### Science K-10 – Curricular Competencies

<table>
<thead>
<tr>
<th>Grade</th>
<th>Questioning and predicting</th>
<th>Planning and conducting</th>
<th>Processing and analyzing data and information</th>
<th>Evaluating</th>
<th>Applying and innovating</th>
<th>Communicating</th>
</tr>
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| K     | • Demonstrate curiosity and a sense of wonder about the world  
|       | • Observe objects and events in familiar contexts  
|       | • Ask simple questions about familiar objects and events  
|       | • Make exploratory observations using their senses  
|       | • Safely manipulate materials  
|       | • Make simple measurements using non-standard units  
|       | • Experience and interpret the local environment  
|       | • Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge  
|       | • Discuss observations  
|       | • Represent observations and ideas by drawing charts and simple pictographs  
|       | • Take part in caring for self, family, classroom and school through personal approaches  
|       | • Transfer and apply learning to new situations  
|       | • Generate and introduce new or refined ideas when problem solving  
|       | • Share observations and ideas orally  
|       | • Express and reflect on personal experiences of place  
| 1-2   | • Demonstrate curiosity and a sense of wonder about the world  
|       | • Observe objects and events in familiar contexts  
|       | • Ask questions about familiar objects and events  
|       | • Make simple predictions about familiar objects and events  
|       | • Make and record observations  
|       | • Safely manipulate materials to test ideas and predictions  
|       | • Make and record simple measurements using informal or non-standard methods  
|       | • Experience and interpret the local environment  
|       | • Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge  
|       | • Sort and classify data and information using drawings, pictographs and provided tables  
|       | • Compare observations with predictions through discussion  
|       | • Identify simple patterns and connections  
|       | • Compare observations with those of others  
|       | • Consider some environmental consequences of their actions  
|       | • Take part in caring for self, family, classroom and school through personal approaches  
|       | • Transfer and apply learning to new situations  
|       | • Generate and introduce new or refined ideas when problem solving  
|       | • Communicate observations and ideas using oral or written language, drawing, or role-play  
|       | • Express and reflect on personal experiences of place  

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## Science K-10 – Curricular Competencies – continued

<table>
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| 3-4   | • Demonstrate curiosity about the natural world  
• Observe objects and events in familiar contexts  
• Identify questions about familiar objects and events that can be investigated scientifically  
• Make predictions based on prior knowledge | • Suggest ways to plan and conduct an inquiry to find answers to their questions  
• Consider ethical responsibilities when deciding how to conduct an experiment  
• Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate  
• Make observations about living and non-living things in the local environment  
• Collect simple data | • Experience and interpret the local environment  
• Identify First Peoples perspectives and knowledge as sources of information  
• Sort and classify data and information using drawings or provided tables  
• Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends  
• Compare results with predictions, suggesting possible reasons for findings | • Make simple inferences based on their results and prior knowledge  
• Reflect on whether an investigation was a fair test  
• Demonstrate an understanding and appreciation of evidence  
• Identify some simple environmental implications of their and others’ actions | • Contribute to care for self, others, school, and community 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 | • Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate  
• Express and reflect on personal or shared experiences of place |
| 5-6   | • Demonstrate a sustained curiosity about a scientific topic or problem of personal interest  
• Make observations in familiar or unfamiliar contexts  
• Identify questions to answer or problems to solve through scientific inquiry | • With support, plan appropriate investigations to answer their questions or solve problems they have identified  
• Decide which variable should be changed and measured for a fair test  
• Choose appropriate data to collect to answer their questions | • Experience and interpret the local environment  
• Identify First Peoples perspectives and knowledge as sources of information  
• Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data  
• Evaluate whether their investigations were fair tests  
• Identify possible sources of error  
• Suggest improvements to their investigation methods  
• Identify some of the assumptions in secondary sources | • Contribute to care for self, others, and community 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 | • Communicate ideas, explanations, and processes in a variety of ways  
• Express and reflect on personal, shared, or others’ experiences of place |
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<td>5-6</td>
<td>• Make predictions about the findings of their inquiry</td>
<td>• Observe, measure, and record data, using appropriate tools, including digital technologies</td>
<td>• Identify patterns and connections in data</td>
<td>• Demonstrate an understanding and appreciation of evidence</td>
<td>• Contribute to care for self, others, community, and world through personal or collaborative approaches</td>
<td>• Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate</td>
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<td>• Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest</td>
<td>• Use equipment and materials safely, identifying potential risks</td>
<td>• Compare data with predictions and develop explanations for results</td>
<td>• Identify some of the social, ethical, and environmental implications of the findings from their own and others’ investigations</td>
<td>• Express and reflect on a variety of experiences and perspectives of place</td>
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<td>• Make observations aimed at identifying their own questions about the natural world</td>
<td>• Identify patterns and connections in data</td>
<td>• Demonstrate an openness to new ideas and consideration of alternatives</td>
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<td>• Identify a question to answer or a problem to solve through scientific inquiry</td>
<td>• Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified</td>
<td>• Experience and interpret the local environment</td>
<td>• Use scientific understandings to identify relationships and draw conclusions</td>
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<td>• Formulate alternative “If…then…” hypotheses based on their questions</td>
<td>• Measure and control variables (dependent and independent) through fair tests</td>
<td>• Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information</td>
<td>• Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected</td>
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<td>7-8</td>
<td>• Make predictions about the findings of their inquiry</td>
<td>• Observe, measure, and record data (qualitative and quantitative), using equipment, including digital technologies, with accuracy and precision</td>
<td>• Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, keys, models, and digital technologies as appropriate</td>
<td>• Identify possible sources of error and suggest improvements to their investigation methods</td>
<td>• Demonstrate an awareness of assumptions and bias in their own work and secondary sources</td>
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<td>• Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified</td>
<td>• Use appropriate SI units and perform simple unit conversions</td>
<td>• Seek patterns and connections in data from their own investigations and secondary sources</td>
<td>• Demonstrate an understanding and appreciation of evidence (qualitative and quantitative)</td>
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<td>• Measure and control variables (dependent and independent) through fair tests</td>
<td>• Ensure that safety and ethical guidelines are followed in their investigations</td>
<td>• Use scientific understandings to identify relationships and draw conclusions</td>
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<td>• Co-operatively design projects</td>
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<td>• Observe, measure, and record data (qualitative and quantitative), using equipment, including digital technologies, with accuracy and precision</td>
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<td>• Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected</td>
<td>• Transfer and apply learning to new situations</td>
<td>• Generate and introduce new or refined ideas when problem solving</td>
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<td>• Use appropriate SI units and perform simple unit conversions</td>
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| 7-8   | • 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 | • 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 | • 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 | • 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 | • 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 | • 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 |
| 9-10  | • 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 | | | | | |
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<td>9-10</td>
<td>• Ensure that safety and ethical guidelines are followed in their investigations</td>
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<td>• Use knowledge of scientific concepts to draw conclusions that are consistent with evidence • Analyze cause-and-effect relationships</td>
<td>• 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 problems</td>
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