

# Science Scope and Sequence P-8

*Supplementary Resource*

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## Science Scope and Sequence P-8

This document outlines the scope and sequence of science learning in P-8. The following information is intended to guide teachers in making decisions about creating learning experiences that will prepare and engage their learners in a responsive way. However, a teacher’s professional judgment remains the most crucial factor for responding effectively to the needs of learners.

It might be relevant for teachers to review or to seek out learning outcomes or indicators from an earlier curriculum or grade level in order to support learners moving forward with current curriculum. Sometimes, however, current curricular learnings do not directly rely on learning from the previous year and current curriculum can be engaged in without additional review. Where relevant, prior learning verification of concepts have been identified in this document.

The learning environment (face-to-face, blended, online) will continue to be an important factor that will impact the types of learning experiences with which learners are able to engage. While learning science in a hands-on, experimental way is preferred, should laboratory experiments not be possible due to public health concerns, teachers are encouraged to offer online experiment simulations, to record scientific phenomena to discuss, notice, observe and unpack with learners, to support simple, safe experiments that could be done at home, to provide authentic data that can be analysed etc...

Integrated, project-based learning and inquiry-based learning (especially in areas that connect STSE) allow for learner choice and flexible pacing which is particularly effective for students to not only learn new concepts but also for demonstrating their learning

It is suggested that the focus for P-8 science learning be on the processes and nature of science, guided by the descriptions below. Building competencies and skills in science will provide a solid foundation for future science learning.

\*orange indicates a pre-learning component that should be verified prior to proceeding

| Grade | Life Sciences          | Physical Sciences   | Earth and Space Sciences   | Nature of Science – Scientific Processes  |
|-------|------------------------|---|----------------------------|---|
| P     | Living Things          | Materials<br>Movement   | Sand and Water             | Gathering observations using the senses<br>Asking testable questions  |
| 1     | Needs of living things | Materials, objects and devices *verify that learners are able to identify properties of materials (eg rough, smooth, see-through etc...) (gr P) | Daily and Seasonal Changes | Investigating cause and effect<br>Fair test<br>Testing variables<br>Controlling variables<br>Using evidence to make conclusions<br><br>Ask learners questions like: |

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| 2 | Animal Growth and Changes *verify that learners are aware of the types of needs living things have (eg food, water, shelter...) (gr 1) | Liquids, solids and mixtures *verify that learners can collect observations using senses (gr P, 1)<br>Motion  | Air and water in the environment *verify that learners notice how water changes throughout the seasons (gr 1)   | -How do you know? What is your evidence? What does your data tell you? What would happen if you tried it again? How can you verify that your guess is correct? How do you know it's a fair test? What variables are you changing? What is staying the same? What are you going to measure? How are you going to measure? How will you record your observations and results?   |
| 3 | Plants *verify that learners know where water can be found by plants in the environment (gr 2)   | Invisible forces *verify that learners know factors that can affect motion (gr 2)<br>Structures *verify that learners can determine properties of materials (gr 1)  | Soil  |   |
| 4 | Habitats *verify that learners know the basic needs of plants and animals (gr 1, 2, 3)   | Light<br>Sound  | Rocks and minerals *verify that learners know about erosion and properties of soil (gr 3)   | Gathering observations using tools<br>Presenting collected data multiple ways<br>Identifying patterns in results and observations<br>Investigating properties and change<br>Designing simple experiments to control variables<br>Using results of experimentation to make claims<br><br>Ask learners questions like:<br>-How do you know? What is your evidence? What does your data tell you? What would happen if you tried it again? How can you verify that your guess is correct? How do you know it's a fair test? What variables are you changing? What is staying the same? What are you going to measure? How are you going to measure? How will you record your observations and results? |
| 5 | Healthy body and body systems *verify that learners are aware of basic needs for survival of living organisms (gr 1, 2, 3)             | Forces and simple machines *verify that learners know factors that can affect motion (gr 2)<br>Chemical and physical properties and changes of matter *verify that learners know about states of matter and dissolving (gr 2) | Weather *verify that learners are aware of how their environment changes through the seasons and the interaction of water and air in the environment (gr 2) |   |
| 6 | Diversity of life *verify that learners know basic components that make up habitats (gr 4)   | Electricity<br>Flight   | Space components  |   |

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| <p>7 -<br/><b>Renewed</b></p>                                      | <p>Environmental Action:<br/>Ecosystem components<br/>*verify that learners are aware of common relationships between organisms in the environment (gr 6)</p> | <p>Engineering Structures<br/>*verify that learners are aware of the simple machines (gr 5)<br/>Environmental Action:<br/>Solutions Chemistry<br/>*verify that learners are aware of chemical and physical properties and changes of matter (gr 5)</p> | <p>Geological Evolution<br/>*verify that learners are aware of the rock cycle (gr 4)</p> | <p>Systematic approach to scientific inquiry<br/>Designing more complex experiments to control variables<br/>Data collection, processing and analysis<br/>Communication of scientific arguments based on evidence<br/>Considering multiple perspectives regarding decision-making and the applications of science</p> <p>Ask learners questions like:<br/>How can you improve your certainty? How can you represent your data in another way? What conclusions can you make based on your data? What additional questions does this raise? Can you design an experiment with a control group?</p> |
| <p>8 -<br/><b>Renewed</b></p>                                      | <p>Cells and Systems</p>  | <p>Climate Change: Heat<br/>*verify that learners are comfortable with the particle theory (gr 7)<br/>Hydraulics and Pneumatics: Fluids</p>  | <p>Climate Change: Ocean Systems</p>   |   |
| <p>7 –<br/><b>Existing</b><br/>(see foundational outcomes doc)</p> | <p>Interactions within Ecosystems<br/>*verify that learners are aware of common relationships between organisms in the environment (gr 6)</p>                 | <p>Heat<br/>Mixtures and Solutions<br/>*verify that learners are aware of chemical and physical properties and changes of matter (gr 5)</p>  | <p>Earth’s Crust<br/>*verify that learners are aware of the rock cycle (gr 4)</p>        |   |
| <p>8 –<br/><b>Existing</b><br/>(see foundational outcomes doc)</p> | <p>Cells, Tissues, Organs, and Systems</p>  | <p>Optics<br/>Fluids<br/>*verify that learners are aware of the kinetic molecular theory (gr 7)</p>  | <p>Water Systems on Earth</p>  |   |