ILLINOIS WITHOUT THE ICE

Performance Standard 12E/11A.E

Students will apply the processes of scientific inquiry to analyze topographic features accordingly:

- *Knowledge*: Describe how changes in atmospheric climatic conditions can result in changes in the geological features of Earth over time.
- *Application*: Analyze historical data and other evidence on glaciation and atmospheric conditions (e.g., patterns of temperature changes and rainfall) and how they have affected the land and water features found in Illinois today.
- *Communication*: Prepare a report on how atmospheric conditions have affected the land and water features found in Illinois today.

Procedures

1. ***In order to know and apply concepts that describe the features and processes of Earth and its resources (12E) and the concepts, principles and processes of scientific inquiry (11A),*** students should experience sufficient learning opportunities to develop the following:
   - Construct an inquiry hypothesis associated with the effect of glaciation on topography.
   - Research pertinent sources of scientific information related to posed inquiry hypothesis.
   - Use scientific technologies to retrieve and communicate data about glaciation.
   - Prepare data tables, charts and visualizations.
   - Describe the effects of glaciation on Illinois' land features.
   - Synthesize data and interpret trends about effect of glaciers generally throughout the world and specifically with Illinois examples.
   - Analyze the interaction between atmospheric conditions and geologic features over an extended period of time.

   Note to teachers: This activity relates to knowledge associated with standard 12E, while addressing the performance descriptors for stage E within standard 11A. More information about this resource is available through the Illinois State Geologic Survey, on the campus of the University of Illinois, 615 E. Peabody in Champaign, 61820, http://www.isgs.uiuc.edu/isgsroot/isgshome.html Dr. Wayne Frankie can be contacted at 217/333-4747 for educational assistance. A student resource that focuses directly on the glacial activity that 'made' Illinois is found at: http://www.isgs.uiuc.edu/servs/pubs/geobits-pub/geobit2/geobit2.html
2. Have students review and discuss the assessment task and how the rubric will be used to evaluate their work.
3. Begin inquiry investigation by having students pose questions from their current understanding about the effect of climatic conditions on geologic formations around the world and specifically in Illinois. Provide access to glaciation resources from the National and Illinois State Geological Surveys and others, which can provide topographic information over broad time periods (to include pre and post Ice Age information.) It may be appropriate to divide the state into regions of greater and lesser glaciation evidence. Ask each student to prepare a 3 to 5 page report on "Illinois without the Ice". They may include:
   - Description of the climatic conditions and weather patterns during the Ice Age and how they affected the formation and eventual retreat of glaciers,
   - Description of how glaciers have affected the land and water features of Illinois and surrounding areas.
   - Analysis of how the land forms present today in Illinois affect weather patterns and vice versa.
   - Graphs and charts to display data related to the topic.
4. Have each student present his/her report to the class. As a class, synthesize the similar data and interpret the trends about the effect of glaciers generally throughout the world.
5. Evaluate each student's work using the Science Rubric as follows and add the scores to determine the performance level:
   - *Knowledge*: The descriptions of how changes in atmospheric conditions can result in geologic changes over time were complete and correct.
   - *Application*: The analysis of historical data and other evidence on glaciation and atmospheric conditions and how they have affected the land and water features found in Illinois today was thorough and accurate.
   - *Communication*: The report was well-organized, well-detailed and communicated the required elements clearly and effectively.

Examples of Student Work not available

Time Requirements

- 1-2 class periods for introduction; 2-5 class periods for research; 2-3 days for presentations and synthesis

Resources

- Library and Internet resources on glaciers and historical data on weather conditions
- Science Rubric