Mighty Mining Machines

Quebec	
Cycle Three (Elementary)	
Material World	
Competencies:	Competency 1: To propose explanations for or solutions to scientific or technological problems. • Use of an approach geared to the nature of the problem or set of problems Competency 2: To make the most of scientific and technological tools, objects and procedures. • Design and making of instruments, tools or models
Key Features:	Forces and Motion • Effects of a force on the direction of an object (e.g. pushing, pulling) • Combined effects of several forces on an object (e.g. reinforcement, opposition Systems and Interaction • Simple machines (e.g. lever, inclined plane, screw, pulley, winch) • How manufactured objects work (e.g. materials, shapes, functions) Techniques and Instrumentation • Use of simple machines • Use of tools (e.g. pliers, screwdriver, hammer, wrench, simple template) • Design and manufacture of instruments, tools, machines, structures (e.g. bridges, towers), devices (e.g. water filtration device), models (e.g. glider) and simple circuits
Cycle One (Secondary I & II)	
The Technological World	
Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems. • Development of a suitable procedure for the situation
Compulsory Concepts:	Technological Systems • System (overall function, inpits, processes, outputs, control) • Energy transformation Forces and Motion • Simple machines

Cycle Two (Secondary III)	
The Technological World	
Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems. • Development of a suitable plan of action for the situation • Appropriate implementation of the plan of action
Compulsory Concepts:	Engineering • Functions, components and use of motion transmission systems (friction gears, pulleys and belt, gear assembly, sprocket wheels and chain, wheel and worm gear) • Functions, components and use of motion transformation systems (screw gear system, cams, connecting rods, cranks, slides, rotating slider crank mechanisms, rack-and-pinion drive)
Cycle Two (Secondary IV)	
The Technological World	
Competencies:	Competency 1: Seeks answers or solutions to scientific or technological problems. • Development of a suitable plan of action for the situation • Appropriate implementation of the plan of action
Compulsory Concepts:	Mechanics • Construction and characteristics of motion transmission systems (friction gears, pulleys and belt, gear assembly, sprocket wheels and chain, wheel and worm gear) • Construction and characteristics of motion transformation system (screw gear system, cams, connecting rods, cranks, slides, rotating slider crank mechanisms, rack-and-pinion drive)