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| **Science 10 Competency Power Standards** |
| BIG IDEAS* **DNA** is the basis for the diversity of living things.
* Energy change is required as atoms rearrange in **chemical processes.**
* **Energy** is conserved, and its transformation can affect living things and the environment.
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| 1. **QUESTIONING & PREDICTING**
* Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest
* Make observations aimed at identifying their own questions, including increasingly complex ones, about the natural world
* Formulate multiple hypotheses and predict multiple outcomes
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| 1. **PLANNING & CONDUCTING INVESTIGATIONS**
* Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative)
* Assess risks and address ethical, cultural and/or environmental issues associated with their proposed methods and those of others
* Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data
* Ensure that safety and ethical guidelines are followed in their investigations
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| 1. **ANALYZING DATA**
* Experience and interpret the local environment
* Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information
* Seek and analyze patterns, trends, and connections in data, including describing relationships between variables (dependent and independent) and identifying inconsistencies
* Construct, analyze and interpret graphs (including interpolation and extrapolation), models and/or diagrams
* Use knowledge of scientific concepts to draw conclusions that are consistent with evidence
* Analyze cause-and-effect relationships
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| 1. **EVALUATING**
* Evaluate their methods and experimental conditions, including identifying sources of error or uncertainty, confounding variables, and possible alternative explanations and conclusions
* Describe specific ways to improve their investigation methods and the quality of the data
* Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled
* Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and secondary sources
* Consider the changes in knowledge over time as tools and technologies have developed
* Connect scientific explorations to careers in science
* Exercise a healthy, informed skepticism, and use scientific knowledge and findings to form their own investigations and to evaluate claims in secondary sources
* Consider social, ethical, and environmental implications of the findings from their own and others’ investigations
* Critically analyze the validity of information in secondary sources and evaluate the approaches used to solve problem
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| 1. **APPLICATION & INNOVATION**
* Contribute to care for self, others, community, and world through individual or collaborative approaches
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving
* Contribute to finding solutions to problems at a local and/or global level through inquiry
* Consider the role of scientists in innovation
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| 1. **COMMUNICATING**
* Formulate physical or mental theoretical models to describe a phenomenon
* Communicate scientific ideas, claims, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations
* Express and reflect on a variety of experiences, perspectives, and worldviews through place
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| **Science 10 Content Power Standards** |
| 1. **GENETICS**
* DNA structure and function patterns of inheritance & mechanisms for the diversity of life:
* & mutation and its impact on evolution & natural selection and artificial selection
* & applied genetics and ethical considerations
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| 1. **CHEMICAL REACTIONS**
* rearrangement of atoms in chemical reactions
* acid-base chemistry
* law of conservation of mass
* energy change during chemical reactions: endothermic vs exothermic
* practical applications and implications of chemical processes, including First Peoples knowledge
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| **ENERGY*** nuclear energy and radiation
* law of conservation of energy
* potential and kinetic energy
* transformation of energy
* local and global impacts of energy transformations from technologies
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