

Science – Grade 8, 2022

Nature of Science

GCO: Students will use scientific inquiry and technological design skills to solve practical problems, communicate scientific ideas and results, and make informed decisions while working collaboratively.

SCO: Students will ask questions about relationships between and among observable variables to plan investigations (scientific inquiry and technological problem-solving) to address those questions.

4 - Excelling	3 - Meeting	2 - Approaching	1 - Working Below
The science learner independently and consistently asks questions that arise from careful observation of phenomena, models or unexpected results.	The science learner generally asks questions that arise from careful observation of phenomena, models or unexpected results.	The science learner sometimes (or with support) asks questions that arise from careful observation of phenomena, models or unexpected results.	The science learner rarely asks questions that arise from careful lead to investigations.
The science learner independently and consistently determines variables (e.g. dependent, independent and control) to formulate a hypothesis or states the problem statement for a practical problem.	The science learner generally determines variables (e.g. dependent, independent and control) to formulate a hypothesis or states the problem statement for a practical problem.	The science learner sometimes (or with support) determines variables (e.g. dependent, independent and control) to formulate a hypothesis or states the problem statement for a practical problem.	The science learner rarely determines variables to formulate a hypothesis or states a problem statement for a practical problem.
The science learner independently and consistently selects appropriate tools, materials and equipment to carry out a fair test or test a prototype.	The science learner generally selects appropriate tools, materials and equipment to carry out a fair test or test a prototype.	The science learner sometimes (or with support) selects appropriate tools, materials and equipment to carry out a fair test or test a prototype.	The science learner rarely selects appropriate equipment to carry out a fair test or solve a technological problem.
The science learner independently and consistently develops (with guidance) investigation procedures for a fair test or designs a solution to a practical problem.	The science learner generally develops (with guidance) investigation procedures for a fair test or designs a solution to a practical problem.	The science learner sometimes (or with support) develops (with guidance) investigation procedures for a fair test or designs a solution to a practical problem.	The science learner rarely develops scientific procedures or design plan for a technological solution.

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GCO: Students will use scientific inquiry and technological design skills to solve practical problems, communicate scientific ideas and results, and make informed decisions while working collaboratively.

SCO: Students will collect and represent data using tools and methods appropriate for the task.

4 - Excelling	3 - Meeting	2 - Approaching	1 - Working Below
The science learner independently and consistently performs a systematic experimental procedure to test a hypothesis or executes plan to build a prototype.	The science learner generally performs a systematic experimental procedure to test a hypothesis or executes plan to build a prototype.	The science learner sometimes (or with support) performs a systematic experimental procedure to test a hypothesis or executes plan to build a prototype.	The science learner rarely performs a logical procedure to test a hypothesis or build a prototype.
The science learner independently and consistently applies scientific ideas or principles to test a design (e.g., object, tool, process, system).	The science learner generally applies scientific ideas or principles to test a design (e.g., object, tool, process, system).	The science learner sometimes (or with support) applies scientific ideas or principles to test a design (e.g., object, tool, process, system).	The science learner rarely applies scientific ideas or principles to the design process.
The science learner independently and consistently uses tools and equipment appropriately (proper handling, transport, etc.) in an investigation.	The science learner generally uses tools and equipment appropriately (proper handling, transport, etc.) in an investigation.	The science learner sometimes (or with support) uses tools and equipment appropriately (proper handling, transport, etc.) in an investigation.	The science learner rarely uses tools and equipment appropriately in an investigation.
The science learner independently and consistently records qualitative and quantitative data using tools as appropriate.	The science learner generally records qualitative and quantitative data using tools as appropriate.	The science learner sometimes (or with support) records qualitative and quantitative data using tools as appropriate.	The science learner rarely records appropriate data.
The science learner independently and consistently develops a model to show the relationships amongst variables.	The science learner generally develops a model to show the relationships amongst variables.	The science learner sometimes (or with support) develops a model to show the relationships amongst variables.	The science learner rarely develops a model to demonstrating relationship.

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GCO: Students will use scientific inquiry and technological design skills to solve practical problems, communicate scientific ideas and results, and make informed decisions while working collaboratively.

SCO: Students will analyse and interpret qualitative and quantitative data to construct explanations.

4 - Excelling	3 - Meeting	2 - Approaching	1 - Working Below
The science learner independently and consistently evaluates the accuracy of various methods for collecting data.	The science learner generally evaluates the accuracy of various methods for collecting data.	The science learner sometimes (or with support) evaluates the accuracy of various methods for collecting data.	The science learner rarely <ul style="list-style-type: none"> evaluates the accuracy methods for collecting data.
The science learner independently and consistently constructs graphical displays (e.g., drawings, charts, maps, tables, and graphs).	The science learner generally constructs graphical displays (e.g., drawings, charts, maps, tables, and graphs).	The science learner sometimes (or with support) constructs graphical displays (e.g., drawings, charts, maps, tables, and graphs).	The science learner rarely constructs graphical representations.
The science learner independently and consistently applies concepts of probability and statistics (e.g., mean, median, mode, and variability).	The science learner generally applies concepts of probability and statistics (e.g., mean, median, mode, and variability).	The science learner sometimes (or with support) applies concepts of probability and statistics (e.g., mean, median, mode, and variability).	The science learner rarely applies concepts of statistical thinking.
The science learner independently and consistently identifies possible sources of error.	The science learner generally identifies possible sources of error.	The science learner sometimes (or with support) identifies possible sources of error.	The science learner rarely identifies sources of error.
The science learner independently and consistently draws a conclusion based on evidence gathered from scientific experiment or testing of the designed solution.	The science learner generally draws a conclusion based on evidence gathered from scientific experiment or testing of the designed solution.	The science learner sometimes (or with support) draws a conclusion based on evidence gathered from scientific experiment or testing of the designed solution.	The science learner rarely draws a conclusion based on evidence collected.

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GCO: Students will use scientific inquiry and technological design skills to solve practical problems, communicate scientific ideas and results, and make informed decisions while working collaboratively.

SCO: Students will work collaboratively on investigations to communicate conclusions supported by data.

4 - Excelling	3 - Meeting	2 - Approaching	1 - Working Below
The science learner independently and consistently works cooperatively to examine own knowledge or knowledge of peers.	The science learner generally works cooperatively to examine own knowledge or knowledge of peers.	The science learner sometimes (or with support) works cooperatively to examine own knowledge or knowledge of peers.	The science learner rarely works cooperatively to examine own knowledge.
The science learner independently and consistently chooses a format of communication appropriate to purpose (e.g., reports, data tables, scientific models, etc.).	The science learner generally chooses a format of communication appropriate to purpose (e.g., reports, data tables, scientific models, etc.).	The science learner sometimes (or with support) chooses a format of communication appropriate to purpose (e.g., reports, data tables, scientific models, etc.).	The science learner rarely chooses appropriate communication method.
The science learner independently and consistently discusses procedures, results and conclusions of investigations using appropriate scientific terminology.	The science learner generally discusses procedures, results and conclusions of investigations using appropriate scientific terminology.	The science learner sometimes (or with support) discusses procedures, results and conclusions of investigations using appropriate scientific terminology.	The science learner rarely discusses investigations using appropriate scientific terminology.
The science learner independently and consistently discusses the design process leading to the solution using appropriate technological terminology.	The science learner generally discusses the design process leading to the solution using appropriate technological terminology.	The science learner sometimes (or with support) discusses the design process leading to the solution using appropriate technological terminology.	The science learner rarely discusses the designed solution using technological terminology.
The science learner independently and consistently communicates answers to questions or solutions to problems based on evidence.	The science learner generally communicates answers to questions or solutions to problems based on evidence.	The science learner sometimes (or with support) communicates answers to questions or solutions to problems based on evidence.	The science learner rarely communicates understandings based on evidence.

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Learning and Living Sustainably

GCO: Students will demonstrate an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

SCO: Students will consider factors that support responsible application of scientific and technological knowledge and demonstrate an understanding of sustainable practices.

4 - Excelling	3 - Meeting	2 - Approaching	1 - Working Below
The science learner independently and consistently follows guidelines for safe use of equipment to conduct a scientific experiment.	The science learner generally follows guidelines for safe use of equipment to conduct a scientific experiment.	The science learner sometimes (or with support) follows guidelines for safe use of equipment to conduct a scientific experiment.	The science learner rarely follows science safety guidelines.
The science learner independently and consistently follows guidelines for safe use of tools to build a prototype of a solution.	The science learner generally follows guidelines for safe use of tools to build a prototype of a solution.	The science learner sometimes (or with support) follows guidelines for safe use of tools to build a prototype of a solution.	The science learner rarely follows technology safety guidelines.
The science learner independently and consistently uses science and technological knowledge to consider issues.	The science learner generally uses science and technological knowledge to consider issues.	The science learner sometimes (or with support) uses science and technological knowledge to consider issues.	The science learner rarely uses science and technological knowledge to consider issues.
The science learner independently and consistently reflects on various aspects of an issue to make decisions about possible actions.	The science learner generally reflects on various aspects of an issue to make decisions about possible actions.	The science learner sometimes (or with support) reflects on various aspects of an issue to make decisions about possible actions.	The science learner rarely makes decisions about action to take.

Evidence of Learning: Suggested Sources

Observations:

- Observe students during “warm up” activities
- Observe students during experiments
- Observe students during group work
- Observe student presentations and demonstrations
- “Gallery” walks

Conversations (oral/written):

- Conferences
- Interviews
- Whole class and group discussions
- Science journal entry
- Exit slips (written responses)
- Self- and peer assessment and reflection

Products:

- Quizzes (oral/written)
- Projects
- Tests
- Work samples
- Exit slips or other responses to questions
- Science journal entry
- Photos of student’s work
- Group problem solving records
- Portfolios