

EARTH SCIENCE Lesson Plan

Quarter 2, Week 4, Day 1



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

In order to make forecasts, meteorologists must gather accurate weather data about temperature, wind, air pressure, and relative humidity using a variety of instruments, both close to the Earth's surface and in the upper atmosphere.

The National Weather Service has a network of approximately 1700 official weather observation sites that measure and record weather variables at least once every hour.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

thermometer barometer anemometer hygrometer celiometer

- 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. 12.3, pp. 312-313

RESPOND

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

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

Students might mention:

- Accuracy of data and the amount of data are two of the most important factors in weather forecasting.
- Data must be gathered at the same time in many different locations.
- The National Weather Service has a network of surface observation sites across the country.

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: Build Your Own Weather Station

Procedure: Students design and construct weather instruments of their choice.

Discussion: Discuss what each instrument measures and elicit suggestions for better designs.

Key question: What would be the advantage of having your own weather station?

Source:

<http://school.discoveryeducation.com/lessonplans/activities/weatherstation/index.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 4, Day 2



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

Currently the instrument of choice for gathering high atmospheric data is the radiosonde, a balloon-borne package of sensors. The ground-based instrument that tracks a radiosonde.

Also computes its range and angle by the minute. This process can be used to determine wind speed and direction at different atmospheric levels by triangulating the location of the station, the location of the radiosonde at the current minute, and its location at the previous minute.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

Radiosonde radar

Doppler effect

infrared imagery

- 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. 12.3, pp. 313-316

RESPOND

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

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

Students might mention:

- Sophisticated technology is needed to gather atmospheric data.
- Radar systems are used to gather data on precipitation.
- Weather satellites track clouds by sending photos back to Earth at regular intervals.

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: Interpreting Weather Symbols

Procedure: Students are introduced to common weather symbols and how to interpret current weather conditions on a map of surface observations.

Discussion: Review temperature, cloud cover, pressure and wind observations.

Key question: Given the data, can you create your own station model?

Source: [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/crclm/act/wx.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/crclm/act/wx.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 4, Day 3



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

Station models are used to plot meteorological data gathered from weather observations on maps used for individual cities or towns. Meteorological symbols are used to represent large amounts of data and gives meteorologists a uniform methods for communicating weather data.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

Station model

isopleths

isobars

- 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.

Read text: Ch. 12.4, p. 317-318

RESPOND

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

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

Students might mention:

- Station models provide information for individual sites.
- Isopleths are lines used to designate contact points of equal value.
- It is critical for meteorologists to understand current weather conditions in order to forecast the weather.

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: Weathering the Odds

Procedure: Students read and discuss the article "Weather Forecasters Look Ahead, Far Ahead" and develop their own forecasts for a region of the country.

Discussion: Discuss the commercial need for long range weather forecasts.

Key question: What would you consider "too inaccurate" to be considered a real forecast?

Source:

<http://www.nytimes.com/learning/teachers/lessons/20011113tuesday.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 4, Day 4



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

While sophisticated technology is used to gather atmospheric data meteorologists cannot possibly measure at the same time all levels of the atmosphere over the entire world.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

Digital forecast

analog forecast

- 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. 12.4, pp. 318-320

RESPOND

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

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

Students might mention:

- To be reliable, a forecast must analyze data from different levels in the atmosphere.
- High speed computers are used to interpret data for digital forecasts.
- The more data available, the more accurate the forecast.

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: Problem-Solving Lab, p. 318 of the text

Procedure: Students will analyze data on a surface weather map.

Discussion: Discuss the similarity of isobars to contour lines.

Key question: What types of weather are commonly associated with high- or low-pressure systems?

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 4, Day 5



Outcomes for Today

PREPARE

1. Background knowledge necessary for today's reading.

Physical features, both man-made and natural, affect the amount of heat absorbed in a particular location. This affects the pressure and wind, which affects cloud formation and other aspects of weather. All these contribute to the difficulties of predicting with accuracy weather projections over time.

2. Vocabulary Word Wall.

Introduce 3-5 important words from today's reading

extrapolation

- 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. 12.4, pp. 320-321

RESPOND

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

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

Students might mention:

- Hourly forecasts are the most reliable.
- One- to three-day forecasts can somewhat accurately predict whether the day will be dry or rainy.
- Projections of four- to seven-days can estimate each days weather, but with little detail.

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: Interpreting a Weather Map, Mapping GeoLab, p. 322-323 in the text

Procedure: Students will use station models, isobars, and pressure systems on a map to forecast with weather.

Discussion: Review station model symbols, the symbols for high- and low-pressure systems and fronts.

Key question: Based on the data from the map, would do you predict tomorrow's weather for your location will be?

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.