Purpose	Content	Lessons
Children love to understand large, overarching ideas before they study basic elements. In the study of water to begin our look into physics and chemistry, we find a huge wealth of knowledge and process in and around a state of matter that is all around us.	SCIENCE: Chemistry/Physics The Story of Water	<u>The Story of Water</u> A. After the Introduction to Water, present a variety of work in small groups with individual follow up via Discovery Cards and writing/drawing/creating. Learners will complete TWO of the following: – Where do we find Water? Do a Picture Tour (35 printed photographs around the room, each with a different water biome or area in Europe - sea, lake, pond, rill, etc.) Mix up cards and have them place them at pictures (3 period lesson). – What is IN Water? Examine a drop of water from 3 different sources under a microscope. Log in Observation Journal. – What State of Matter is Water? Can Water become another State of Matter? Introduce FURTHER STATES OF MATTER in AMI albums for Water: Water flows down and out; Water changes state with temperature aka ice and vapor; water seeks its own level. **– CREATE a TABLE OF THE ELEMENTS in the classroom. WE will add to this throughout the year, each time we discover an element. The first one we will add is H for Hydrogen and O for Oxygen. Are there any others we can add from this study? Where there any other chemicals from the water samples we pulled?** – Scavenger Hunt: Find 6 different Water forms in Europe. Create a map and label. B. AFTER all of the above is introduced, leave for the Learners the following Discovery Cards. Learners will complete ONE or TWO of the following. Observations noted in Observation Journals.

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– Water coming out of Air.

– Water going into Air.

– The Strange Story of Water's Size

– Water isn't Pure.

– Pressure and Shape and Size

– Surface Tension

– Soap Boat

C. What Lives in Water (Salt)?

1. Introduce the three zones of the Oceans.

The pelagic zone consists of the waters further offshore, basically the open ocean. In this zone you can find surface seaweed, plankton, fish, dolphins, and whales, among other living things.

The benthic zone lies beneath the pelagic zone. As you move further from the ocean's surface, the water gets colder. At the bottom of the benthic zone, you will find sand, silt, and dead organisms. The dead, decomposing organisms make for a nutrient rich environment. For that reason, all sorts of bacteria, fungi, sponges, sea anemones, worms, sea stars, and fishes live in this zone.

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The abyssal zone consists of the deepest regions of the ocean. The water temperatures in the abyssal zone are very cold, about 37 degrees Fahrenheit. This zone is highly pressurized and high in oxygen, but low in nutritional content. Many bacteria, invertebrates, and fish live in this zone.

2. Learners will then complete ONE of the following:

– What chemicals in salt water have we found that we are able to add to our Element Chart? NA for sodium is an easy one!

– What animals live in the pelagic zones off of Europe and America? Are any of them different or similar?

– Measure a body of salt water in Europe (draw).

D. What lives in the WATER (fresh)?

1. Present the following facts to Learners with pictures or charts:

Three types of main freshwater: ponds, lakes, streams.

Only 3% on earth water comes from freshwater biomes.

There are 700 different species of fish - learn about 5 of them.

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		99% of freshwater is on ice or located in an aquifer. An aquifer is an underground layer of water bearing permeable rock. Groundwater can be extracted with a water well. Many animals besides fish live in freshwater - crocodiles, amphibians, hippos' turtles, and frogs. Four key features that determine ecology - the flow of water, amount of light, temperature of climate and chemistry of river. Freshwater biomes supply more than half of people's drinking water. Insects in freshwater biomes are considered pests (mosquitos) but are important for food source for other animals. The Nile is the longest river in the world - part of the freshwater biome. 2. After the above introductions, Learners will complete ONE of the following: – Learners can follow up on one of the above statements by making a book or measuring with a detailed drawing. – Are there any chemicals in fresh water sources we can add to our Chart?

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		– APEX Predators in the Water and Ecology. Would the Learners like to set up a touch tank in the Grow Room that removes an Apex Predator and observe what happens (GOING OUT)? – Calculate the measurement of a body of freshwater in Europe. Suggested Books: ● *Down by the River* by Andrew Weiner and *Be A Pond Detective* by Peggy Kochanoff