

Setup and use of Biological Timeline activity

Jessica Beauchemin
jessb@jessb.org
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In this activity, students will work in pairs to correctly sequence a series of events in Earth's biological past. First, students will organize strips of paper with these events on their desks in the order they predict is correct. After a given amount of time, all students will participate in a teacher-driven class discussion of their sequences. The teacher will provide a graduated clothesline on which students will place laminated cards representing these events, thus creating a timeline that will help students visualize the amounts of time required before each event occurred.



What you will need

clothesline
clothespins
masking or duct tape
colored tabs or markers
scissors
ruler
envelopes
laminator

Preparation:

First, you will measure and mark up the clothesline that will be used as a timeline.

- ◆ Obtain a length of clothesline that is approximately the length of the front of your classroom.
- ◆ Your timeline will extend from 4.5 billion years ago to the present. This means you will need to divide the clothesline into 9 equal sections that represent 0.5 billion years each. You may choose to mark smaller sections of years in between the 0.5 b.y. divisions as well.
- ◆ Use colored tabs, flags, or markers to identify each of the 0.5 b.y. divisions.

Second, you will put together a set of event cards that will be placed on the "timeline."

- ◆ Print the following document: biotimeline large display.doc
- ◆ Cut out each of the events from the printed document. Before printing them, you may wish to add clipart to spice them up. Alternately, you (or a student) can illustrate them before being laminated.

- ◆ Mount the cards on cardstock or colored paper.
- ◆ Laminate each card.
- ◆ Affix a clothespin to the back of each card with masking tape or duct tape.

Third, you will assemble envelopes for student sequencing.

- ◆ Print the following documents:
 1. biological timeline.doc
 2. biological timeline KEY.doc
- ◆ Keep a copy of the KEY for yourself to help you lead the discussion on the event sequence. The dates used on this sequence are accurate at the time of producing this activity. You may want to align them with the dates in your textbook or current research. You may also decide to add your own notes before printing.
- ◆ Make enough photocopies of the timeline so that students can work in pairs. Note that there are two timelines on one page of this document. For a class of 30, I would make 10 copies. (In case students lose or destroy pieces, they are easily replaced!)
- ◆ Cut the timeline into strips so that one event is located on each strip (note that they are not printed in order on the original so that students cannot be clever and simply assemble a puzzle).
- ◆ Place one set of strips into one envelope.



Before class:

1. Set up the clothesline in a visible spot in your room, that is not out of reach for the students.
2. Make sure you have the following items ready: laminated cards with clothespins attached, envelopes with event strips for each pair of students, event sequence key for you.

To begin:

1. Explain to the class that they will be using their prior knowledge and logical reasoning skills to help assemble a sequence of the events that happened in Earth's past (DO NOT TEACH IT AHEAD OF TIME!!!). Say that you will be giving them a series of events, all scrambled up, and their task is to put them in the correct order...no books, please.
2. Pair up students and give each pair an envelope.
3. Instruct students to spread out all events on the desk and attempt to recreate Earth's history.

While they are working:

1. You may distribute the event cards to all the pairs so that during the class discussion, each is responsible for contributing to the timeline.
2. Some students will give up on this really easily. Give them some hints, like...
 - a. Figure out what HAD to have happened first? (this is an easy one)
 - b. It's easy to figure out the relative order of things if you just THINK...for example, dinosaurs had to evolve BEFORE they became extinct.

- c. Review some vocabulary words on the cards, like prokaryotes, cyanobacteria, amphibians, photosynthesis, etc... You may list these on the board or ask students to look them up in their notes.
- d. Recruit students who think they are done to go and assist other groups who are far behind.

Culmination:

As a class, you will discuss the sequence and, concurrently, assemble the timeline on the clothesline in your classroom.

Begin by asking what the first event was...everyone should have this answer. Then ask if anyone knows the date of that event. Use this event to explain how the timeline works. Point out the beginning (4.5 billion years ago) and the end (present day--2006). Explain that the line is divided into .5 billion year segments. You may want to review how many zeroes are in a billion.

Have one student place the first event on a timeline.

Ask "what comes next?" Wait for the right answer, ask why they came up with that one next, and provide a little background information. You may require students to take notes during the discussion. Provide the date for this event. Have a student add the event to the timeline. Repeat this procedure for the remainder of the timeline.

Alternately, you may provide enough strips so that each student/pair has a set to keep, which they will glue onto a piece of colored paper as the discussion proceeds. Students can record dates and notes on this sheet of paper as well.

Follow up this activity with the UCMP Geologic time tutorial (<http://www.ucmp.berkeley.edu/education/explorations/tours/geotime/index.html>) and/or History of Earth booklet activity for best results 😊.