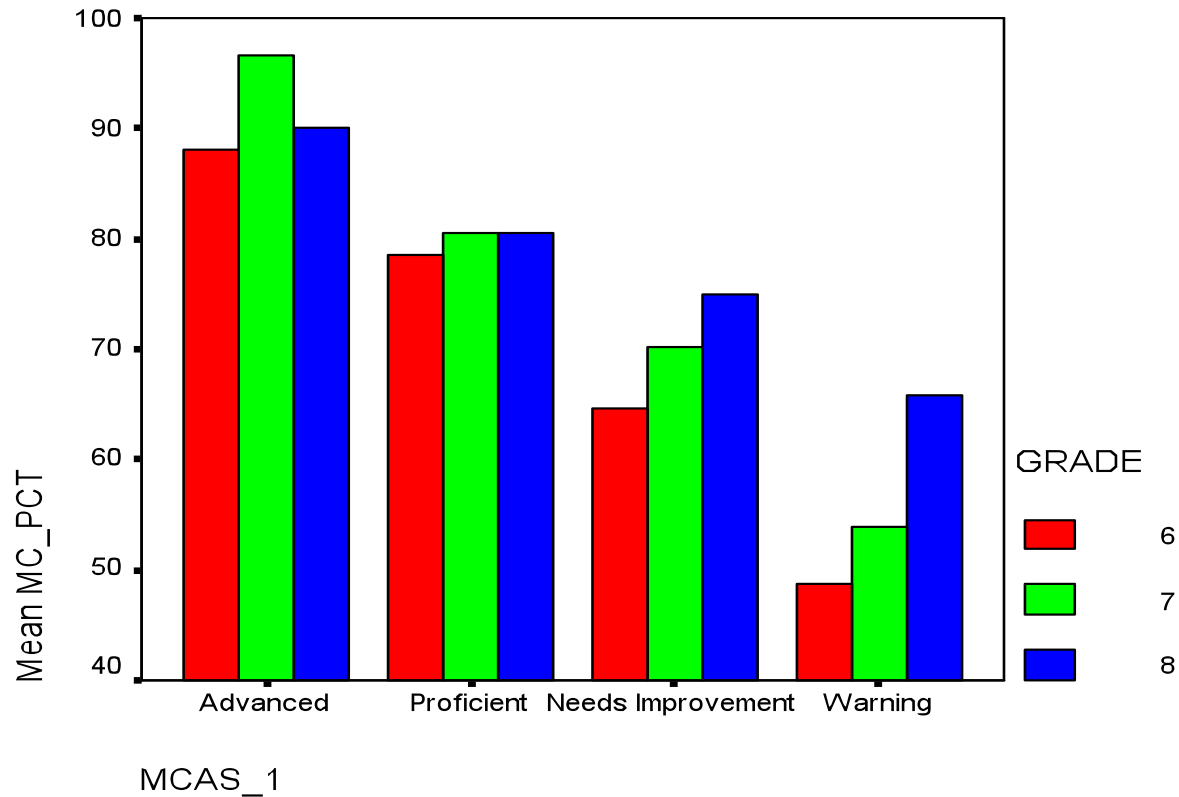
English-only and Language Minority Students in Word Generation and Comparison Schools, 2007-2008



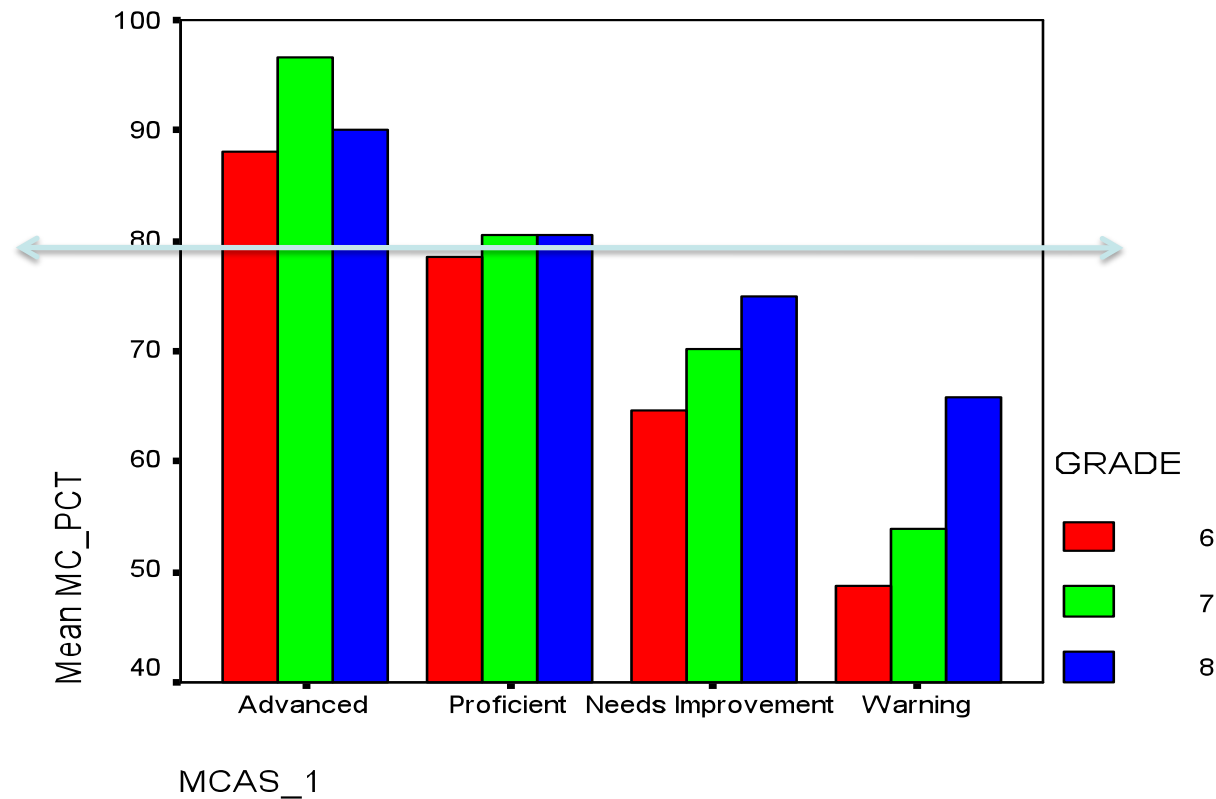
Year 2 results, 6 schools

Treatment Status	Pre Test		Post Test		Gain
	Mean	SD	Mean	SD	
Comparison Group (N=294)	21.02	6.20	22.97	7.15	1.95
Treatment Group (N=632)	18.53	6.17	22.93	7.33	4.4

Knowledge of academic vocabulary is a good predictor of performance on MCAS (Massachusetts Comprehensive Assessment System)



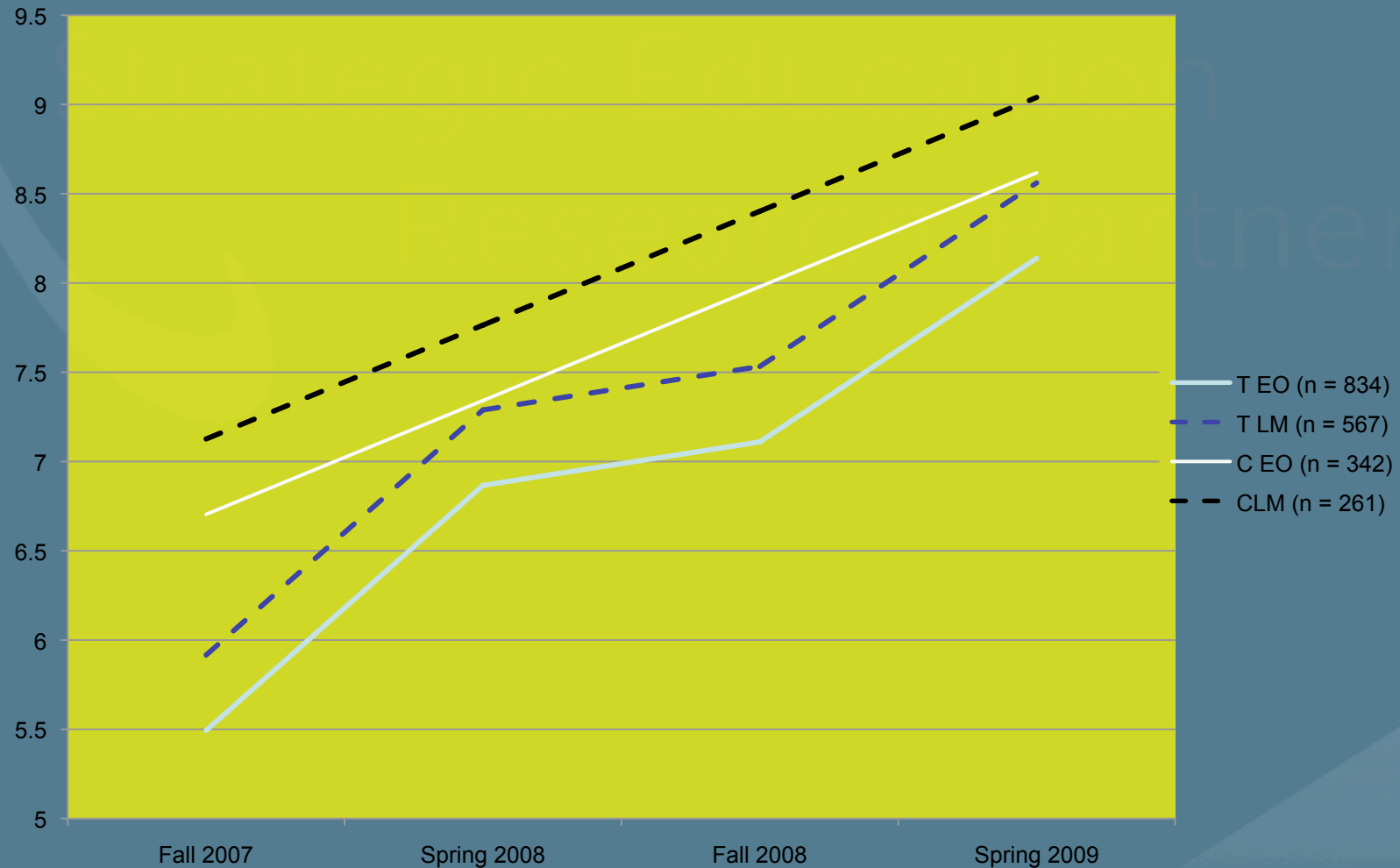
Knowledge of academic vocabulary is a good predictor of performance on MCAS (Massachusetts Comprehensive Assessment System)



Evidence of learning – what about maintenance?

- 11 words retested fall and spring, following year
- General pattern: Learning, maintenance, consolidation

Learning, maintenance, consolidation for English-only vs. language-minority students



Working with Teachers on WG

- Focus groups to brainstorm topics
- Teacher academy to review initial materials
- Intensive feedback on weeks 1-5
- Weekly reviews from interested teachers
 - Improvements in teacher materials
 - Redesign of math problems
- Teacher-contributed materials
- Teacher participation in website development

Word Re-Generation

- Changes made during year one
 - Math problems: MCAS adapted
 - Teacher materials: streamlined
- Changes made in year two
 - Website designed (Matt Ellinger)
 - Much more focus on academic discussion (Cathy O'Connor) – in other words, emphasizing the discussion activities as a source of learning
- Changes made in year three
 - Science activities upgraded

Serendipitous discoveries from Word Generation: Discussion is good in its own right!

- Teachers are impressed by the sophistication of students' ideas
- Students value the opportunities for discussion, especially of more student-centered topics
- Students care about making their points effectively
- Good discussion can (under ideal circumstances) get recycled into good writing

What we learned: Affordances of Discussion

[if done well] practice in:

- Perspective taking
- Providing warrants
- Anticipating counterarguments
- An epistemic orientation
- An authoritative voice
- High levels of engagement

Evidence about Discussion in Classrooms

	Low-track classes	Middle-track classes	High-track classes	Mixed classes
Min of discussion per 60 min ELA or SS	0.70	1.44	3.30	1.42

Classroom discussion is rare and brief (Applebee, Langer, Nystrand & Gamoran, 2003)

And always has been (Gamoran & Nystrand, 1991)

Evidence about Discussion in Classrooms

- It happens rarely
- Comprehension programs proven effective use it, e.g. Reciprocal Teaching
- But discussion effects themselves have not traditionally been tested

Interest in Classroom Discussion is rising

- Recent meta-analysis of 9 discussion-based programs (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009) embodying one of three stances—most published since mid 1990s
- Critical-analytic: Collaborative Reasoning, Paideia Seminar, Philosophy for Children
- Efferent: Instructional Conversations, Junior Great Books Shared Inquiry, Questioning the Author
- Expressive: Book Club, Grand Conversations, Literature Circles

Evidence concerning the role of discussion: Effect sizes

	Comp	TE	TI	SI	CT/R
Collab Reason	0.262	0.490	0.082	0.668	2.465
Phil 4 Children	0.333				0.236
Paideia				0.428	
Query the Author	-0.205	0.899		0.627	2.499
Instruc Convrs'ns	2.798	1.336	0.568	0.871	
Jr Great Books	0.333	0.331	1.124		0.718
Literature Circles	0.426		2.136		
Grand Convers'ns			0.822		
Book Club					

Evidence concerning the role of discussion: Effect sizes

	Comp	TE	TI	SI	CT/R
Collab Reason	0.262	0.490	0.082	0.668	2.465
Phil 4 Children	0.333				0.236
Paideia				0.428	
Query the Author	-0.205	0.899		0.627	2.499
Instruc Convrs'ns	2.798	1.336	0.568	0.871	
Jr Great Books	0.333	0.331	1.124		0.718
Literature Circles	0.426		2.136		
Grand Convers'ns			0.822		
Book Club					

A developmental view

- The power of dialogic reading/nonimmediate talk during parent-child book reading (Hargrave & Sénéchal, 2000; Lonigan & Whitehurst, 1998; De Temple & Snow, 1998; Valdez-Menchaca & Whitehurst, 1992; Whitehurst, Arnold et al., 1994; Whitehurst, Epstein et al., 1994)
- Text Talk/KEEP with Kindergartners and 1st graders (Au & Jordan, 1981; Beck & McKeown, 2007)
- Efferent focus with 2nd-5th graders
- Critical-analytic focus with 4th-12th graders

The simple view of reading updated

decoding x oral comprehension → [simple]
reading
comprehension

The simple view of reading updated

decoding x oral comprehension → simple
reading
comprehension

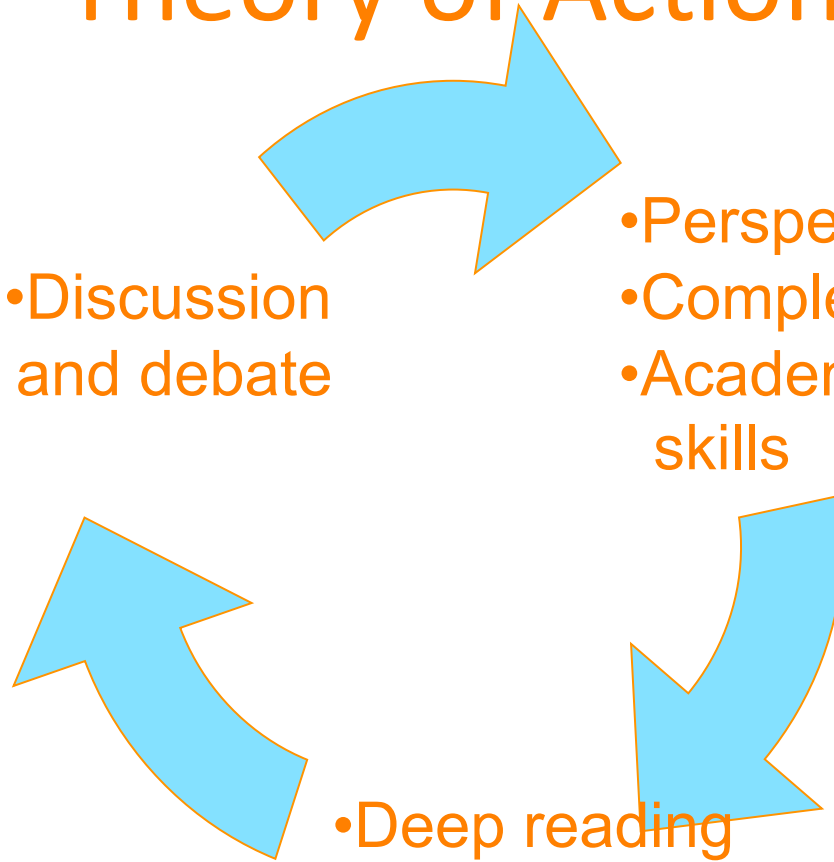
simple	academic language	deep
reading	+ perspective taking	→ reading
compre- hension	complex reasoning	compre- hension

Theory of Action

•Discussion
and debate

•Perspective taking
•Complex reasoning
•Academic language
skills

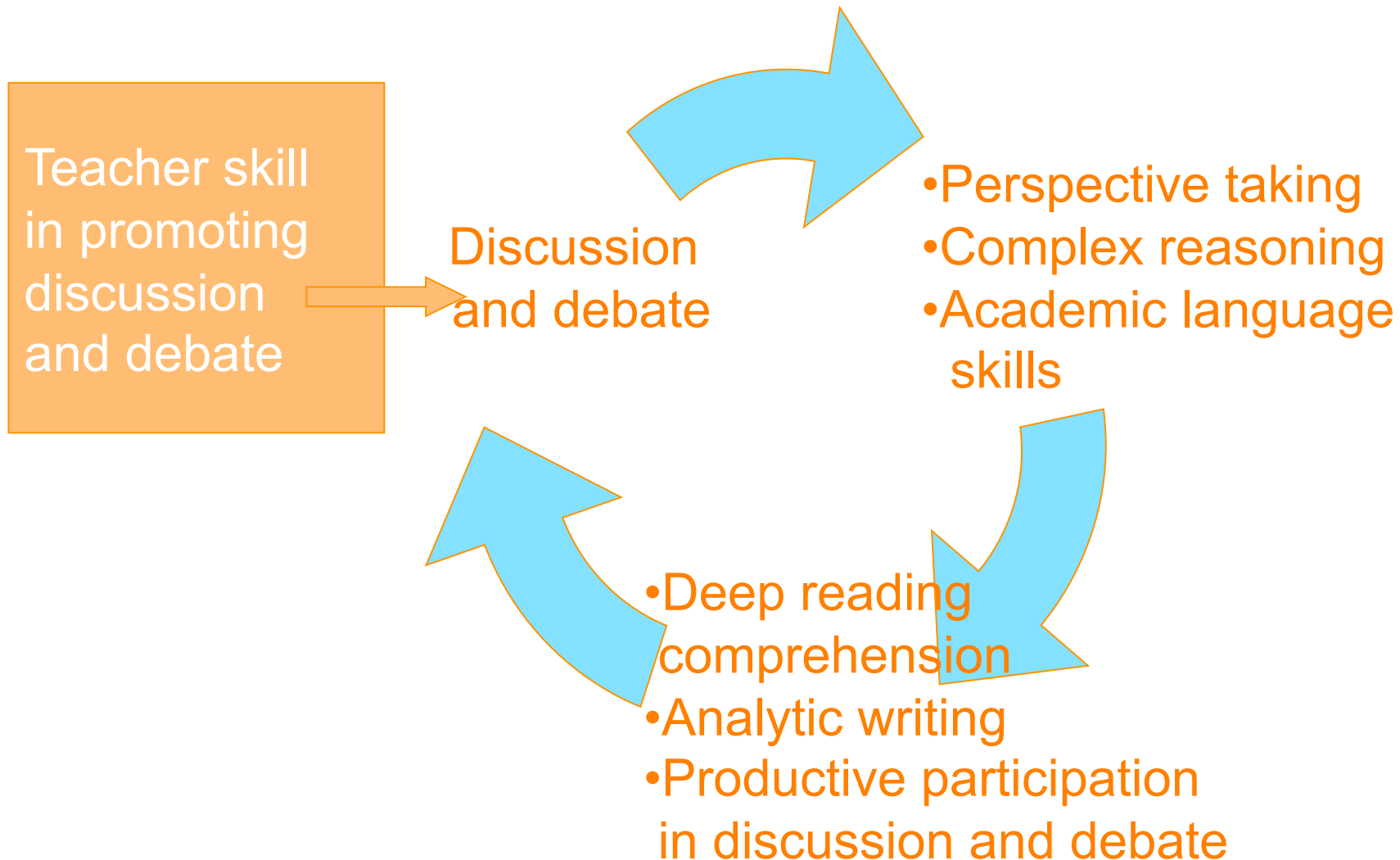
•Deep reading
comprehension
•Analytic writing
•Productive participation
in discussion and debate



Challenges

- Launching/managing discussion is not always part of teacher repertoires
- Discussion is not a skill prioritized on state standards or through certification procedures
- Learning to do it takes time, support, and practice
- Leading discussion requires shifting identities – the teachers' AND the students'

Theory of Action



Teacher skills at talk management

(Lawrence & Snow, HRR, 2010)

- Moves that work in general
 - Modeling
 - Direct explanation
 - Marking
 - Verifying and clarifying student understandings
- Moves that work to promote discussion
 - Establishing an explicit goal
 - Establishing ground rules
 - Sharing interpretive authority
 - Allowing/promoting peer-peer talk
 - Controlling air time
 - Controlling topic
 - Posing genuine questions
 - Verifying and clarifying student understandings

Academic discussion in WG

Academically productive talk (APT)

Conceptually rich

Personally engaging

Interpersonally responsive

Key moves in supporting APT

Revoicing

Students revoicing one another

Requiring warrants

Key conditions for APT

Classroom discussion rules

Talk about issues not people

21st Century Educational Goals

- Deep reading comprehension
- Scholarly writing (arguments, analyses)
- Critical thinking
- Sophisticated vocabulary
- Academic language skills
- Content knowledge in key areas: math, science, history, humanities

Bold Claim

The classroom practices most likely to move students toward success in these domains are discussion and debate

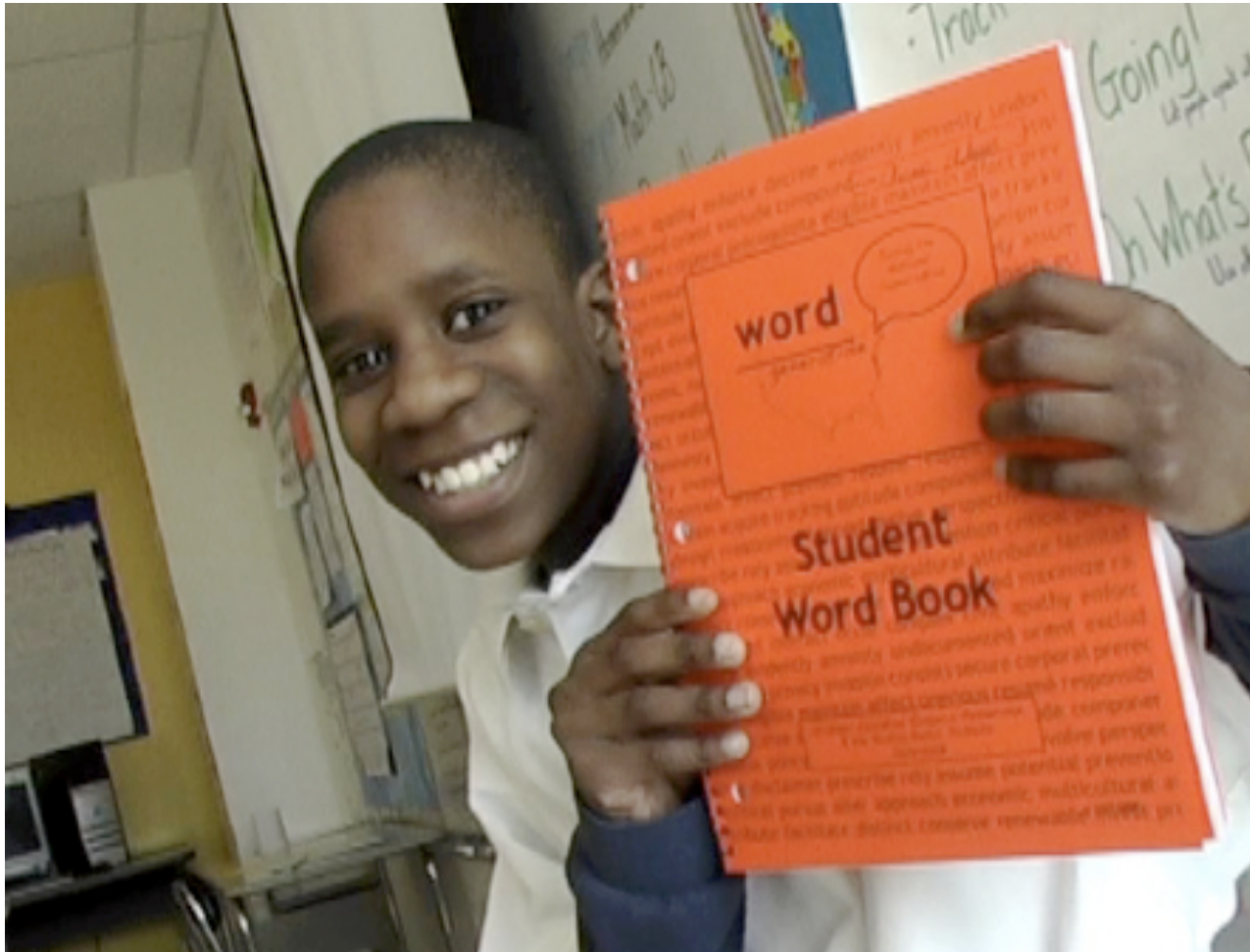
Thanks to:

Suzanne Donovan, Annemarie Palinscar, Donald Deshler, and others for WG guidance

Claire White, Christina Dobbs, Jen Zeuli, and others for materials

Gina Biancarosa, Joshua Lawrence, Joanna Christodoulou, Rachel Currie-Rubin, Michael Kieffer, Jeannette Mancilla-Martinez, Sarah Meacham and others for analyses

Spencer Foundation, William and Flora Hewlett Foundation, IES & Council of Great City Schools, and Lowenstein Foundation for funding
Matthew Ellinger for website design



www.wordgeneration.org

www.serpinitute.org