

Scientific Inquiry

	Level 3	Level 4
Knowledge		
Understanding of Concepts	Student demonstrates considerable understanding of science concepts related to the topic.	Student demonstrates thorough understanding of science concepts related to the topic.
Skills		
Initiating and Planning <ul style="list-style-type: none"> • Posing questions • Designing inquiry 	Student identifies a topic-related question to answer, a practical problem to solve, or an issue having societal or environmental implications.	Student clearly identifies and refines a topic-related question to answer, a practical problem to solve, or an issue having societal or environmental implications.
	Student researches and evaluates multiple sources of information related to the problem.	Student researches and evaluates multiple sources of information related to the problem, considers different perspectives, and identifies bias in information.
	Student poses a testable question, identifies variables, and develops a working hypothesis.	Student poses a testable question, identifies variables and possible relationships, and develops a working hypothesis.
	Student develops a written plan of procedures with most materials included.	Student understands the need for, and develops, a comprehensive written plan with detailed procedures, including materials, to safely guide the inquiry.
Performing and Recording <ul style="list-style-type: none"> • Data collecting • Data recording 	Student safely implements his/her own written plan with guidance.	Student safely implements his/her own written plan independently.
	Student collects and records data safely using various tools and techniques.	Student collects and records appropriate data safely using various tools and techniques.
	Student organizes data in a form appropriate to the task.	Student organizes and displays data using various modes of representation appropriate to the task.
	Student assesses inquiry plan, prototype construction, or options to develop plan of action.	Student assesses and refines inquiry plan, prototype construction, or clarifies options to develop plan of action.
Analyzing and Interpreting <ul style="list-style-type: none"> • Identifying patterns in data • Graphing • Proposing explanations 	Student identifies patterns and relationships within the data that relate to problem, prototype, or issue.	Student identifies patterns and relationships in the data and correctly relates them to problem, prototype, or issue.
	Student understands the need for evidence to develop knowledge in science.	Student clearly understands the need for evidence, ideally quantitative, to develop knowledge in science.
	Student proposes explanations of patterns and relationships within the data.	Student correctly proposes explanations of all relevant patterns and relationships within the data.
	Student makes new prediction based on data, suggests improvements to the prototype, or critically assesses the decision or plan of action.	Student makes an insightful prediction based on data, suggests effective improvements to the prototype, or assesses the decision or plan of action considering science concepts.

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	Student understands the need to consider societal and environmental factors in proposing explanations, developing technologies, or recommending solutions.	Student understands and incorporates societal and environmental factors in proposing explanations, developing technologies or recommending solutions.
Communication and Teamwork <ul style="list-style-type: none"> • Stating conclusion • Sharing results 	Student uses conventions, vocabulary, and terminology in various media, to communicate results.	Student effectively uses conventions, vocabulary, and terminology in various appropriate media, to communicate results.
	Student expresses and organizes ideas and information taking audience or purpose into consideration.	Student effectively expresses and organizes ideas and information taking audience and purpose of project into consideration.
	Student collaborates with classmates throughout most of the inquiry, contributing effectively to the team and listening to the contributions of others.	Student collaborates with classmates through the entire inquiry process, contributing positively to the team and encouraging and respecting the contributions of others.
STSE		
Nature of Science and Technology	Student demonstrates considerable recognition that science knowledge results from systematic testing of ideas.	Student demonstrates a high degree of recognition that science knowledge results from systematic testing of ideas.
Social and Environmental Contexts of Science and Technology	Student includes social connections and environmental considerations in communicating the results of the inquiry.	Student includes social connections and environmental considerations and recognizes the need for peer acceptance of findings.
Attitudes		
Interest in Science <ul style="list-style-type: none"> • Obtaining hands-on experience • Observing during class and on field trips • Reading, watching, listening 	Student demonstrates curiosity in the content area, in familiar and unfamiliar contexts, with considerable effectiveness.	Student demonstrates curiosity in the content area, in familiar and unfamiliar contexts, with a high degree of effectiveness.
Inquiry in Science	Student recognizes the need for evidence that either supports or refutes the hypothesis or purpose.	Student recognizes the need for accuracy, precision, and honesty in collecting relevant evidence to support or refute the hypothesis or purpose.
Collaboration <ul style="list-style-type: none"> • Co-operating with classmates 	Student contributes and listens to group throughout the inquiry process.	Student contributes to group and considers and builds on the contribution of other members throughout the inquiry process.
Safety <ul style="list-style-type: none"> • Considering self and other students • Considering plants and animals 	Student demonstrates concern for safety with respect to self, other students, and/or live specimens, including use of protective devices as appropriate.	Student demonstrates high degree of recognition of need for safety in planning and carrying out procedures for self, other students, and/or live specimens.

Saskatchewan Science. Don Mills, ON: Pearson. Pages 77, 78, 85-88. ISBN 978-0-13-289342-8

