

Open Ocean Thematic Instructional Sequence

| Activity | Concept |
|---|--|
| <p>APPLES AND OCEANS 3 sessions</p> | <ul style="list-style-type: none"> • <i>Most of our planet is covered in ocean, but only a small fraction of the ocean supports large concentrations of life.</i> |
| <p>Transition: We have discovered that the ocean is very important for life on Earth, but there is only a small fraction of it that has large amounts of living creatures. Let's look more closely at globes to observe all we can about the geography and currents on our ocean planet.</p> | |
| <p>PLANET OCEAN 2 sessions</p> | <ul style="list-style-type: none"> • <i>There is only one ocean! Our Earth is covered by one interconnected world ocean that circulates around all the continents.</i> |
| <p>Transition: Using a globe, we observed that there is actually only one ocean. Now lets do some experiments with a model continent and ocean to learn more about how the ocean is able to circulate around all the continents.</p> | |
| <p>WASTE DISPOSAL 2 sessions</p> | <ul style="list-style-type: none"> • <i>Things dumped into the ocean may be distributed by currents throughout the ocean.</i> • <i>Wind and the temperature differences between masses of water are two factors that cause currents.</i> • <i>Winds blowing across the surface of the ocean-combined with other factors-cause major circulating currents, or gyres.</i> |
| <p>Transition: Currents circulate nutrients, pollution and organisms throughout the one world ocean. Let's do some experiments with seawater to see how the currents are formed.</p> | |

| | |
|---|--|
| <p style="text-align: center;">CURRENT TRENDS 2 sessions</p> | <ul style="list-style-type: none"> • <i>Salinity and temperature differences create masses of water with different densities.</i> • <i>Gravity causes more dense water to sink below less dense water. As a result, less dense water rises.</i> |
| <p>Transition: Now let's put everything together that we have learned about currents and try to figure out a challenge question about density.</p> | |
| <p style="text-align: center;">ICE CUBES</p> | <ul style="list-style-type: none"> • (Students write their own key concepts.) |
| <p>Transition: Plankton are animals or plant-like organisms that drift with the currents we have just studied. Let's build some imaginary plankton that are adapted to stay near the sunlit surface waters and observe some actual plankton to investigate their adaptations up-close.</p> | |
| <p style="text-align: center;">THE GREAT PLANKTON RACE 3 sessions</p> | <ul style="list-style-type: none"> • <i>Adaptations are features or behaviors which help organisms to survive in their habitat.</i> • <i>Plankton have adaptations which help them avoid sinking below the sunlit photic zone.</i> |
| <p>Transition: Plankton form the base of the open ocean food pyramid. Now let's look at the adaptations of an animal that plays a critical role in the center of the open ocean food pyramid.</p> | |
| <p style="text-align: center;">SQUIDS-OUTSIDE AND INSIDE 4 sessions</p> | <ul style="list-style-type: none"> • <i>Pelagic creatures are organisms living in the open ocean.</i> • <i>Looking closely at an animal like the squid can tell us a lot about the adaptations needed to survive and thrive as a pelagic creature.</i> |
| <p>Transition: So far we have learned about the adaptations of two open ocean organisms, plankton and squid, and how they fit into the open ocean food pyramid. Now let's learn about the adaptations of whales, one of the top predators in the open ocean food pyramid.</p> | |

| | |
|---|--|
| <p style="text-align: center;">WHALE WITH CLASS 3 sessions</p> | <ul style="list-style-type: none"> • <i>Evolution is change in an organism over time.</i> • <i>Over the last 50 million years, whales have evolved from land mammals into ocean mammals.</i> |
| <p>Transition: We've learned a lot about three different organisms of the open ocean, including how they are adapted to this habitat and how they interact with each other. Now let's try to find out all we can about other open ocean animals living here in this habitat of moving water and predators.</p> | |
| <p style="text-align: center;">BUILD AN OPEN OCEAN 3 sessions</p> | <p><i>The open ocean is home to many different organisms that interact with one another as predators, prey or competitors.</i></p> |