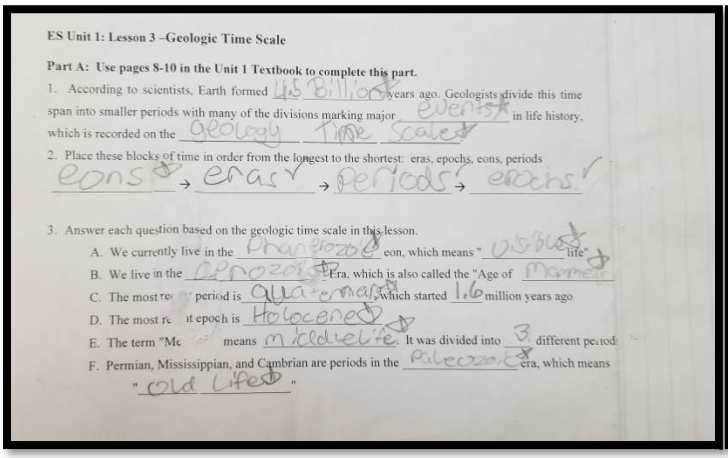
Geologic Time Scale - Student Work Samples

This document shares student work from their interactive science notebooks. Some activities are teacher-led, while others provide students with opportunities to demonstrate their understanding in their own way.

Sample 1: Student Notes

Prior to the start of the first activity, students read a section in the textbook (created on CK12.org) and fill in a note organizer (see picture at left below.) This activity introduced students to the key vocabulary they would hear throughout the geologic time lesson. The assignment also included an EDPuzzle video, titled *Exploring Fossils*, to connect the current lesson with the previous one in which we discuss how scientists use index fossils to determine relative ages and absolute dates for rock strata or layers. Students took notes as they watched the video (see picture at right below), which were then shared and discussed in class. I was able to address student misconceptions highlighted by the student responses to the video questions. One misconception was related to the age of fossils, such as a handprint in the mud would not be as old as a dinosaur print fossilized in stone. They also had trouble remember the differences between mold and casts.



ES Unit 1: Lesson 3 –Geologic Time Scale

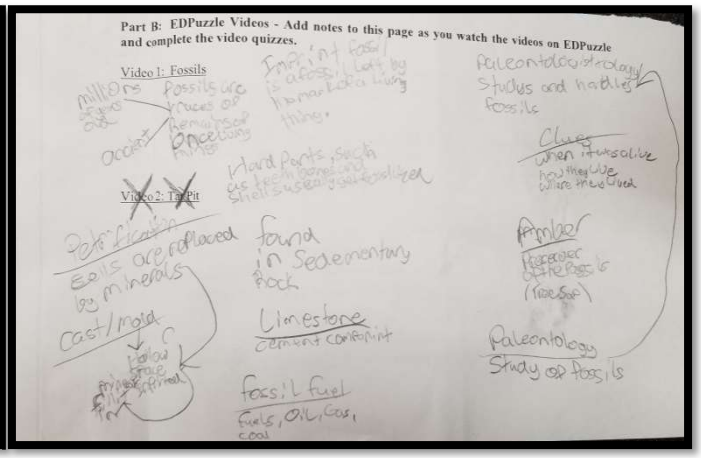
Part A: Use pages 8-10 in the Unit 1 Textbook to complete this part.

1. According to scientists, Earth formed 4.6 Billion years ago. Geologists divide this time span into smaller periods with many of the divisions marking major events in life history, which is recorded on the geology Time Scale

2. Place these blocks of time in order from the longest to the shortest: eras, epochs, eons, periods

eons → eras → periods → epochs

3. Answer each question based on the geologic time scale in this lesson.
   - A. We currently live in the Phanerozoic eon, which means "visible life"
   - B. We live in the Cenozoic Era, which is also called the "Age of Mammals"
   - C. The most re[cent] period is Quaternary, which started 1.6 million years ago
   - D. The most re[cent] epoch is Holocene
   - E. The term "Me[sozoic]" means middle life. It was divided into 3 different periods
   - F. Permian, Mississippian, and Cambrian are periods in the Paleozoic era, which means "old lifes"



Part B: EDPuzzle Videos - Add notes to this page as you watch the videos on EDPuzzle and complete the video quizzes.

Video 1: Fossils

Video 2: Tar Pit

Sample 2: Whole Class Activity

Students assisted me in creating a mini version of the geologic time scale in the school hallway. The "timekeepers" added the correct time division and then the students and I took a "field trip". Starting at the oldest point on the scale (4600 mya), we worked together to add the event cards (baggies with items representing the events).

Yellow = Time Division Card
Pink = Major Event Card

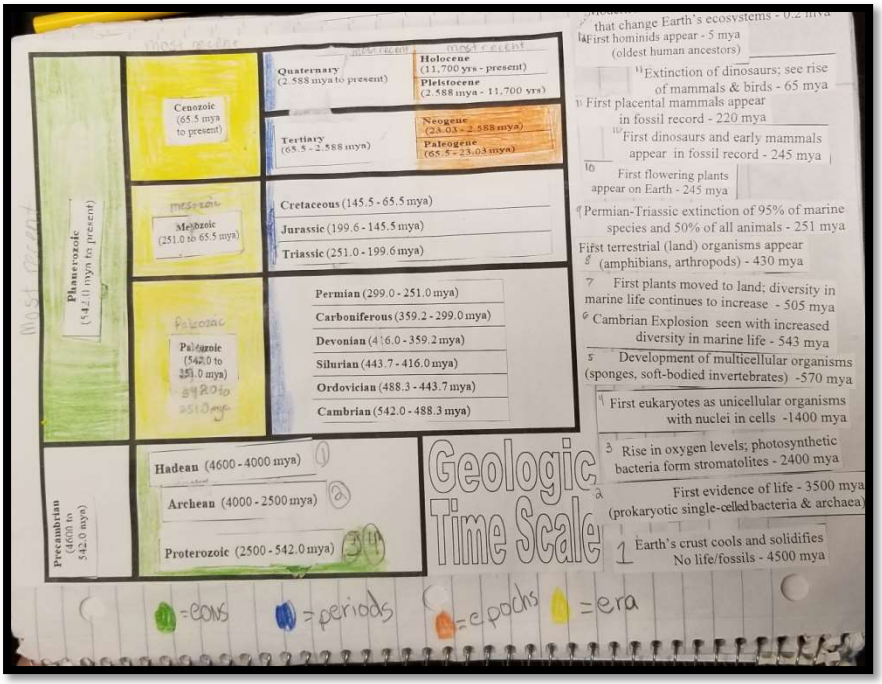
At various points of the "field trip", I asked students questions related either to the time line itself or to lessons completed earlier in the school year. For example, we discuss prokaryotes and eukaryotes in one of our first units in

the fall. The majority of the students were able to recall the information and answer my questions correctly.

We also "back tracked" a few times to determine the number of years specific time divisions spanned either by calculating the difference in the years or by using "student arm spans" as a comparison. I challenged the students to determine how scientists divided up the time scale. Since they were able to see the differing spans of time periods on the scale, they knew the eons, eras, etc. were not set to a specific length (i.e. 100 million years). After more investigation, they were able to see how event cards/baggies tended to show up where older eras ended and new ones began. This concept was reviewed and reinforced in the follow-up classroom lessons.

Sample 3: "Putting Together the Pieces of the Puzzle" Page

One of the first classroom activities students completed was organizing the blocks of geologic time into the "puzzle" in order from oldest at the bottom to the most recent at the top. Students cut out the 10 blocks and determined the correct placement, which was checked at the start of the next class.



Students organized the 15 events (the same ones completed during the class activity) and placed them on the same page. They were allowed to choose their own method for organization. Many students had a difficult time understanding the "backwards design" of the time scale when attempting to determine into which time division each event would belong. As mentioned in my post-observation responses, many students were able to make more sense of the "mya" if they thought of it as money. For other students I used the hallway timeline to help them see how the time "counts down", which helped them to work backwards on their timeline to find the correct spot for each event.

Since students were having difficulty with questions related to the time divisions (identified through student performance on the Legends of Learning playlist and note quizzes), I added the coding activity to help students see which divisions were eons, the eras were divisions within eons, the periods divided

eras, and epochs were divisions within eras. This information will be reviewed on a class warm-up next week to see if students have made progress with this concept prior to the final unit test.

Sample 4: Adding to the Hallway Timeline

Each student was challenged with finding an event that was not already listed on the hallway timeline. They had to create their own event card with a description of the event, the estimated time/age, and add a picture or diagram that relates to it. After I checked their work, they had to find the correct spot to place the card and then add it to the timeline. This activity allowed me to identify students who were still having difficulty measuring geologic time. I discussed several examples with each of those students until I was confident they understood the concept. See the card with a question mark at top right for an example. This student placed the card near the 25 mya mark rather than 2.5 mya. After a few questions, the student moved the card to the correct spot.