LESSON PLAN: Chesapeake Bay Populations!

Title: Populations in the Chesapeake Bay Area

Grade level/content area: 8th grade

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Date lesson will be taught: 17FEB2022

Source of the lesson: Teacher Created by Mayli Dasalla and Anna Gradel

CONCEPT STATEMENT

The life processes of plants and animals are interdependent and contribute to the flow of energy and cycles of matter within an ecosystem. The interaction between a consumer that captures and consumes another consumer is the predator-prey relationship. Many animals exhibit social behaviors that help them obtain resources. Herbivores often exhibit herding behaviors, which can protect the group from predators. Predators often work together to hunt, capture, and share their prey as well as to raise offspring. Organisms may exist as members of a population; populations interact and are interdependent with other populations in a community. Members of a population interact with other populations in a community. They compete to obtain the matter and energy they need for basic resources, mates, and territory, and cooperate to meet basic needs and carry out life processes. Organisms or populations that rely on each other for basic needs form interdependent communities, where a change in the population of one organism will affect the survival of others. Environmental factors (biotic and abiotic), which determine the types and number of organisms of a species in an ecosystem, are called *limiting factors*. Many limiting factors affect the growth of populations in nature.

LESSON OBJECTIVES

Students will be able to...

Investigate and understand the interactions between populations and members in a population

Explain how population size changes in response to environmental factors and interactions between organisms.

Relate population dynamics of local species to the ecosystem of the Chesapeake Bay.

VIRGINIA SOL OBJECTIVE(s) ADDRESSED

LS.7 The students will investigate and understand that interactions exist among members of a population. Key concepts include:

LS.7.a Competition, Cooperation, Social Hierarchy, Territorial Imperative; and

.7.b Influence of behavior on a population.

LS.8 The student will investigate and understand interactions among populations in a biological community. Key concepts include:

LS.8.c Competition and Cooperation

LS.9 The students will investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem. Key concepts include:

LS.9.c Adaptations that enable organisms to survive within a specific ecosystem.

LS.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long term changes in their environment. Key concepts include:

LS.10.b factors that increase or decrease population size; and

LS.10.c Eutrophication, Climate changes, and Catastrophic disturbances.

MATERIALS NEEDED (Resources, supplies, and handouts)

- (4) Pre-made Foldables
- (1) Prototype Foldable
- (4) Packs colored pencils
- (4) Printed Exit Tickets

SAFETY CONSIDERATIONS

Students will be finding their own research online for their Chesapeake Bay species; ensure the sites are appropriate and educational.

ENGAGEMENT	Estimated Time: _____
Teacher and Student Activity	**Probing Questions**
The teachers will introduce themselves and the topic of the lesson. The teachers will inform the students that their tablets will be needed for the day so that they may pull out and charge their devices as needed.	“How is everyone doing this morning?” “Can anybody tell me one thing they already know about populations or ecosystems?”
The teachers will call on individual classes students to give their response, and give feedback.	“Who would like to share first?”
The students will be given a warm up. The teachers will hand out premade foldables. The teacher will instruct the students to define key terms on the left side of their foldable as their warm up activity.The students may find the definitions using their textbook or tablet.	“Does anyone have any questions about the warm up terms.” “Does anyone have questions about the instructions?”
The teachers will recognize when the students have finished answering their warm up questions, and the class will review the students’ answers.	“So, Zeke, could you tell us the definition of the first key term? Great. Does the class agree, or does anyone have anything to add? Who can define the next term?...”

Transition
"Now that we've started our foldable, we are going to investigate the population, and its key concepts, of a specific species native to the Chesapeake Bay"

EXPLORATION	Estimated Time: _____
Teacher and Student Activity	**Probing Questions**
The teachers will assign a specific species, native to Chesapeake Bay, to each student.	“Does anyone have questions about your assigned species?”
The students will investigate their assigned species in relation to the key words introduced during their warm up. The students will use their tablets to investigate information. The teachers will provide websites for finding the information.	“Why do you think we chose this species for you? What term might best suit us, humans, in relation to your species?”
The students will use the information investigated to fill in the rest of their foldable. Once finished, the foldable will have the major terms and concepts on one side and an example of the key term, in relation to their specific species, on the other.	“How has climate change affected your species so far?” “Do did you find the population size for your species, and was it specific?” “Did you find [key term] in relation to your species?” “If you did not, why do you think that is?”

Transition

Give students the option to share their foldable examples for their species."Did anyone find any cool facts about their species?"

EXPLANATION	Estimated Time: _____
Teacher and Student Activity	**Probing Questions**
The teachers will explain key concepts using the powerpoint presentation. The teacher will have students read off the powerpoint by students, to keep them engaged.	"Are there any questions about the powerpoint presentation?" "Can you please read the first section of the slide?" "What do you take away from this slide?"
The teachers will prompt students to discuss knowledge gained from activity and powerpoint while presenting. The teachers will maintain a discussion throughout the explanation instead of lecturing.	"So, who here investigated a keystone species?" "How does a change in your species population size affect the Chesapeake Bay?" "When your species experiences a decrease in population, how are their competition affected? Or the food chain?"
The teachers will open up the opportunity to ask questions or request clarification.	"Are there any questions about your species population, or any concepts or terms we've discussed so far?"

Transition
"Alright, now that we've talked about your specific species, let's look at a bigger picture."

ELABORATION	Estimated Time: _____
Teacher and Student Activity	**Probing Questions**
The teachers will prompt students into a discussion about the ecosystem, using the Chesapeake Bay as an example. The teachers will prompt the students to discuss how their different populations interacts with one another?	"Did you see anything that your species would benefit from or be harmed by in the example?" "Student A, can you describe your species relationship to student B's species?" "What are the big impacts made by humans to the Chesapeake Bay?" "Can anyone tell me what major disturbances the Bay has experienced in the past? How might that have affected the ecosystems there?"
The teachers will point at different parts of the example and call on students to tell the class what definition relates to the organism or object.	"Jaden, can you tell me if this is an example of population or community?" "Who knows whether this interaction is cooperation or competition? Explain why."

Transition
"This has been a great discussion, and we have one more thing for you guys."

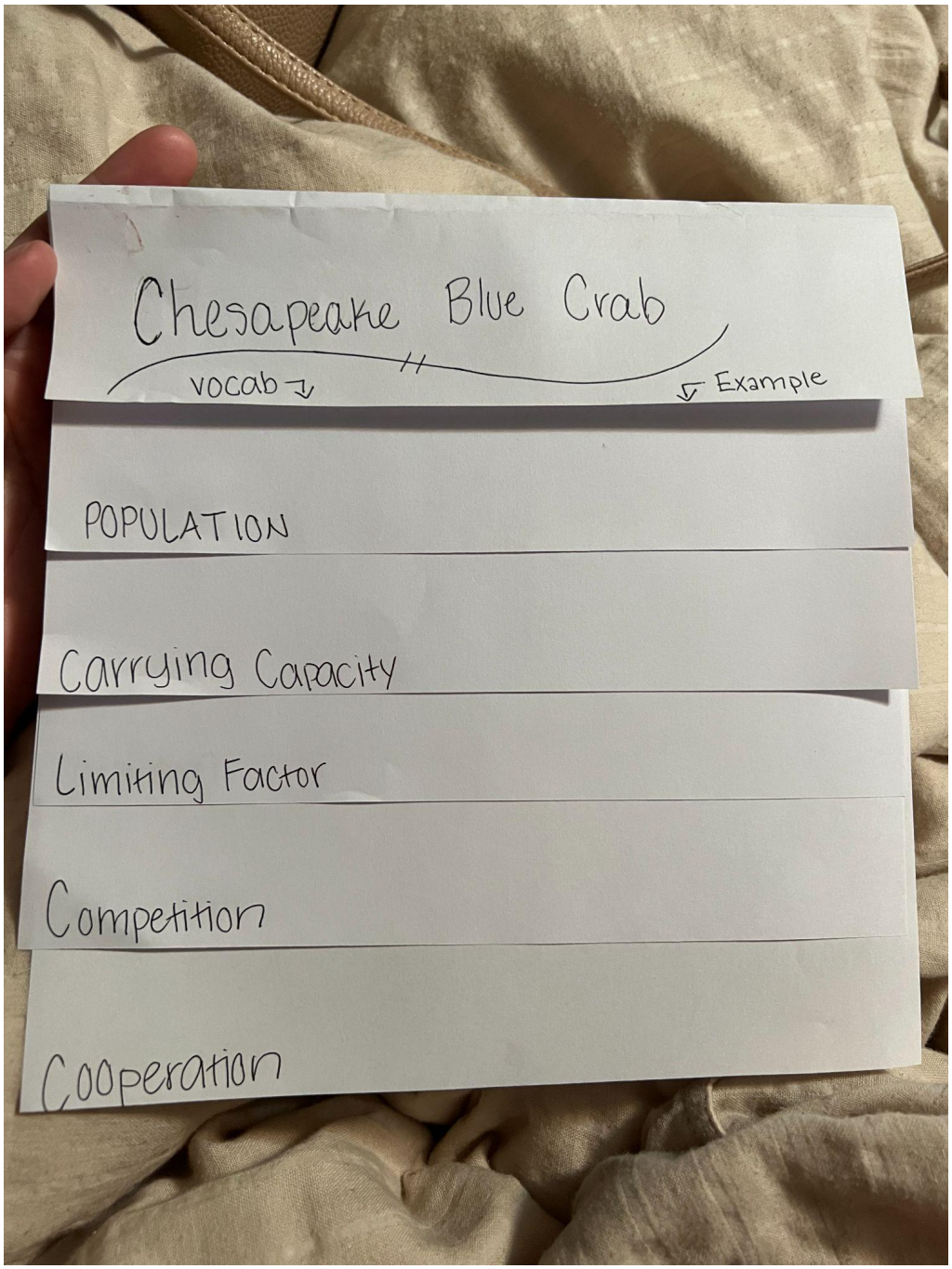
EVALUATION	Estimated Time: _____
Teacher and Student Activity	**Probing Questions**
The teachers will hand out exit tickets.	
The students will individually answer the question in the space provided.	“Are there any exit ticket questions?”

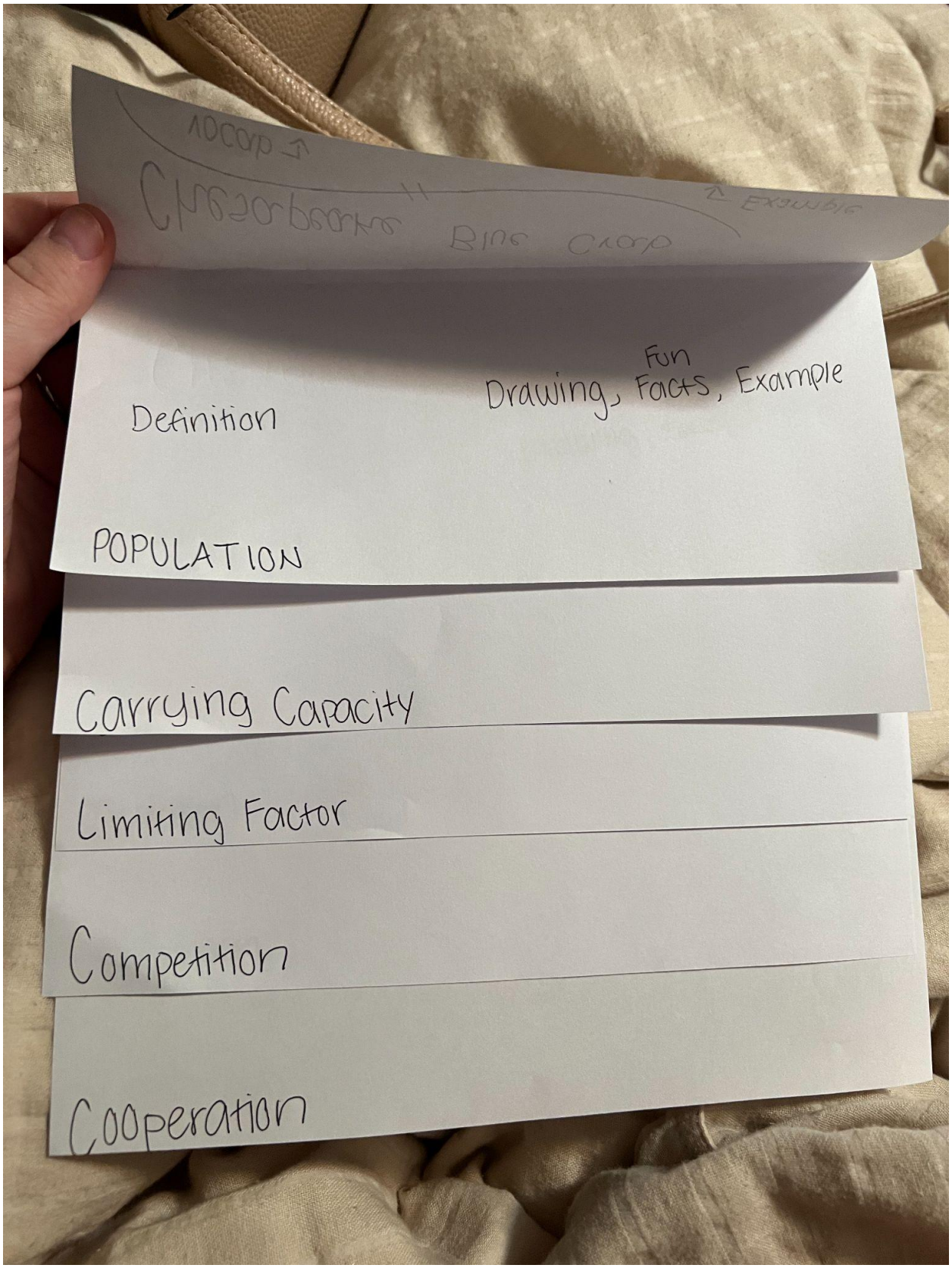
Dismissal/Wrap-Up
The teacher will Collect exit tickets and thank students for giving their attention to us today.

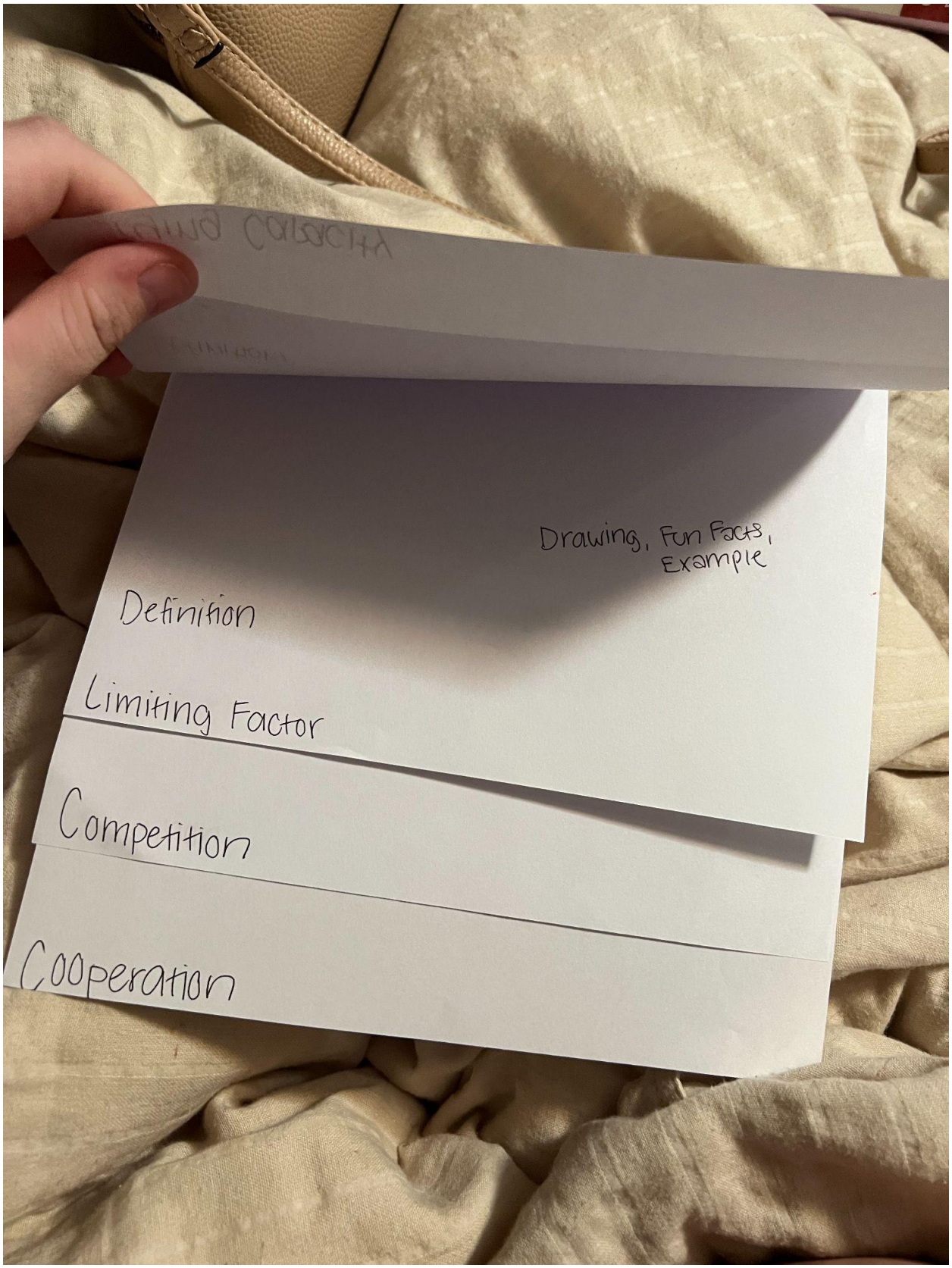
Student Artifacts for Lesson Evaluation

Attach any SUPPLEMENTARY MATERIALS (handouts, worksheets, data collection tables, assessments, etc.) as part of your lesson plan.

Foldable Template (Example) -


Chesapeake Blue Crab
vocab
Example
POPULATION
Carrying Capacity
Limiting Factor
Competition
Cooperation


Definition
Fun
Drawing, Facts, Example
POPULATION
Carrying Capacity
Limiting Factor
Competition
Cooperation


Drawing, Fun Facts, Example
Definition
Limiting Factor
Competition
Cooperation