



Seaquaria in Schools Big Idea Links to B.C. Science Curriculum 2020 Edition

Below is a snapshot of curriculum points Seaquaria in Schools meet. For clarification on certain curricular links, please contact us at education@seaquaria.org



Science K-10 – Big Ideas

Grade	Biology	Chemistry	Earth/Space	How is Seaquaria linked?
K	Plants and animals have observable features.		Daily and seasonal changes affect all living things	<p>Invertebrates in the Seaquarium are intertidal species and experience daily and seasonal changes to their habitat following the patterns of low and high tide.</p> <p>Seaquarium organisms has observable features that are adapted for their environment.</p>
1	Living things have features and behaviours that help them survive in their environment.		Observable patterns and cycles occur in the local sky and landscape.	<p>Seaquarium organisms have observable features that are adapted for their environment (e.g. camouflage, pincers).</p> <p>Tidal cycles (low tide and high tide) are caused by the lunar cycle and occurs daily.</p>
2	Living things have life cycles adapted to their environment.		Water is essential to all living things, and it cycles through the environment.	<p>Many faunae in the Seaquarium will have visible features that have been adapted for their survival in their habitat.</p> <p>Some invertebrates in the Seaquarium may lay eggs or spawn in ways adapted to their environment.</p> <p>Watersheds (rivers, creeks, lakes etc) all drain into the ocean and is a great example for the water cycle.</p> <p>The water cycle in a Seaquarium is essential to the health of the animals living within.</p>
3	Living things are diverse, can be grouped, and interact in their ecosystems.		Wind, water, and ice change the shape of the land.	<p>Seaquaria animals can be grouped by shared characteristics such as morphology (body parts) or by feeding habits (filter feeder, grazer etc) or by their taxonomy.</p> <p>The shorelines where these animals are found are shaped by wind, water, and ice over time.</p>

4	All living things sense and respond to their environment.	Matter has mass, takes up space, and can change phase.	The motions of Earth and the moon cause observable patterns that affect living and non-living systems	<p>Seaquaria conditions such as salinity or algal cover change over time, allowing for responses such as increase feeding from different animals.</p> <p>Evaporation of the seawater leaves behind salt crystals – a great way to introduce water changing phases.</p> <p>The motion of the Earth and moon affects tides and the animals living on coast.</p>
5	Multicellular organisms have organ systems that enable them to survive and interact within their environment.			<p>Invertebrate organ systems differ from human systems and make for a great comparison project!</p> <p>Seaquaria animals can be used to study different organ systems and how they function under water versus exposed to air.</p>
6	Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment.			Seaquaria animals can be used to study different organ systems and how they function under water versus exposed to air, and the different reproductive strategies.
7	Evolution by natural selection provides an explanation for the diversity and survival of living things.		Earth and its climate have changed over geological time.	<p>Organisms from different phyla has evolved in different ways. Compare a sponge (one of the oldest living animals on Earth) to a fish or a sea cucumber.</p> <p>Evolutionary links can be observed in the larval form of many invertebrates (for example, a larval nudibranch has a shell that they lose later in life, indicating evolutionary links with the rest of the mollusca family)</p>
8	Life processes are performed at the cellular level.			Anemones are frequently studied by marine biologists to understand the response of nervous systems to stimuli.

9	Cells are derived from cells.		The biosphere, geosphere, hydrosphere, and atmosphere are interconnected, as matter cycles and energy flows through them.	Aggregating anemones reproduced by cloning themselves. The Seaquaria is an interconnected ecosystem. Waste created by decomposing algae or defecating animals is consumed by bacteria and other organisms living in the gravel. Rocks and shells are eroded by the flow of water and the movement of animals, and the ambient warmth of the room will speed up or slow down evaporation from the tank.
10	DNA is the basis for the diversity of living things.			Aggregating anemones reproduce by cloning themselves, there are colonies of this animal that date back hundreds of years. Marine biologists are still finding new marine invertebrates and reclassifying those already found based on new information revealed via DNA.