



*presents*

## Improving Math Instructions for ELLs

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**Thank you**

NCELA is operated under contract ED-04-CO-0094/0002 from the US Department of Education to The George Washington University. Our mission is to provide technical assistance information to state education agencies, local education agencies, and others regarding the education of English language learners.

*Welcome*

- Welcome to the webinar on “Improving Math Instruction for ELLs.” Today’s webinar is hosted by the National Clearinghouse for English Language Acquisition, NCELA, located at the Graduate School of Education and Human Development at The George Washington University, funded through a contract with the U.S. Department of Education's Office of English Language Acquisition.
- NCELA's mission is to provide technical assistance information to state and local educational agencies on issues pertaining to English language learners.
- My name is Kathia Flemens, Ph.D., a Research Associate at NCELA and your Webinar facilitator.

THE GEORGE WASHINGTON UNIVERSITY  
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**NCELA**  
National Clearinghouse for  
English Language Acquisition and  
Language Instruction Educational Programs

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**Today our presenters are:**

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CREATING STRONG  
SCHOOLS & COMMUNITIES

# Improving Math Instruction for ELLs

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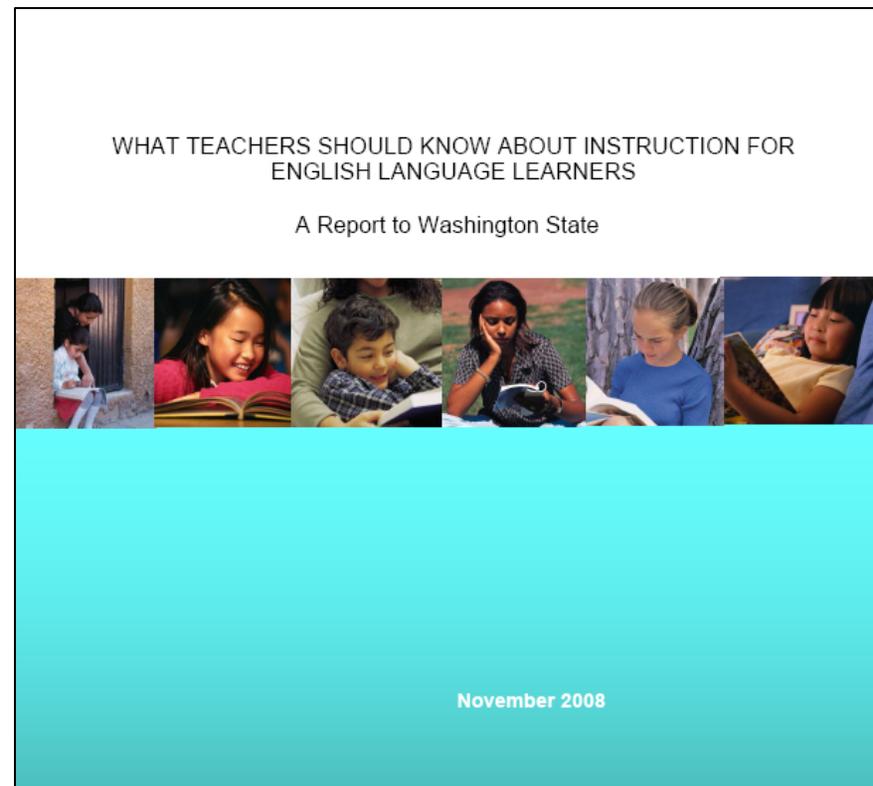
# Webinar Goals

You will learn...

- What research says about effective practices with ELLs for (a) all teachers and (b) in mathematics
- What research tells us about characteristics of effective professional development
- How video study groups support professional learning for teachers and address gaps in the research

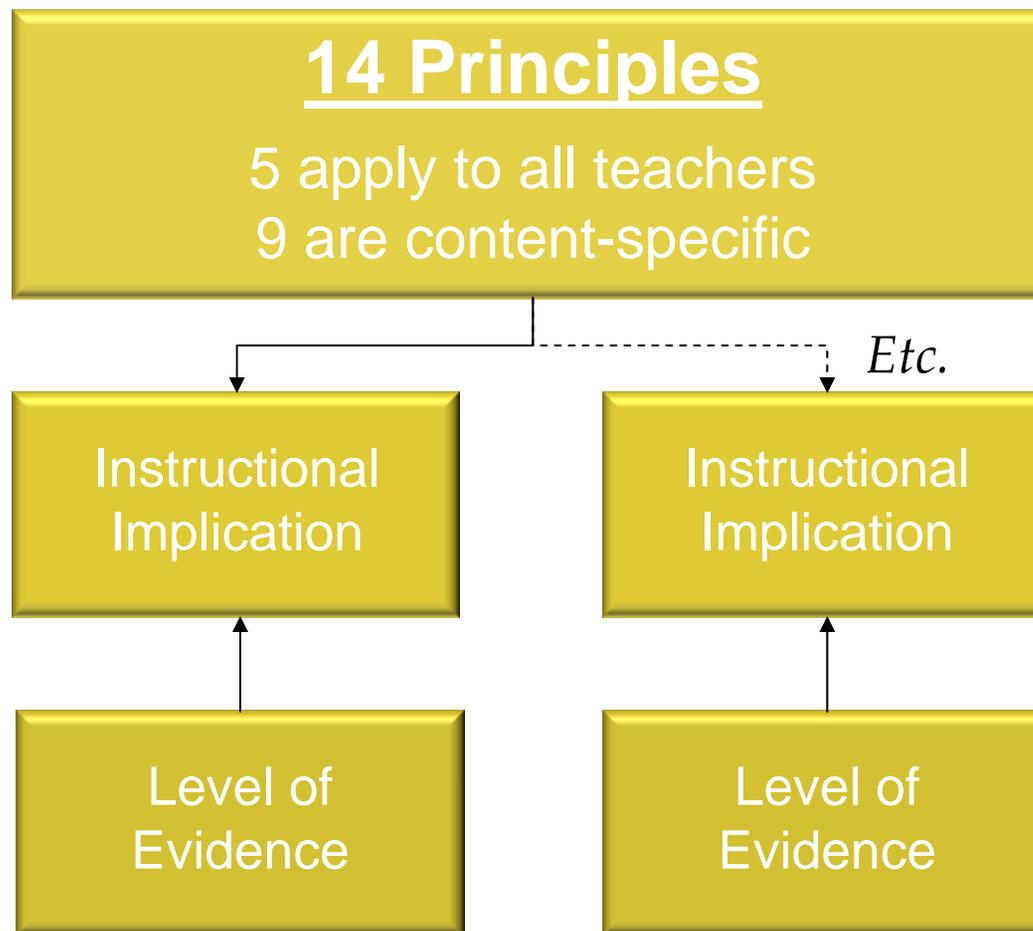
# A Research Summary

- Research through 2008
- Focused on instruction within the classroom, K-12
- Across content areas and focused on language arts, math, science, and social studies



[http://educationnorthwest.org/webfm\\_send/217](http://educationnorthwest.org/webfm_send/217)

# Organization of the Research Summary



- Big ideas
- Theoretical constructs
- Challenges ELLs face

- Strategies
- What teachers can do
- Classroom-based

- Strong
- Moderate
- Suggestive

**Principle 1: ELLs move through different stages as they acquire English proficiency and at all stages need comprehensible input.**

<u>Stage</u>	<u>Approximate timeframe</u>
Pre-production	0-6 months
Early production	6-12 months
Speech emergence	1-3 years
Intermediate fluency	3-5 years
Advanced fluency	5-7 years

## Principle 1: ELLs move through different stages as they acquire English proficiency and at all stages need comprehensible input.

Teachers should:

- Scaffold their instruction and assignments. (Moderate)
- Provide multiple representations of concepts. (Strong)
- Promote student interaction that is structured and supported. (Strong)

**Principle 2: There is a difference between conversational and academic language; fluency in everyday conversation is not sufficient to ensure access to academic texts and tasks.**

**Principle 3: ELLs need instruction that will allow them to meet state content standards.**

**Principle 4: ELLs have background knowledge and home cultures that sometimes differ from the U.S. mainstream.**

**Principle 5: Assessments measure language proficiency as well as actual content knowledge.**

## Principle 8: Mathematics has its own language and representational system, and ELLs struggle to understand math concepts in this language.

$2.45 = 2,45$	$2+3=5$
$1,942 = 1.942$	<i>“2 plus 3 equals 5”</i>
	<i>“2 and 3 make 5”</i>
	<i>“2 added to 3 gives you 5...”</i>

Teachers should:

- Provide explicit instruction on how to read and use mathematical terms, syntax, and symbols. (Suggestive)
- Use concrete materials which help develop mathematical understanding when linked to the concepts they represent. (Moderate)

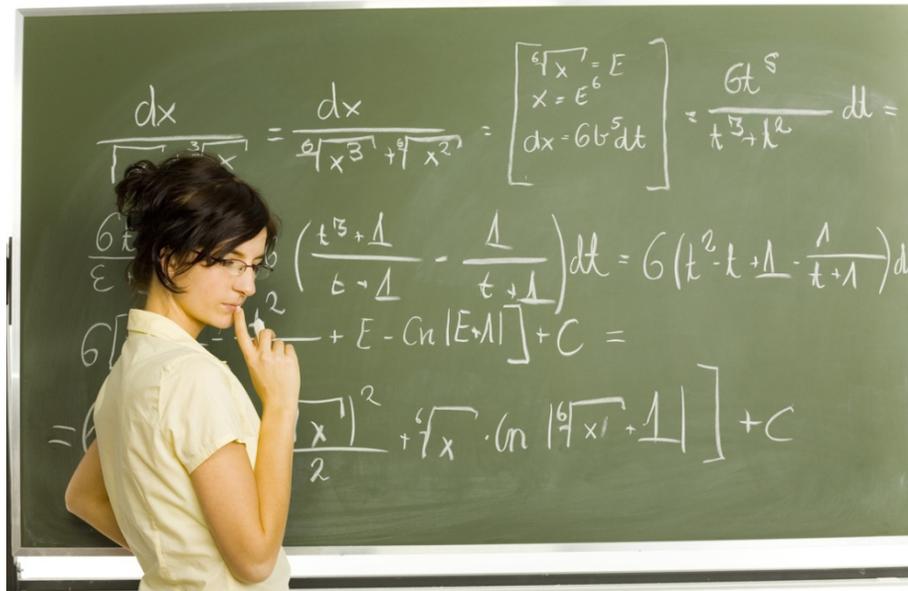
## Principle 9: Math word problems are particularly challenging for ELLs.

- *There are five times as many apples as pears*
- *Three times a number is two more than two times the number*
- *If the first number is two times the other, find the number*

Teachers should:

- Use opportunities for ELLs to explain their strategies for reaching solutions. (Moderate)





“Proficient students of all ages expect mathematics to make sense. They take an active stance in solving mathematical problems. When faced with a non-routine problem, they have the courage to plunge in and try something.... They are experimenters and inventors.... They think strategically.”

Common Core Standards Draft (2010)



“Mathematics is the gatekeeper to higher education...Because ELLs are not achieving at the same levels in math as their native English-speaking counterparts, many are at risk of having the gate to higher education closed to them.”

Bresser, et al (2009)

# How Can Professional Development Help?

- By helping teachers understand and apply the research evidence we currently have
- By helping teachers build professional knowledge by conducting action research as a component of ongoing professional development

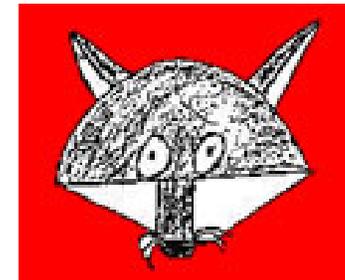
# According to the Research...

Professional development that has a positive impact on teaching and learning is:

1. Ongoing and comprehensive
2. Collaborative
3. Teacher-driven
4. Classroom- or school-based
5. Focused on subject matter
6. Active and hands-on
7. Grounded in the professional knowledge base for teaching
8. Focused on student outcomes

# Focus on ELL Students

- Fox Elementary ELL Project Goals
  - Increase the percent of teachers who are skilled in sheltered instruction
  - Develop a replicable and sustainable professional development model
  - Increase the percent of ELL students who pass the math portion of the WASL



# What is a Video Study Group?

- Ongoing professional development experience conducted in small learning communities
- Built around video of students at work in teachers' own classrooms as the springboard for collegial discussions
- Focused on the real day-to-day experiences of teaching and learning in our school

# Video Study Group Principles



Examples,  
Not Exemplars

Investigation,  
Not Evaluation

Expertise from the Inside,  
Not the Outside

# Protocol for Video Study Group

- Teacher selects a short clip to share
- Teacher tells why he/she chose this clip
- Teacher puts the clip into the context of the whole lesson
- Group views the clip

## A Third-Grade Problem

The baseball coach is ordering supplies for the teams. Baseballs come 4 to a box. Each of the 5 teams will need 24 baseballs. How many boxes should the coach order?





# Protocol for Video Study Group

- Each group member shares one or two observations from the tape. These should not be value judgments, but factual statements.  
“I noticed that...”
- The group discusses the ways in which this clip relates to the experience in other classrooms

# Benefits of Video Study Groups



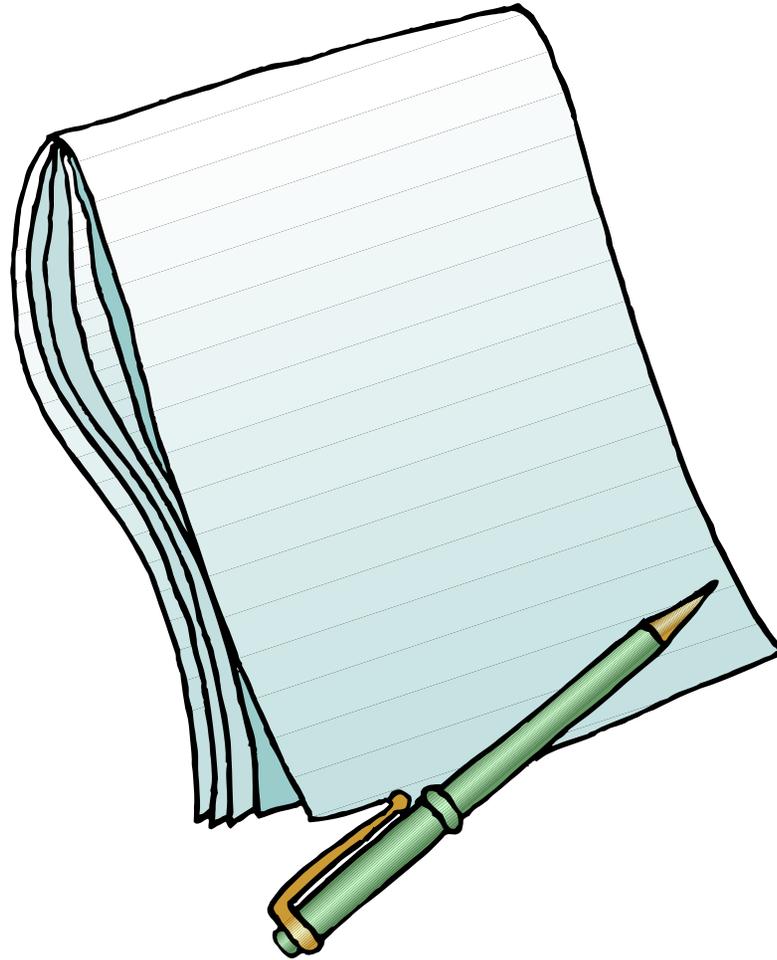
- Launches authentic professional discussions about student learning
- Provides data for action research about ELLs

# How to Get Started with VSG

- Prepare teachers for the process
- Proactively address potential group problems
- Capture worthwhile video



# Write a personal action step



# Resources

Deussen, T., Autio, E., Miller, B., Turnbaugh-Lockwood, A., & Stewart, T. (2008). *What Teachers Should Know About Instruction for English Language Learners: A Report to Washington State*. Portland, Oregon: Northwest Regional Educational Laboratory.

Griffin, L., & Barton, R. (2009). Improving mathematics instruction for ELL students. *NCSM Journal of Mathematics Education Leadership*, 11(1), 21–24.

# Questions?



**Thank you**

Thank you for having participated in today's webinar on "Improving Math Instruction for ELLs" presented by Dr. Linda Griffin and Dr. Theresa Deussen; hosted by the National Clearinghouse for English Language Acquisition, NCELA, located at the Graduate School of Education and Human Development at The George Washington University.

• For more information or if you have additional questions regarding today's webinar topic contact:

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**Thank you**