**How is Our School an Ecosystem?**

**A Next Generation Science Standards (NGSS) curriculum for 5th graders**

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**Big Question:** What are the nonliving and living things in an ecosystem and how do they interact?

**Overview:** Students will describe the nonliving and living things in their school ecosystem. Students will then produce a video that shows their school ecosystem while describing components such as the living organisms, non-living organisms, producers, consumers, and decomposers.

*IMPORTANT:* It is important to note, that this curriculum carries on to the “Engineering a Solution” lesson plans. In the next series of curriculum, students will review their videos and identify a problem in the ecosystem and how they can create change and design a solution.

**Objectives:**-Students will be able to describe nonliving and living components of an organisms
-Students will be able to organize different organisms as composers, producers, and decomposers.
-Students will be able to create a story of their school ecosystem and its organisms and environment

**NGSS Standards Addressed:**

*5-LS2-1.* Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**Common Core Math Standards Addressed:**

*MP.4* Model with mathematics

**Common Core Literacy Standards Addressed:**

*RI.5.7*. Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or solve a problem efficiently.

*SL.5.5* Include multimedia components (e.g. graphics, sounds), and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

**Description of Lessons:**

*Lesson 1*: Students will describe the school as an ecosystem by describing the living and non-living things. Students will then categorize their living things as either a producer, consumer, or decomposer.

*Lesson 2:* Students will describe their school as an ecosystem by describing the living and nonliving things in El Sol. They will finish their community map, organism booklet, and begin creating their documentary

*Lesson 3:* Students will describe their school as an ecosystem by describing the living and nonliving things. They will assign roles for their documentary and work together in groups to record their respective school ecosystem. Students will film and edit their video documentaries.

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| **Suggested Calendar** |
| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| **Week 1**Lesson #1Create community maps of the school | Lesson #1 Create the organisms in the school ecosystem  | Lesson #2Create organism legend and start a script and roles for video | Lesson #2Continue script and roles for video | Lesson #3Film  |
| **Week 2**Lesson #3 Film | Lesson #3Film | Lesson #3 Edit | Lesson #3 Edit | Lesson #3 Present(Carries onto the engineering a design unit) |

**Lesson 1**

**Activity Name:** The School as an Ecosystem

**Overview:** Students will describe the school as an ecosystem by describing the living and non-living things. Students will then categorize their living things as either a producer, consumer, or decomposer.

**Goals:** The goal of this lesson is to show students that their community is an ecosystem with living and non-living components.

**Materials:**

* School Ecosystem Map (1 per student)
* Draw your Organism worksheet (1 per student)
* Colored pencil and markers

**NGSS standards:**
**5-LS2-1.** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**Procedure**

1. Large group - Refresher with Ecosystem
	1. What do you remember about ecosystems from your science class?
	2. What are the different parts of an ecosystem?
	3. What are some of the living and nonliving components of an ecosystem?
		1. Terms: Living, nonliving, Producers, Consumers, Energy, Decomposers
2. Large group - Pokemon Go video
	1. <https://www.youtube.com/watch?v=ud17EHiDKrM>
	2. What types of Pokémon are shown?
		1. Water, birds, owls, and bats
	3. What types of environments are shown in the video?
		1. City, forest, mountains, beach
3. Mini Squads - The School Ecosystem using the Maps
	* 1. Community Map (Non living things)
			1. The purpose of this task is for students to be able to see that the school is an ecosystem, emphasizing the nonliving things.
			2. Follow up questions
				1. Ask the students to draw a map of their school. What do they see everyday? What is their daily routines?
				2. Ask students to list the non-living things in the school ecosystem ex. Trash can, tables, water, sand.
		2. School Organism Map (Living things) (Use draw your organism hand out)
			1. The purpose of this task is for students to understand how living things coexist with nonliving things in an ecosystem. Make sure to emphasize how the nonliving and living things relate to each other and support each other. For example, would an organism such as a fish live in the jungle gym?)
			2. Follow up questions
				1. What kind and types of organisms that would be in the school ecosystem?
				2. Where would we find them and why would they live there?
				3. Would they be a producer, decomposer, or consumer?
			3. Students can write down two entries about the organism in the ecosystems map.
			4. Be sure to foreshadow that next week we will be filming a video about how their school is an ecosystem and how they see the organisms they listed as part of the ecosystem.

**School Ecosystem Map**

What do you see every day at school?
What are the nonliving things you see at school?

**Draw Your Organisms**

Draw your organism that lives in your school ecosystem

Is it either a producer, consumer, or decomposer?

Where would it live in the school ecosystem?

How is it related to the living and non-living things?

**Lesson 2**

**Activity Name**: Brainstorming a Ecosystems Documentary

**Overview:** Students will describe their school as an ecosystem by describing the living and nonliving things in El Sol. They will finish their community map, organism booklet, and begin creating their documentary

**Goals:** The goal of this lesson is to show students that their community is an ecosystem with living and nonliving components.

**Materials:**

* School Ecosystem Map (1 per student)
* Draw Your Organism (at least 6 organisms)
* Colored pencils and markers (David)
* Recording devices such as smart phones, tablets, video cameras

**NGSS Standards:**

-5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**NGSS Practices:**

-Modeling in 3-5 builds on K-2 models and progresses to building and revising simple models and using models to represent events and design solutions.

-Develop a model to describe phenomena. (5-LS2-1)

-A system can be described in terms of its components and their interactions. (5-LS2-1)

**Procedure**

1. Organism Community Map

 -***2 students pass out map and legends-***

 ***- Teacher will divide students into 4 groups***

* 1. Students will finish up on their community maps
		1. Students have examples of the main components of an ecosystem, i.e. consumer, producer, decomposer - nonliving (abiotic) /living (biotic).
	2. Class Discussion
		1. Students will discuss as a class the different environments in the school that organisms can live in.
		2. The teacher will assign which group has which section (on map/whiteboard)
			1. Basketball court
			2. Jungle Gym
			3. Black Top
			4. Classroom
		3. Each group will choose one representative to discuss an organism that can live in their assigned environment
			1. Organism name
			2. Category (consumer, producer, decomposer)
			3. Nonliving or living
			4. Why/how the organism is related to their environment?
1. Organism Legend
	1. Students will work in assigned groups to create a Organism Legend
		1. Students will use the worksheet as a guideline to create or name a organism that would best fit at the school (drawing information from the community maps). *(Students must draw at least* ***6*** *organisms, at least* ***two*** *per category -* ***consumer, decomposer, and producer****)*
		2. Students must describe how the organism they drew relates to the environment and how the organism interacts with their environment/other organisms around them.
		3. Students must name their organism

Ex: Gary the Goat is a consumer that can live by the jungle gym because it eats grass.

1. Documentary Assignments
	1. Teacher will write possible jobs on the whiteboard
	2. Students will discuss amongst each other and assign jobs within group (people take turns) [EACH student must be in the video at least once]
		1. Recorder
		2. Organism
		3. Narrator
		4. Guide
		5. Why organism is interrelated to environment/what category it falls under. (can be split)

**Lesson 3**

**Activity Name:** Producing the Video

 **Overview:** Students will describe their school as an ecosystem by describing the living and nonliving things. They will assign roles for their documentary and work together in groups to record their respective school ecosystem.

**Goals:** The goal of this lesson is to show students that their community is an ecosystem with living and nonliving components.

**Materials:**

* School Ecosystem Map (1 per student)
* Draw Your Organism (at least 6 organisms)
* Colored pencils and markers (David)
* Recording devices such as smart phones, tablets, video cameras

**NGSS Standards:**

-5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**NGSS Practices:**

-Modeling in 3-5 builds on K-2 models and progresses to building and revising simple models and using models to represent events and design solutions.

-Develop a model to describe phenomena. (5-LS2-1)

-A system can be described in terms of its components and their interactions. (5-LS2-1)

**Procedure**

1. Groups will discuss who will help each role of making the documentary
	1. Recorder (person that holds recording devices)
	2. Actor: Acts out the organism
	3. Narrator: Speaks and narrates, does not need to be on camera
	4. Director (organize/guide video production)
	5. Assistant Director (helps with script)
2. Each group will be assigned an undergraduate teacher and go towards their destination
	1. Undergraduate students will be in charge of making sure their group is doing what they are supposed to be doing
		1. Undergraduate students will each carry a timer on them and ensure that students make it back to the classroom at least 5 minutes before leaving for snacks
	2. Students run the show, we will act as facilitators
		1. Undergraduates will have a sample script to help students narrate their documentary if they are unable to come up with their own
			1. Script ex: Hi, my name is \_\_\_\_. I am here to show you our school as an ecosystem. The first thing I want to show you is \_\_\_\_ which is a nonliving/living thing. The organism that lives in this ecosystem is \_\_\_. It needs \_\_\_\_\_ to survive
3. After students record, they can edit, film additional pieces, narrate, add voice overs, and then present their work.
4. It is important to note, that this curriculum carries on to the “Engineering a Solution” lesson plans. In the next series of curriculum, students will review their videos and identify a problem in the ecosystem and how they can create change and design a solution.