

What on Earth?

Mod.1.1

TIME

30 minutes, weekly

OVERVIEW

Students infer and predict the purpose of an unfamiliar object through observation. This learning experience helps students to activate interest in inventions, develop questioning skills, and form conclusions based on evidence.

Note: Mod.1.1: What on Earth? can be revisited as an ongoing learning experience (OLE) throughout this *Inventions, Innovations, and Discoveries* interdisciplinary unit.

LEARNING OUTCOMES

Through this learning experience (LE), students will achieve specific learning outcomes (SLOs) in various subject areas. Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified.

English Language Arts

Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified below:

- 1.1.1 *Express Ideas* — Engage in exploratory communication to share personal responses, make predictions, and discover own interpretations.
- 1.1.2 *Consider Others' Ideas* — Select from others' ideas and observations to develop thinking and understanding.
- 1.2.1 *Develop Understanding* — Reflect on prior knowledge and experiences to arrive at new understanding.
- 1.2.2 *Explain Opinions* — Explain personal viewpoints in clear and meaningful ways and revise previous understanding.
- 1.2.4 *Extend Understanding* — Appraise ideas for clarity and ask extending questions; select from others' experiences and ideas to extend ways of knowing the world.
- 5.2.1 *Cooperate with Others* — Assist group members to maintain focus and complete tasks; identify and solve group process issues.
- 5.2.2 *Work in Groups* — Select and assume roles to assist in the achievement of group goals; engage in ongoing feedback.

Science

Consider the intent of this LE and your choice of instructional and assessment strategies to determine which SLOs students may achieve, in addition to those identified below:

- SLOs related to Scientific Inquiry or the Design Process in Cluster 0: Overall Skills and Attitudes.

ICT LITERACY SKILLS AND COMPETENCIES

Consider the intent of this LE and your choice of instructional and assessment strategies to determine which skills and competencies students may achieve, in addition to those identified below:

- basic operating skills
- communicating electronically
- ethical use of technologies

- inquiry using electronic sources
- web page authoring

SUGGESTED LEARNING RESOURCES

Software

- email
- web page authoring

Print

- Appendix C: Index of Teaching and Learning Strategies and Tools
- Manitoba Education and Training. *Success for All Learners: A Handbook on Differentiating Instruction: A Resource for Kindergarten to Senior 4 Schools*. Winnipeg, MB: Manitoba Education and Training, 1996. (See Exit Slips, 6.60.)

BLMs

- BLM Mod.1.1#1: What on Earth?
- BLM Mod.1.1#2: Group-Participation Checklist

Materials

- variety of unfamiliar objects
- digital camera
- digital microscope

SUGGESTIONS FOR INSTRUCTION

Preparation and Set-up

- Bring to class a variety of objects that will likely be unfamiliar to students.
- Alternatively, students could bring a variety of unfamiliar objects. (Hint: They could ask their grandparents to share something from their kitchen or tool shed.) Advise students not to disclose the purpose of their object to the rest of the class.
- Display each object for at least one day prior to inferring its purpose. Allow students time to speculate about the purpose of the object.

Activating Strategies

- An inference is a conclusion drawn from observation. Introduce the process of inferring by brainstorming with students for common occurrences around them.
Examples: Observation: There are puddles on the playground.
Conclusion: It probably rained.
Observation: The teacher gives me a stern look.
Conclusion: I probably did something I was not supposed to do.
- Point out that several inferences can sometimes be made from a single observation.
Examples: Observation: The book from my bag is wet.
Conclusions: My lunch drink spilled.
My bag is sitting in a puddle.
My bag was not zipped up when I walked in the rain.
- Introduce the use of the five senses to validate an observation, draw a conclusion, and make a prediction. Students brainstorm occurrences when their senses can help in making an observation and drawing a conclusion.
Examples: Observation: My wet book smells of apple juice.
Conclusion: It must have been my drink that spilled.

Observation: My wet book feels sticky.
 Conclusion: It must be juice and not water.

Acquiring Strategies

- Select and show one of the unfamiliar objects. Write down the questions that students brainstorm, as well as their observations.
Examples: What is it made of? It is metal and wood.
 Why is it this shape? It reminds me of a horseshoe.
 What is this knob used for? It looks like a handle.
 Why is it rusty / sharp / oily? Maybe it is used in water.
 How does it work? It looks like this part turns.
 Who might have used it? It looks like a kitchen gadget.
- Based on the recorded questions and observations, students take turns making inferences.
Examples: It has oil on it; therefore, it probably needs to turn smoothly.
 It has slots, so you probably insert another piece in there.
 These grooves probably make it turn or help it to attach to another piece.
- Using an Exit Slip, students write what they conclude the object must be and explain their prediction.
Examples: I think it is a woodworking tool because it has a sharp edge that could be used to chip wood. I have found a wood chip in a crack and the rounded knob on the tool looks like you could hammer on it to drive it through the wood.
- Share some Exit Slips with the class and discuss the suggested uses of the object, the validity of the conclusions, and the astuteness and accuracy of the observations. Discuss how students could have improved their inferences and their predictions.
- Tell students what the object really is and, if possible, show them how it works.

Applying Strategies

- Once a week, in collaborative groups, students investigate an unfamiliar object.
- Students use BLM Mod.1.1#1: What on Earth? to record their observations.
- Allow each group of students to ask the owner of the object two questions that might help them to predict the purpose of the object. Each collaborative group creates and decides on questions that will yield the most information.

Variations/Extensions

- When students have learned the use of a digital camera (see ICT.7: Caught in Action) and have created a web page for the class (see ICT.11: Make It: Creating an Effective Web Page), use the camera to take photographs of the object at several angles. Post these pictures on the class website. Add a Mail-to-Link and invite email responses from key pals or classes at a distance. Students take turns answering email messages that make predictions.
- Use a digital microscope to take a close-up photograph of a familiar object. Take different shots further and further away, at the same angle. Use these shots as progressive clues to assist students in identifying the object.

SUGGESTIONS FOR ASSESSMENT

- Read the Exit Slips to assess whether students understand the process of inferring and predicting.
- Read student work recorded on BLM Mod.1.1#1: What on Earth? Can students observe obvious details in objects? Do they make appropriate inferences? Can they draw conclusions and make predictions from their inferences?

- Observe group work using a checklist such as BLM Mod.1.1#2: Group-Participation Checklist.

CONNECTION TO INVENTION CONVENTION

- Students start to think differently when they learn to make accurate and detailed observations, draw inferences from their observations, and make predictions from their inferences. This LE helps them to consider different aspects, perspectives, and points of view. They also learn to work as a team.

BLM Mod.1.1#1: What on Earth?

Name _____ Date _____

What I See (My Observations)	What I Think It Means (My Inferences)
What I Conclude, Based on My Observations (My Predictions)	

BLM Mod.1.1#2: Group-Participation Checklist

Project _____ Date _____

Participation in Group Work	Student Names											
The student												
• demonstrates attentiveness												
• shows appreciation for others' ideas												
• recalls relevant information												
• clarifies ideas												
• provides feedback												
• asks relevant questions												
• takes turns												
• contributes ideas												
• describes concepts												
• includes everyone												
• paraphrases												
• elaborates												
• criticizes ideas, not people												
• disagrees politely												

Group-Participation Checklist: Adapted from *Grades 5 to 8 English Language Arts: A Foundation for Implementation* (Manitoba Education and Training BLM-55).