Organisms In and Around Our Water

Grade Span	Middle School Life Science
Time Span	1 (70 minute) class period
Standards	Obtaining, Evaluating, and Communicating Information Modeling Planning and Carrying Out in Investigation Mathematics and Computational Thinking **MS-LS2-1** Analyze and interpret data to provide evidence for the effects of resources availability on organisms and population of organisms in an ecosystem. **MS-LS2-4** Construct and argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **MS-LS 2-5** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
Focus Question	What are the biotic factors around a watershed?
Overview	• Students will take a look at different ways water makes its way to a pond/lake. • Students will also be thinking about how that water carries contaminants and sediment and what impact that has on ponds/lakes. • Students will make a food chain and/or a food web to share what biotic factors play a role in watersheds.
Objectives	• Students will be able to define what a watershed is. • Students will be able to find organisms that live in a certain ecosystem. • Students will be able to read and share science material. • Students will be able to create a food chain and a food web.
Materials Needed	K-12 Wetland Reading List **K-2 Books:** *Box Turtle at Long Pond,* William T. George *Come Out, Muskrats,* Jim Arnosky *Common Frog,* Oxford Scientific Films *Dragonflies,* Cynthia Overbeck *Fish Eyes,* Lois Ehleert *If You Were a Wild Duck Where Would You Go?,* George Mendoza *Let's Find Out About Frogs,* Corrine J. Naden *Lily Pad Pond,* Bianca Lavies *The Lorax,* Dr. Seuss *Make Way for Ducklings,* Robert McCloskey *The Noisy Counting Book,* Susan Schade and Jon Butler

	Old Mother West Wind, Thornton W. Burgess *Puddles and Ponds,* Rose Wyler *Rain Drop Splash,* Alvin Tresselt *A River Dream,* Allen Say *River Parade,* Alexandria Day *The Seminole,* Emilie U . Lepthier *Spring Peepers,* Judy Hawes *The Ugly Duckling,* Hans Christian Anderson *Willa in Wetlands,* Peyton Lewis and Rory Chalcraft
Vocabulary	**Food web**: A network of feeding interactions, usually consisting of multiple food chains **Food chain:** A series of organisms in which energy is transferred to another **Decomposers:** An organism that breaks down dead, decaying matter **Autotroph** (producer): An organism that produces its own food using sunlight or chemical energy **Heterotroph** (consumer): An organism that consumes another organism for food **Trophic level:** Each step in a food chain or food web
Teacher Prep	1. Familiarize yourself with Watershed Ecology. 2. Gather books you will be using for the reading activity. 3. Break students into groups of 2-3 to read their books. 4. Have a sheet for notes, ie: what type of water and what plant/animal life you saw when reading books. 5. Make copies of Rubric for the final project. 6. Familiarize yourself with Scratch if you are going to introduce that part of the project. 7. Gather paper for those who are going to do paper copies.
Background	Skyline Park Teacher's Guide with information about Watersheds and organisms. Familiarize yourself with Scratch. This is a student example of a possibility of what students could do. Scratch is a computer program using block coding. Students could also code using java if they want.
Procedure	**Engage:** 1. Break students up into groups and give each group a children's book (List of books are in the materials list above) to read. a. As they are reading, have students take note of what kind of water the book talks about. b. Make a list of the plants and animals they noticed in the book. 2. Have students come together and share what they noticed. **Explore:**

Option 1:

1. Have students go outside and just sit and observe the space around them.
2. Have students make a list of living organisms they see around them.
3. Come together as a whole class and talk about what everyone saw. You could compile a list on the whiteboard or a sheet of paper if you are still outside.
4. Discuss the different levels of the food chain with the organisms found.
5. Have students draw a food chain.
6. Now discuss how much more complicated the chain actually is and how a food web is more likely happening in your ecosystem.
7. Have students create a food web.
8. Students could then create a food web using Scratch, a computer program, or you could have students sketch out a food web.
9. Students could make food web guides for your outdoor learning space.

Option 2:

Have students watch a video on food webs. Students will then research plants and animals in the watershed area with the resources provided.

1. Crash Course Defining a Food Chain

2. Crash Course Next step into a Food Web

3. Crash Course in Food Webs (when you mess with the ecosystem) video shows deeper thought of what happens when you mess with an ecosystem, mother nature or humans.

Research Options:

- https://kids.nationalgeographic.com/explore/nature/habitats/freshwater/
- What Kind of Animals are Found in Freshwater Ecosystems?
- National Geographic Freshwater Ecosystem Article
- Falling Into Freshwater
- A-Z freshwater plants and animals
- Freshwater Biomes
- Ponds and Lakes and More Information
- Ducksters Freshwater Biomes

Explanation:

1. Students will make a food web using the research they discovered.
    a. Students could do this either:
        i. on paper
        ii. make an interactive food web using a Scratch program. Students could make a Scratch program like the one shown but be careful, that shows a food chain and the activity is a food web.

	Extension: • Macroinvertebrate Invasion - Don't Bug Me activity where students go out to freshwater lake/pond/stream and gather data on macroinvertebrates. • Video of Collecting Dragonfly Nymphs in Acadia National Park • Bugs Don't Bug Me Activities • Wetland Inhabitant Word Search: Search for the types of animals found in wetlands.
Wrap-Up	**Evaluate:** **Formative Assessment:** Verbal check in with students when they have finished reading the book and have made a list of the type of water and their list of plants and animals. **Summative:** Their final project of the Scratch program or the drawn food web.