

EARTH SCIENCE Lesson Plan

Quarter 2, Week 3, Day 1



Outcomes for Today

Standard Focus: Earth Sciences 5.a “Students know how differential heating of Earth result in circulation patterns in the atmosphere and oceans that globally distribute the heat” and 6.a “Students know weather (in the short run) and climate (in the long run) involve the transfer on energy into and out of the atmosphere.”

PREPARE

1. Background knowledge necessary for today’s reading.

Meteorology is the study of atmospheric phenomena. Atmospheric phenomena include precipitation, clouds, wind and rainbows. Weather refers to the current state of the atmosphere at particular moment at a given location.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today’s reading

meteorology

weather

climate

- 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.12.1, pp. 299-301

RESPOND

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

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

Students might mention:

- Climate is the average weather over a long period of time.
- Weather is different day to day because of the distribution of solar radiation on earth.

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: MiniLab – How does the angle the Sun's rays differ?, text p. 302

Procedure: Students will demonstrate how the angle of the Sun's rays affect the amount of solar energy received at different positions.

Discussion: Discuss how the angle at which the Sun's rays reaches the Earth's surface effect the amount of solar energy received.

Key question: How does the amount of solar energy received compare during summer and winter?

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 2, Week 3, Day 2



Outcomes for Today

Standard Focus: Earth Sciences 5.a and 6.a.

PREPARE

1. Background knowledge necessary for today's reading.

The study of meteorology is basically the study of Earth's heat balance. Air masses formed over different surfaces take on the characteristics of these surfaces. As they move from their source regions they are modified by the new surfaces they travel over.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

air masses

air mass modification

- 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. 12.1, pp. 301-304

RESPOND

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

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

Students might mention:

- Air masses that form over the land are drier than those formed over water.
- Air masses are classified according to their source regions.
- Air masses are modified as they travel away from their source regions.

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: Air Masses

Procedure: Students will use maps to locate and identify air masses

Discussion: Discuss how air masses are modified as they travel away from their source regions.

Key question: Where do air masses typically clash?

Source: [http://2010.atmos.uicu.edu/\(Gh\)/guides/crclm/act/arms.rxml](http://2010.atmos.uicu.edu/(Gh)/guides/crclm/act/arms.rxml)

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 2, Week 3, Day 3



Outcomes for Today

Standard Focus: Earth Sciences 5.a, 6.a and 5.b “*Students know the relationship between the rotation of the Earth and the circulation motions of ocean currents and air in pressure centers*”.

PREPARE

1. Background knowledge necessary for today’s reading.

Were there no land masses or rotation of the Earth, cool dense air from the poles would sink and move towards the warmer, less dense tropics. At the tropics, the warm air would be forced up by cooler air and flow towards the poles in a giant convection cell. In reality, the Earth’s rotation and the land masses modify the movement of air by what is known as the Coriolis effect.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today’s reading

Coriolis effect trade winds polar easterlies prevailing westerlies jet stream

- 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. 12.2, pp. 305-308

RESPOND

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

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

Students might mention:

- There are three basic zones of winds in each hemisphere.
- Each hemisphere also has belts of light winds that historically were problems for sailors.
- Global wind direction reverses in the southern hemisphere.

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 Coriolis Effect of Wind

Procedure: The Coriolis effect is demonstrated using a ball submerged in water.

Discussion: Discuss the role of the Coriolis effect in the formation of global wind currents.

Key question: How does the Coriolis effect affect air in the northern and southern hemisphere?

Source:

http://whyfiles.larc.nasa.gov/text/educators/activities/2001_2002/athome/coriolis_effect.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.

EARTH SCIENCE Lesson Plan

Quarter 2, Week 3, Day 4



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

The narrow area where two opposing air masses meet or collide is called a front. Fronts can be thousands of kilometers long and trigger sudden changes in the weather.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

cold front warm front stationary front occluded front

- 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.12.2, pp. 308-310

RESPOND

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

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

Students might mention:

- Colliding air masses can bring drastic changes in the weather.
- There are four different types of fronts.
- Each type of front is represented differently on weather maps.

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: Precipitation Along Fronts

Procedure: Students are introduced to how precipitation develops along fronts.

Discussion: Discuss the weather associated with warm and cold fronts.

Key question: How does the development of precipitation differ between cold and warm fronts?

Source: [http://2010.atmos.uicu.edu/\(Gh\)/guides/crcIm/act/fpr/rxml](http://2010.atmos.uicu.edu/(Gh)/guides/crcIm/act/fpr/rxml)

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 2, Week 3, Day 5



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

Rising or sinking air, combined with the Coriolis effect, results in the formation of rotating high- and low- pressure systems in the atmosphere. Air moves around the centers of these pressure systems in a circular pattern.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

Low pressure system

high pressure system

wave cyclone

- 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.12.2, pp. 310-311

RESPOND

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

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

Students might mention:

- In the northern hemisphere, winds in high pressure systems rotate in a clockwise motion. Winds in a low pressure system rotate in a counterclockwise direction.
- High pressure systems are generally associated with fair weather.
- Low pressure systems are often associated with clouds and precipitation.

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

8. Explore today's investigation with inquiry activities.
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9. Explore today's simulation with inquiry activities.
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10. Collect data and post.
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One possible activity: Pressure Activity

Procedure: Students are introduced to characteristics of pressure and high and low pressure centers.

Discussion: Compare and contrast a low-pressure system and a high pressure system.

Key question: Why are clashes between air masses more common in certain parts of the country?

Source: [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/crclm/act/prs.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/crclm/act/prs.rxml)

EXTEND

11. Prompt every student to write a short product tied to today's reading.
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12. Close with a short summary.
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Extend the reading to the students' lives or to the world.