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Description automatically generated with medium confidenceInformal Assessments of Student Learning

**Assessment**



**What to do:** Review and try various ways to assess student learning during science (or other) activities. If you feel uncertain about how to implement an approach, ask your school-day partners to provide a quick demonstration or example.

**Why it matters:** Out-of-school time is about having fun while learning. Using approaches other than formal quizzes or tests to assess learning creates a relaxed experience. You may find that these options lead to discussions or questions that deepen student interest and learning.

# Asking Questions

Assessing student learning can be as simple as checking in with students and asking questions during activities. Questions are at the heart of the scientific process, and they’re an essential part of learning in general. Consider using prompts like these:

* What do you see/hear/smell/taste/feel?
* What do the data tell you?
* How do you know that?
* How does that connect to the question we’re trying to answer/explore?
* What are you learning?
* Is this interesting to you?
* What will you do next? How? Why?
* Should we consider collecting additional kinds of data? If so, tell me more.
* How do you think this will help scientists or others address the question or issue we’re exploring?

# Class Discussions

Similar to checking in with individual students (or groups of students) during an activity, engaging in class discussions is a great way to gauge students’ understanding and promote engagement. It can also help students develop speaking and presentation skills. During a science activity, consider using prompts related to the following topics:

* Students’ attitudes about science (e.g., anyone can be a citizen scientist, the importance of science to society, science as a collaborative process, recognizing the many unanswered questions in science, the value of curiosity in driving science)
* Students’ development of scientific process skills (e.g., experiences with making observations, asking questions, carrying out investigations, analyzing and interpreting data, constructing explanations, communicating findings)
* Students’ understandings related to specific projects (e.g., what they like, what they find challenging, next steps, questions they have, initial findings, explanations)

# Observation Rubrics

Observing students during activities can help you assess their learning and development of skills, and a rubric can help you define and score the elements you’re interested in. These elements may be related to students’ attitudes about science or another area, their development of skills, or other learning goals. There are many ways to create observation tools; see below for a simple example of a rubric that focuses on science.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Skill, Knowledge, or Attitude** | **Ability Level** | | | **Score** | **Notes** |
| **1 – Beginning** | **2 – Developing** | **3 – Exemplary** |
| Understanding that anyone can be a scientist and scientists don’t have all the answers. | * Gets easily frustrated by not knowing something and views it as a failure. * Doubts their abilities as a scientist and feels they have nothing worthwhile to contribute to scientific research. | * Gets frustrated by not knowing something, but demonstrates curiosity and persistence. * Acts excited to contribute to scientific research, but is not fully confident in their ability to do so. | * Gets excited by not knowing something and views it as an opportunity to explore unanswered questions. * Feels empowered by contributing to real scientific research. |  |  |
| Making observations. | * Requires significant guidance and prompting to make observations. * Observations aren’t always relevant to the question or project. * Requires step-by-step guidance or prompting to discuss, draw, or record observations. | * Requires some guidance and prompting to make observations. * Requires some guidance to determine whether observations are relevant to the question or project. * Requires some guidance or prompting to discuss, draw, or record observations. | * Focuses attention on senses, using tools to extend as appropriate. * Makes observations that are relevant to the question or project with minimal guidance or prompting * Discusses, draws, or records observations. |  |  |

# Scientist’s (or Expert’s) Notebook

Every scientist needs somewhere to record their burning questions, fascinating findings, and brilliant ideas. Have students document their progress throughout a project, either in a notebook or an electronic file. This supports their learning and also gives you a way to assess their learning.

# Culminating Event/Activity

Communicating your findings and reflecting on what you learned are critical parts of the scientific and learning processes, and holding an end-of-project celebration or activity can be a fun opportunity for students to communicate and reflect. Consider these ideas:

* **Presenting findings.** Being able to explain their findings to an audience is an important skill for students to develop. The audience may be other students in the program or the school, or it may include families, school leaders, community members, the city council, a local environmental organization, and others). You can explain the expectations to students and create an observation rubric based on the elements you want to assess (e.g., being able to tell why the project is important and relevant, describing and/or demonstrating how they collected data, and making connections to community or global issues).
* **Writing to a scientist.** Collaboration and communication are critical science skills. After completing a citizen science project, for example, you can have students write to the researchers who led the project you participated in. Depending on the project, you may be able to use the contact information provided, or you can look up contact information on the organization’s website. Students can write letters or send emails. Provide prompts for the content to include, such as a description of students’ experiences with the project, what they enjoyed about it, challenges they faced, questions they have, and recommendations for improving or expanding the project. Although a response is not guaranteed, the scientists working on the project will likely love to hear from your students and may write back!
* **Recruiting more citizen scientists to join the project.** Professional scientists use the citizen science approach because they can learn more by having many people collecting data. Your students may want to recruit their peers. This could involve giving presentations, writing letters, or creating advertisements. For example, students might create posters about the project, why they liked it, what they learned, and how others can join. Feature student products on your program or school website and in spaces such as hallways, the cafeteria, entryway, or other high-visibility areas. You can help build enthusiasm for science — and communicate that we can accomplish more together!

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