



# Supporting English learners in the mainstream classroom: Sheltered instruction and beyond

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what's hard about science  
for an English learner?

# my list

“especially great vocabulary load”

abstract, dense noun phrases

*“the exact relationship between temperature  
and volume of a gas...”*

writing norms in lab reports differ from  
standard spoken English

everything that’s hard about science

# Today's Agenda

- Provide a short recap of how sheltered instruction addresses content and language needs of ELs
- Share what we learned from our study of one version of sheltered instruction
- Hear what implications you draw from the findings of our study
- Share some of our reflections about more might be needed to help ELs learn science & other content

part research findings

part reflection on findings

# sheltered instruction

A program or approach that uses **specialized instructional strategies** to provide ELs in the mainstream classroom the opportunity to **access grade-level content** while also **building their academic English**.



# sheltered instruction

SIOP

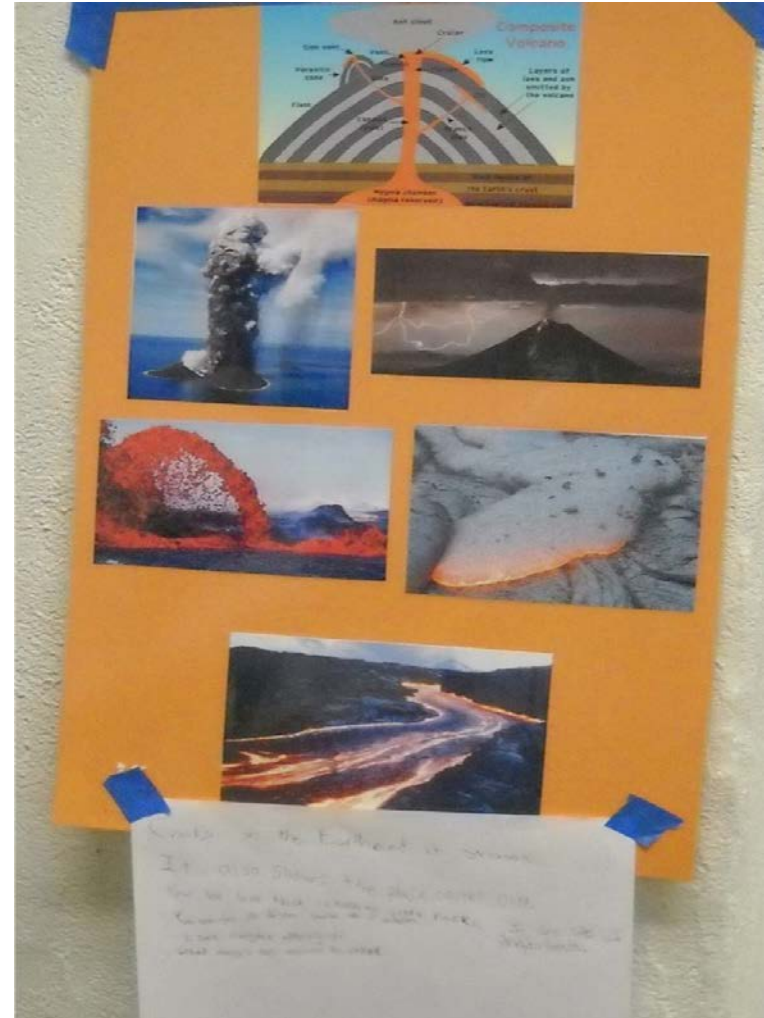
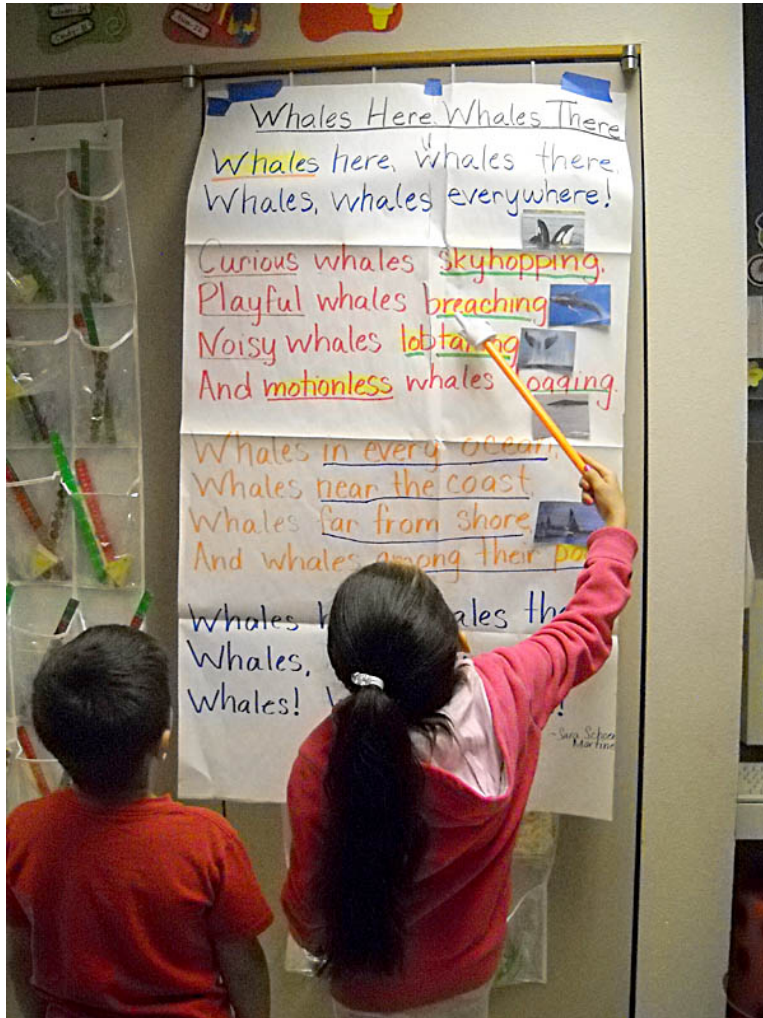
Sheltered Instruction Observation Protocol

Project GLAD

Guided Language Acquisition Design

# Project GLAD®

## (Guided Language Acquisition Design)





# Key program elements

35 instructional strategies

Usable with any curriculum

Intended as a coherent package that builds

- Readiness and motivation to learn
- Content knowledge
- Ability to converse at a high level about the topic
- Ability to read and write at a high level about the topic

what does it look like?

# Granite - most abundant intrusive Igneous Rock

Igni "fire"

minerals

- feldspar
- quartz
- mica
- hornblende

Locations  
Where it is found

- Deep in the earth
- where erosion occurs

erosion →

→ lithosphere

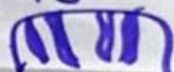
Properties/characteristics

- made of mineral crystals you can see
- different colors - minerals
- large crystals

mechanical

weathering - breaking rock into smaller bits

chemical



Continental Crust  
Batholiths

Slow cooling,

large crystals grow

mantle

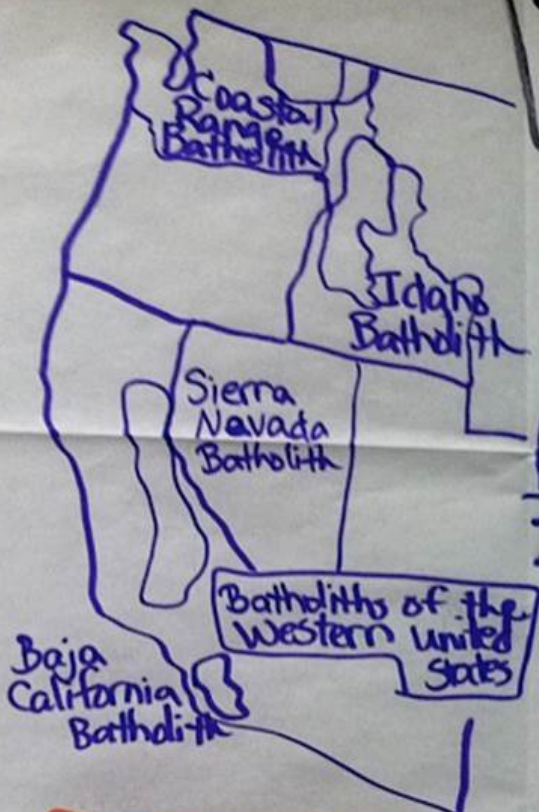
magma chamber

Formation

- Intrusive rock
- form inside the earth
- magma cools slowly

formation of granite

A rock melts  
1600°



Interesting Facts

- Very strong
- weathers slowly

Uses  
Past

- arrowheads
- tools

Present

- Statues/monuments
- buildings
- countertops

- Well known Batholiths
- Half Dome
- Sawtooth mountains
- Yosemite Valley







How does this compare to what  
you do in your school?

I have never had  
training that has  
been this good!



# Research Questions

What is the impact of Project GLAD® teacher training on fifth-grade students' achievement in ELA and science?

- For ELs?
- For nonELs?



# Study population

## **30 Idaho schools**

- 21 districts

- 50% located in rural communities

## **2250 grade 5 students**

- 65% Free/Reduced-Price Lunch

- 33% Latino

- 62% White

- 13% ELs

# Cluster Randomized Trial (CRT)

30 schools agreed  
to participate



15 received Project GLAD®



15 had “business as usual”



# Outcome measures

## English language arts

- Reading comprehension
- Vocabulary
- Essay writing

## Science

- Rocks & minerals unit test
- State science test

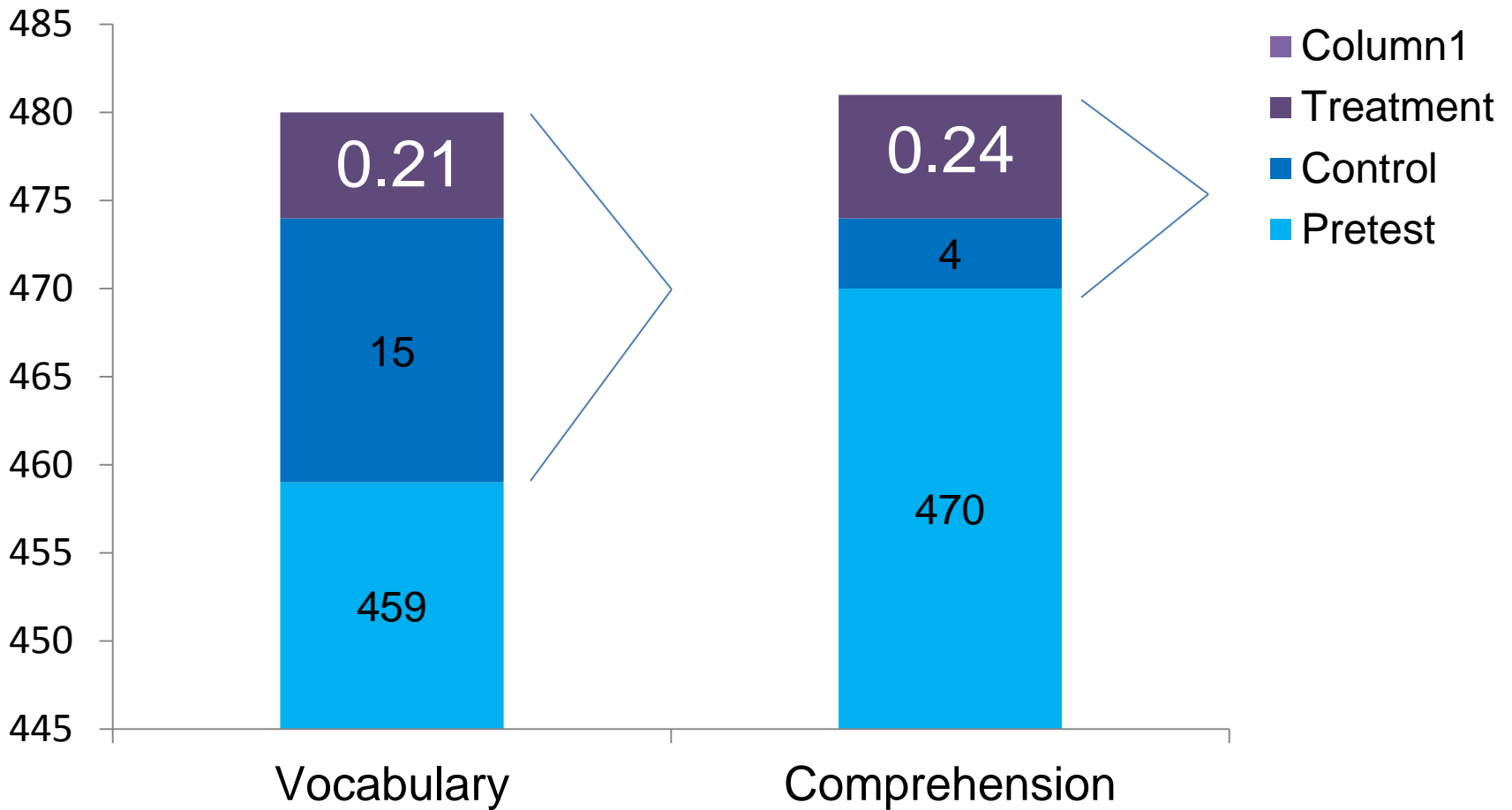


# year 1 outcomes

	ELs	Non-ELs
Comprehension	Yes	No
Vocabulary	Yes	No
Essay writing	Yes (ideas & organization)	No
Rocks & minerals	No	No
State science test	No	No

# Year 1 Literacy Outcomes

ELs only



# What's an effect size again?

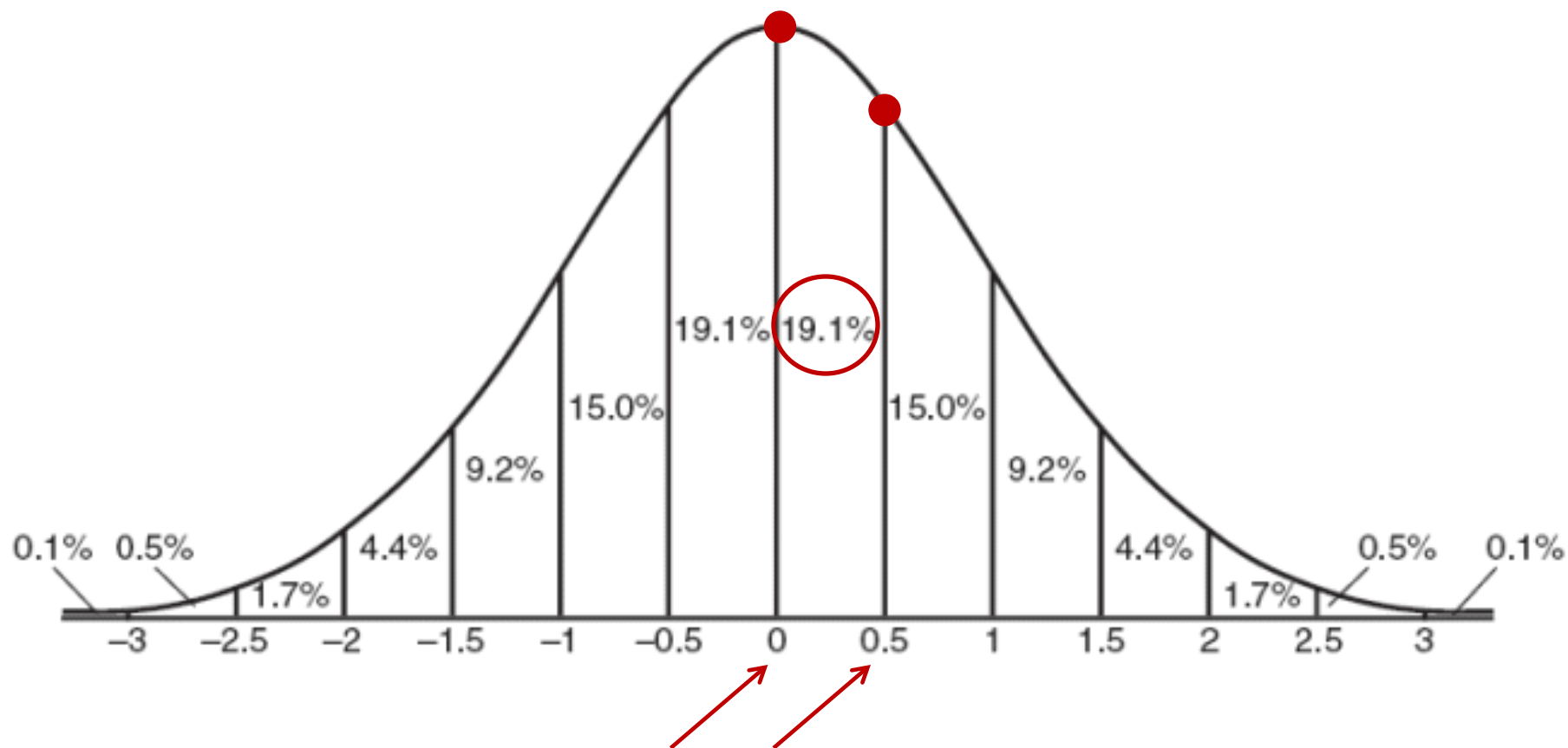
Difference between the Tx and C  
Standard deviation of the group



Measure	ELs	Non ELs
Vocabulary	<b>.21~</b>	.04
Comprehension	<b>.24~</b>	.04
Writing		
<i>Ideas</i>	<b>.32*</b>	<b>.21~</b>
<i>Organization</i>	<b>.27~</b>	.13
<i>Word Choice</i>	.22	.14
<i>Sent. Fluency</i>	.05	.12
<i>Voice</i>	.05	.08
<i>Conventions</i>	.02	.07
Rocks & Minerals	.19	.23
State Science	.12	.13

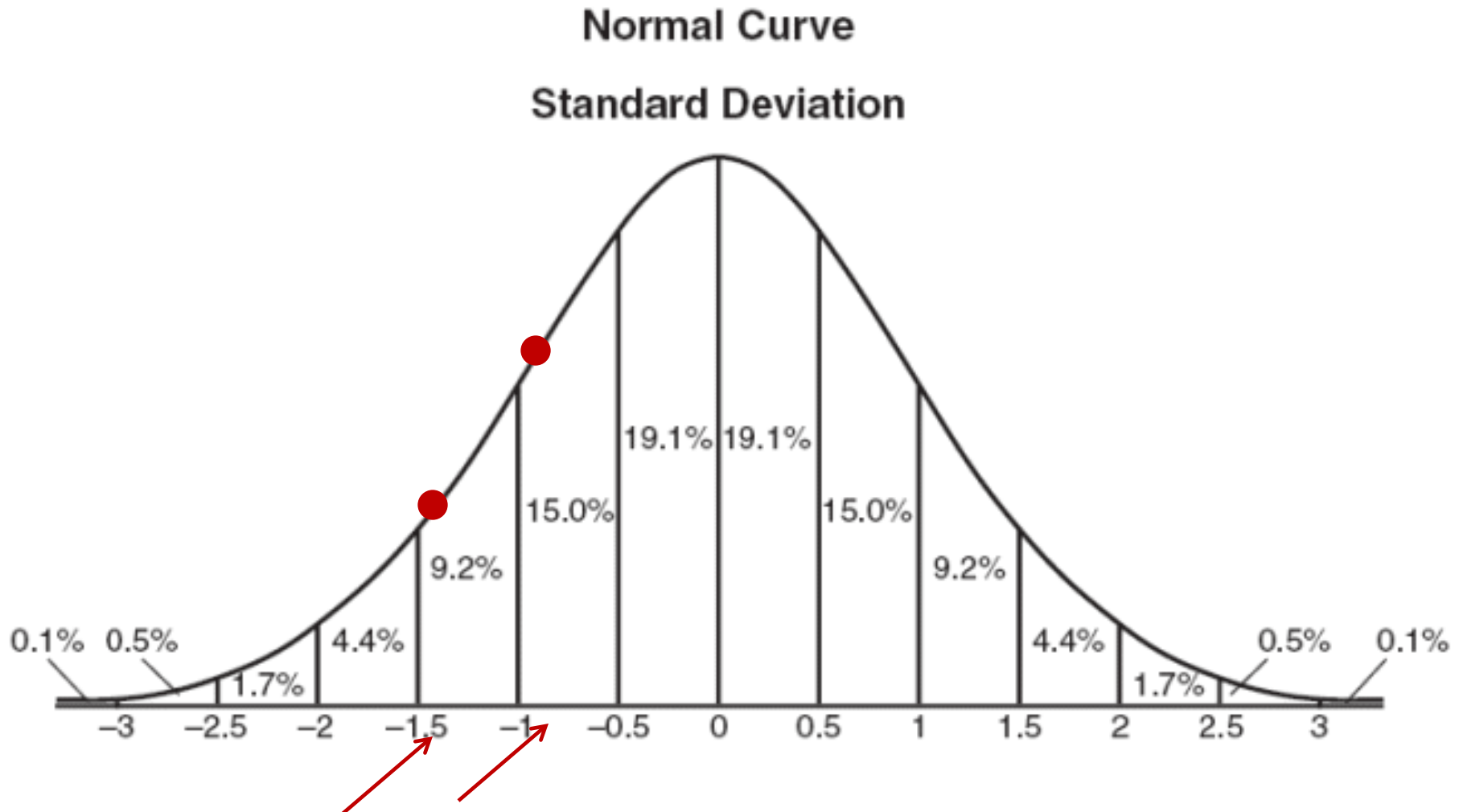
# Normal Curve

## Standard Deviation





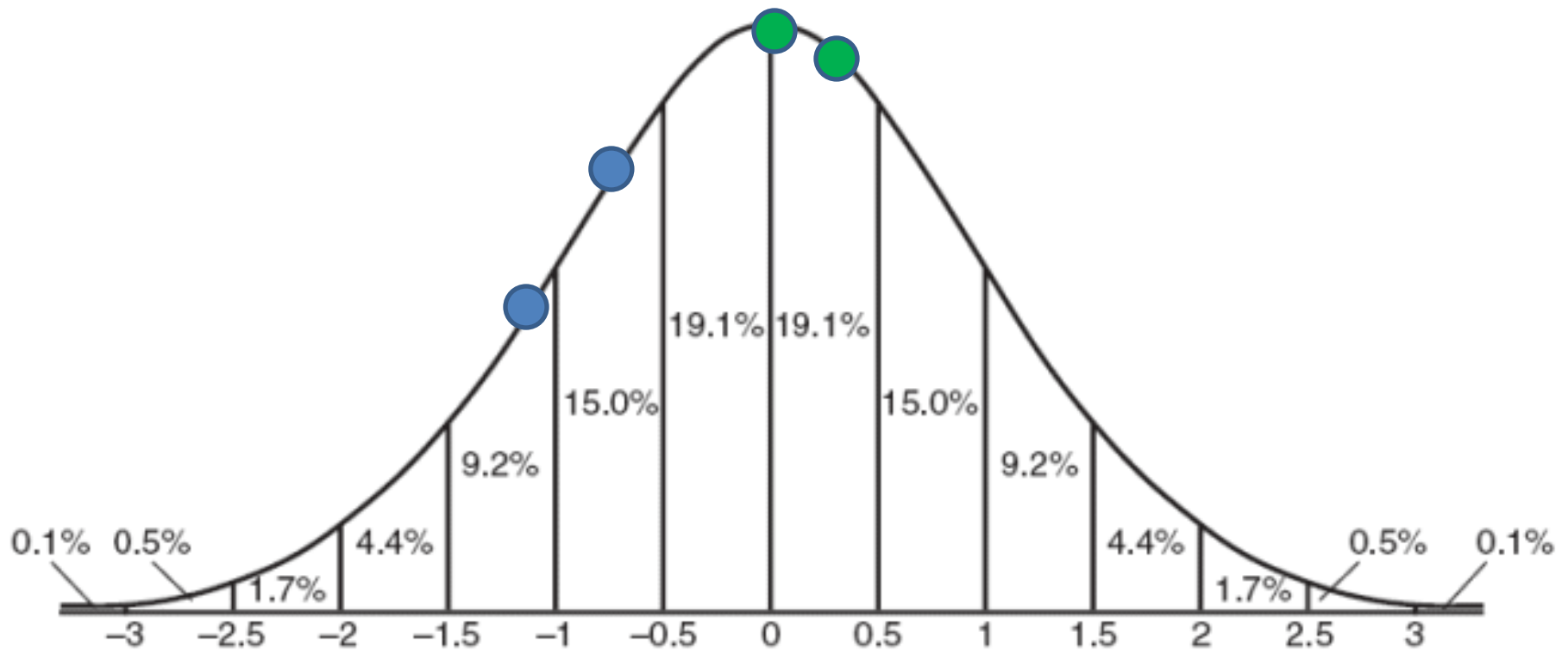
Starting lower means you need a bigger boost.



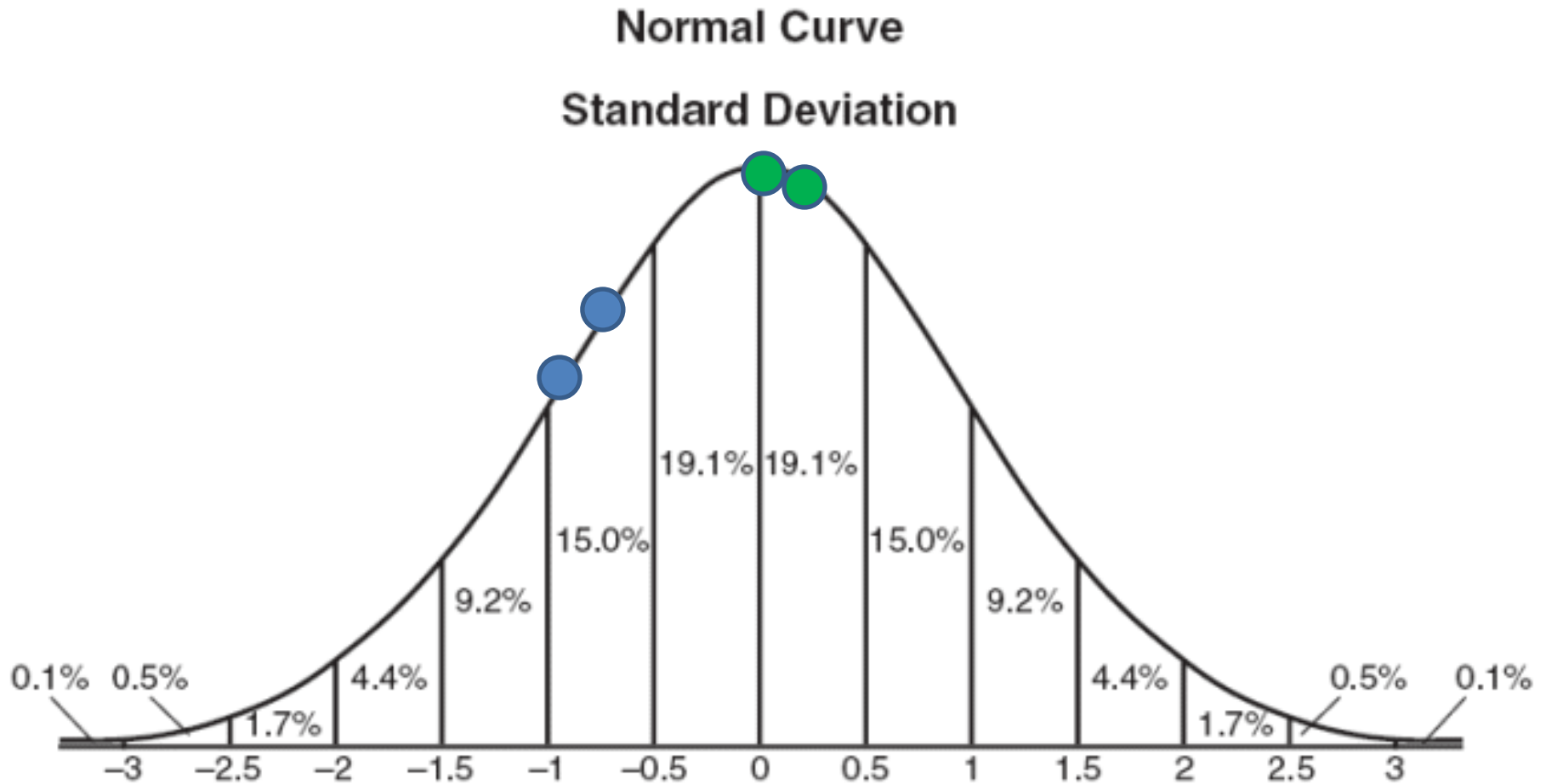


# Vocabulary

Normal Curve  
Standard Deviation



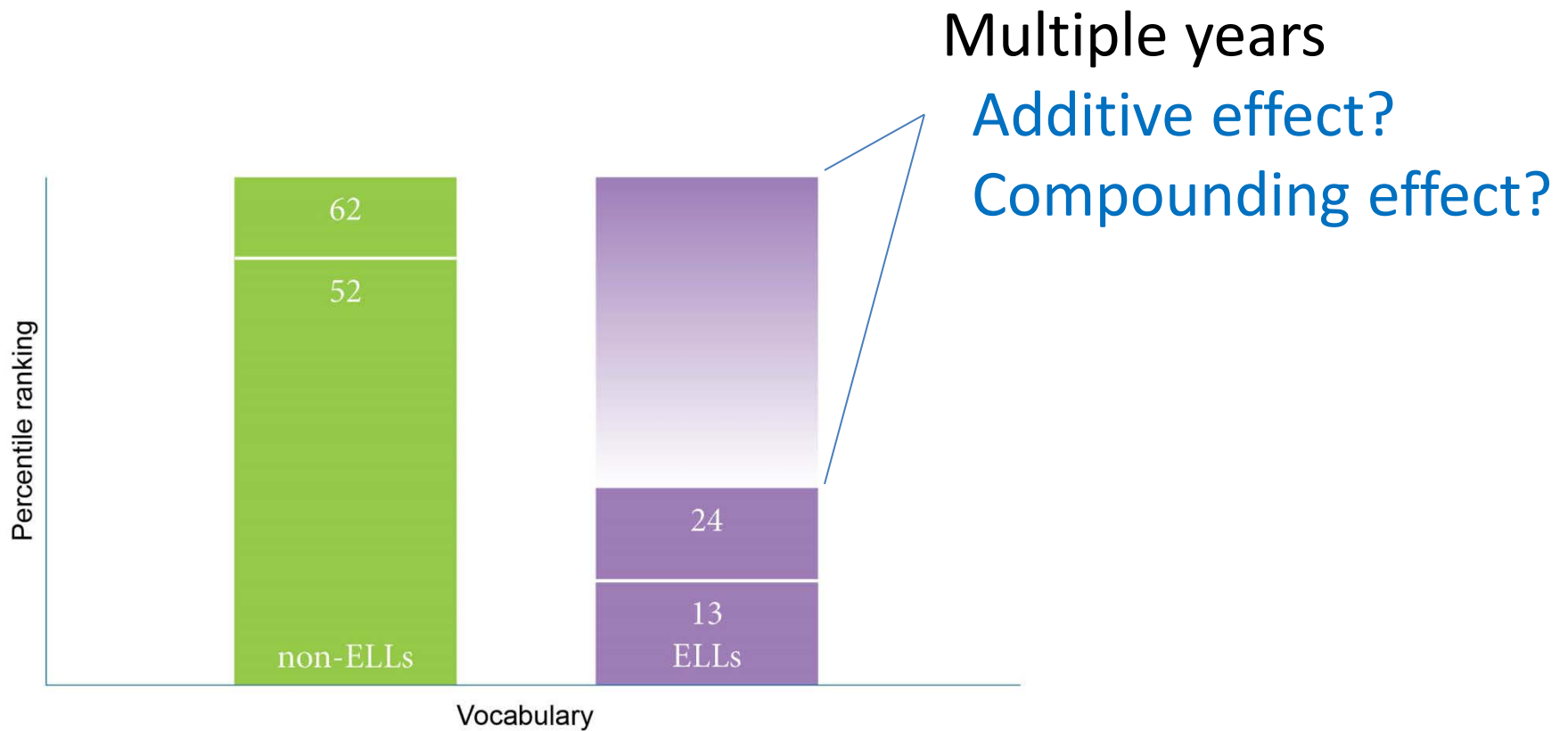
# Comprehension



# big picture – year 1

- language benefits for ELs
- reduction of the gap in vocabulary
- no benefits in science
- no benefits (but no harm) to nonELs

# Can Project GLAD close that gap?



year 2

same teachers (more experienced)

different students

same tests

# year 2 outcomes

	ELs	Non-ELs
Comprehension	No	No
Vocabulary	No	No
Essay writing	No	No
Rocks & minerals	No	No
State science test	No	No

how can that be?!?





# implementation

teachers reported use of same  
number of surveys

observers rated similar level of  
fidelity



# students

somewhat different distribution of  
English proficiency

bigger impact for students with  
lowest English proficiency to start

# how we teach science

Oregon science standards require  
a focus on inquiry-based  
instruction

# Powerful science instruction

Inquiry-based

Uses evidence

- Collect
- Interpret
- Communicate





what percent of elementary  
science lessons require students  
to supply evidence in support of  
their claims?

**15%**



what percent of science  
lessons are of “high quality”?

14%

what percent of the time do  
students spend making  
presentations to the class?

4%



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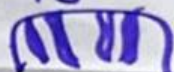
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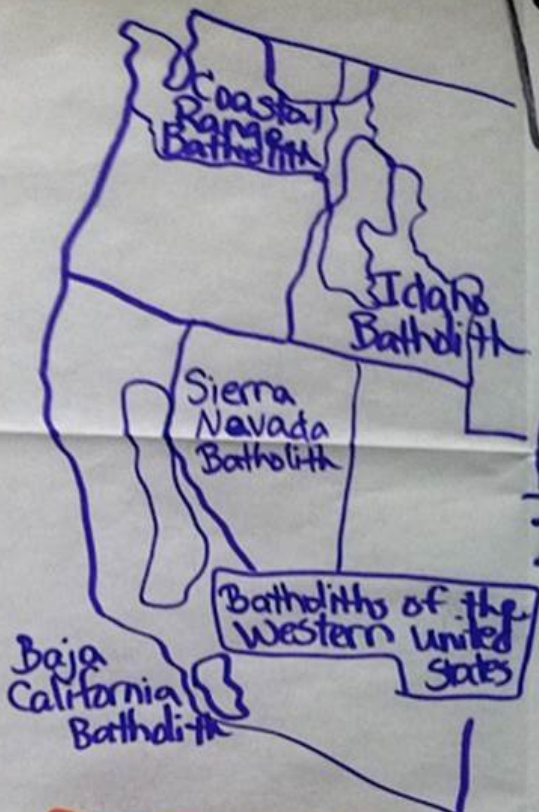
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# Powerful science instruction

FOSS kits

Linguistic scaffolding

(ES = +1.39)

Project GLAD

Vocab ES = +0.21

Comprehension = +0.24



what's hard about science  
for an English learner?



what's hard about science  
for an English learner?



what's hard about \_\_\_\_\_  
for an English learner?

# More about this study

<http://projectgladstudy.educationnorthwest.org/>

## Contact us

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