Manitoba Report Card Grade Scale—Science Achievement Profiles (Grades 1 to 8)
Subject Category: Design Process and Problem Solving

Category indicator	Extent to which the student is meeting grade-level* learning outcomes, across the provincial report card grading scale				
	Not demonstrated (ND)	**Limited (1)**	**Basic (2)**	**Good (3)**	**Very good to excellent (4)**
Engages in science practices[1] to solve design problems, and communicates problem-solving processes. Practices related to the design process include ▪ identifying and defining practical problems ▪ research, planning, and choosing a solution ▪ constructing and testing the model or prototype ▪ evaluating and optimizing the solution[2]	Does not yet demonstrate the required understanding and application of concepts and skills.	Requires considerable, ongoing teacher[3] support to ▪ apply strategies to solve practical problems and to explain reasoning ▪ use scientific vocabulary ▪ use criteria or constraints to define a problem and evaluate the chosen solution ▪ recognize when changes need to be made to a plan ▪ work collaboratively with peers	Requires occasional teacher or peer support to ▪ apply strategies to solve practical problems and to explain reasoning ▪ use scientific vocabulary ▪ use criteria or constraints to define a problem and evaluate the chosen solution ▪ recognize when changes need to be made to a plan ▪ work collaboratively with peers	Applies appropriate strategies to solve practical problems; requires occasional prompting to recognize when changes need to be made to a plan. Explains and justifies reasoning using appropriate science vocabulary, and generalizes to similar contexts; requires occasional prompting for clarification. Collaborates effectively with peers.	Demonstrates flexibility, resilience, and creativity when solving practical problems; critically analyzes results and makes any necessary changes to a plan. Explains and justifies reasoning clearly using appropriate science vocabulary and generalizes to other contexts. Collaborates effectively with peers, often taking a key role in group work.
Applies science knowledge to seek solutions to practical problems.		Requires considerable, ongoing teacher support to make connections between science concepts and design. Shows limited application of science concepts to help solve a problem.	Requires occasional teacher or peer support to make connections between science concepts and design. Occasionally provides incomplete explanations of science concepts needed to solve a problem.	Applies science concepts to solve problems using criteria and/or constraints. Explanations of science concepts needed to solve the problem are organized and complete.	Applies appropriate science concepts efficiently and accurately to analyze problems and choose the best solution with regard to criteria and/or constraints. Explanations of science concepts needed to solve the problem are clear, comprehensive, and logical.

[1] The use of the term *science practices* indicates that the skills and attitudes related to the design process and science inquiry are not separate from science concepts. Students engaging in the design process simultaneously use both knowledge and skills, which deepens their understanding of concepts.

[2] Depending on the grade level, students are not necessarily expected to independently engage in all aspects of the design process. For these levels, student independence refers to the degree to which a student participates in and contributes to the processes (with the class or within a small group) without teacher prompting or assistance. Specific learning outcomes specify what constitute grade-appropriate levels of independence.

[3] Teacher support may include an educational assistant, resource teacher, et cetera, as directed by the teacher.

*Grades are based on what is developmentally appropriate for the time of year toward attaining end-of-grade learning outcomes or learning outcomes described in an individual education plan. References in the table to "support," "prompt," et cetera, do **not** refer to adaptations defined as "a change in the teaching process, materials, assignments or pupil products to assist a pupil to achieve the expected learning outcomes" (Manitoba Education and Training, www.edu.gov.mb.ca/k12/specedu/programming/adaptation.html).