

Subject-Group Overviews: Science

Created in the Late Fall of 2014 at Rochester Montessori School, revised June 2016

Year One, Grade 6

Unit Name	Key Concept	Related Concepts	Global Context	Statement of Inquiry	Objectives	ATL Skills	Content
Earth Science- Observation in the Environment	Relationships	Environment, Energy	Orientation in Time and Space	Through observation and data collection, the connection between organisms, their environment, and water use are apparent throughout time and space.	A, B	Thinking Skills, Communication, Self-Management, Research	The learner will integrate observation skills, Eagle Bluff experiences, and watershed research to create a Powerpoint to share.
Engineering Tools	Change	Transformation, function, interaction	Scientific and Technological Innovation	Humans have been transforming materials and the environment around them to solve scientific and technological problems through the use of the design process throughout all of time.	B, C	Thinking, Self-Management, Research, Social, Communication	The learner will review the timeline of early humans and the engineering of tools and then create a model of an early human tool.
Science Fair	Communication	Evidence, Interaction	Scientific and Technical Innovation	Communicating scientific results based on evidence through interactions with others allows for a transfer of knowledge between	B,C	Creative Thinking, Organizational, Media Literacy, Collaboration, Communication	The learner will create and conduct an experiment and share their results at a

				individuals.			science fair.
*Preservation of the Species	Relationships	Balance	Globalization and Sustainability	In order to ensure the sustainability of our planet, it is vital that we notice the relationships between plants and animals, and between plants and humans, and work to keep the natural world in balance.	A, D	Communication, Research, Thinking	The function of the reproduction of plants, relationships between plants and animals, the importance of human stewardship toward the natural botanical world.
*Circulation, Respiration, Nutrition: A Combined Study	Relationships	Balance	Globalization and Sustainability	identify relationships among living things by comparing the functions of their body systems.	A, D	Communication, Research, Thinking	<p>Vocabulary: Systems, functions, nutrition, ingest, digest, egest, excrete, respiration, inhale, exhale, cellular respiration, circulation, veins, arteries, capillaries, open system, closed system.</p> <p>Big ideas: How systems and functions differ yet are connected.</p>

							A dry animal is a dead animal. Ethics in research
* Evolutionary Chemistry	Change	Conditions	Scientific and Technical Innovation: Principles and Discoveries	Changing conditions affect the state of matter; this leads to future scientific discoveries.	A, C	Research, Thinking,	The Learner will complete an end-of-unit exam that will address all strands of objective A. They will create their own model of an element or their own symbol of an element. They must be able to explain the structure of their model or image, including a historical overview of how earlier models morphed into the one they have designed.
RMS Carbon Reduction Plan	Change	Environments, Patterns	Globalization and Sustainability	Exploring the changes and patterns of our planet will show how humans can help to sustain the environment.	A,D	Category... Thinking Cluster... Critical thinking Category... Research Cluster... Informational literacy	Ecosystems, Greenhouse Gasses, Ozone Layer, Atmosphere, Smog, Greenhouse

							Effect, Methane, Deforestation
Robotics							

*3 Year Rotation of Lessons

Years Two/Three, Grades 7/8: YEAR A

Unit Name	Key Concept	Related Concepts	Global Context	Statement of Inquiry	Objectives	ATL Skills	Content
I-Machine	Relationships	Function and Movement	Scientific and Technical Innovation	The movement and function of innovative machines will define their relationship to humans.	A C	Communication Skills and Research Skills	-Newton's Laws of Motion -Types of energy -Speed and Velocity -Metric conversions -Simple machines
Planet Earth:	Change	Environment and Models	Orientation in Space and Time	Over time an environment will change in many ways.	A D	Research Skills and Thinking Skills	-Plate tectonics -Rock cycle -Rocks and Minerals -Water cycle -Global warming / greenhouse effect -Types of volcanoes

							<ul style="list-style-type: none"> -Earthquakes -Local and regional weather patterns
Relationships	Relationships	Energy and Interaction	Identities and Relationships	Chemical interactions, including relationships between chemical elements impact our daily lives, allow us to create a variety of useful products, and allow us to harness energy to power our world.	B D	Communication Skills and Research Skills	<ul style="list-style-type: none"> -Parts of the atom -Types of atomic particles (protons, neutrons, and electrons) -Ionic and covalent bonding -Bohr models -Lewis dot structures -Use of the periodic table of elements -Characteristics of chemical families -Nuclear energy
E-Citizen	Systems	Movement and Interaction	Fairness and Development	International space exploration can increase knowledge of the planetary movements and the planetary system, and can result in interactions between countries that	B C	Information literacy and Communication Skills	<ul style="list-style-type: none"> -Introduction to the planetary system: Planets and moons of our solar system -Key principles of astronomy -Ecological footprints -The Space Race -History of NASA and international space research

				lead to greater human capability..			-Mars Lab Curiosity -Introduction to rockets and model rocket construction -Mars and the potential for a Mars base in the future
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Years Two/Three, Grades 7/8: YEAR B

Unit Name	Key Concept	Related Concepts	Global Context	Statement of Inquiry	Objectives	ATL Skills	Content
Home Page	Systems	Environment, Interaction, and Energy	Personal and Cultural Expression	We must use ethical judgements when interacting with diverse environments that are part of Earth's natural systems.	A D	Research Skills Communication Skills	-Ecology -Types of ecosystems -Nutrient Cycles -Aquatic Ecosystems -Population dynamics -Water quality -Food webs
Me Inc.	Connections	Form and Function	Identities and Relationships	Connections exist between form and function and these impact personal health and wellness	C D	Communication Skills Research Skills	-Cell structure and function -Cell theory -Types of cells -Bones of the human skeletal system -Body systems -Illness/disease

Money, Money, Money	Change	Patterns, Interaction, and Transformation	Fairness and Development	Change occurs in living communities within patterns of DNA, through genetic interactions, and environmental transformations, which result in greater human ability to influence genetic outcomes.	B C	Information Literacy, Thinking, and Communication Skills	-DNA -Genetics -Punnett Square -Inheritance -Biological change and environmental factors -Evolution -Bioethics -Adaptations
Innovators and Heroes	Relationships	Interaction and Function	Scientific and Technical Innovation	Scientific and technical innovations over time have allowed interactive relationships between societies, resulting in greater functional ability.	A B	Communication, Information Literacy, and Thinking skills	-Inventions and innovators -Major scientific advancements and their impact on society -Timeline of scientific advancement -Biography of a scientist -Invention Research Paper -Transportation innovation presentation