

Leading Inquiry-Based Learning

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CALIFORNIA STATE UNIVERSITY
FULLERTON

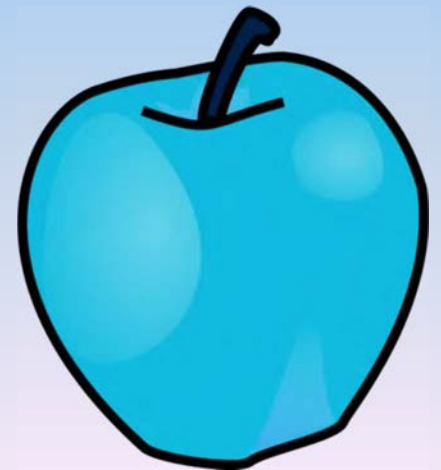
SCHOOLSFIRST 
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Center for Creativity
and Critical Thinking

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



“Math and Me”

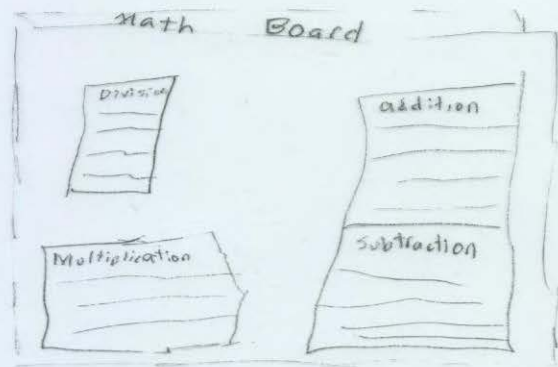
- Upper-grade students in Orange County drew pictures: “Math and Me”
- What themes do you find?
- Watch:
 - > Where they encounter math
 - > Who is with them
 - > How it is taught and learned
 - > How they know they’ve got it right
 - > What math can do for us



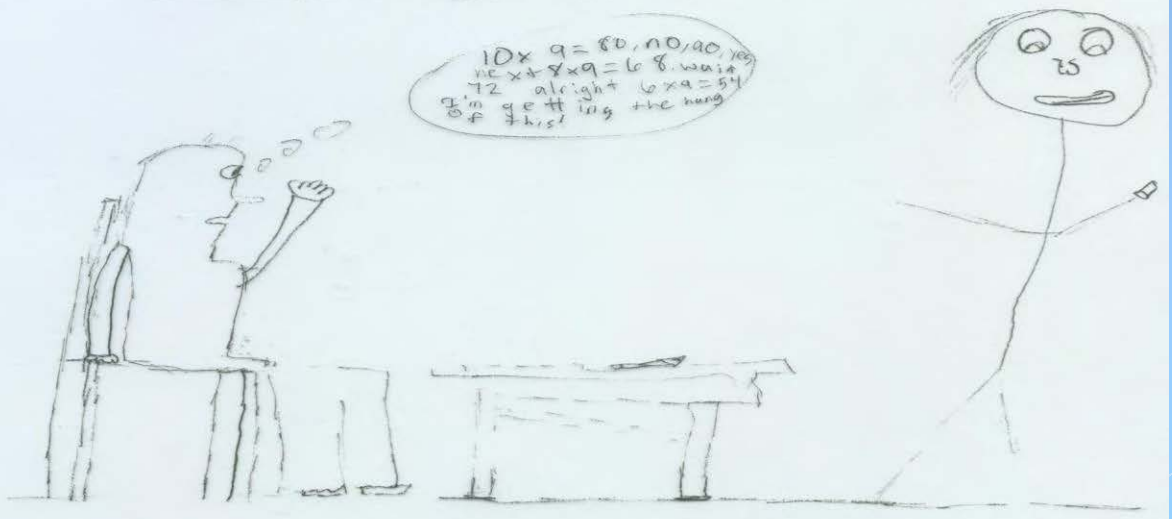
$$\frac{0}{1} \times$$

$$7 \times \square \times 6 = 42$$

		X
0		
0		X



10x q = 80, no, ac, yes
12x q = 68, wait
72, alright, 6xq = 54
I'm getting the hang
of this!



MATH
ROCKS
+ - x ÷

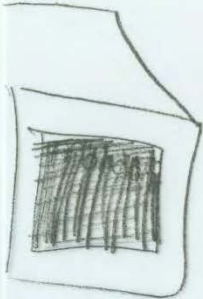
ALRIGHT!
I'm really
good at
math.



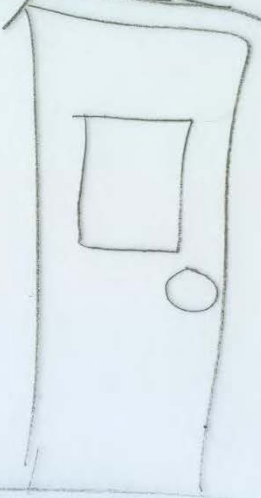
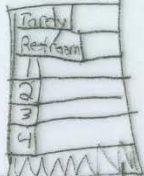
48×92 45×90
 $300 \div 3$ 1×1000

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk
Ll Mm Nn Oo Pp Qq Rr Ss Tt
Uu Vv Ww Xx Yy Zz

Did I get
it correct or
did I get
it wrong?



$$\begin{array}{r} \times 21r3 \\ 3164 \\ -64 \\ \hline 3 \end{array}$$



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?

Traditional Math & Science Instruction

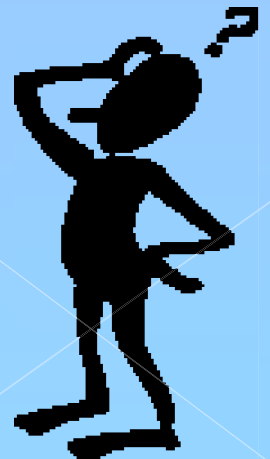
- Teacher “stands and delivers.”
- Students “sit and get.”
- Teacher is “sage on the stage.”
- Students learn recipes for how to get an answer, not necessarily with understanding.
- Content is divorced from context in which it is used.

Traditional Math & Science Instruction

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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.”





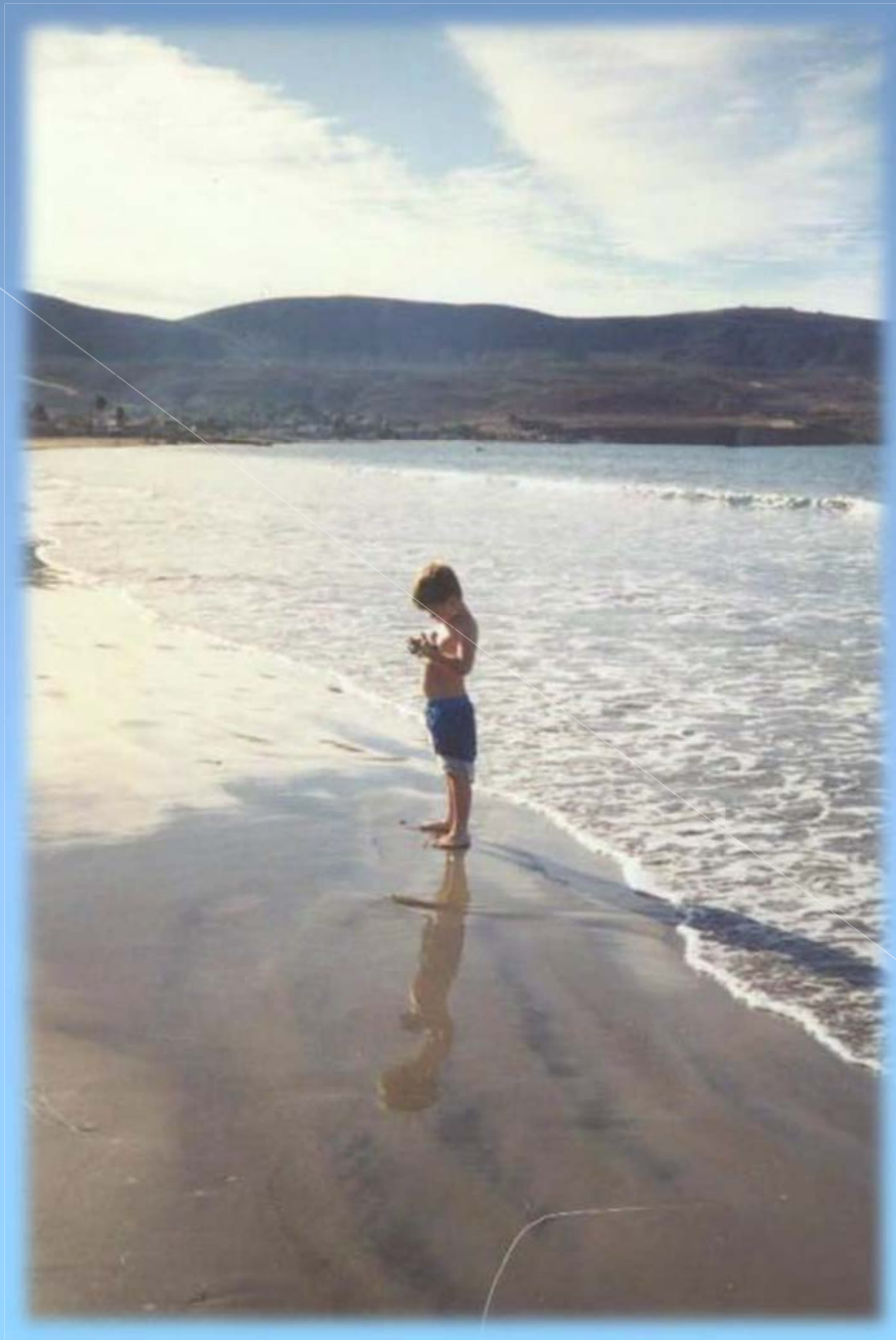
Let's Live It!

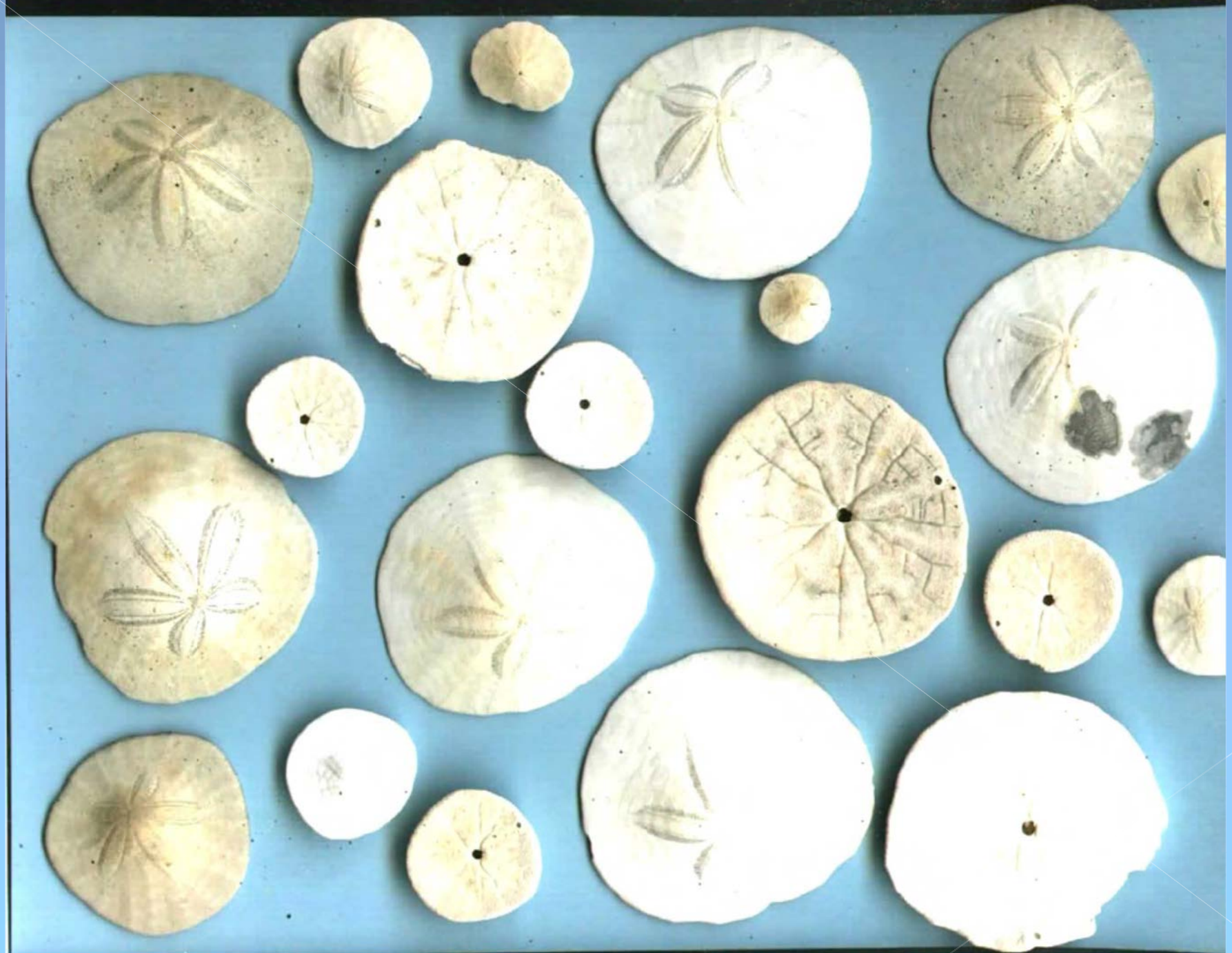
Science Example

La Playa Dorado

Andrea's Birthday Story

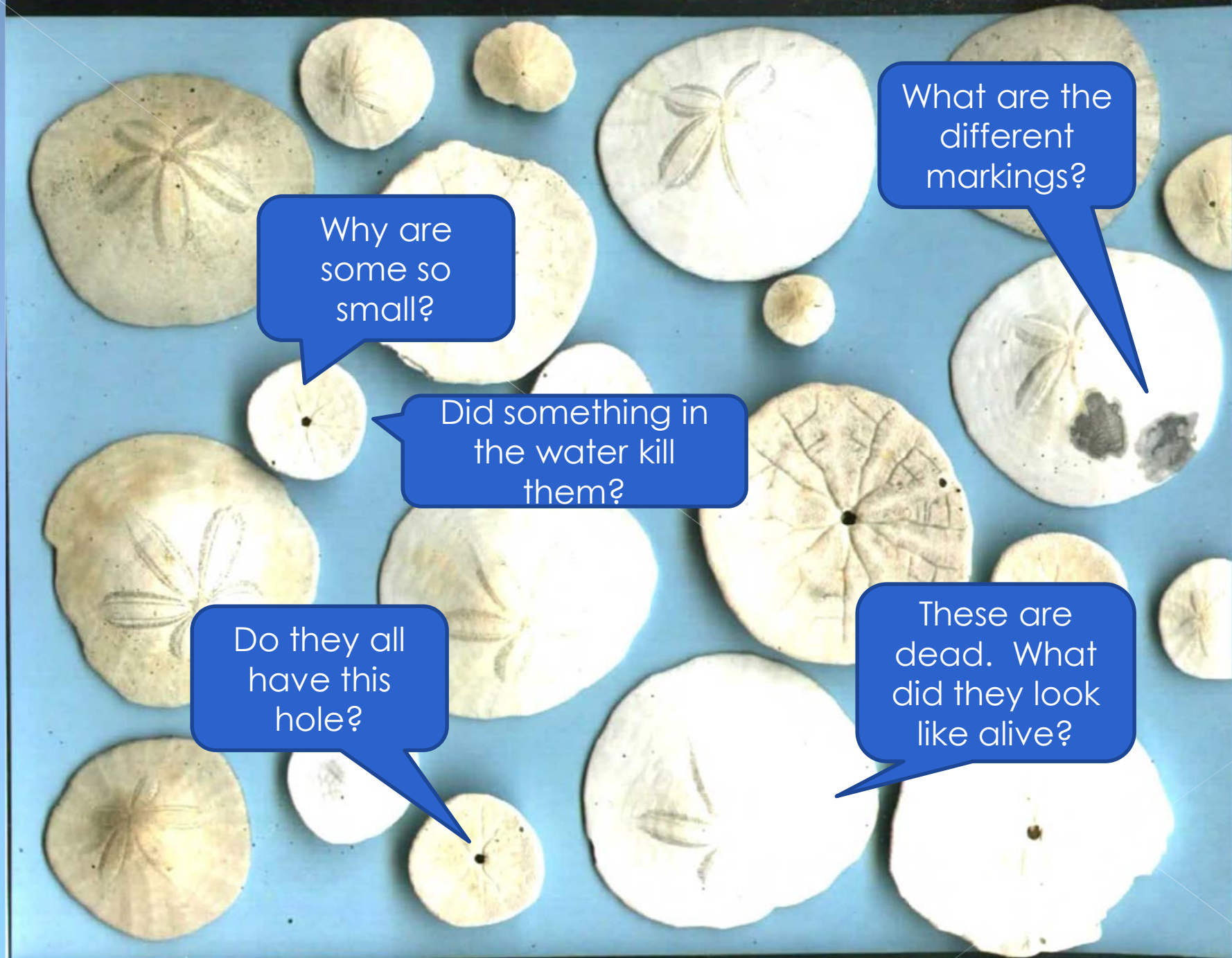






"There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle."

--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?