

Grade 4 Scientific Literacy: What the 2022-23 Provincial Assessment Revealed about Student Understanding

Provincial assessments are designed to discover what students understand about curricular outcomes and to identify the degree to which specific skills have been mastered at a given point in time. Assessment items, their correct responses and distractors are systematically constructed to pinpoint students' understandings and misconceptions. In addition to providing an overview of student performance at the provincial, district, and school level, the analysis of response patterns provided in this document has an application for classroom use.

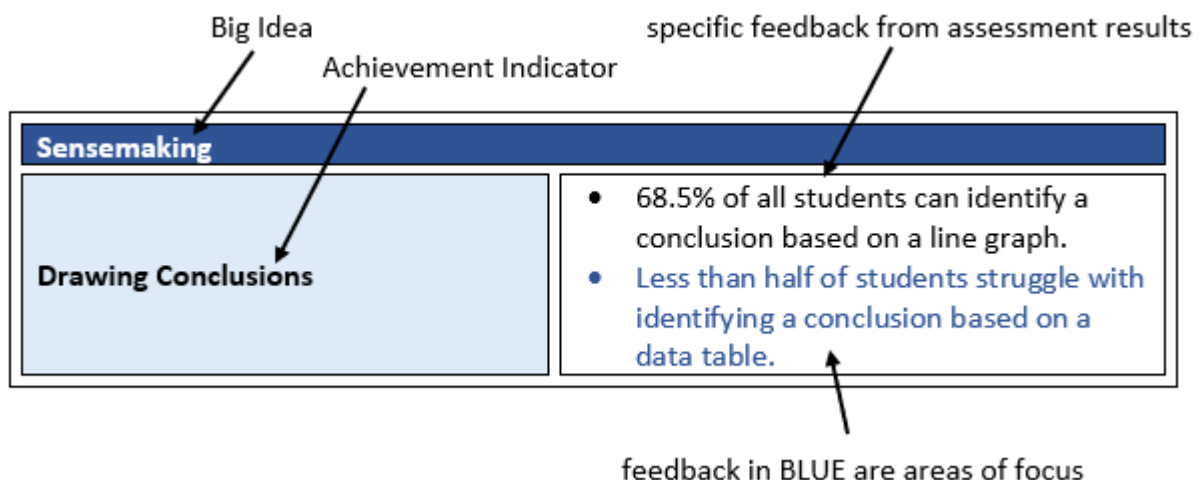
How to use this feedback for your classroom

The statements in the feedback section reflect the collective understanding of a large number of students at this grade level. This may include some or many of your students.

A checkpoint: This information can be applied to the development of your formative assessments to help you identify whether any of your students are missing the highlighted concepts.

Instructional design: Given the widespread nature of the gaps identified and the fact that some of the skills involved would have been included in the curricula of previous years, this information could be of assistance with multigrade planning.

Example:



In the example above, the first bullet reveals that 68.5% of students can identify a conclusion based on a line graph. The second bullet indicates a widespread misconception pertaining to the concept of a conclusion when it refers to a data table.

Investigation	
Propose Testable Questions/Problems	<ul style="list-style-type: none"> • 70.6% of students can identify a testable question written in standard form about familiar topics. • Some students struggle with the difference between a testable question and a general question.
Identify and Describe Variables	<ul style="list-style-type: none"> • 76.6% of students can identify the variable being measured in an investigation (dependent variable). • 81.7% of students can identify the variable being changed in an investigation (independent variable). • Some students struggle with the difference between a dependent and independent variable.
Fair Test	<ul style="list-style-type: none"> • 54.25% of all students are able to identify aspects of a fair test. • Many students struggle with the concept of a fair test.
Plan Investigations	<ul style="list-style-type: none"> • 86.1% of students can identify the appropriate tool for measurement. • More than half of all students struggled to identify the changes that would result in a fair test.
Appropriate Tools	<ul style="list-style-type: none"> • 81.8% of all students can select the appropriate scientific tool for a specific investigation. • Some students struggle to distinguish the difference between different measurement tools.
Collect and Represent Data	<ul style="list-style-type: none"> • 78.15% of all students can use a number line to find the measurement on a beaker or thermometer. • Most students struggle with the difference between an observation and prior knowledge. • Most students can find the mass of an object when given various weights.

Sensemaking	
Classify, Organize & Display Data	<ul style="list-style-type: none"> 82.1% of students can plot columns on a bar graph when given information in a data table. Most students can identify a bar graph that corresponds to a data table.
Analyze Data	<ul style="list-style-type: none"> 74.8% of students can analyze a data table and answer a question based on the information provided. 74% of all students can analyze a diagram and answer a question based on the information provided. Less than half of students struggle to find and use a pattern in a data table or chart.
Drawing Conclusions	<ul style="list-style-type: none"> 73.1% of all students can identify a conclusion when given the purpose and data for an experiment. Less than half of students struggled with identifying a conclusion based on the data provided.

Responsible and Sustainable Application	
Lab Safety	<ul style="list-style-type: none"> 94.7% of all students can identify safe and unsafe activities while doing a science experiment.
Opinion versus Facts	<ul style="list-style-type: none"> 83.1% of strong students were able to distinguish between opinions versus facts. Most students struggle with the differences between a fact and an opinion.
Responsible use of Earth Materials	<ul style="list-style-type: none"> 74.0% of all students can identify human actions which can be harmful to the environment. Some students struggle with specific actions which may harm the earth.

