School:	Richmond Heights Middle School	Subject:	Food Web Relationships	Teacher:	Mrs. Ebonie Battle-Williams	Lesson Plan Date:	3/9/17

<table>
<tr><td rowspan="10">PRE-PLANNING</td><td>OBJECTIVE
What will your students be able to learn?</td><td>BENCHMARK:</td></tr>
<tr><td>• Compare and contrast the relationships between organisms in the food web
• Explain the role of different organisms in the food web
• Describe limiting factors of organisms in their environment</td><td>SC.7.L.17.2 – Compare and contrast the relationships among organisms, such as mutualism, predation, parasitism, competition, and commensalism
SC.7.L.17.1 – Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
SC.7.L.17.3 – Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.</td></tr>
<tr><td colspan="2">ASSESSMENT “Begin with the End in Mind”
How will you know whether your students have made progress toward the objective? How and when will you assess mastery?</td></tr>
<tr><td colspan="2">Students will answer questions at the end of the activity relating to the interdependence of organisms</td></tr>
<tr><td colspan="2">ESSENTIAL QUESTION
A higher order question that is directly derived from the benchmark, introduced at the beginning of the lesson, discussed throughout the lesson, and answered by students at the end of the lesson to show understanding of the concepts taught.</td></tr>
<tr><td colspan="2">How do organisms interdepend on each other in their environments?</td></tr>
<tr><td colspan="2">HIGHER ORDER QUESTIONS (3-5)
What questions will be answered to provoke higher order thinking and include Moderate to High FCAT Complexity Levels? What would the ideal student response be for each question?</td></tr>
<tr><td colspan="2">1. How do you differentiate between a primary consumer and a secondary consumer?
• A primary consumers are typically herbivores and eat producers, plants and fungus, and secondary consumers are typically carnivores that feed on the primary consumers
2. Why are limiting factors a requirement for environments?
• Limiting factors help control population sizes, of both consumers and producers. If there are too many predators, the amount of prey will be diminished, which will then lessen the amount of prey. The limiting factors help keep population sizes in tact.
3. Can something be both a tertiary consumer and a primary consumer?
• Yes, this type of animal would be an omnivore. It would consume both plants and other secondary consumers. This would include humans.</td></tr>
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<tr><td rowspan="4">LESSON CYLCE</td><td>BELLRINGER
Follow the Focus Calendar to provide reinforcement of previously taught skills.</td><td>TIME
Approximate</td></tr>
<tr><td>Students will start with a food web. They will be asked to identify primary consumers, secondary consumers, producers, carnivores, omnivores, and herbivores.</td><td>10 min</td></tr>
<tr><td>INTRODUCTION
Brief part of the lesson when students learn the objective/essential question and how mastering the objective leads to achieving the bigger goal of the course.
• Provide a hook to motivate students and link to prior knowledge in order to introduce a new concept.
• Explain the relevance of lesson and the importance of learning the concept.
• Introduce important vocabulary using the word wall as an interactive learning tool.</td><td rowspan="2">25-30 min</td></tr>
<tr><td>Introduce the topic of interdependence. Explain that the activity will be based on the understanding of the food web and food relationships between organisms.</td></tr>
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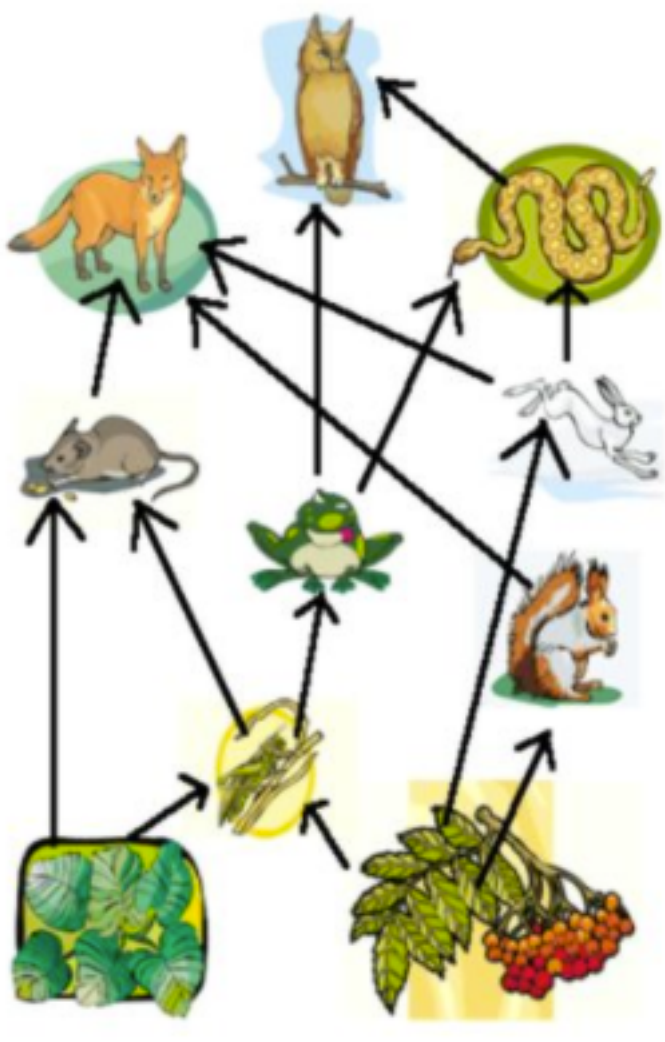
Important vocabulary: primary consumer, secondary consumer, tertiary consumer, predator, prey,



herbivore, carnivore, omnivore, producer

MODELING *"I DO"*

Component of the lesson when teacher explicitly models to students exactly what they are expected to do during guided practice and eventually during independent work.

- Conduct a think aloud while modeling the steps to completing an activity or solving a problem.
- Model the use of a graphic organizer.
- Use questioning techniques such as re-directing, wait-time and prompting.

Describe the activity the students will be performing. Give them directions as to how they will set up an environment.

GUIDED PRACTICE *"WE DO"*

Guide students to independent practice by providing an opportunity to work in small groups and practice what was taught during the modeled portion of the lesson.

- Incorporate the use of a collaborative strategy in small groups.
- Encourage student accountable talk during group discussion.
- Perform checks for understanding.

"Predator-Prey" simulation activity. See attached sheet.

COLLABORATIVE PRACTICE *"THEY DO"*

Guide students to independent practice by providing an opportunity to work in small groups and practice what was taught during the shared portion of the lesson.

- Incorporate the use of a collaborative strategy in small groups.
- Circulate throughout the room and provide guidance to each group as needed.

	After data collection for the 20 generations, they students should work with their groups to create a graph of the amount of predators and prey over the generations. Use colored pencils to depict the two different lines and label the graph. Students should discuss among their groups what they see as a trend in the graph.	
	INDEPENDENT PRACTICE *“YOU DO”* Differentiate your instruction to reach the diversity of learners in your classroom. • Assign students independent work that is directly aligned with the “I Do” and “We Do” portions of the lesson. • Conduct Center Rotations • Circulate around the room to provide individual support. • Pull small groups or individuals for more intensive support.	
	Students will work together to do the activity	
	CLOSURE Wrap up the lesson and help students organize the information learned into a meaningful context. • Have students reflect on or answer the Essential Question. • Help students connect today’s learning to their bigger goal in the course.	*5 min*
	Students will discuss what they learned and share the answers to the questions they completed on their own.	
	HOME-LEARNING How will students practice what they learned? How will opportunities be provided for students to maintain mastery of previously mastered skills/concepts?	
	N/A	

Name: ______________________________

Predator Prey Simulation

Procedure:

1. Place 3 prey on your table, make sure they are evenly dispersed.
2. Toss 1 predator onto the table. The predator needs 3 prey to survive. It will be impossible for the predator to survive at this point.
3. Remove any of the prey the predator touches and remove the predator. Record the data for your 1st generation, both initial predators and prey and remaining predators and prey.
4. The prey population doubles each generation. Count how many prey you have left on your table, add that number of additional prey to the table. Record the number in the data table under 2nd generation “number of prey starting”. (It should be 2x the number you have in “prey remaining” for generation 1.
5. Your predator died during the first round, and that’s OK, a new predator moves in for the second round. Put a 1 in the “number of predators” for generation 2 to represent the new arrival. Repeat the tossing procedure and record your data for the second generation.
6. Again, the number of prey doubles, if your predator didn’t “capture” 3 prey, it died. But a new one moves in for the next round. Keep going, doubling the number of prey remaining each round.
7. Eventually, your predator will be able to capture enough prey to survive, when this happens the number of predators double. Add to your predator population by adding predators. Now, when you toss your predators you will toss more than one. Do not forget to remove any “captured” prey.
8. Continue recording through 20 generations.

Generation	# Predators	# Prey	# Predators Remaining	# Prey Remaining
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Construct a graph:
On the X-axis, put generations 1-20. This is the ____________________________ variable.
On the Y-axis, put the population numbers for each generation. This is the ____________________________ variable.
Use one line for the predator and one line for the prey to graph the data.
Be sure to give the graph a title, label the axes, and label the different lines.

Analysis:

1. Describe the relationship between the predator and prey population as time goes by.

2. Make a prediction about what would happen to your prey population if a new predator is added to the system.

3. Explain how this simulation models a real ecosystem.