Leading Inquiry-Based Learning

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Welcome!

- Introductions
- Our Session
  - Traditional instruction in school
  - Inquiry-based instruction
  - Living an example: Science
  - Structures and tips for leading inquiry-based Instruction
  - Living an example: Engineering
Traditional Instruction in Schools
Upper-grade students in Orange County drew pictures: “Math and Me”

What themes do you find?

Watch:
  » Where they encounter math
  » Who is with them
  » How it is taught and learned
  » How they know they’ve got it right
  » What math can do for us
7x1x6 = 42

Q O C

7 x 1 x 6 = 42
Math Board

Division

Addition

Multiplication

Subtraction

10 \times q = 50, no, 40, no
15 \times 4 \times q = 60, 8 \times q = 72, alright, 7 \times q = 34
I'm getting the hang of this thing, too.

2
MATH ROCKS
+-x÷

ALRIGHT!
I'm really good at math.

48×92
300 ÷ 3
5×90
1×1000
Traditional Instruction: What Do You Conclude?

- What did you find?
  - Where they encounter math
  - Who is with them
  - How it is taught and learned
  - How they know they’ve got it right
  - What math can do for us

- How is science instruction similar?
Teacher “stands and delivers.”
Students “sit and get.”
Teacher is “sage on the stage.”
Students learn recipes for how to get an answer, not necessarily with understanding.
Content is divorced from context in which it is used.
Teacher “stands and delivers”
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Inquiry-based Instruction

- Students are physically and cognitively active in pursuing learning.
- Driven by a question or problem.
- Teacher is still very active, but now it as “guide on the side.”
Let’s Live It!
Science Example
La Playa Dorado
Andrea’s Birthday Story
"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle."

--A. Einstein
Why are some so small?

Did something in the water kill them?

Do they all have this hole?

What are the different markings?

These are dead. What did they look like alive?