

EARTH SCIENCE Lesson Plan

Quarter 3, Week 1, Day 1



Outcomes for Today

Standard Focus: Earth Sciences

PREPARE

1. Background knowledge necessary for today's reading.

In the early 1900s scientists believed there were two competing theories explaining Earth's ancient geography. Alfred Wegener, a German scientist trained in meteorology and who also studied geography, geology and geophysics, proposed his own theory of continental drift, which stated that at one time the continents had been a single landmass, Pangaea. He theorized that the continents had broken apart and over time migrated to their present positions.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

continental drift

Pangaea

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 17.1, pp. 443-445

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- For at least 400 hundred years people have speculated about moving landmasses.
- Alfred Wegener used similar rock types of similar ages to suggest that the continents had once been a single landmass.
- Wegener also used fossil evidence to argue that some plant fossils had once grown in places that were close to the equator.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Continental Drift, Day 1

Procedure: Students map the locations of four different fossils and construct a model of what a Gondwanaland might have looked like

Discussion: Discuss Wegener's theory of Pangaea and DuTiot's theory of Laurasia and Gondwanaland.

Key question: What does the fossil evidence tell about the climate and environment of Gondwanaland?

Source:

<http://school.discoveryeducation.com/lessonplans/pdf/continentaldrift/continentaldrift.pdf>

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 1, Day 2



Outcomes for Today

Standard Focus: Earth Science

PREPARE

1. Background knowledge necessary for today's reading.

At the time Wegener proposed his theory of continental drift one of the competing theories was that land bridges had once connected the continents but later sank. Other scientists believed in the theory of permanence, which stated that the ocean basins were permanent and unchanging. Wegener was unable to convince the scientific community because he could not explain what caused the continents to move.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

coal

glacial deposits

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 17.1, pp. 446-447

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Wegener found evidence of climatic changes on some continents, such as glacial deposits, in Africa, India, Australia, and South America.
- Other scientists rejected Wegener's theory because he could not satisfactorily explain the cause of the continental movement.
- In the 1960s new evidence revealed a process to explain Wegener's theory.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Continental Drift, Day 2

Procedure: Continuation of yesterday's activities

Discussion: See Day 1

Key question: See Day 1

Source:

<http://school.discoveryeducation.com/lessonplans/pdf/continentaldrift/continentaldrift.pdf>

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 1, Day 3



Outcomes for Today

Standard Focus: Earth Sciences

PREPARE

1. Background knowledge necessary for today's reading.

Until advances in technology during the 1940s and 1950s many scientists thought the ocean crust was flat and unchanging. As previously noted in other chapters, the advent of sonar allowed scientists to study the ocean floor in greater detail. The use of magnetometers and sonar to create maps that showed topographic features that surprised scientists.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

magnetometer

magnetic fields

ocean ridges

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 17.2, pp. 448-450

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The Earth's deepest trench is in the Pacific Ocean, the Mariana Trench.
- The changes in the ages of rocks on the ocean floor vary in a predictable way.
- The thickness of ocean floor segments increases with distance from an ocean ridge.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: A Magnetic Personality

Procedure: Students will use a magnetometer to identify the magnetic field around a magnet

Discussion: Discuss the similarity of Earth's magnetic field to that of a bar magnet.

Key question: What do your observations show?

Source:

<http://stevekluge.com/geoscience/projects/nysic/magneticpersonality.doc>

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 1, Day 4



Outcomes for Today

Standard Focus

PREPARE

1. Background knowledge necessary for today's reading.

The Earth's core is thought to be composed of the elements of nickel and iron, acting as a geomagnetic dynamo. This creates an electric field which in turn creates a magnetic field.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

paleomagnetism magnetic reversal isochron

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch.17.2, pp. 451- 452

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Rocks like basalt contain iron-bearing minerals that provide a record of Earth's magnetic field.
- Magnetometers were used to create a geomagnetic time scale to compare continental basalt-flow data with ocean floor basalts.
- Magnetic patterns on the sea floor are symmetrical in relation to ocean ridges.

1. Post information to the billboard. Add new information to ongoing whole class projects.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: Magnetic Patterns: Ocean Floor Plotting

Procedure: Students use magnetic field data and a map of the ocean floor around Iceland to observe the direction magnetization varies

Discussion: Discuss magnetic reversals

Key question: How might this pattern have developed?

Source:

<http://www.chemsoc.org/networks.learnnet/jesei/magpat/home.htm>

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world

EARTH SCIENCE Lesson Plan

Quarter 3, Week 1, Day 5



Outcomes for Today

Standard Focus: Earth Sciences 3.a

PREPARE

1. Background knowledge necessary for today's reading.

Wegener was unable to satisfactorily answer how the continental landmasses moved but the theory of seafloor spreading proposed in 1962 by American Harry Hess did, more than 30 years after Wegener's death. Much like a conveyor belt moves, magma is forced up at ocean ridges and cools becoming part of the sea floor. It moves away from the center of the ridge as new sections are added until it eventually subducts at deep-sea trenches.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

seafloor spreading intrusion

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter.

4. Read directions for investigation/activity.

5. Read text.

Ch. 17.2, pp. 453-454

RESPOND

6. Fix the facts. Clarify what's important.

Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The compilation of topographic, magnetic, sedimentary, and age data lead to the theory of seafloor spreading.
- The theory of seafloor spreading answered the question of how the continents moved.
- The youngest crust is closest to the ocean ridges.

7. Post information on the billboard. Add new information to ongoing projects on the wall.

EXPLORE

8. Explore today's investigation with inquiry activities.

9. Explore today's simulation with inquiry activities.

10. Collect data and post.

One possible activity: The Distance between Us and Them: Seafloor Spreading in the Atlantic Ocean

Procedure: Students will use a strip map to calculate distances and spreading rates for sections of the seafloor.

Discussion: Discuss the concept that the ages of seafloor rocks become progressively older the further away from the mid-ocean ridges they are.

Key question: During which geologic period did the north Atlantic begin to form?

Source:

http://www.beloit.edu/~SEPM/Earth_Works/Sea_floor_spreading.html

EXTEND

11. Prompt every student to write a short product tied to today's reading.

12. Close with a short summary.

Extend the reading to the students' lives or to the world