Pangaea Fossil Puzzle

MIDDLE GRADES SCIENCE NSPIRED

TEACHER NOTES

Science Objectives

- Students will analyze and interpret data on the distribution of fossils to provide evidence of continental drift.

Vocabulary

- continent
- fossil
- plates
- plate tectonics
- Pangaea

About the Lesson

- In this lesson students discover fossils at various locations on the earth's continents. As a result, students will:
  - Understand how scientists use fossil evidence to support the theory of continental drift.
  - Determine past locations of continents.

TI-Nspire™ Navigator™

- Send out the *Pangaea_Fossil_Puzzle.tns* file.
- Monitor student progress using Class Capture.
- Use Live Presenter to spotlight student answers.

Activity Materials

- Compatible TI Technologies: TI- Nspire™ CX Handhelds, TI-Nspire™ Apps for iPad®, TI-Nspire™ Software

Tech Tips:

- This activity includes screen captures taken from the TI-Nspire CX handheld. It is also appropriate for use with the TI-Nspire family of products including TI-Nspire software and TI-Nspire App. Slight variations to these directions may be required if using other technologies besides the handheld.
- Watch for additional Tech Tips throughout the activity for the specific technology you are using.
- Access free tutorials at http://education.ti.com/calculators/pd/US/Online-Learning/Tutorials

Lesson Files:

Student Activity

- Pangaea_Fossil_Puzzle_Student.doc
- Pangaea_Fossil_Puzzle_Student.pdf

TI-Nspire document

- Pangaea_Fossil_Puzzle.tns

Discussion Points and Possible Answers

Have students read the background information stated on their activity sheet and page 1.2 in the .tns file.

Move to page 1.3.

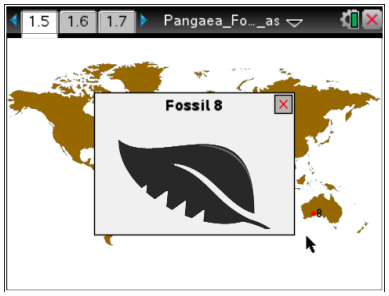
Have students answer question 1 in the .tns file, activity sheet, or both.

Q1. Similar fossils are found on the east coast of South America and the west coast of Africa. Brainstorm a list of explanations for this discovery

Sample Answer: The continents were once connected; There was a land bridge connecting the continents; The animals swam or flew across the water; The fossils were transported by natural or human forces.

Move to pages 1.4 - 1.5.

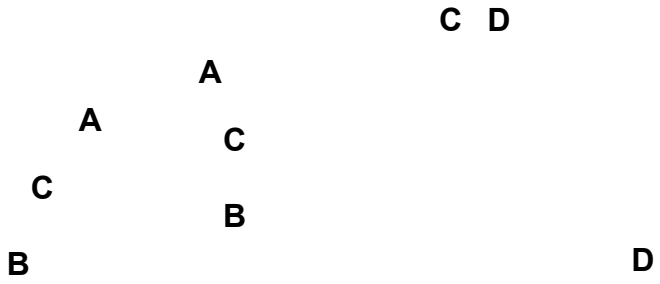
1. Students should select and drag the magnifier to the numbered fossil dig locations on the map to reveal the fossils at each site..

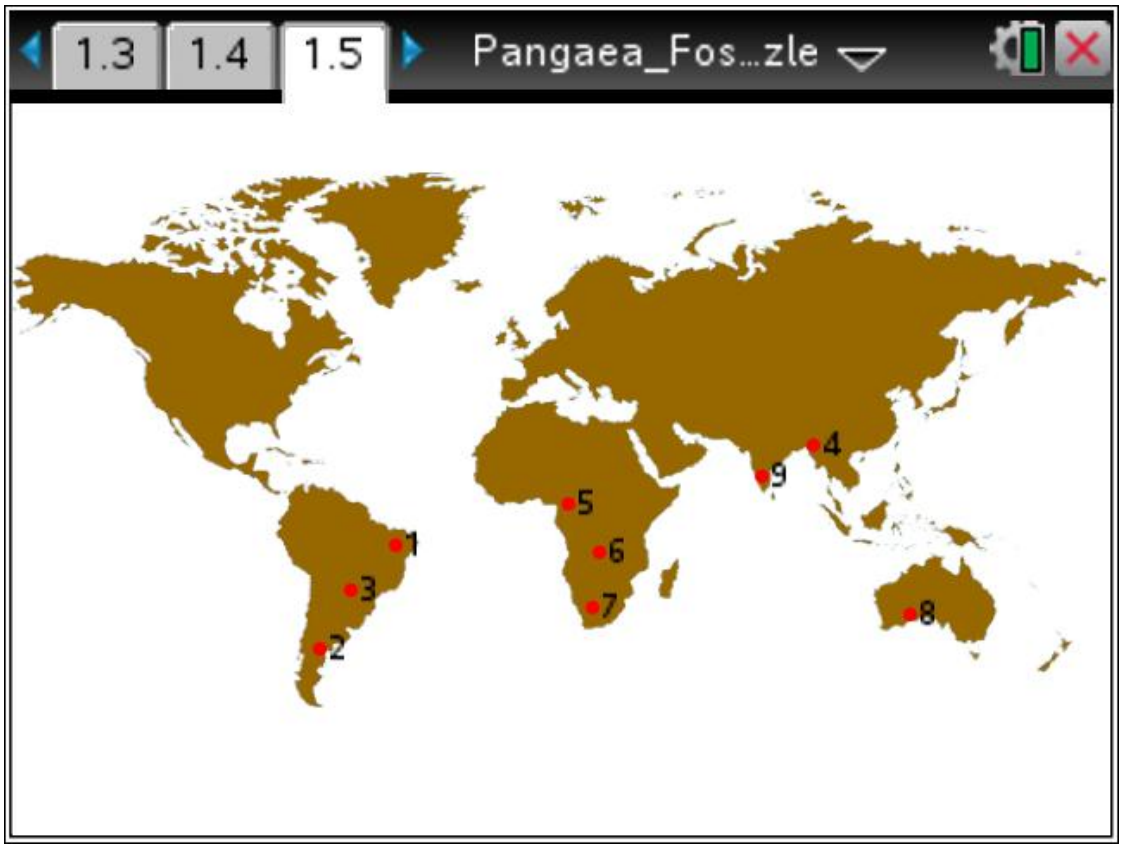


Tech Tip: To access the Directions again, select > **Pangaea Fossil Puzzle > Directions.**

Tech Tip: To access the Directions again, select menu or **Document Tools ( ) > Pangaea Fossil Puzzle > Directions.**

2. Students should record the fossil types found at each location on their student activity sheet. Students' evidence maps should look like this:





Place the letter corresponding to the fossil types below next to the fossil dig site where it was found on the map.

A

B

C

D

Move to pages 1.6 – 1.14.

Have students answer questions 2 - 10 on the device, the activity sheet, or both using their maps.

Q2. Which two continents have the most matching fossils between them?

Answer: South America and Africa

Q3. What do you notice about the coastlines of South America and Africa?

Sample Answer: They seem to fit together like parts of a jigsaw puzzle.

Q4. India has two fossils in common with: (Select all that apply.)

Answer: Australia, Africa, and South America

Q5. Based on the fossil evidence, to which continent was Australia most likely connected?

Answer: Eurasia

Q6. What evidence do you have that India was once connected with land masses other than Eurasia?

Sample Answer: The fossils in India match the fossils in Australia as well as the southern half of Africa.

Q7. Based on your fossil evidence, how would the discovery of fossils on continents separated by miles of ocean support Wegener's continental drift hypothesis?

Sample Answer: If the characteristics of the fossils suggested that the animals could not swim or fly, then it would be logical to think the continents would have been connected in some way for the animals to move between them.

Q8. Look at the picture of Fossil A. Does it look like it would be a good swimmer?

Answer: No

Q9. Look at the picture of Fossil B. Does it look like it would be a good swimmer?

Answer: No

Q10. Why would the fossil of an ocean fish found on two different continents NOT be good evidence of continental drift?

Sample Answer: In theory, an ocean fish could have been able to swim between the continents, so this would not support the idea that the continents were once connected as a single land mass.

TI-Nspire Navigator Opportunities

Make a student a Live Presenter to show how to move the magnifying glass and select different fossil sites. Throughout the activity, monitor student progress. At the end of the activity, collect the .tns file and save to Portfolio.

Wrap Up

When students are finished with the activity, retrieve the .tns file using TI-Nspire Navigator. Save grades to Portfolio. Discuss activity questions using Slide Show.

Assessment

- Formative assessment will consist of questions embedded in the .tns file. The questions will be graded when the .tns file is retrieved. The Slide Show will be utilized to give students immediate feedback on their assessment.
- Summative assessment could consist of questions/problems on the chapter test or a performance assessment involving collecting actual water quality data and analyzing it.