Do it, talk it, write it:

Incorporating literacy and digital media to promote meaning making for young learners

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Agenda

01	Research and theoretical basis
02	Hero Elementary
03	Do it
04	Talk it
05	Write it
06	Wrap-Up, Q & A

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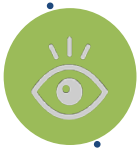
Talking in Science
(Worth, 2008)


Make sense of own thinking


Listen to the ideas of others


Become aware of multiple perspectives


Re-think own ideas


Evaluate another's ideas


Frame own ideas before writing

Natural Progression of Concept Development

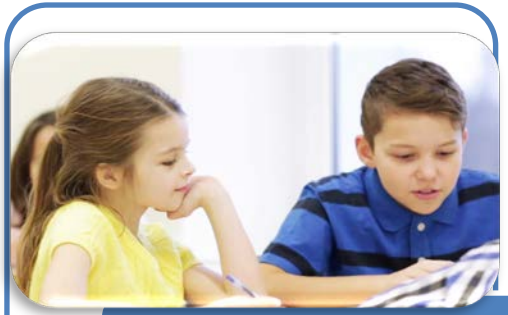
If I can-
experience first-hand

Then, I can
discuss it orally

Then, I can
Understand what
others mean when
they talk about it

Wesson, 2007

Natural Progression of Concept Development



If I can understand when I discuss it and when others discuss it

Then, I communicate in written form

If I can, do it, see it, discuss it, hear about it, and write about it, then I can explain it to others intelligently

Wesson, 2007

HERO ELEMENTARY

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HERO ELEMENTARY

Superpowers of Science

Planning & Carrying Out Investigations

Analyzing & Interpreting Data

Designing Solutions

Defining Problems

Asking Questions

Constructing Explanations

Obtaining, Evaluating, & Communicating Information

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We DO Science

Using the SUPERPOWERS of Science

To ENGAGE WITH Big Ideas

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Start, Stop, Go

Science Big Ideas

- We can push or a pull an object to make it move from one place to another.
- We can push a moving object to make it stop.
- We can push an object to make it move at a *slow, medium, or fast* speed.

NGSS

DCI PS2.A:

- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.

CCC: Cause and Effect

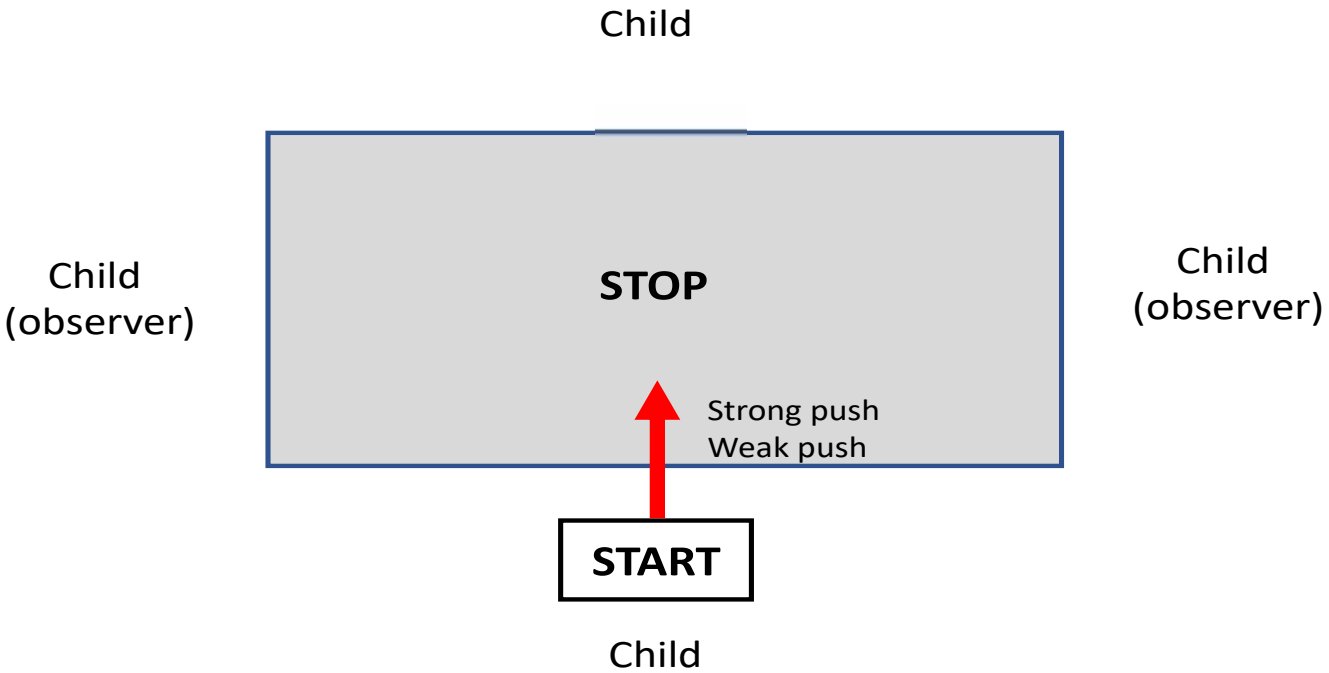
SEPs:

- Constructing an explanation
  Communicating information

Pushes and Pulls

Do It

Start, Stop, Go

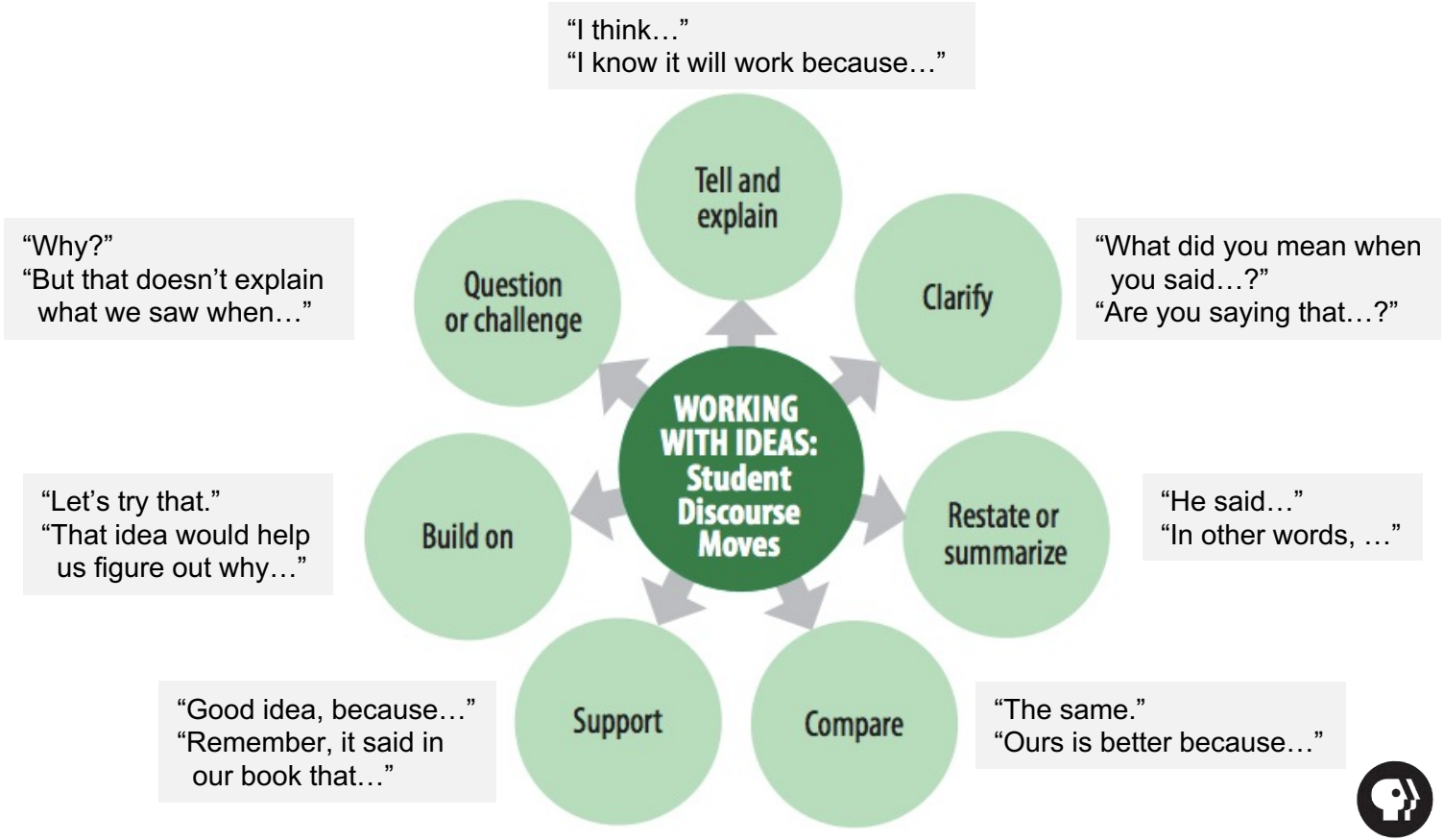


Pushes and Pulls

Talk It

Student Discourse Moves (WIDA)

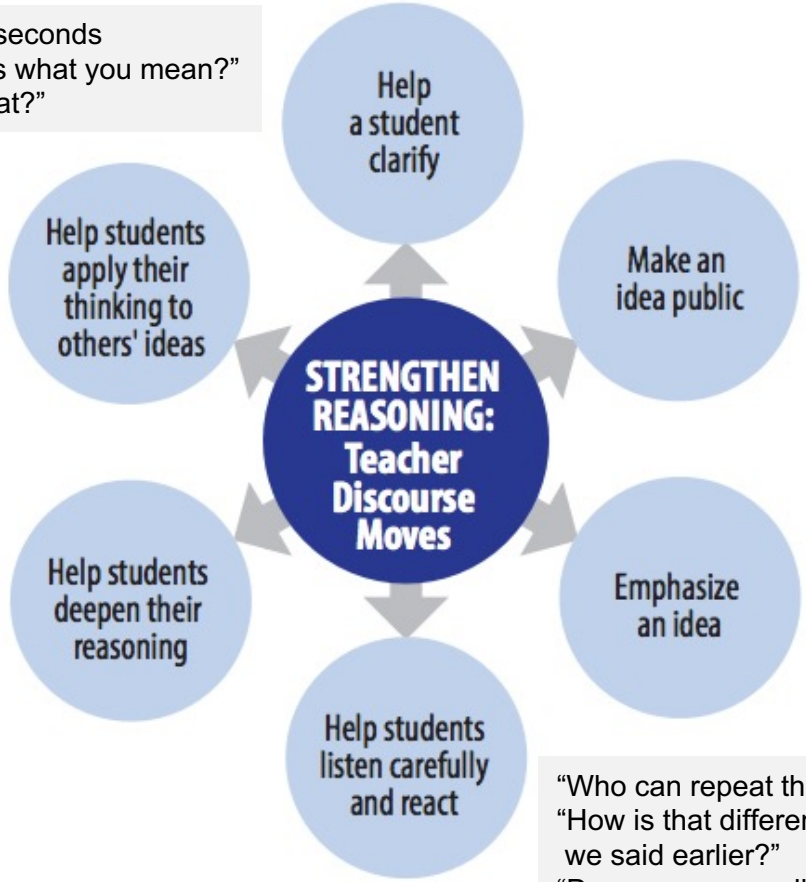
http://stem4els.wceruw.org/resources.html



Teacher Discourse Moves (WIDA)

http://stem4els.wceruw.org/resources.html

Wait time: 20-30 seconds
“Can you show us what you mean?”
“Can you draw that?”



“Who will re-tell that idea for us?”
“Who is ready to tell us the connection between those ideas?”
“What can you ask X to find out more?”

“Tell us more about what you’re thinking.”
“Did I say your idea correctly?”
“So, you’re saying…”

“Will you tell us more about your thinking on that?”
“Would that always be true?”
“What do we need to know more about?”

“That’s interesting. Can you say that again for us?”
“Will someone re-tell that idea for us?”

“Who can repeat that idea for us?”
“How is that different from what we said earlier?”
“Do you agree or disagree with that?”

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Superpowers of Science

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Start, Stop, Go

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Science Talk

Science words
fast, move(s), pull, push, slow, stop, strong, weak

Superpowers of Science
investigate, observe, compare, explain, share information

Pushes and Pulls

Write It

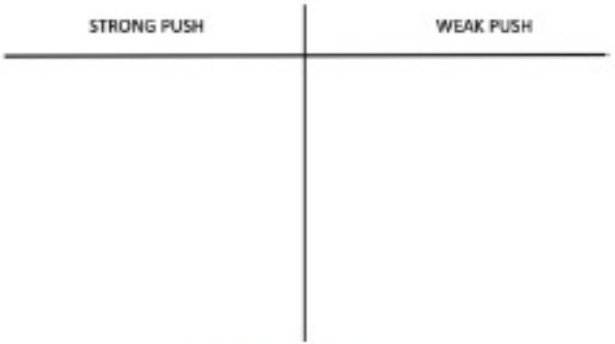
Notebook Talk for *How I Move Things:* T-Chart Graphic Organizer

Playlist: Pushes and Pulls

Time: 10-15 minutes

Materials

- √ Access to *Science Power Notebook* for all children
- √ Large display of a T-Chart Graphic Organizer *(can be the Notebook or you can draw one)*
- √ Marker, if using a paper version of T-Chart



How I Move Things

Science Question

How can I use the T-Chart to compare the effects of a big push and a small push?

Intro – WHOLE GROUP

1. Display the graphic organizer. Discuss what children notice about it.
2. Tell children the name of the graphic organizer, T-Chart. Read the headings on the chart. Explain that the T-Chart helps us think about the different ways a big push and a small push can move the toys. Share one item for each category and write it on the T-Chart.

Wrap Up

Research Tells Us…

- Strong Oral Language Development…
  - leads to oral proficiency
  - supports early decoding
  - leads to increased early reading and writing skills and later decoding and comprehension
  - translates to more successful academic experiences

(Achieve, 2005)

When Teachers Make Talk Happen

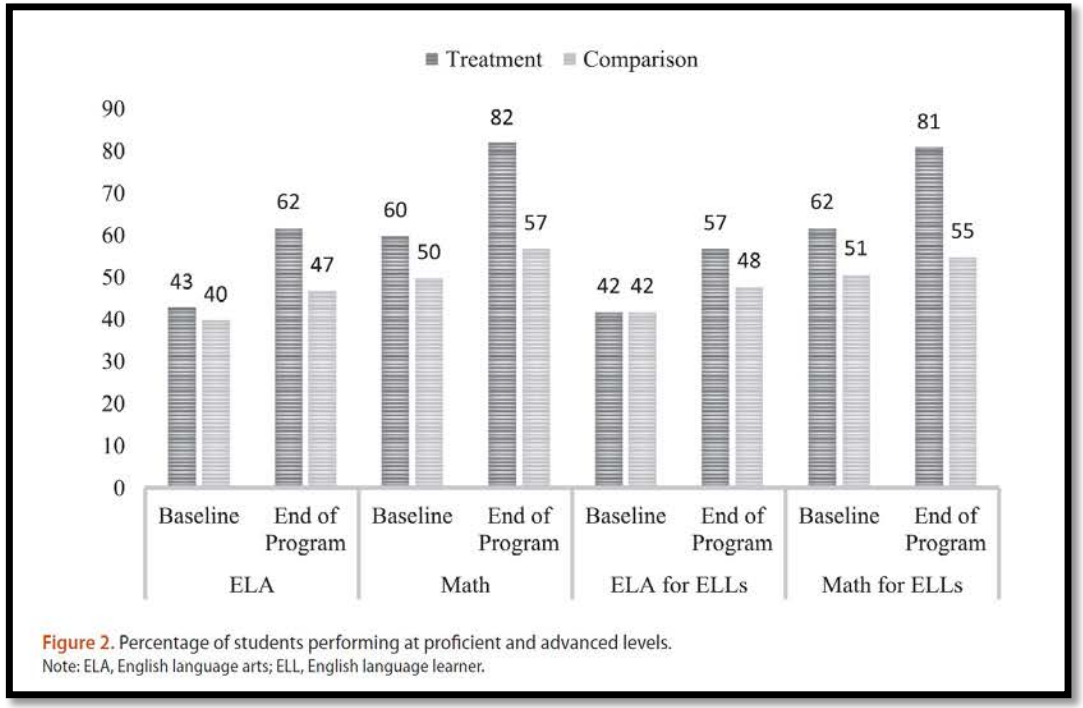


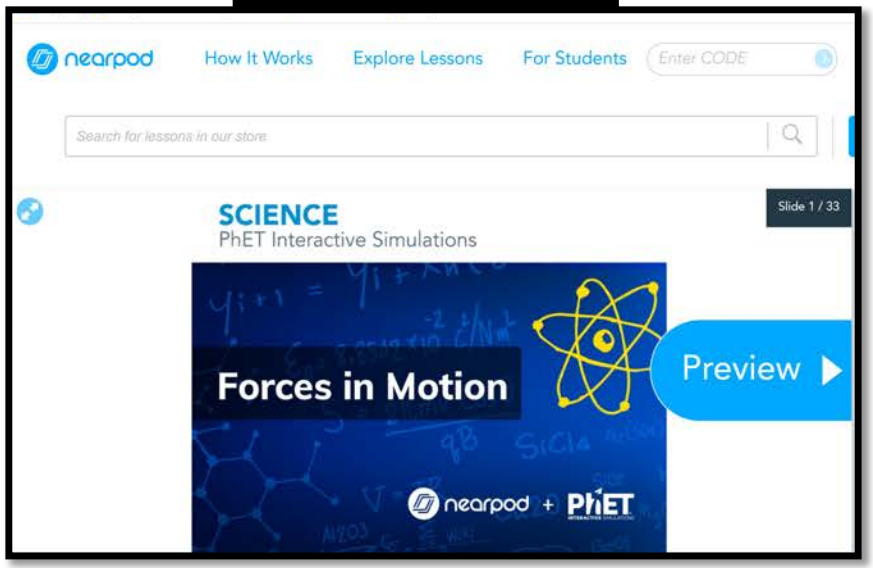
Figure 2. Percentage of students performing at proficient and advanced levels.
Note: ELA, English language arts; ELL, English language learner.

Shanahan, T. & Shea, L.M. (2012). Incorporating English language teaching through science for K-2 teachers. *Journal of Science Teacher Education, 23*(4). DOI: 10.1007/s10972-012-9276-1

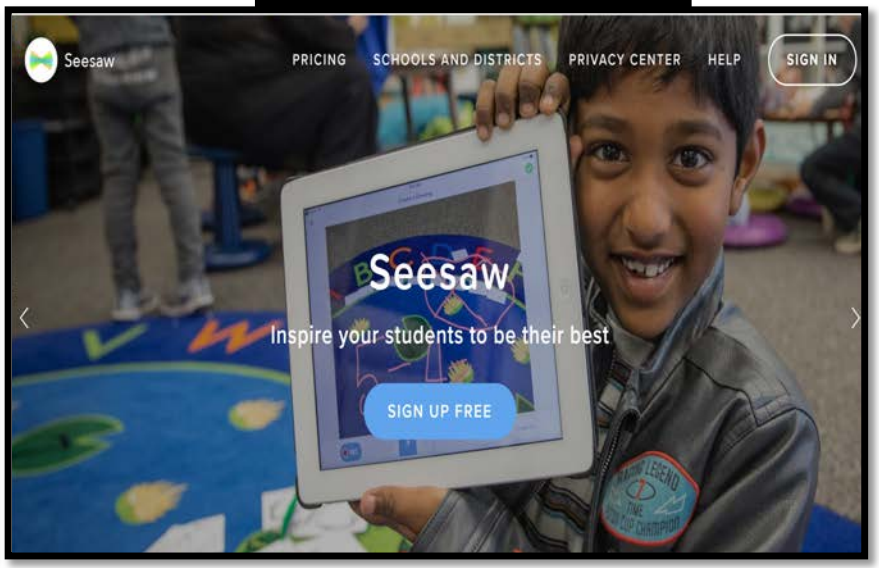
Shea, L. M., Sandholtz, J.H., & Shanahan, T. (2017). We are all talking: A whole-school approach to professional development for teachers of English learners. *Professional Development in Education.*

Resources: Digital Notebooks

https://nearpod.com/



https://web.seesaw.me/



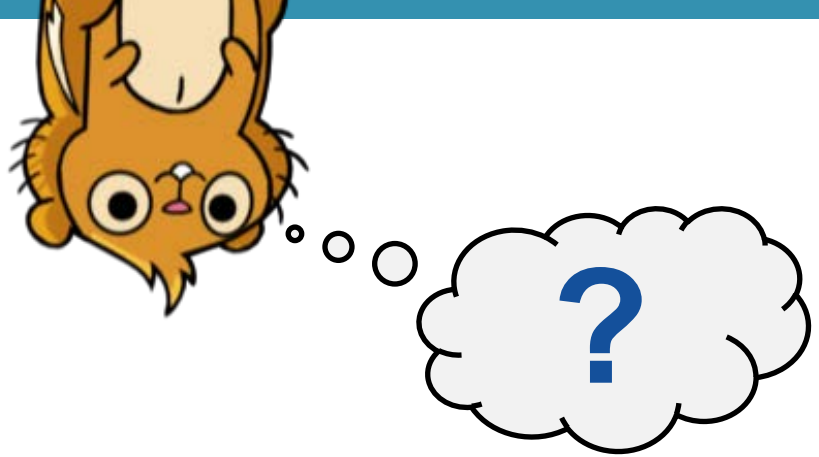
Playlists

Thematic units for programs to use

- TV stories
- Hands-on Activities
- Digital Games
- Analog Games
- Super Science Notebook
- eBooks

Playlist: *Pushes and Pulls*

Hands-on	Start, Stop, Go	Explore how things start and stop moving with a push or a pull.
eBooks (choose one)	*Making Things Move*	Read about ways to make things move.
	Pushes and Pulls	A beginning book about pushes and pulls.
Digital Notebook	How I Move Things	Reflect on experiences of moving things with a strong push or a weak push.
Video	*With A Little Push*	How can Sparks' Crew stop a GIANT squeaky ball? It might take more than a little push!
Digital Game	Push Pull Puzzles	Use pushes & pulls to clear a path for Fur Blur to reach her snack.
Hands-on	One More Push	Race a light-weight cup against a heavy-weight cup. Discover that each cup moves at a different speed.
Digital Notebook	Push Power	Describe the strength of a push needed to move a heavy cup filled with clay.



What **questions** do you have about **DOING**, **TALKING**, **WRITING**?

Thank You!

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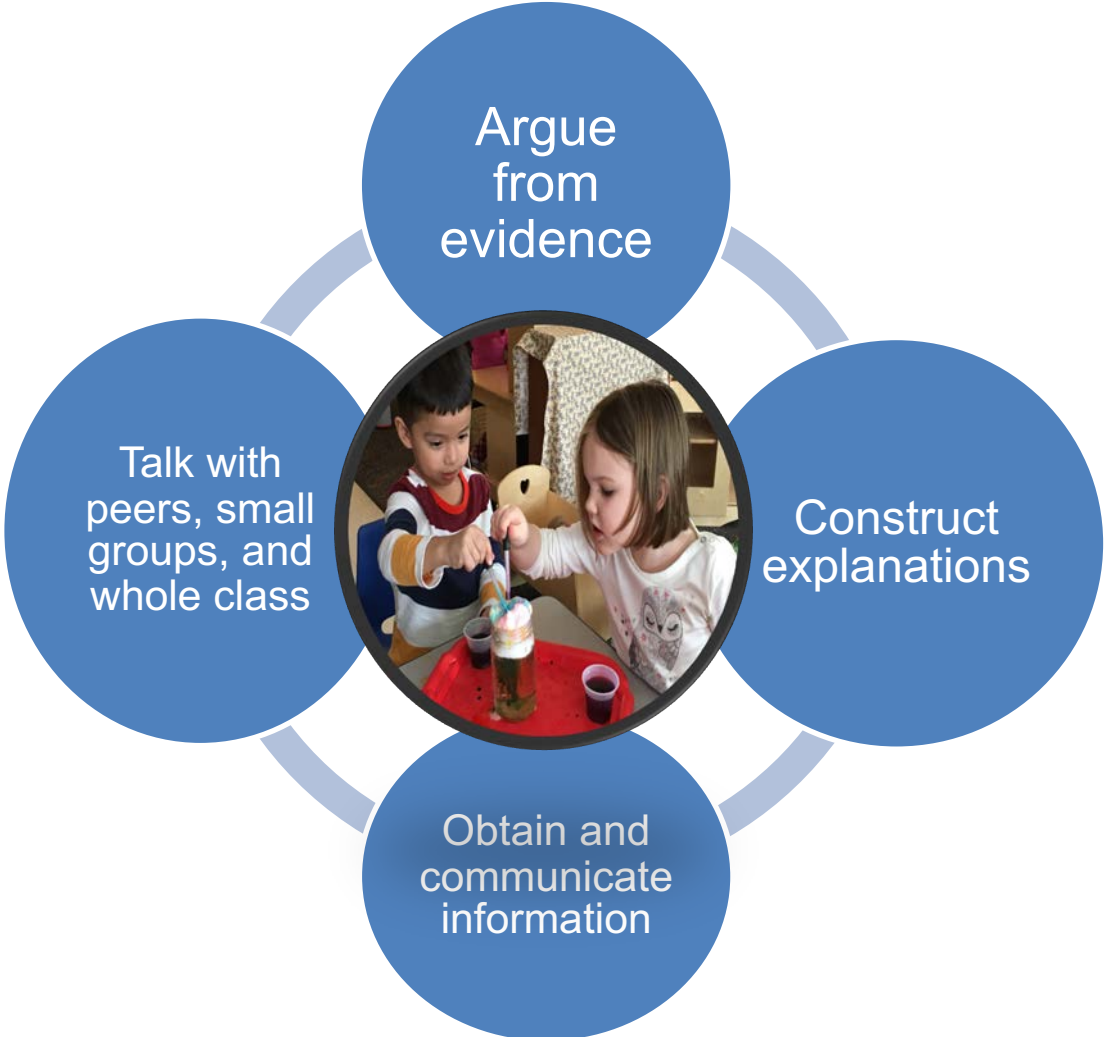
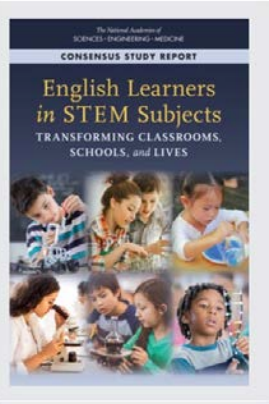
- HeroElementary@TPT.org

APPENDIX

ELs in STEM Subjects





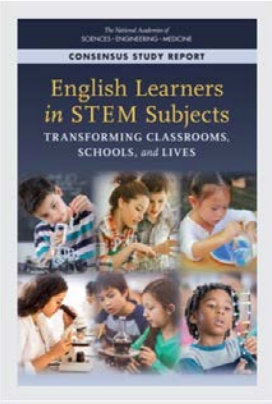
ELs in STEM Subjects

Different Groupings

Talking to Peers (informally)

Formal Writing (reports, etc.)

Talking to Peers (formally)



The Natural Progression of Concept Development

The Natural Progression of Concept Development	
If I Can…	**Then I Am Able to…**
1. Experience it first-hand ("Hands-on, minds-on learning")	Discuss it orally
2. Discuss it orally	Understand what others mean, when they talk about it
3. Understand when I discuss it and when others discuss it	Communicate it in written form
4. Communicate it in written form	Read my own writing
5. Do it, see it, discuss it, hear about it, and write about it	Explain it to others intelligently
6. Explain it to others	Read the writing of others on the same subject
7. Understand the descriptive writings of others on the subject	Begin reading (the writing of others) in the same content area
8. Read factual and content-area writing	Connect the concept to other disciplines
9. Connect it to other disciplines	Comprehend fictional writing on the subject
10. Process the concept on both a literal and a fictional level	Connect it to other relevant abstractions
11. Connect it to abstractions	Begin thinking of the concept on a more global scale and/or on a creative level
12. Begin thinking of the concept on a global and/or a creative level	Ask connecting, "what if," and philosophical questions (of the highest cognitive levels.) The very best indicator we can use to determine how well an individual knows a subject is not gauged by the answers he or she can give us, but by the cognitive level of the questions that he or she begins to ask.

Wesson, 2007

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