

Analyzing North Carolina's natural history

BY PAULINE S. JOHNSON

These two short activities will allow students to examine the changes that occurred as the earth formed and assess their impact on what is now North Carolina. The first is a short assessment of the reading of “The Natural History of North Carolina¹.” It is an active lesson designed to address the needs of kinesthetic, tactile learners and is a cooperative group activity. The second is a small group discussion, followed by a class discussion, of how scientists know about the earth’s changes and the distant past. This activity will enable the teacher to gauge the class’s scientific background and willingness to think creatively and deeply.

Activity one

LEARNING OUTCOMES

- Students will read and analyze “The Natural History of North Carolina.”
- Students will create a visual representation of what is now North Carolina in different epochs.
- Students will work cooperatively in groups.

TEACHER PLANNING

Materials needed

- Paper — ½ sheets of newsprint or 8 ½ x 14
- Colored pencils or crayons
- Tape
- “The Natural History of North Carolina²” printed out for each group. **Note:** When printing this information, cut the pages before the section “How Do Scientists Know...” The second activity requires that students have not read this section. (As a result, the use of computers or LCD is not recommended.)

Time required for activity

20 minutes

PROCEDURE

1. Put the students into groups of three or four.
2. Assign each group to read “The Natural History of North Carolina.” Explain that they should read the chart from the bottom up to understand the changes in the earth from the earliest time period to the most recent.
3. After the students have read through the material, ask each group to create visual representations of what they think the area that is now North Carolina would have looked like. For example, in the Carboniferous/Pennsylvanian period, North Carolina would have been part of Pangaea and the Appalachian Mountains would have finished developing. For several of these periods, there is just a little information and others may be similar. That is fine for this particular activity. It is designed to be engaging, thoughtful, and a way to set the tone for the classroom. It will also give the teacher a chance to observe who the leaders and artists are in the class.
4. You may choose to assign each group two of the periods from the following list, putting the name of the period on the back of the paper.
 - Meso-proterozoic
 - Neo-proterozoic
 - Cambrian
 - Silurian
 - Carboniferous/Pennsylvanian
 - Triassic
 - Jurassic
 - Cretaceous
 - Paleocene
 - Eocene
 - Miocene
 - Pliocene
 - Pleistocene
 - Holocene
5. Give the students 12 to 15 minutes to complete this.
6. After each group has finished, have the class attempt to put the papers up around the room in the correct chronological order. You can then check their accuracy by having the students turn over their papers to show the time periods.

ASSESSMENT

This activity is in itself an assessment of the reading of “The Natural History of North Carolina.” The students should show that they have internalized this new information and realize that the area we call North Carolina has changed significantly. An effort grade can be given.

Activity two

LEARNING OUTCOMES

- Students will use higher order thinking to try to understand how scientists learn about the past.
- Students will recognize the interdisciplinary nature of the social studies.
- Students will work cooperatively in groups
- Students will experience an appropriate classroom discussion.

TEACHER PLANNING

Materials needed

- One copy of the worksheet “How Do Scientists Know?” with the questions cut apart
- Overhead projector
- Seven blank overhead transparencies — one for each group
- Seven transparency markers — one for each group
- Alternatively, this activity could be done with newsprint instead of the overhead and transparencies.

Time required for activity

40 minutes

PROCEDURE

1. Put the class into seven groups. (If the class is too small for groups of three, you will need to double up on a few of the questions.)
2. Explain that each group will be thinking about and recording their conclusions about how scientists have been able to learn about the past. (This lesson can possibly devolve into a theological discussion. If this happens, emphasize that the students are to try to decide how scientists have made their determinations about the past and the development of the earth.) Each group will share their ideas with the rest of the class and ask for additional input.
3. Give each group a blank transparency, a transparency marker, and one of the questions from the worksheet “How Do Scientists Know?”. Have one student (a recorder) print the question at the top of the transparency. Ask the group to choose the group presenter.
4. Give the groups 10 minutes to discuss and write down their ideas on the transparency.
5. Go over the rules for this class discussion:
 - Each group presenter will be allowed to present the group’s information.
 - The group presenter will then call for questions and additional information from the rest of the class.
 - The presenter will call on students for their input.
 - The class is permitted to ask questions of the group — the presenter does not have to answer all questions.
 - The recorder will add additional information to the list.

6. Have each group bring their transparency to the overhead and explain their thinking. Each group can lead a short discussion about their question and ask the class for questions and additional information which they will add to their transparency.
7. After each group's discussion, the teacher should share any missing information.
8. Explain that scientific discoveries have added much to the study of history. Ask if any other subjects that the students study in school are used in the study of history. You may want to direct this discussion by suggesting particular disciplines. Answers could include: math (statistics and graphs), language arts (poetry, myths, folk tales, historical fiction, speeches, writing), sciences (climatology, archaeology, geology, biology), music (folk music, period music), dance (native, folk), technology (printing press, sextant), art (posters, historical depictions of events or times), and health (diseases).

ASSESSMENT

The student assessment for this activity is a participation grade.

Because background knowledge of this subject will vary, this is really a chance for the teacher to gauge the students' scientific background and to see how the students react to a lesson that requires critical and higher order thinking. You may also discover the interests of individual students through using this activity.

SUPPLEMENTAL RESOURCES

There are several excellent links in "The Natural History of North Carolina" that can be used with the class after the lesson. Alternatively, the teacher may direct individual students to these links after the lesson as their interest has been piqued.

Worksheet: How do scientists know?

1. How do scientists know the age of rocks and fossils?
2. How do scientists know the age of the earth?
3. How do scientists know when water appeared on the earth?
4. How do scientists know where the continents and oceans used to be?

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- **Objective 5.01:** Interpret ways in which rocks, fossils, and ice cores record Earth's geologic history and the evolution of life including:
 - Geologic Time Scale.
 - Index Fossils.
 - Law of Superposition.
 - Unconformity.
 - Evidence for climate change.
 - Extinction of species.
 - Catastrophic events.
 - **Objective 5.02:** Correlate evolutionary theories and processes:
 - Biological.
 - Geological.
 - Technological.
 - **Objective 5.03:** Examine evidence that the geologic evolution has had significant global impact including:
 - Distribution of living things.
 - Major geological events.
 - Mechanical and chemical weathering.

National Standards

In addition to meeting objectives of the North Carolina Standard Course of Study, this lesson plan addresses the following national standards.

NATIONAL GEOGRAPHY STANDARDS

Standard 2: How to use mental maps to organize information about people, places, and environments.

Standard 3: How to analyze the spatial organization of people, places, and environments on Earth's surface.

Standard 7: The physical processes that shape the patterns of Earth's surface.

Standard 8: The characteristics and spatial distribution of ecosystems on Earth's surface.

On the web

The natural history of North Carolina

<http://www.learnnc.org/lp/editions/nchist-twoworlds/1.2>

If the five billion years of the earth's history were condensed into a single day, humans would have arrived in North Carolina just two tenths of a second before midnight! This article summarizes the major biological and geological events in North Carolina's history and explains how the land and environment of today came to be.

More from LEARN NC

Visit us on the web at www.learnnc.org to learn more about topics related to this article, including .

Notes

1. See <http://www.learnnc.org/lp/editions/nchist-twoworlds/1.2>.
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About the author

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I am currently the Director of a Teaching American History Grant for Buncombe County Schools, Asheville City Schools, and Madison County Schools. I have taught history and English in the seventh and eighth grades for over twenty-six years at Reynolds Middle School in Asheville, North Carolina. I am currently doing adjunct work for Mars Hill College and Western Carolina University. I have a Masters Degree from Western Carolina University and am Nationally Board Certified in Early Adolescence/Social Studies-History. I am certified to teach K-12 and I also have Academically-Intellectually Gifted certification.