PRACTICING OBSERVATIONS, INTERPRETATIONS, AND APPLICATIONS WITH NEARPOD

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GEOGRAPHY, GEOLOGY, AND THE ENVIRONMENT

MY CLASSES

INTRODUCTORY GEOLOGY CLASS FOR MAJORS AND NON-MAJORS (GEO 207)

- 25 students
- Sophomore level
- Lecture followed by lab looking at rock samples.

GEOLOGY-COMPUTER CLASS FOR MAJORS (GEO 363)

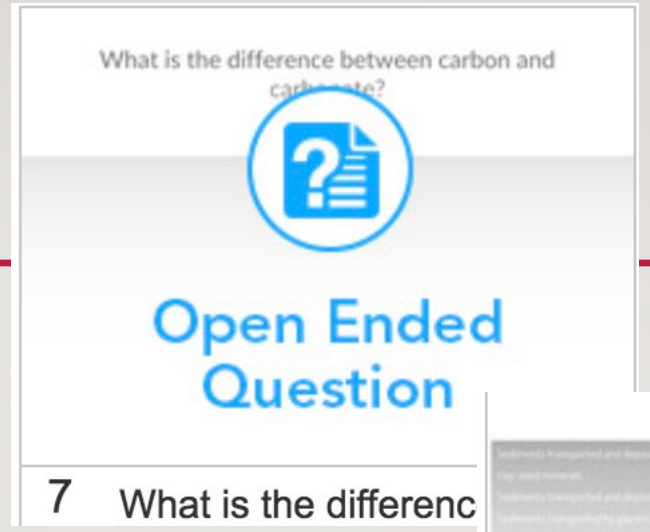
- 13 students
- Seniors and graduate students
- Lecture and lab in a computer lab

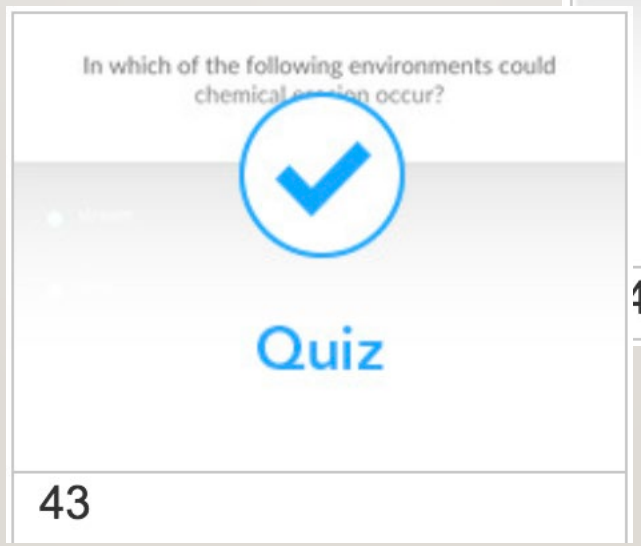
HOW I CREATED MY PRESENTATIONS:

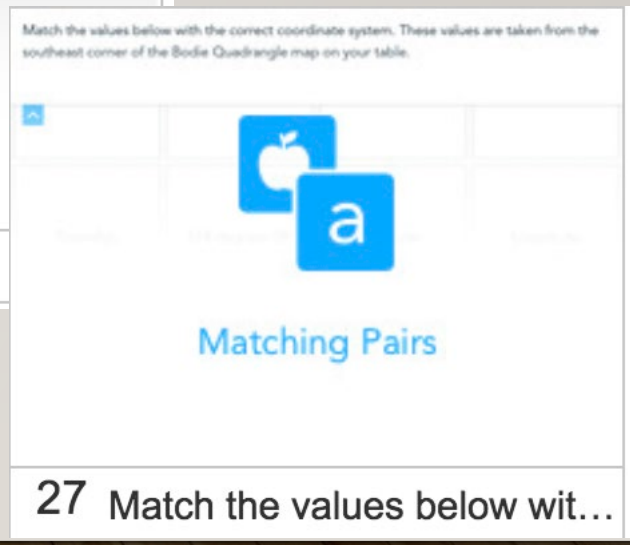
- Mostly imported previous power point slides
- Web Content
  - Links to videos
  - Links to reference websites

TOOLS I TRIED

- Draw it
- Open ended question
- Quiz
- Collaborate
- Fill in the blank
- Matching Pairs
- Poll

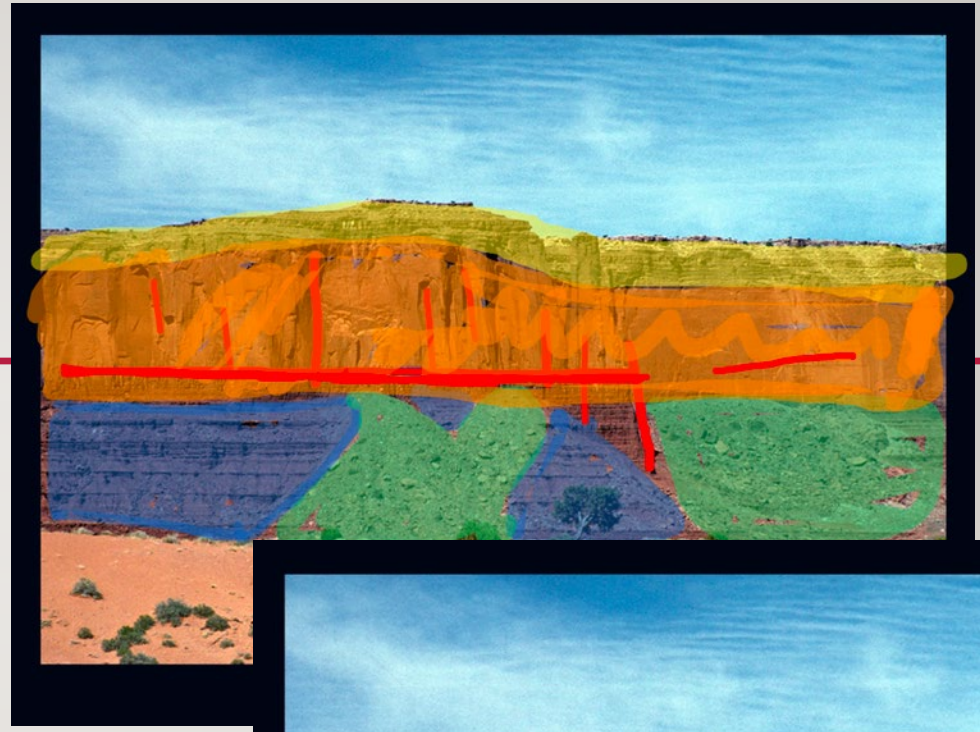


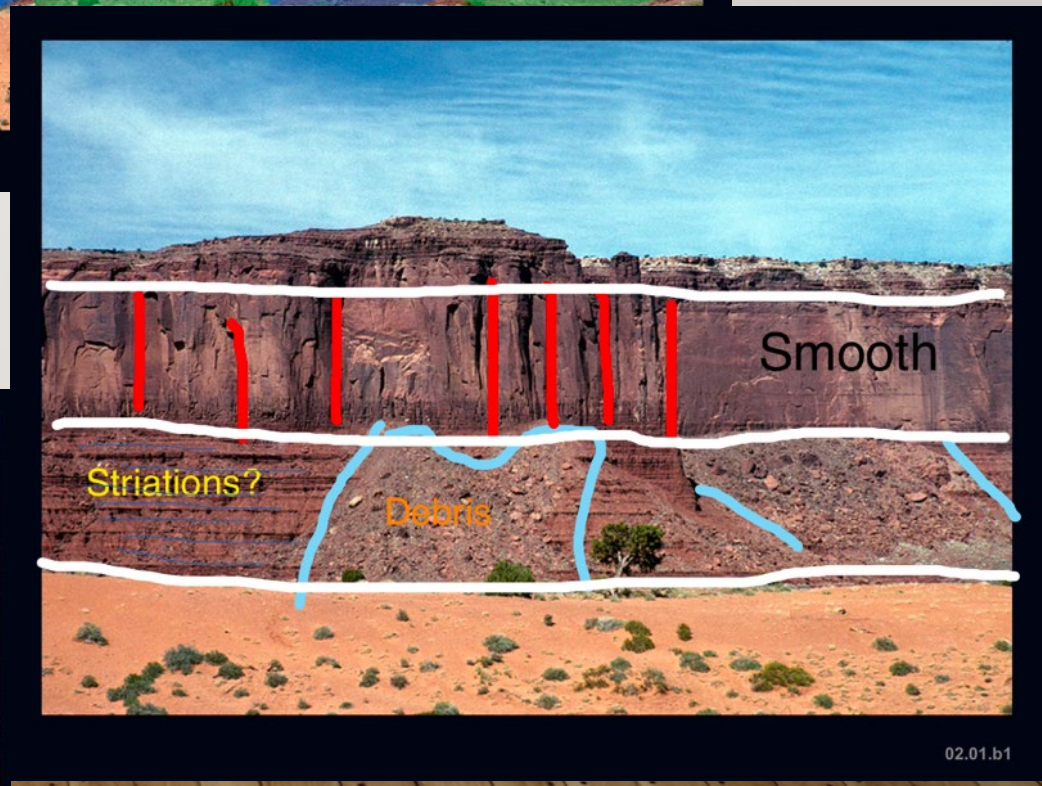


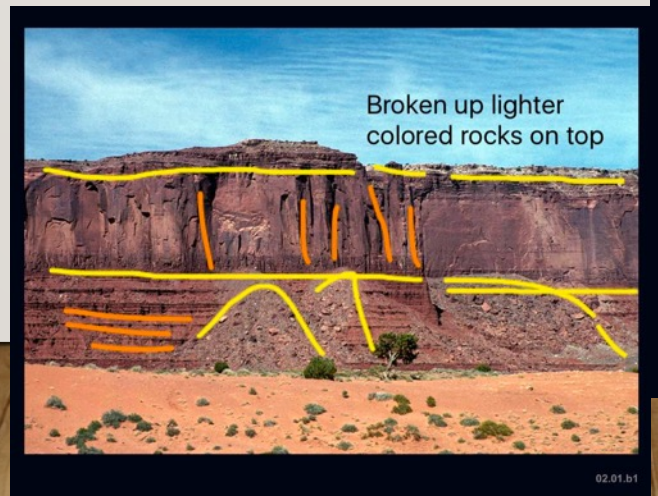


MY FAVORITE? DRAW IT!

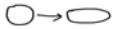
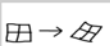
- Geology is visual
- We make lots of observations and sketches.
- Drawing option in the app allows students to practice identifying important geologic features to sketch in the field.

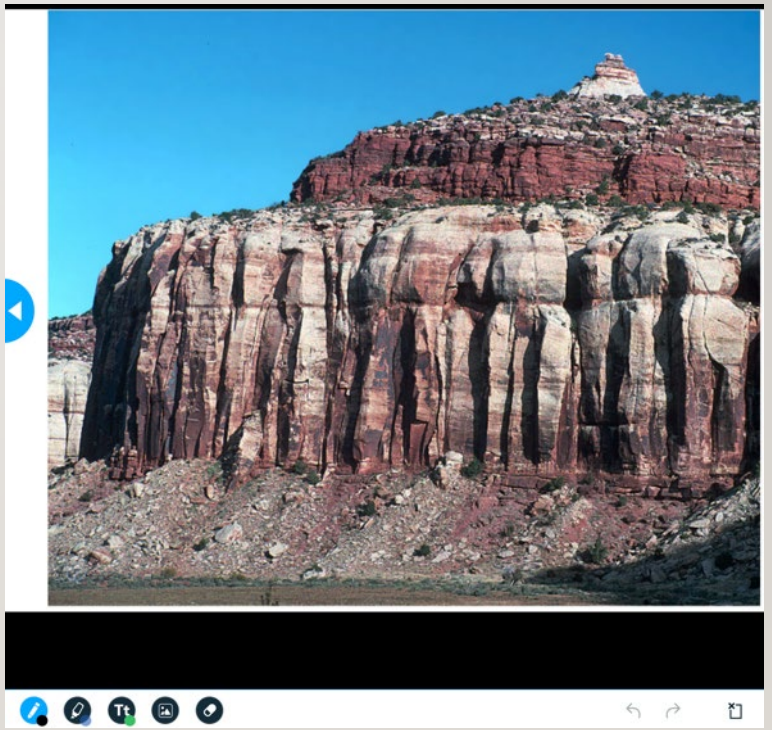






DRAW IT:
START WITH A BLANK SLATE OR BACKGROUND IMAGE

3	Draw a sketch that illustrates how a vector shape would change after a projection. (E.g. circle	YES	
4	Draw a sketch that illustrates how a raster shape would change after a projection.	YES	

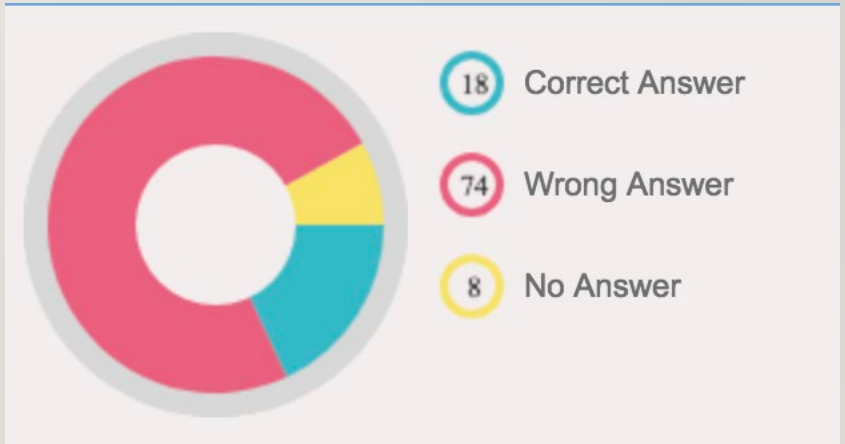


MY EASY GO TO TOOL: QUIZ ALLOWED A CHANCE TO PAUSE, REFLECT, AND ASSESS COMPREHENSION

- Similar to clickers, I could assess how well students understood a concept.
- Transition from lecture to a question was easy.
- It helped me see when I needed to spend more time on a topic to help students understand.

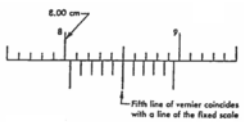
In which of the following environments could chemical erosion occur?

Student	Response
0636	stream, lake, beach, deep ocean
A. afarensis	stream



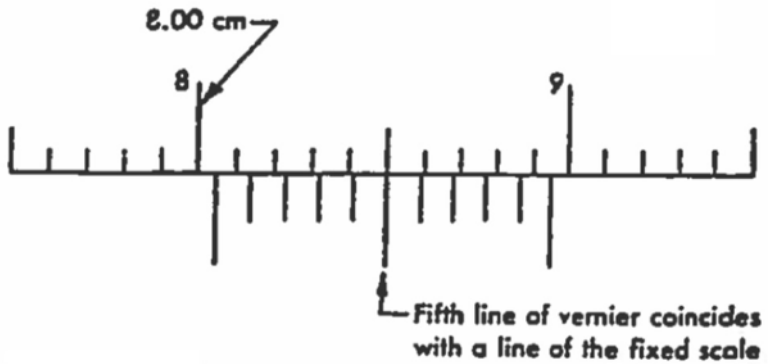
QUIZZES ALSO OFFERED OPTIONS TO ADD FIGURES OR GRAPHS FOR ANALYSIS.

- Test if students could interpret a graph or use a tool that would be used later in lab.
  - Clicking on the image let students see a larger view.



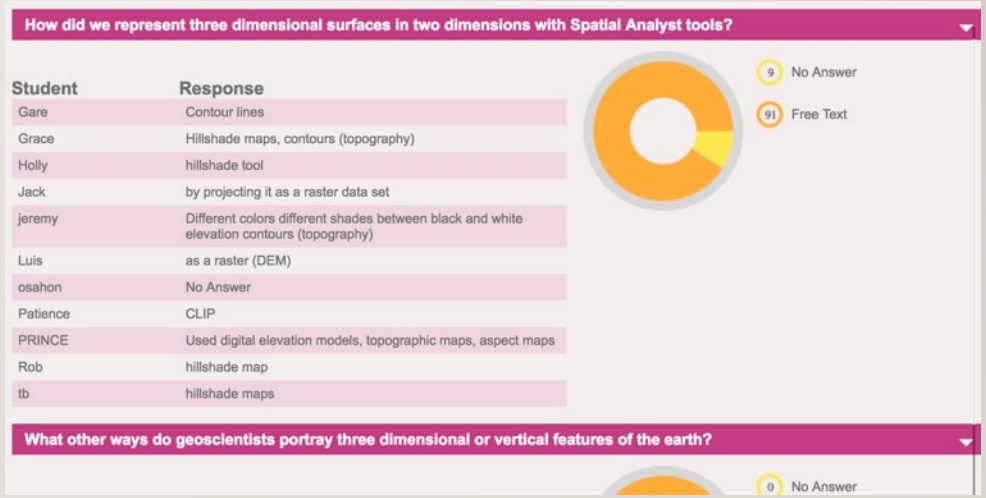
What is the reading in this Vernier Caliper Example?

- 8.00 +/- .05 cm
- 8.05 +/- .01 cm
- 8.55 +/- .005 cm
- 8.29 +/- .002 cm



MY OTHER QUICK TOOL FOR PAUSE AND REFLECTION: OPEN ENDED QUESTION

- Review a topic from last class.
- Make connections between this class and other classes.
- Review a concept that proved tricky from a lab or assignment.



How did we represent three dimensional surfaces in two dimensions with Spatial Analyst tools?

Student	Response
Gare	Contour lines
Grace	Hillshade maps, contours (topography)
Holly	hillshade tool
Jack	by projecting it as a raster data set
jeremy	Different colors different shades between black and white elevation contours (topography)
Luis	as a raster (DEM)
osahon	No Answer
Patience	CLIP
PRINCE	Used digital elevation models, topographic maps, aspect maps
Rob	hillshade map
tb	hillshade maps

What other ways do geoscientists portray three dimensional or vertical features of the earth?

BENEFITS TO THE STUDENTS

GEO 207: USING NEARPOD ON A PHONE, TABLET, OR LAPTOP

- Students could follow along
- Helpful to take quizzes during lecture
- Return to notes and review/retry quizzes at a later time.
- Easier to go back and forth between phone and notebook than front of room and notebook.

GEO 363: USING NEARPOD ON A COMPUTER:

- Most students took notes as we went through slides
  - Added to a portfolio at the end of the semester.
- Exercise sparked questions and discussion which hopefully lead to better understanding of the content and applications.
- Clearer visual than always trying to see the slide at the front of the room.

CHALLENGES

- Students' initial uncertainties in how the notes were saved and where they were sent.
- Size of images on smaller devices
- Reviewing quiz questions as a class:
  - I couldn't see the questions the students were looking at from my computer without showing the answer
- Students can't go back and forth to see slides during the lecture to add additional notes.

HOW DID NEARPOD AFFECT PARTICIPATION?

- Nearpod offered a non-intimidating way for students to participate.
- Some questions triggered follow-up questions from the students engaging the class in more discussion.
- Quote from a student:
  - "I liked that you trusted us using our phones while in class because it took away the temptation to check my text messages because I knew you were counting on us to stay focused."

DID IT DETER STUDENTS FROM USING DEVICES FOR OTHER PURPOSES? NO, BUT…

GEO 207

- Students continued to use their devices throughout the rest of class in positive ways:
  - Returning to lecture notes for reference
  - Referring to electronic textbook
  - Sharing discussions through their own preferred apps (snapchat)
- Devices can serve as useful reference tools.

GEO 363

- Seniors and Graduate students may be more focused anyway.
  - More likely to be working on something for my class than a different class or something unrelated to school.

MY FINAL REFLECTIONS ON NEARPOD:

- Allowed me to feel like I was interacting a little more with each student during lectures when I went through answers to open-ended questions.
- Helped me to slow down and make sure I was clearly communicating and effectively communicating with the students.
- Using Nearpod in combination with another application for mapping in the field helped demonstrate professional benefits to devices.
  - Encouraged responsible use.
- Same activities - less paper – and more opportunity for immediate feedback and discussion!
- I mostly utilized the tools to provide immediate feedback during the class, but I like that summary reports are available for review.