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| **Science 7** (Planning KDU) | | | | | |
| **CORE COMPETENCIES**  **COMMUNICATION** | | **CORE COMPETENCIES**  **THINKING (CRITICAL/CREATIVE)** | | **CORE COMPETENCIES**  **(PERSONAL/SOCIAL)** | |
| **CURRICULAR COMPETENCIES** | **BIG IDEA (Understand…)** | | **What do we want students to DO?**  **(Activities, lessons…)** | | **Content (& Elaborations)**  **(Know)** |
| **Questioning and predicting**  *(Evolution is the change that occurs in living things over long periods of time. This change is a result of organisms being suited to their environment. Evolution is an important concept in biological science, as scientists are always searching for the underlying laws, reasons, or explanations for their observations of living things. Key questions about evolution: How have species on Earth evolved due to natural selection? How does fossil evidence support the evolution of geological time?)*   * Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest * Make observations aimed at identifying their own questions about the natural world * Identify questions to answer or problems to solve through scientific inquiry * Formulate alternatives “If…then…” hypotheses based on their questions * Make predictions about the findings of their inquiry   **Planning and conducting**   * Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified * Measure and control variables through fair tests * Observe, measure, and record data [qualitative] *(evidence expressed through words, descriptions, interviews, narratives)*  and [quantitative] *(evidence expressed through numbers and measurement)*, using equipment, including digital technologies, with accuracy and precision *(how close measurements of the same type are to each other)* * Use appropriate SI units and perform simple unit conversions * Ensure that safety and ethical guidelines are followed in their investigations   **Processing and analyzing data and information**   * Experience and interpret the local environment * Apply First Peoples perspectives and knowledge, other ways of knowing *(Ways of knowing refers to the various beliefs about the nature of knowledge that people have; they can include, but are not limited to, Aboriginal, gender-related, subject/discipline specific, cultural, embodied and intuitive beliefs about knowledge.)*, and local knowledge as sources of information * Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, key, scale models, and digital technologies as appropriate * Seek patterns and connections in data from their own investigations and secondary sources * Use scientific understandings to identify relationships and draw conclusions   **Evaluating**   * Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected * Identify possible sources of error and suggest improvements to their investigation methods * Demonstrate an awareness of assumptions and bias in their own work and secondary sources * Demonstrate an understanding and appreciation of evidence (qualitative and quantitative) * Exercise a healthy, informed skepticism and use scientific knowledge and findings from their own investigations to evaluate claims in secondary sources * Consider social, ethical, and environmental implications of the findings from their own and others’ investigations   **Applying and innovating**   * Contribute to care for self, others, and community and world through personal or collaborative approaches * Co-operatively design projects * Transfer and apply learning to new situations * Generate and introduce new or refined ideas when problem solving   **Communicating**   * Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate * Express and reflect on a variety of experiences and perspectives of place *(Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity. The connection between people and place is foundational to First Peoples perspectives of the world. Key questions about place: How does place inform your questions and inquiries? How does place influence your ability to plan and conduct an inquiry and make predictions about outcomes? How does your understanding of place affect the ways in which you collect evidence and evaluate it? As you consider the significance, worth, or value of an outcome or finding, how can you show different ways of knowing? How can your understanding of place influence project designs? How do the place-based experiences and stories of others affect the ways in which you communicate and collaborate?)* | Evolution by natural selection provides an explanation for the diversity and survival of living things. | | *Questions to support inquiry with students:*   * Why do living things change over time? * How do these changes affect biodiversity?   *Key questions about evolution:*   * How have species on Earth evolved due to natural selection? | | **Core Focus: BIOLOGY**   * Organisms have evolved over time *(change in traits of populations over time)* * survival needs*(all organisms need space, food, water, and access to resources in order to survive)* * natural selection *(the natural process by which certain traits that have a greater fitness for their environment lead to a reproductive advantage; this process happens within a population over time because of genetic variation)* |
| **Evidence of Experience (Show)** | | | | |
| **BIG IDEA (Understand…)** | | **What do we want students to DO?**  **(Activities, lessons…)** | | **Content (& Elaborations)**  **(Know)** |
| Elements consist of one type of atom, and compounds consist of atoms of different elements chemically combined. | | *Questions to support inquiry with students:*   * What are the similarities and differences between elements and compounds? * How can you investigate the properties of elements and compounds? | | **Core Focus: CHEMISTRY**   * elements *(a pure substance consisting of a single type of atom, as distinguished by its atomic number (eg., iron, copper)* and compounds *(a pure substance consisting of two or more atoms held together in a defined special arrangement by chemical bonds (eg., water/salt))* are pure substances *(matter that consists of only one type of particle and has one set of properties (e.g., density, boiling point, solubility, conductivity))* * crystalline structures *(crystals formed by a unique arrangement of particles (eg., rock candy, quartz, snowflakes)* of solids * chemical changes (*when atoms rearrange into new products accompanied by an energy change (eg., rusting, the reaction of vinegar and baking soda))* |
| **Evidence of Experience (Show)** | | | | |
| **BIG IDEA (Understand…)** | | **What do we want students to DO?**  **(Activities, lessons…)** | | **Content (& Elaborations)**  **(Know)** |
| The electromagnetic force produces both electricity  and magnetism | | *Questions to support inquiry with students:*   * How is electricity generated? * What is the relationship between electricity and magnetism? | | **Core Focus: PHYSICS**   * Electricity   + generated in different ways (*ways of generating electricity including the use of wind, water, coal, geothermal, and solar energy)* with different environmental impacts   + electromagnetism *(the electromagnetic force is responsible for both electricity and magnetism; moving or changing a magnetic field relative to a wire produces electric current (e.g., electricity generation by a turbine); an electric current passing through a wire produces a magnetic field (e.g., constructing a simple electromagnet using a wire, iron nail and battery))* |
| **Evidence of Experience (Show)** | | | | |
| **BIG IDEA (Understand…)** | | **What do we want students to DO?**  **(Activities, lessons…)** | | **Content (& Elaborations)**  **(Know)** |
| Earth and its climate  have changed over  geological time | | *Questions to support inquiry with students:*   * How and why have Earth and its climate changed over time? * How do people and their practices impact Earth and its climate?   *Key question about evolution:*   * How does fossil evidence support the evolution of geological time? | | **Core Focus: EARTH/SPACE**   * fossil records provides evidence for changes in biodiversity over geological time *(the geologic time scale categorizes the time periods of Earth’s geologic history; ages of rocks and fossils can be determined by both relative and absolute methods)* * First Peoples knowledge of changes in biodiversity over time * evidence of climate change *(change in climate affects: the interconnectedness of plants and animals, and their local environment; e.g., changes to harvesting dates, changes to schedules due to early/later ripening and runs, lowered water levels in creeks, rivers and lakes, change in humidity impacts the ability to preserve salmon, etc.)* over geological time and the recent impacts of humans: *(humans are capable of changing Earth’s landscape, climate, and systems; efficacy of sustainable practices)*   + Physical records *(ice flow data, fossil record, etc.)*   + Local First Peoples knowledge of climate change *(oral history, change in traditional practice (e.g., the timing of harvest has been impacted by climate change), etc.)* * evidence of climate change over |
| **Evidence of Experience (Show)** | | | | |