

BIG IDEAS

Diversity in Local Ecosystems

Local environments contain diverse ecosystems with many roles and relationships.

Processes and Changes in Local Ecosystems

- Interconnected systems sustain healthy ecosystems.
- Ecosystem stability is an important result of sustainability

Sustainability in Local Ecosystems

Human practices affect the sustainability of ecosystems.

Conservation and Restoration of Ecosystems

Humans can play a role in conservation and restoration of ecosystems.

Learning Standards

| Curricular Competencies | Content |
|--|---|
| <p><i>Students are expected to be able to do the following:</i></p> <p>Questioning and predicting</p> <ul style="list-style-type: none"> • Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal, local, or global interest • Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world • Formulate multiple hypotheses and predict multiple outcomes <p>Planning and conducting</p> <ul style="list-style-type: none"> • 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 • Use appropriate SI units and appropriate equipment, including digital technologies, to systematically and accurately collect and record data • Apply the concepts of accuracy and precision to experimental procedures and data: <ul style="list-style-type: none"> – significant figures – uncertainty – scientific notation | <p><i>Students are expected to know the following:</i></p> <p>Diversity in Local Ecosystems</p> <ul style="list-style-type: none"> • abiotic and edaphic factors • biodiversity: <ul style="list-style-type: none"> – species and their ecological roles – relationships and interactions in ecosystems <p>Processes and Changes in Local Ecosystems</p> <ul style="list-style-type: none"> • energy flow • matter cycles • population dynamics and landscape structure • change and stability in ecosystems <p>Sustainability in Local Ecosystems</p> <ul style="list-style-type: none"> • benefits of healthy ecosystems • humans as agents of change: <ul style="list-style-type: none"> – First Peoples and other traditional ecological knowledge – unsustainable and sustainable ecosystem practices |

Learning Standards (continued)

| Curricular Competencies | Content |
|---|--|
| <p>Processing and analyzing data and information</p> <ul style="list-style-type: none"> • 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, performing calculations, and identifying inconsistencies • Construct, analyze, and interpret graphs, models, and/or diagrams • Use knowledge of scientific concepts to draw conclusions that are consistent with evidence • Analyze cause-and-effect relationships <p>Evaluating</p> <ul style="list-style-type: none"> • 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 in primary 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 to evaluate claims in primary and secondary sources • Consider social, ethical, and environmental implications of the findings from their own and others' investigations • Critically analyze the validity of information in primary and secondary sources and evaluate the approaches used to solve problems • Assess risks in the context of personal safety and social responsibility | <p>Conservation and Restoration of Ecosystems</p> <ul style="list-style-type: none"> • environmental stressors challenge ecosystem integrity, health, and sustainability • ecological restoration principles and practices • First Peoples concept of interconnectedness as related to conservation and restoration • engagement in ongoing and potential stewardship projects |

Learning Standards (continued)

| Curricular Competencies | Content |
|--|---------|
| <p>Applying and innovating</p> <ul style="list-style-type: none"> • Contribute to care for self, others, community, and world through individual or collaborative approaches • Co-operatively design projects with local and/or global connections and applications • Contribute to finding solutions to problems at a local and/or global level through inquiry • Implement multiple strategies to solve problems in real-life, applied, and conceptual situations • Consider the role of scientists in innovation <p>Communicating</p> <ul style="list-style-type: none"> • Formulate physical or mental theoretical models to describe a phenomenon • Communicate scientific ideas, 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 | |