

ILLINOIS' HABITATS HAPPENING

Performance Standard 12B/11A/13B.H

Students will apply the processes of issue investigations as scientific inquiry to analyze Illinois-specific ecosystems and biomes and their local issues of resource acquisition/conservation/management and/or technological development, accordingly:

- *Knowledge*: Define the optimum and actual biome setting and conditions and change and stability factors within a local habitat.
- *Application*: Conduct an investigation of a local habitat/ecosystem which is facing an interaction impact dilemma.
- *Communication*: Report the findings of the issue investigation associated with the interactions within the local habitat from group work and individual reflections.

Procedures

1. *In order to know and apply concepts that describe how living things interact with each other and with their environment (12B), and apply the concepts, principles and processes of scientific (issue) inquiry (11A), and the concepts that describe how living things interact with each other and their environment (13B)*, students should experience sufficient learning opportunities to develop the following:

- Generate inquiry questions that addresses a local ecosystem or biome issue, associated with:
 - the interaction of resource acquisition, technological development and local ecosystem impact, and/or
 - natural resource conservation and management programs within a particular local ecosystem, and/or
 - the implications of change and stability in the local ecosystem or biome, and/or
 - specific species demise or success within this ecosystem or biome, and/or
 - the biogeography of Illinois with specific attention to its topographic features, population data, plant diversity and distribution, etc., and/or
 - scenarios of changes to the local ecosystem for near- and long-term future contingencies, etc.
- Collect and research pertinent qualitative and quantitative data, research and expert resources that address the selected local issue, including:
 - seasonal/annual data of ecosystem factors, and/or
 - estimates of interaction cost factors, etc.
- Select applicable conceptual, mathematical or physical models for utility.
- Design scientific issue investigation that addresses proposed inquiry questions.
- Propose applicable survey instruments to assess depth of informed opinions on issue.
- Select associated research, analysis and communication components for investigation.
- Use appropriate technologies for data collection and assimilation.
- Follow established formats for random sampling, if necessary.
- Follow all procedural and safety precautions and materials/equipment handling directions.
- Interpret and represent analysis of results.
- Evaluate data sets to explore explanations of unexpected responses and data concurrence.
- Evaluate survey validity and reliability.
- Analyze research and data for supporting or refuting the hypothesis of the inquiry investigation.
- Determine action response options to deal with issue in local context.
- Report, display and defend the process and findings of the investigation.
- Generate further questions or issues for additional consideration.
- Evaluate resolutions or responses for action for applicable correlations, consolidation or explanation.

Note to teacher: This activity relates to knowledge associated with standard 12B, while addressing the performance descriptors for stage H within standard 11A and 13B. Data for local ecosystems may be accessed from the county offices of the Association of Illinois Soil and Water Conservation Districts and the Illinois Department of Natural Resources, Illinois State Water, Geological and Natural History Surveys and county and municipal departments and agencies.

2. Have students review and discuss the assessment task and how the rubric will be used to evaluate their work.

3. Begin this investigation with foundational questions and information about ecosystems generally and Illinois' ecosystems specifically. Further specific details should follow relating to the local ecosystem, familiar to the students. Determine a local issue facing the citizens of the local ecosystem (such as subdivision development, groundwater contamination, local conservation policies, landfill closure, energy production, wildlife control, etc.) Devise group-work and individual assignments for the issue investigation including data gathering and analysis, model research and development, survey instrument creation, completion and analysis, and mechanism for reporting findings with student input. Present group or individual findings to classroom audience. Students should prepare journal entries for progress of investigation and foundations of ecosystem facts and applications. Individual submissions on the personal reflections as a citizen and future questions to consider should be collected.
5. Evaluate each student's work using the Science Rubric as follows and add the scores to determine the performance level:
 - *Knowledge*: The correlation of the foundational facts and the ecosystem interaction dilemma was defined thoroughly and with sufficient detail.
 - *Application*: The individual and group assignments for the issue investigation were well-constructed, well-organized, and met class-determined criteria for usefulness.
 - *Communication*: The group presentation was thorough, well-focused, well-detailed, and included all the required elements; individual reflections as a citizen and future questions presented a well-focused understanding of the issue and its possible resolution.

Examples of Student Work not available

Resources

- Access to local resources (materials, experts, etc.) about local ecosystem issue
- Science Rubric

Time Requirements

- 2-3 days for foundational understandings for issue investigation; 2 days for development of survey instrument; 1-2 weeks for investigation and preparation for presentations; 2-4 days for class presentations and resolution considerations; 1 day for personal reflection as a citizen.