

BIG IDEA: GEOLOGIC TIME

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The geologic changes that have occurred during the Earth's history cover such a great time span that it is very difficult for most people to comprehend. Most of us think in terms of our lifetime or just several lifetimes. This activity is designed to help the students get a grasp on time as it relates to the geologic formation of the Earth. (This lesson should be done at the very beginning of the students' involvement of Earth Science).

ENGAGEMENT:

Ask students to take a scrap of paper and write down something that happened a long time ago. Then have students share these events with the rest of the class. Guide them into realizing time is relative.

For example, what is the life span of an elephant?...a fruit fly? How would you view life if your entire life span consisted of just a few days? Do you think that a fruit fly could comprehend an elephant's lifetime? Allow/lead discussion.

Then ask how students' life spans relate to the Earth's life span. (Like comparing a fruit fly to an elephant?)

"How could we visualize the Earth's life span?" Lead discussion into creating something visual (a visual time line). Tell students we will make our own time line by marking specific geologic events in Earth's history on a string or rope.

ACTIVITY:

- 1) Provide materials for lesson.
- 2) Divide students into groups of 2.
- 3) Have each team pull 2 "EVENTS" from the EVENTS BAG. (You will have 25 to 30 tags within the bag. Each tag has a major geologic event listed on it).
- 4) VISUALIZATION: Ask, "Who's got the oldest event?" "If we are going to make this time line fit within the length of our hallway, what kind of time scale should we use. ie. 1 meter = 1 year? 1 centimeter = 100 years? (For our building we would use 1mm = 100 years).
- 5) Once the class has agreed to a scale of 1mm = 100 years, allow students to begin measuring the string and putting their tags in the correct locations. This should be done outdoors, if possible, or at least in a hallway or gym.
- 6) Monitor students' progress by walking around and measuring or at least estimating their accuracy.

SUMMARY:

Once everyone is done and you're satisfied with the results, stretch the string out full length and have several students put stakes in the ground for several 'human events' that they would like to mark, such as 1) their birth, 2) 1776, 3) the birth of Christ, 4) 1492 or any other significant events.

Then take for a walk through time until you arrive at the last event. Once you have reached the end, have everyone turn back and look at the beginning of the string that covers the human history that they know.

“Do you think this is what an elephant’s time line would look like to a fruit fly?”

FOLLOW-UP:

This time line should be mounted in the hallway (probably along the ceiling) so that students will not only have the satisfaction of seeing what their class created as a team, but it will also be available as a reminder of the huge time scale that is used when considering geologic events in the Earth’s history.

CONTINUATION:

As you move into astronomy, you could continue the time line by adding events from our solar system (provided you have the time and lots of string!).

MATERIALS:

- String or cord
- Event labels and strings or similar method of attachment
- Meter sticks
- Calculators