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Description automatically generated with medium confidenceScientific Inquiry Skills Checklist

**Checklist**



**What to do:** Review the list of skills on this page and select which ones to focus on during science activities. Then, use the student and class checklists that follow to assess student performance as you observe activities in progress.

**Why it matters:** Mastering scientific inquiry skills prepares students for success in school and throughout life. It gives them tools for exploring their world and solving problems.

**Tip:** You can make scientific inquiry skills part of almost any type of activity. For example, if students want to play soccer as a recreational activity, you can extend the learning into health and wellness by having them research and share the physical benefits of exercise, such as improvements in sleep patterns. Bring in math by having students collect, analyze, and graph data about the most successful angles for scoring goals or the best strategies for moving the ball down the field.

* **Making observations**
  + Focusing their senses to describe the item/experience of interest (e.g., a plant, photos of space, the area where goal shots are most successful), and using real-world tools and technologies to extend their senses (e.g., microscope, water test kit, video)
  + Making observations that are relevant to the question or project being explored
  + Discussing, drawing, or recording observations
* **Asking questions and forming hypotheses/making predictions**
  + Asking a variety of questions based on observations
  + Using background knowledge and logic to predict what they will find
  + Citing evidence from background research and/or observations to support predictions
* **Carrying out projects/investigations and collecting data**
  + Planning experiments/investigations to answer questions or following the design of an existing citizen science project
  + Following research procedures to collect accurate data
  + Organizing data (e.g., in a scientist’s notebook, on a website, or in an app used for a particular citizen science project)
* **Analyzing and interpreting data to construct explanations**
  + Identifying patterns or trends in data
  + Performing appropriate calculations (e.g., frequency, mode, mean) and determining how to organize and represent data (e.g., drawing, graphing)
  + Using data to describe findings or answer a question
* **Communicating findings**
  + Discussing findings and related implications, including engaging in scientific argumentation
  + Using multiple approaches (e.g., oral, written, visual) for communicating and explaining findings to an audience
  + Expressing enthusiasm to using data to report results and being part of a community helping to advance progress in science or another arena

# Individual Student Checklist

**Directions:** Select scientific inquiry skills you want your students to build and record indicators to look for (use the bullet points on the first page of this tool to help). As you observe students during activities, check off whether they exhibited the skill. There is also space to write comments, such as descriptions of what the student said/did to exhibit the skill or notes about their level of competency with the skill (e.g., beginning, developing, exemplary). Customize this checklist based on the number of skills you choose to include.

Student Name:

| **Scientific Inquiry Skill** | **Indicator(s)** | **Exhibited Skill** | | **Comments** |
| --- | --- | --- | --- | --- |
| Yes | No |
| Skill #1 |  |  |  |  |
| Skill #2 |  |  |  |  |
| Skill #3 |  |  |  |  |
| Skill #4 |  |  |  |  |
| Skill #5 |  |  |  |  |
| **Overall** | | /5 | /5 |  |

# Class Checklist

**Directions:** Select the scientific inquiry skills you want your students to build and record the indicators to look for (use the bullet points on the first page of this tool to help). As you observe students during activities, check off whether they exhibited the skill. There is also space for you to write comments, such as successes, challenges, or ideas for improvement. Customize this checklist to the number of skills and students you want to include.

| **Student** | **Skill #1** | **Skill #2** | **Skill #3** | **Skill #4** | **Skill #5** | **Overall** |
| --- | --- | --- | --- | --- | --- | --- |
|  | Indicator(s): | Indicator(s) | Indicator(s) | Indicator(s) | Indicator(s) |  |
| Student #1 |  |  |  |  |  | /5 |
| Student #2 |  |  |  |  |  | /5 |
| Student #3 |  |  |  |  |  | /5 |
| Student #4 |  |  |  |  |  | /5 |
| Student #5 |  |  |  |  |  | /5 |
| Student #6 |  |  |  |  |  | /5 |
| Student #7 |  |  |  |  |  | /5 |
| Student #8 |  |  |  |  |  | /5 |
| Student #9 |  |  |  |  |  | /5 |
| Student #10 |  |  |  |  |  | /5 |
| Student #11 |  |  |  |  |  | /5 |
| Student #12 |  |  |  |  |  | /5 |
| Student #13 |  |  |  |  |  | /5 |
| Student #14 |  |  |  |  |  | /5 |

Comments:

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