<table>
<thead>
<tr>
<th><strong>Target Language:</strong> Spanish</th>
<th><strong>Grade Level:</strong> 4 and 5</th>
</tr>
</thead>
</table>

| **Proficiency Level:** Junior Novice Low – Junior Novice Mid |

| **Enduring Understanding:** |
| The Chesapeake Bay is an ecosystem affected by many factors, including human activity. |

| **Essential Questions:** |
| What actions harm the Chesapeake Bay watershed? |
| What can we do to help the Chesapeake Bay watershed? |

| **Module Duration and Lessons:** |
| This module is designed for three to five 30-minute class periods per week over three to five weeks. Instructional time will depend on students’ previous knowledge of content and vocabulary, as well as their language proficiency. Other factors include program type and whether the module is used as the main core of instruction or as a supplementary resource. |
| Lesson 1: Un paseo por la Bahía Chesapeake |
| Lesson 2: El ecosistema de la Bahía Chesapeake |
| Lesson 3: Las zonas muertas en la Bahía |
| Lesson 4: Acciones para proteger la Bahía |
| Lesson 5: Final Performance Assessment |

| **Suggestions to teachers:** |
| You may want to consider using this module after using the *Water, Water Everywhere* and/or *From Seeds to Table* modules. The content from these two modules may serve as prior knowledge for this module on ecology. |
| In Lesson 4, students learn about chicken farms in the Chesapeake Bay watershed. If possible, arrange for a field trip to a local chicken farm or invite a farmer to visit your classroom. If these options are not possible, obtain an online video. |
| This module includes a story about Danny visiting his grandpa, Jim, who grew up on the Chesapeake Bay. The story is called «La Bahía Chesapeake - un hogar para muchos.» The text of the story is included in the accompanying PowerPoint so that students can narrate the story as you progress through the module. |

| **Context and Storyline:** |
| Jim lives along the Chesapeake Bay and his grandson, Danny, has come for a visit. As they walk together along the shore, Jim tells Danny about the Chesapeake Bay watershed and how it has changed over time. Danny learns about the animals of the Bay watershed, factors that have affected the health of the watershed and steps that can be taken to improve it. |
## Standards Targeted

<table>
<thead>
<tr>
<th>5C’s – World-Readiness Standards for Learning Languages</th>
<th>NGSS/STEM Standards</th>
</tr>
</thead>
</table>
| **Communication:** Communicate effectively in more than one language in order to function in a variety of situations and for multiple purposes  
- **Interpersonal Communication:** Learners interact and negotiate meaning in spoken, signed, or written conversations to share information, reactions, feelings, and opinions.  
- **Interpretive Communication:** Learners understand, interpret, and analyze what is heard, read, or viewed on a variety of topics.  
- **Presentational Communication:** Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers. | **SS: NGSS 3-LS4-3**  
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. |
| **Cultures:** Interact with cultural competence and understanding  
- **Relating Cultural Practices to Perspectives:** Learners use the language to investigate, explain, and reflect on the relationship between the practices and perspectives of the cultures studied.  
- **Relating Cultural Products to Perspectives:** Learners use the language to investigate, explain, and reflect on the relationship between the products and perspectives of the cultures studied. | **STEM:**  
- Learn and apply rigorous science, technology, engineering, and mathematics content  
- Interpret and communicate information from science, technology, engineering, and mathematics  
- Engage in inquiry  
- Engage in logical reasoning  
- Apply technology strategically |
| **Connections:** Connect with other disciplines and acquire information and diverse perspectives in order to use the language to function in academic and career-related situations. |
Making Connections:
Learners build, reinforce, and expand their knowledge of other disciplines while using the language to develop critical thinking and to solve problems creatively.

Acquiring Information and Diverse Perspectives:
Learners access and evaluate information and diverse perspectives that are available through the language and its cultures.

Comparisons: Develop insight into the nature of language and culture in order to interact with cultural competence

Language Comparisons:
Learners use the language to investigate, explain, and reflect on the nature of language through comparisons of the language studied and their own.

Cultural Comparisons:
Learners use the language to investigate, explain, and reflect on the concept of culture through comparisons of the cultures studied and their own.

Communities: Communicate and interact with cultural competence in order to participate in multilingual communities at home and around the world

School and Global Communities:
Learners use the language both within and beyond the classroom to interact and collaborate in their community and the globalized world.

Lifelong Learning:
Learners set goals and reflect on their progress in using languages for enjoyment, enrichment, and advancement.

Knowledge: Students will know...

<table>
<thead>
<tr>
<th>Content-obligatory language:</th>
</tr>
</thead>
<tbody>
<tr>
<td>el abuelo</td>
</tr>
<tr>
<td>la región de la Bahía Chesapeake</td>
</tr>
<tr>
<td>el pájaro</td>
</tr>
<tr>
<td>el pato</td>
</tr>
</tbody>
</table>

Skills: Students can...

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify Chesapeake Bay organisms</td>
</tr>
<tr>
<td>Show how organisms within an ecosystem depend on one another within food chains and food webs.</td>
</tr>
<tr>
<td>Predict an ecosystem’s stability when one factor (abiotic or biotic) is changed.</td>
</tr>
</tbody>
</table>
The Chesapeake Bay – A Home for Many
La Bahía Chesapeake – Un hogar para muchos

- el pez
- el depredador
- la presa
- el águila calva
- el águila pescadora
- el ánade real
- la barnacla canadiense (el ganso del Canadá)
- el tiburón sarda
- la raya gavilán
- la lubina rayada
- el sábalito atlántico
- el pez de ostra
- el zorro rojo
- la almeja softshell
- la ostra virginica
- el camarón de la hierba
- el caballito de mar
- el cangrejo azul
- el fitoplancton
- el zooplancton
- la hierba de anguila
- la hierba widgeon
- el ecosistema
- la cuenca
- la cadena alimentaria
- la red alimentaria
- el equilibrio
- saludable
- las personas/la gente
- la agricultura
- la basura agrícola
- el fertilizante
- los químicos
- el agua de lluvia
- la escorrentía
- el nitrógeno
- el oxígeno
- la contaminación/ la polución
- el nutriente
- las algas
- la marea caoba
- la zona muerta
- la granja/el granjero/cultivar

- Identify pollutants that affect water quality in the Chesapeake Bay.
- Explain the relationship between healthy food chains and healthy ecosystems.
- Propose solutions, which could improve the water quality in the Chesapeake Bay.
World Language-STEM MODULE COVERSHEET
The Chesapeake Bay – A Home for Many
La Bahía Chesapeake – Un hogar para muchos

- el pollo
- el aire
- las fábricas
- las casas
- las ciudades

Content-compatible language:
- vivir
- la tierra
- el agua
- depender
- hacer
- quitar
- interactuar
- flotar
- migrar
- morir
- doler
- nadar
- volar
- andar/caminar
- correr
- comer/ ser comido por
- Reducir, reutilizar, reciclar.
- las rayas (rayado/a)
- los lunares
- la costa oriental/la costa occidental
- el río
- el cieno verde
- el porcentaje
- el coche (el carro)
- la bicicleta
- el papel
- el jardín
- el árbol
- la planta/ plantar
- el campamento/ir de camping
- la basura trash / garbage
- transparente

Expressions and patterns:
- ¿Te gusta...?
- Me gusta____. No me gusta____.
### Integrated Performance Assessments

#### Interpretive and Presentational Task

In Lesson 1, students identify and describe one of the animals of the Chesapeake Bay.

In Lesson 5, for the final performance assessment of this module, students record a podcast for an Earth Day contest in their school. In addition to a description of a Chesapeake Bay animal, the podcast will also include the animal’s habitat, the problems it faces, and how people can help. Students then listen to several of their classmates’ podcasts and identify the animals described.

#### Presentational Task

In Lesson 2, students design a postcard in which they summarize their learning about the Chesapeake Bay watershed and the animals that live there.

In Lesson 4, using a presentation format of their choice, teams of students research and present one problem facing the health of the Bay.

In Lesson 5, students assemble *My Bay Book* with the activities that were completed in this module. They share their book with a partner.

#### Interpersonal Task

In Lesson 1, pairs of students discuss characteristics of Bay animals.

### Materials/Resources:

- PowerPoint presentation: Un hogar para muchos
- tape or glue sticks
- scissors
- Internet access for stations activities and videos
- online videos: a bald eagle or an osprey catching a fish, a blue crab or seahorse
- online video: [https://www.youtube.com/watch?v=o7kB7-UN7m4&list=PL33o4n6CIM9jcTSBNc7nj1Qu8qZp-X8I2](https://www.youtube.com/watch?v=o7kB7-UN7m4&list=PL33o4n6CIM9jcTSBNc7nj1Qu8qZp-X8I2)
World Language-STEM MODULE COVERSHEET
The Chesapeake Bay – A Home for Many
La Bahía Chesapeake – Un hogar para muchos

- index cards
- markers or colored pencils
- a ball of yarn or string
- one large roasting pan (one per group) (such as a disposable aluminum pan, 16” x 12” x 3”)
- one sheet of thin plastic that is larger than the pan – one for each group of 4 students
- sheets of newspaper
- plastic wrap
- aluminum foil
- spray bottle (one for each group)
- large book (one for each group)
- green and orange gelatin mix
- hot cocoa mix
- blue food coloring
- audio recording device
- optional: video camera

- STEM Background Resource 1: Animal Life of the Chesapeake Bay Watershed
- STEM Background Resource 2: Plant Life of the Chesapeake Bay Watershed
- Resource 1a: Images for small group activity
- Resource 1b: Flashcards for partner activity
- Worksheet 1a: Mi libro de la Bahía cover
- Worksheet 1b: La Bahía de Chesapeake (one per student and one enlarged copy for class display)
- Worksheet 1c: Visuals to accompany Worksheet 1b (one set per student and one enlarged set for class display)
- Resource 2a: Visuals for food web activity (one set per student)
- Resource 2b: Arrows for food web activity (one page per group)
- Worksheet 2a: Mi cadena alimentaria
- Worksheet 2b: La cuenca de la Bahía de Chesapeake
- Worksheet 2c: Una tarjeta postal a mi amigo/a (one per student duplicated on cardstock, if possible)
- Resource 3a: Un experimento de la cuenca
- Worksheet 3a: Resultados del experimento de la cuenca
- Worksheet 3b: Una zona muerta
- Worksheet 3c: La contaminación de nitrogen en la Bahía de Chesapeake
- Resource 4a: List of Resources for Stations Activity
- Resource 4b: Rubric for Team Presentational Task
- Worksheet 4a: Explorar los problemas
- Worksheet 5a: Final Performance Assessment

STEM Background for Teachers:
Biodiversity: The connection of living things to each other. Plants and animals depend on each other to survive.

Ecosystem: “Ecosystem” is short for “ecological system” and includes all the living organisms existing together in a particular area. These plants and animals within an area interact with each other and with the non-living elements of the area such as climate, water, soil, etc. An ecosystem can be very small such as a puddle or an area under a large rock, or it can be vast like Chesapeake Bay or the Atlantic Ocean. The balance of an ecosystem is delicate, and a disruption such as the introduction of a new
element can damage it. Scientists group ecosystems that are similar into biomes. When we talk about the entire ecosystem of the whole planet, we call it the biosphere. (Sydenham, S. & Thomas, R. What is an ecosystem? [Online] www.kidcyber.com.au [2009]).

Each spring and summer in the Chesapeake Bay region, low-oxygen “dead zones” and harmful algae blooms appear in various parts of the Bay and its creeks and rivers. The size and severity of algae blooms and dead zones in the Bay depend on the amount of water that flows into the Bay. That water brings excess nutrients and sediment from the land. Combined with high temperatures, the excess pollutants can fuel the growth of algae blooms and cause the water to become clouded and discolored. The water condition is called a mahogany tide, which can cause the water to appear reddish brown. Mahogany tides may also deplete the water of oxygen, which may be why Jim and Danny saw dead fish.

Algae blooms make conditions difficult for much of the aquatic life in the Chesapeake Bay. Algae blooms can be very detrimental to the health of the Bay. Some are considered harmful algae blooms (HABs) and can be toxic to aquatic life such as fish, oysters and crabs. They can also cause skin irritation or other sickness to people who come into contact with them. Even if algae blooms aren’t toxic, they can still be harmful to the Bay. When algae blooms get dense enough, they block sunlight from reaching Bay grasses growing at the bottom of the Bay. Of course, Bay grasses are vital to the Bay’s health, so when fewer Bay grasses grow, the cycle of poor Bay health continues. When algae blooms die they create more problems, as the decomposition process sucks up most of the oxygen that fish, oysters and crabs needs to survive.

Since algae blooms are fueled by excess nutrients, you can do your part to help prevent algae blooms in your local waterway by taking small steps to decrease polluted runoff. Small steps such as not fertilizing your lawn, picking up your pet’s waste and planting more trees in your yard can make a difference. (Source: Chesapeake Bay News).

Additional resources included in this module:

- **STEM Background Resource 1:** Animal Life of the Chesapeake Bay Watershed
- **STEM Background Resource 2:** Plant Life of the Chesapeake Bay Watershed
- **Resource 4a:** List of Resources for Stations Activity
The Chesapeake Bay – A Home for Many
La Bahía Chesapeake – Un hogar para muchos
<table>
<thead>
<tr>
<th>Animal</th>
<th>Photo</th>
<th>Size</th>
<th>Color</th>
<th>Eating habits</th>
<th>Predators</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>el águila calva</strong></td>
<td><img src="image1.png" alt="Photo" /></td>
<td>• 30-37”</td>
<td>• black/brown</td>
<td>• fish</td>
<td>humans</td>
<td>• national symbol of the USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• female larger than male</td>
<td>• white head</td>
<td>• ducks</td>
<td></td>
<td>• powerful beak and claws</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• wingspan of 72-90”</td>
<td>• yellow feet and beak</td>
<td>• birds</td>
<td></td>
<td>• can travel 30 mph</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• small animals (up to 4 lbs.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>el águila pescadora</strong></td>
<td><img src="image2.png" alt="Photo" /></td>
<td>2’</td>
<td>brown and white</td>
<td>fish</td>
<td></td>
<td>• hawk-like raptor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• wingspan of 6’</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• migrates south August-March</td>
</tr>
<tr>
<td><strong>la barnaca canadiense (el ganso del Canadá)</strong></td>
<td><img src="image3.png" alt="Photo" /></td>
<td>30-43”</td>
<td>brown, gray, white and black</td>
<td>plants</td>
<td>humans</td>
<td>• average wingspan of 5’</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• can travel 2,400 miles per day</td>
</tr>
<tr>
<td><strong>el ánade real</strong></td>
<td><img src="image4.png" alt="Photo" /></td>
<td>18-28”</td>
<td>red, brown, and white with green head</td>
<td>plants</td>
<td>humans</td>
<td>winters in Chesapeake Bay region, then migrates north</td>
</tr>
<tr>
<td>Animal</td>
<td>Photo</td>
<td>Size</td>
<td>Color</td>
<td>Eating habits</td>
<td>Predators</td>
<td>Other Notes</td>
</tr>
<tr>
<td>---------------------</td>
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<td>--------------------------------</td>
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<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| el zorro rojo       | ![Red Fox Image](image) | 25” 6-15 lbs. | • reddish body  
• black legs  
• white belly | • fruits  
• seeds  
• worms  
• insects  
• small mammal  
• small birds and their eggs | • eagles  
• coyotes  
• other animals  
• humans | • usually only lives 3 years in the wild  
• lives in swamps, forests, farms throughout the Chesapeake Bay watershed |
| la lubina rayada   | ![Striped Bass Image](image) | 20” | • light or olive green to blue, brown, black  
• metallic sides are striped with 7-8 dark lines | • small fish  
• invertebrates (worms, squid, menhaden, anchovies, and crustaceans) | • sharks  
• larger fish  
• ospreys | • state fish of MD  
• elongated body |
| el sábalo atlántico| ![Atlantic Sablefish Image](image) | max to 15” | • phytoplankton  
• zooplankton | • bluefish  
• weakfish  
• striped bass  
• predatory birds (osprey, eagles) | • forms a critical link between the upper and lower levels of the Bay food web  
• limited harvest |
<table>
<thead>
<tr>
<th>Animal</th>
<th>Photo</th>
<th>Size</th>
<th>Color</th>
<th>Eating habits</th>
<th>Predators</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>la raya gavilán</td>
<td></td>
<td>• pups 11-18”</td>
<td>brown</td>
<td>• oysters</td>
<td>• cobia</td>
<td>• called a “doublehead” because of the indentation around its snout</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• wingspan of up 3’</td>
<td></td>
<td>• clams</td>
<td>• bull sharks</td>
<td>• swims by flapping its fins like bird</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 50 lbs.</td>
<td></td>
<td></td>
<td>• sandbar sharks</td>
<td></td>
</tr>
<tr>
<td>el tiburón sarda</td>
<td></td>
<td>• max. 11’</td>
<td>grey on top and white belly</td>
<td>• bony fishes</td>
<td>humans</td>
<td>• one of three most aggressive, dangerous sharks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 690 lbs.</td>
<td></td>
<td>• rays</td>
<td></td>
<td>• occasional summer visitor to the Chesapeake Bay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• female larger than the male</td>
<td></td>
<td>• other sharks</td>
<td></td>
<td>• thrives in both saltwater and freshwater and can travel far up-river</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• crustaceans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• turtles</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• mammals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>el pez de ostra</td>
<td>12”</td>
<td></td>
<td>olive-brown</td>
<td>• small crabs</td>
<td>sharks</td>
<td>• Male makes a nest in a dark.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>back with dark blotches/lines</td>
<td>• small fish</td>
<td></td>
<td>• Female lays sticky eggs on the top of the nest.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• pale belly</td>
<td>• crustaceans</td>
<td></td>
<td>• Male protects the eggs and keep nest clean</td>
</tr>
</tbody>
</table>
## World Language-STEM MODULE COVERSHEET

### The Chesapeake Bay – A Home for Many

**La Bahía Chesapeake – Un hogar para muchos**

<table>
<thead>
<tr>
<th>Animal</th>
<th>Photo</th>
<th>Size</th>
<th>Color</th>
<th>Eating habits</th>
<th>Predators</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>el cangrejo azul</td>
<td><img src="image1.png" alt="Crab" /></td>
<td>4-9”</td>
<td>brown with blue claws</td>
<td>omnivore, bottom-feeders</td>
<td>fish, birds</td>
<td>and guards the young toadlets for a few more weeks after eggs are hatched.</td>
</tr>
<tr>
<td>la ostra virgínica</td>
<td><img src="image2.png" alt="Oyster" /></td>
<td>3-5”</td>
<td>white, gray and/or tan</td>
<td>filter feeder of plankton</td>
<td>humans</td>
<td>can produce 11 million eggs yearly</td>
</tr>
<tr>
<td>la almeja softshell</td>
<td><img src="image3.png" alt="Clam" /></td>
<td>3-4”</td>
<td>brown and white</td>
<td>filter feeder of plankton</td>
<td>crabs, ducks, rays</td>
<td>burrows up to 20’ deep</td>
</tr>
<tr>
<td>el caballito de mar</td>
<td><img src="image4.png" alt="Sea Horse" /></td>
<td>5-6”</td>
<td>yellow, brown, or black</td>
<td>crustaceans</td>
<td>few predators due to camouflage ability</td>
<td></td>
</tr>
<tr>
<td>el camarón de la hierba</td>
<td><img src="image5.png" alt="Shrimp" /></td>
<td>1.5”</td>
<td>nearly transparent body</td>
<td>worms, algae, tiny crustaceans</td>
<td>small fish</td>
<td>claws on the first two pairs of walking legs</td>
</tr>
<tr>
<td>Animal</td>
<td>Photo</td>
<td>Size</td>
<td>Color</td>
<td>Eating habits</td>
<td>Predators</td>
<td>Other Notes</td>
</tr>
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<td>----------------</td>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| el zooplancton |       | microscopic: range in size from single-celled protozoa to large jellyfish | • transparent  | phytoplankton       | form a link between the phytoplankton community and larger species at higher levels in the food web | • free-floating animals  
|              |       |                               | • colors vary  |                     |                                                                             | • the most plentiful animals in the Bay and its rivers                     |
### Plant Life of the Chesapeake Bay Watershed

<table>
<thead>
<tr>
<th>Plant</th>
<th>Photo</th>
<th>Size</th>
<th>Color</th>
<th>Predators</th>
<th>Other Notes</th>
</tr>
</thead>
</table>
| el fitoplancton (las algas)        |       | microscopic | • red  
• brown  
• green     | • fish  
• shellfish | • primary producers of oxygen and food for the bay  
• free-floating |
| la hierba de anguila              |       | up to 4’ | green       | • birds  
• turtles   | found in shallow, salty areas |
| la hierba widgeon                 |       | up to 4” | green       | • migratory waterfowl   | • Pollen floating on the water’s surface fertilizes the flowers, which then produce seeds.  
• common in shallow areas |
# World Language-STEM MODULE COVERSHEET

## The Chesapeake Bay – A Home for Many

### La Bahía Chesapeake – Un hogar para muchos

#### Lesson 1- *Un paseo por la Bahía*

<table>
<thead>
<tr>
<th>Lesson 1 of 5</th>
<th>Un paseo por la Bahía</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>I Can: <strong>Oral language:</strong></td>
</tr>
<tr>
<td></td>
<td>• Identify animals that live on the Chesapeake Bay.</td>
</tr>
<tr>
<td></td>
<td>• Tell if an animal lives on land, water, or both.</td>
</tr>
<tr>
<td></td>
<td>• Say if I like certain animals.</td>
</tr>
<tr>
<td></td>
<td>• Use pictures, a map and simple words to explain a watershed.</td>
</tr>
<tr>
<td></td>
<td><strong>Literacy:</strong></td>
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<td>• Recognize and label some of the names of animals found in the Chesapeake Bay watershed.</td>
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<td><strong>STEM and Other Subject Areas:</strong></td>
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<td>• Express a basic understanding of predators and prey.</td>
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<table>
<thead>
<tr>
<th>Vocabulary and Expressions</th>
<th>Prior Knowledge:</th>
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<tbody>
<tr>
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<td>• colors</td>
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<td>• numbers</td>
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<td>• adjectives of physical description such as <em>grande</em>, <em>pequeño(a)</em>, <em>bonito(a)</em>, <em>feo(a)</em>, <em>largo(a)</em>, <em>corto(a)</em></td>
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<td></td>
<td><strong>Content obligatory language:</strong></td>
</tr>
<tr>
<td></td>
<td>• <em>el abuelo</em></td>
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<td></td>
<td>• <em>la región de la Bahía Chesapeake</em></td>
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<td>• <em>el pájaro</em></td>
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<td>• <em>el pato</em></td>
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<td>• <em>el pez</em></td>
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<td>• <em>el depredador</em></td>
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<td>• <em>la presa</em></td>
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<td>• <em>el águila calva</em></td>
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<td>• <em>el águila pescadora</em></td>
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<td>• <em>el ánade real</em></td>
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<td>• <em>la barnacla canadiense (el ganso del Canadá)</em></td>
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<td></td>
<td>• <em>el tiburón sarda</em></td>
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<td></td>
<td>• <em>la raya gavilán</em></td>
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<tr>
<td></td>
<td>• <em>la lubina rayada</em></td>
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<td></td>
<td>• <em>el sábalo atlántico</em></td>
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<td>• <em>el pez de ostra</em></td>
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<td>• <em>el zorro rojo</em></td>
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<td>• <em>la almeja softshell</em></td>
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<td></td>
<td>• <em>la ostra virgínica</em></td>
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</table>
World Language-STEM MODULE COVERSHEET
The Chesapeake Bay – A Home for Many
La Bahía Chesapeake – Un hogar para muchos

<table>
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<td>o tape or glue sticks</td>
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<td>o scissors</td>
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<td>o Internet access</td>
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<td>o online videos: a bald eagle or an osprey catching a fish, a blue crab or seahorse</td>
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<tr>
<td>o <strong>STEM Background Resource 1:</strong> Animal Life of the Chesapeake Bay Watershed</td>
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<td>o <strong>STEM Background Resource 2:</strong> Plant Life of the Chesapeake Bay Watershed</td>
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<td>o <strong>Resource 1a:</strong> Images for small group activity</td>
<td></td>
</tr>
</tbody>
</table>

- *el camarón de la hierba*
- *el caballito de mar*
- *el cangrejo azul*
- *el fitoplancton*
- *el zooplancton*
- *la hierba de anguila*
- *la hierba widgeon*

**Content compatible language:**
- *vivir*
- *la tierra*
- *el agua*
- *las rayas (rayado/a)*
- *los lunares*
- *migrar*
- *flotar*
- *transparente*
- *la costa oriental/la costa occidental*

**Expressions and patterns:**
- ¿*Te gusta...?*
- Me gusta___. No me gusta____.
- Es un/a___.
- Come___. Es comido por___.
- Mi animal favorito es___.
- ¿Es grande o pequeño/a?
- ¿Vive en la tierra o en el agua?
- ¿Nada/vuela/anda/corre?
- ¿Qué ocurre/pasa cuando...?
- Vamos a averguiar!
- ¿Qué sucede/pasa?
- ¿Cuál es el problema?
### World Language-STEM MODULE COVERSHEET

**The Chesapeake Bay – A Home for Many**

**La Bahía Chesapeake – Un hogar para muchos**

- **Resource 1b:** Flashcards for partner activity
- **Worksheet 1a:** Mi libro de la Bahía cover (one per student)
- **Worksheet 1b:** La Bahía de Chesapeake (one per student and one enlarged copy for class display)
- **Worksheet 1c:** Visuals to accompany **Worksheet 1b** (one set per student and one enlarged set for class display)

### Lesson Storyline

Jim lives along the Chesapeake Bay. Danny, his grandson, is visiting Jim this summer. As they walk together along the Bay, Jim tells Danny about the Chesapeake Bay and the animals that live there.

### Key Elements

<table>
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<tr>
<th>Engagement</th>
<th>Lesson 1: <em>Un paseo por la Bahía</em></th>
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<tbody>
<tr>
<td>Object, event or question used to engage students.</td>
<td><strong>Introducción a la Bahía Chesapeake</strong></td>
</tr>
<tr>
<td>Connections facilitated between what students know and can do</td>
<td>Vocabulary introduced: abuelo, la región de la Bahía Chesapeake, la costa oriental, la costa occidental, el pájaro, el pato, el águila calva, el águila pescadora, la barnacla canadiense (el ganso del Canadá,) el ánade real, la tierra, el agua, vivir, volar, nadar</td>
</tr>
<tr>
<td>NOTE: For this module, students will create a Mi libro de la Bahía, <em>(Worksheet 1a)</em> in which they will assemble the worksheets that they complete in these lessons.</td>
<td>T: ¡Buenos días, chicos! ¡Comenzamos una nueva aventura hoy!</td>
</tr>
</tbody>
</table>

**PPT 1-2**

T: ¿Dónde vivimos? (Point out Baltimore on the map. Talk about la costa oriental vs. la costa occidental of Maryland.)

T: Vivimos en la costa occidental. El abuelo de Danny vive en la costa oriental.

T: ¿Cómo viajamos de una costa al otra?

Students respond.

Engage students in a conversation about their experiences on the Eastern Shore.

T: ¿Alguna vez has viajado a través del puente de la Bahía Chesapeake?

**PPT 3**

T: ¿Adónde fuiste? ¿A quiénes visitaste? ¿Qué viste allí?

Students respond.

**PPT 4**

T: Vamos a viajar a través del puente de la Bahía Chesapeake con nuestro amigo, Danny para visitar su abuelo, Jim. Jim ha vivido su vida entera en la costa de la Bahía Chesapeake. Vamos a escuchar a Jim.

**PPT 5**

T: ¿Te gustan los animales? Vamos a mirar algunos de los animales de la región de la Bahía Chesapeake.

Chorally repeat *pájaro* and *pato* while using gestures for comprehension.
### World Language-STEM MODULE COVERSHEET

#### The Chesapeake Bay – A Home for Many

#### La Bahía Chesapeake – Un hogar para muchos

- Engage students in conversation using the following questions.
  - Encourage students to use multiple animals in their sentences and to use the negative response, such as «No me gustan los patos.»
    - ¿Te gusta___? (Instruct students to signal thumbs up/down.)
    - Vive ___ en la tierra o en el agua?
    - ¿Vuela o nada? (Instruct students to use gestures.)
    - ¿Cuál es tu favorito – el pato o el pájaro? (Instruct students to use gestures.)
- Continue until all four animals have been chorally repeated.

#### Introduce el águila calva.

T: Este es un pájaro muy especial. Es el símbolo nacional de los Estados Unidos.

Engage students in a discussion and choral repetition about el águila calva using familiar vocabulary and expressions, such as size, color, and other physical descriptions.

- Este es el águila calva.
- ¿De qué color es el águila calva?
- ¿Es grande o pequeña?
- ¿Vuela o nada?
- ¿Qué come el águila calva?
- Come peces y animales pequeños, come los patos.
- Los peces son comidos por el águila calva.

Point to el águila pescadora.

T: Aquí hay otro pájaro importante que vive en la costa de la Bahía. Se llama el águila pescadora.

Engage students in a discussion and choral repetition about el águila pescadora using familiar vocabulary and expressions, such as size, color, and other physical descriptions.

- Este es el águila pescadora.
- ¿De qué color es el águila pescadora?
- ¿Es grande o pequeña?
- ¿Vuela o nada?
- ¿Qué come el águila pescadora?
- Come peces y animales pequeños, come los patos.
- Los peces son comidos por el águila pescadora.

T: El águila calva vive en la Bahía durante todo el año. Pero, el águila pescadora migra hacia el sur desde agosto a marzo. Aquí hay dos otros pájaros que migran también. Migran a la Bahía en invierno.

- La barnaca canadiense (el ganso del Canadá) migra a la Bahía de septiembre a marzo.
- El ánade real migra a la Bahía desde septiembre a marzo también.
**World Language-STEM MODULE COVERSHEET**  
The Chesapeake Bay – A Home for Many  
La Bahía Chesapeake – Un hogar para muchos

| Engage students in questions about the *el ganso del Canadá* and *el ánade real* such as the color, the size, and other physical descriptions.  
| • ¿De qué color es el ganso canadiense?
| • ¿Es grande o pequeño?
| • ¿Vuela o nada?
| • ¿Qué come el ánade real y el ganso del Canadá?
| • Solamente comen plantas. No comen animales como el águila calva y el águila pescadora.
| • ¿Son comidos por otros animales?
| T: ¿Sí! Son comidos por otros animales y pájaros grandes.
| T: Todos estos pájaros viven en la región de la Bahía Chesapeake.

T: Para nuestro viaje, vamos a mantener un diario. Aquí hay la cubierta de sus diario. Se llama «Mi libro de la Bahía.»

Distribute Worksheet 1a and instruct students to write their name in the space provided.

(This will become the cover for their journal. All worksheets in this module will be collected for inclusion in Mi libro de la Bahía.)

---

**Exploration**  
- Objects and phenomena are explored.  
- Hands-on activities, with guidance.

| Danny aprende acerca de un depredador de los pájaros de la Bahía Chesapeake  
| Vocabulary introduced: *el depredador, la presa, el zorro rojo, andar/caminar, correr*

**NOTE:** Prepare one set per student of the visuals from Part 1 only of Resource 1c.

**PPT 5**  
Review el pájaro, el pato, el águila calva, el águila pescadora, la barnacla canadiense (*el ganso del Canadá*) and el ánade real.

Discuss what the birds eat.

- *El águila calva es un pájaro que come peces. Por eso, el águila calva es un depredador de peces.* (Chorally repeat.)
- *El pez es la presa del águila calva.* (Chorally repeat.)

Continue to practice *el depredador* and *la presa* with *el águila pescadora, el ganso del Canadá* and *en ánade real.*

**PPT 6**

T: Entonces, estos animales tienen depredadores también. Aquí está un depredador del ganso del Canadá y del ánade real. Se llama el zorro rojo.

Engage in conversation use choral repetition and questions such as:

- ¿De qué colores es el zorro rojo?
- ¿Es grande o pequeño?
- ¿Vive en tierra o en el agua?
- ¿Qué come el zorro rojo?
- ¿Vuela?...¿Nada?...¿Anda(Camina)...? ¿Corre?
Divide students into two equal groups for an Inside/Outside Circle communicative activity.

- Each student will ask a variety of questions to their face partner about the animals that they have learned.
- Display the questions for reference during the activity.
  - ¿Te gusta ___?
  - ¿De qué color es?
  - ¿Dónde vive? (en tierra/en el agua)
  - ¿Vuela/nada/anda (camina)/corre?
  - ¿Es grande o pequeño?
  - ¿Qué come?
  - ¿Qué es el depredador del ___?
- Distribute one flashcard from Resource 1a to each student.
- Direct students to form two circles facing each other.
- Model one set of questions/answers with a student. Exchange cards with the student.
- Encourage students to use different questions for each turn.
- After each pair has asked and answered their questions, use an audible or hand signal to direct students to exchange cards.
- Then direct the outside circle to move one student to the right. (The inside circle will not move.)
- Continue in this manner until students meet their original partner.
- Remind students to exchange cards before moving to the next partner.

**PPT 7**

**T:** Aquí hay la Bahía de Chesapeake. ¿Qué animales viven aquí? (Review the el águila calva, el águila pescadora, el ganso del Canadá el ánade real, and el zorro rojo.)

Distribute Worksheet 1b, one set of visuals from Worksheet 1c, (Part 1 ONLY) and glue sticks to each student.

**T:** Vamos a hacer un cartel de los animales que hemos aprendido.

- Model one of the animals using the classroom poster by writing the names of the animal upside down on the reverse side of its visual.
  - Invite one student to place this visual the appropriate location on the poster. (land or water)
  - Tape or glue the upper edge only so that the name is revealed when the visual is lifted.
- Distribute the visuals for Part 1 only to the students.
- On the reverse side of each visual, instruct students to flip the flashcard upside down and write the name of the animal.
- Instruct students to decide where each animal should be placed on the poster. (land or water)
| **World Language-STEM MODULE COVERSHEET** | **Exploration** |
| **The Chesapeake Bay – A Home for Many** | |**La Bahía Chesapeake – Un hogar para muchos** |
| | **Note:** Prepare one set per student of the visuals from Part 2 only of Worksheet 1c. |

- Instruct students to glue or tape the visuals along the top edge only, so that the visual can be flipped up to reveal the name of the animal on the reverse side.
- Assist students as needed.
- As a summary, invite students to come to the class poster and place the remaining visuals of the animals in the appropriate locations on the poster.
- Collect **Worksheet 1b** for inclusion in the *Mi libro de la Bahía*. It will be re-distributed and completed in future segments.

**Explanation**
- Students explain their understanding of concepts and processes.
- New concepts and skills are introduced as conceptual clarity and cohesion are sought.

**Danny Learns about the Food Chain.**

**Vocabulary introduced:** *la lubina rayada, el sábalo atlántico, la raya gavilán, el pez de ostra, el tiburón sarda, rayas, rayado/a, los lunares*

| **PPT 8** | **Danny Learns about the Food Chain.** |
| T: Vamos a caminar con Jim y Danny. ¿Qué le pregunta a su abuelo? Invite a student to read the text on the slide. | **Vocabulary introduced:** *la lubina rayada, el sábalo atlántico, la raya gavilán, el pez de ostra, el tiburón sarda, rayas, rayado/a, los lunares*

- Show a video of either a bald eagle or an osprey catching a fish.
- Engage students in conversation and choral repetition:
  - ¿Quién comió el pez?
  - ¿Quién es el depredador?
  - ¿Quién es la presa?

| **PPT 9** | **Danny Learns about the Food Chain.** |
| Introduce *la lubina rayada, el sábalo atlántico, la raya gavilán, el pez de ostra*, and *el tiburón sarda* using choral repetition and gestures. T: Aquí hay algunos peces importantes que son la presa de los águilas calvas, los águilas pescadoras, y otros pájaros. | **Vocabulary introduced:** *la lubina rayada, el sábalo atlántico, la raya gavilán, el pez de ostra, el tiburón sarda, rayas, rayado/a, los lunares*

- La lubina rayada es gris en color y es grande.
- El sábalo atlántico es gris y tiene lunares.
- La raya gavilán es café en color.
- La lubina rayada y el sábalo atlántico son la presa del águila calva.
- El tiburón sarda come peces pequeños.
- El pez de ostra es amarillo y café.

T: ¡Vamos a ir de pesca en la Bahía!
- Distribute either a picture or a word card to each student from **Resource 1b**.
- Instruct students to circulate around the room in order to locate their matching card and practice one sentence about their picture to share with the class.
Students repeat their sentence(s) to the class.

Other options for communicative activities:
- Create a matching game using the Smart Board. Invite students to take turns matching the word to the visual as they use it in a sentence.
- Use one set of cards for a game of *Memoria*.
  - Number the backs of the cards.
  - Place the cards face down between two or more students.
  - Instruct students to take turns selecting two numbers and turning over the cards.
  - If the cards match (visual and correct word), the student uses the word in a sentence and keeps the cards.
  - If the cards do not match, they are placed faced down and the next student takes a turn.
  - Continue in this manner until all cards have been matched.

Re-distribute *Worksheet 1b*.

**T:** *Vamos a añadir más animales a nuestros carteles.*
Instruct students to continue with *Worksheet 1b* and the flashcards from Part 2 of *Worksheet 1c*.

- On the reverse side of each visual, instruct students to flip the flashcard upside down and write the name of the animal.
- Instruct students decide where the animal should be placed on the poster. (land or water)
- Instruct students to glue or tape the visuals along the top edge only, so that the visual can be flipped up to reveal the name of the animal on the reverse side.
- Assist students as needed.
- Collect *Worksheet 1b* for inclusion in *Mi libro de la Bahía*. It will be re-distributed and completed in future segments.

**Elaboration**
- Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.

**Danny Learns How the Bay Supports Various Types of Plants and Animals.**

**Vocabulary introduced:** *la hierba de anguila, la hierba widgeon, el fitoplancton, el zooplancton, el cangrejo azul, la ostra virgínica, la almeja softshell, el caballito de mar, el camarón de la hierba, flotar, transparente*

***NOTE:** Videos are readily available online for many of the animals in this segment. They will be very helpful to engage students and prompt conversation.

**T:** *Vamos a caminar con Danny y su abuelo para buscar otros animales y aprender como viven conjuntos en la Bahía.*

**PPT 10**

**T:** *¿Qué ve Danny?*
- Invite a student to read the text on the slide.
- If possible, show a brief video of a blue crab. (available online)
PPT 11
T: Jim describe la hierba de anguila y la hierba widgeon.
Chorally repeat in context:
• La hierba de anguila es verde.
• La hierba widgeon es verde.
• Viven el el agua. (en la bahía)
• Los peces comen las hierbas. (Substitute la lubina rayada, el sábalo atlántico, etc.)

PPT 12
T: Pero, hay otras plantas y animales que no podemos ver...
• El zooplancton es animales muy pequeños que viven en el agua.
• El fitoplancton es plantas muy pequeñas que viven en el agua también.
• Son de varios colores.
• Son alimento importante por muchos animales.

PPT 13
Engage students in meaningful conversation using gestures and choral repetition as you introduce the animals. For example:
• El cangrejo azul es muy importante para Maryland.
• ¿Te gustan los cangrejos azules?
• Viven en el fondo de la bahía.
• ¿Te gustan las ostras?
• La ostra virgínica es gris.
• La ostra virgínica come zooplancton y fitoplancton.
• La almeja softshell vive en la bahía también.
• Las almejas y las las ostras ayudan a mantener el agua limpia.
• Las almejas, las ostras, y los cangrejos azules son la presa de los patos y los peces.

Point to the seahorse and grass shrimp.
T: Aquí hay dos más animales interesantes que viven en la bahía. El caballito de mar flota entre las hierbas.
• El camarón de la hierba es pequeño y transparente.
• ¿Vuelo, nada, o corre?
• ¿Es grande o pequeño?
If possible, show brief videos of a seahorse and/or grass shrimp. (available online)
T: Vamos a añadir los animales y las plantas a nuestros carteles.
• Distribute the remaining flashcards from Part 3 and 4 of Worksheet 1c.
• Instruct students to complete Worksheet 1b as completed previously.
• Collect Worksheet 1b for inclusion in Mi libro de la bahía.
Option for more practice: Duplicate multiple copies of the flashcards for students to play ¡Pesca! o Memoria.

### Evaluation

- Students assess their knowledge, skills, and abilities. Activities permit evaluation of student development and lesson effectiveness.

### Interpretative and Presentation Performance Assessment: ¿Quién soy yo?

Students will identify and describe one animal of the Chesapeake Bay learned in this lesson.

- Write the names of the animals learned in this lesson on index cards and place in a container.
- Allow students five to ten minutes to practice descriptions of the animals on their posters, **Worksheet 1b**, with partners.
- Encourage students to describe the animal with as many details as possible.
- After the partner practice, collect the worksheets.
- Distribute one index card to each student.
- Instruct students to write a description of their animal (without naming the animal), using as many sentences as possible, including size, color, where it lives, what it eats, etc.
- Encourage students to also use gestures to convey meaning.
- Allow 10-15 minutes for students to prepare their presentation.
- Each student will then present and finish their presentation with the statement - ¿Quién soy yo?
- The students will state: ¡Eres el/la_____!
- Video tape the presentations, if desired.

**NOTE:** Depending on the ability levels of your students, provide prompts/sentence starters as needed.

### Teacher Reflection Lesson 1 – Jim y Danny dan un paseo por la Bahía

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<th>What worked well?</th>
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<td>What did not work well?</td>
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<tr>
<td>What would I do differently?</td>
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<tr>
<td>Other comments or notes</td>
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## Lesson 2 of 5

**Objective**

**I Can:**

**Oral language:**
- Name animals in a food chain
- Use pictures and simple words to tell what an ecosystem is and give examples
- Use pictures to describe how food chains form food webs

**Literacy:**
- Recognize names of animals in a food web
- Recognize the word *watershed* and label an example on a map
- Use pictures, a map and simple words to explain a watershed

**STEM and Other Subject Areas:**
- Explain how food chains and food webs are interrelated and how they support ecosystems
- Express a basic understanding of a watershed

## Vocabulary and Expressions

**Content obligatory language:**
- *el ecosistema*
- *la cuenca*
- *la cadena alimentaria*
- *la red alimentaria*
- *el equilibrio*
- *saludable*
- *las personas/ la gente*

**Content compatible language:**
- *comer/ ser comido por*
- *cazar*
- *depender el uno el otro*
- *hacer*
- *quitar*
- *el porcentaje*

**Expressions and patterns:**
- *Qué ocurre/pasa?*
- *¡Vamos a averguiar!*
### World Language-STEM MODULE COVERSHEET

**The Chesapeake Bay – A Home for Many**

**La Bahía Chesapeake – Un hogar para muchos**

| Materials/Resources | o PowerPoint slides 13 – 21  
|                     | o ball of string  
|                     | o index cards  
|                     | o colored pencils  
|                     | o **Resource 2a:** Visuals for food web activity (one set per student)  
|                     | o **Resource 2b:** Arrows for food web activity (one page per group)  
|                     | o **Worksheet 2a:** Mi cadena alimentaria  
|                     | o **Worksheet 2b:** La cuenca de la Bahía de Chesapeake  
|                     | o **Worksheet 2c:** Una tarjeta postal a mi amigo (One per student duplicated on cardstock, if possible) |

| Lesson Storyline and Core Text | Jim explains how the plants and animals are part of an ecosystem and depend on each other. He explains the food web found in the Chesapeake Bay: The Chesapeake Bay is an ecosystem. Our ecosystem includes the plants and animals that are found in the Chesapeake Bay area. These plants and animals depend on each other to survive. All the plants and animals in an ecosystem interact with each other. Some plants and animals are food for other plants and animals. They form a food chain. The animals that eat other animals and plants are predators. The plants and animals that others eat are prey. In one food chain example, blue crabs eat zooplankton. And you and I eat blue crabs! We are part of the ecosystem and food chain! In another food chain, clams eat zooplankton. Birds eat clams. A red fox eats birds. Many food chains together form a food web. A healthy ecosystem is one with a balanced food web. There are not too many predators or preys. Look at the top of this food web, Danny. That’s you and me! When we catch fish for supper, we are part of the food web! |

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<th>Key Elements</th>
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<td>Engagement</td>
<td>¿Es depredador o presa? Introducir una cadena alimentaria</td>
</tr>
<tr>
<td></td>
<td>Vocabulary introduced: <strong>la cadena alimentaria</strong></td>
</tr>
<tr>
<td></td>
<td><strong>NOTE:</strong> Prepare one set of visuals and one set of arrows for each pair of students.</td>
</tr>
<tr>
<td>PPT 13</td>
<td>T: Piensan en los animales de la Bahía Chesapeake. ¿Quién puede nombrar uno de los animales?</td>
</tr>
<tr>
<td></td>
<td>Students respond.</td>
</tr>
<tr>
<td></td>
<td>• Distribute one set of the visuals from <strong>Resource 2a</strong> to each pair of students. (The arrows will be distributed later in this lesson.)</td>
</tr>
<tr>
<td></td>
<td>• Call on students to name an animal.</td>
</tr>
<tr>
<td></td>
<td>• Point to the animal on <strong>PPT 13</strong> or on the poster.</td>
</tr>
<tr>
<td></td>
<td>• Then ask the students to hold up the flashcards of this animal.</td>
</tr>
<tr>
<td></td>
<td>• Ask: ¿Es depredador o es presa de_____?</td>
</tr>
</tbody>
</table>
Continue in this manner, asking students to hold up the appropriate flashcards as students answer and chorally repeat.

Ask additional questions such as:
- ¿Es posible ser un depredador y una presa al mismo tiempo?
- ¿Cuál animal es el depredador?
- ¿Cuál animal es la presa?

Instruct students to select two flashcards and ask a partner:
- ¿Cuál animal es el depredador?
- ¿Cuál animal es la presa?

PPT 14
Invite students to ask each other the questions on the slide. Encourage students to substitute other animals they have learned.

PPT 15
Introduce la cadena alimentaria.
- T: Cuando un animal come al otro, se llama una cadena alimentaria.
- ¿Quién comienza la cadena alimentaria?
- Nosotros son las personas, ¿no? Comemos el/la_____.
- Entonces, el/la_____come el/la_____.
- Entonces, el/la _____come el/la_____ Etc., etc.

Instruct each student to use this pattern to arrange four different flashcards into a food chain on their desks.
- Conduct a Gallery Walk in which students look at several other food chains and discuss using the pattern, El/La___come el/la_____.
- Distribute Worksheet 2a and instruct students to draw a food chain with different animals and plants.
- Collect Worksheet 2a for inclusion in the Mi libro de la Bahía.
- Collect the flashcards to be used in the following segment.

Exploration
- Objects and phenomena are explored.
- Hands-on activities, with guidance.

Experimentando una red alimentaria
Vocabulary introduced: la red alimentaria, la zona muerta

Distribute the flashcards from Resource 2a.

PPT 15
T: Las plantas y los animales dependen el uno del otro para vivir, ¿no? A veces, más de un depredador puede tener la misma presa. ¿Alguien tiene un ejemplo?
Students respond.
T: ¿Qué come los cangrejos azules además de las personas?

PPT 16
T: ¡Correcto! Un animal puede tener más de un depredador.
T: Cuando las cadenas alimentarias afectan el uno al otro, llamamos esto una red alimentaria.
Discuss and chorally repeat examples of predators and prey using the animals on the slide.

Making food webs.
- Divide students into groups of 3-5.
- Instruct each student to create his/her own food chain using four of the flashcards. The different food chains should be arranged side by side on their tables.
- Distribute one set of arrows from Resource 2b to each group.
- Then, instruct students to connect their own food chain to their partners’ food chains at their table using the arrows, and to explain their webs. For example: Mi águila calva come tu sábalo atlántico, as the student points the arrow from the águila calva to the sábalo atlántico in the adjoining food chain.
- Conduct a Gallery Walk so that each group can review and check for accuracy of the food webs of the other groups.
- Collect the flashcards.

T: Vamos a fingir que somos los animales en nuestras cadenas alimentarias. ¿Podemos hacer nuestra propia red alimentaria?
- Hold up the ball of string. Instruct students to form a circle.
  o Primero, voy a nombrar uno de los animales en la Bahía.
  o Segundo, voy a lanzar esta bola de cuerda a uno de ustedes.
  o Esta persona va a nombrar otro animal, mantener la cuerda, y lanzar la bola a otra persona.
  o Vamos a seguir así hasta que cada persona nombra un animal y mantiene la cuerda.
- After all students are connected with the string:
  o T: ¡Miren...estamos conectados uno al otro con la cuerda! ¿Qué hacemos?
  o Students respond.
T: Ahora, ¿qué pasa si uno de los animales quita la red?
- Instruct one student to drop his/her string, and to step back from the circle.
- T: ¿Todavía tenemos una red alimentaria?
- Students respond.
- Instruct two more students to drop the string and step back from the circle.
- T: ¿Qué pasa cuando dos animales quitan la red?
- Students respond.
- Instruct three people to drop the string and step back from the circle.
- T: ¿Qué pasa cuando tres o más animales quitan la red?
- Students respond.
- T: ¡Exacto! La red no es fuerte. Muchos animales no pueden
sobrevivir.

- T: Ahora, todos quiten la red. No hay ningunos animales conectados, y por eso, no pueden sobrevivir. Esto se llama una zona muerta. Chorally repeat.

**Explanation**

- Students explain their understanding of concepts and processes.
- New concepts and skills are introduced as conceptual clarity and cohesion are sought.

**Explicar un ecosistema**

**Vocabulary introduced: el ecosistema**

**PPT 18**

T: Jim va a explicar la red alimentaria en la Bahía. ¡Escuchamos!

Invite students to read the text on the slide.

Chorally repeat ecosistema in context.

Engage students in a conversation using the images on the slides.

- ¿Qué es la presa del águila calva/ánade, etc.
- ¿Cuál animal es depredador de zooplancton y de fitoplancton?
- (Point to two animals.) ¿Cuál es la presa? ¿Cuál es el depredador?
- ¿Por qué necesita un ecosistema un equilibrio de presa y depredador?
- Students respond.
- ¿Por qué dijo Jim, «Somos parte de la red alimentaria?»
- Students respond.

Re-distribute **Worksheet 1b**.

- Direct students to draw arrows from a predator to its prey, connecting as many animals as possible. Model one example.
- Then direct students to write, *el ecosistema de...* in front of the title *La Bahía Chesapeake*.
- Instruct students to discuss their choices with several partners, using a different set of animals each time. Model sentences:
  - El/La_____ es el depredador del/de la_____.
  - El/La_____ es la presa del/de la_____.
- Summarize the activity by asking students to explain ecosistema.
- ¡Exacto! *El ecosistema de la Bahía Chesapeake es parte de un sistema más grande. Se llama una cuenca*. Jim va a explicarla.
- Collect **Worksheet 2a** for inclusion in the *Mi libro de la Bahía*.

**Elaboration**

Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.

**La cuenca de la Bahía Chesapeake**

**Vocabulary introduced: watershed, Atlantic Ocean, Maryland, West Virginia, Virginia, New York, Delaware, Pennsylvania, and Washington, D.C.**

**PPT 19-22**

T: Sigamos nuestro cuento de Jim y Danny y la Bahía Chesapeake.

- Invite students to read the text on the slides.
- Chorally repeat the states on the map and the *Océano Atlántico*.
- Engage students in conversation about the states and their
abbreviations; and about how the rivers flow into the Bay, and the Bay into the Atlantic Ocean.
- Distribute Worksheet 2b.
- Assist students in labeling the watershed map.
- Collect Worksheet 2b for inclusion in the Mi libro de la Bahía.

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>Interpretative, Interpersonal and Presentational Performance Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students assess their knowledge, skills and abilities.</td>
<td>Students design a postcard to send to a friend.</td>
</tr>
<tr>
<td>Activities permit evaluation of student development and lesson effectiveness.</td>
<td>Cut out one postcard per student from Worksheet 2c. (If possible, use cardstock paper.)</td>
</tr>
</tbody>
</table>

- Display and read the instructions: Ahora que ya hemos visitado la Bahía Chesapeake, vamos a mandar una tarjeta postal a un amigo. Usando los materiales, dibujen y completen un mensaje breve que resume lo que han aprendido. ¿Sean creativos! Aquí hay una plantilla para usar, si lo desean. Las tarjetas postales deben incluir:
  - en el frente – un dibujo que representa lo que han aprendido acerca de la Bahía Chesapeake.
  - al dorso – el mensaje a su amigo o amiga.
- Options:
  - Depending on the ability levels of your students, you may choose to display the word bank included with Worksheet 2c. (Not all words will be used, depending on your students’ choices for some of the animals; and there may be more than one response for some sentences.)
  - Read the message to the students and have them write the missing words in the blanks.
- Distribute the postcards and colored pencils.
- Instruct students to write the name of a friend on the Querido(a)_____, line, and to sign their name on the Tu amigo(a), ________ line.
- Assist as needed.
- When students have completed their postcards, direct them to read their messages to one or more classmates.
- Display the postcards in the classroom, or collect for inclusion in Mi libro de la Bahía.
### Teacher Reflections on Lesson 2 – *El ecosistema de la Bahía Chesapeake*

<table>
<thead>
<tr>
<th>What worked well?</th>
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<tbody>
<tr>
<td>What did not work well?</td>
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<tr>
<td>What would I do differently?</td>
<td></td>
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<tr>
<td>Other comments or notes</td>
<td></td>
</tr>
</tbody>
</table>

### Lesson 3- *Zonas muertas en la Bahía*

#### Lesson 3 of 5

<table>
<thead>
<tr>
<th>Zonas muertas en la Bahía</th>
</tr>
</thead>
</table>

#### Objectives

**I Can:**

**Oral language:**
- Identify dead zones on the Chesapeake Bay
- List what pollutes the water in the Chesapeake Bay

**Literacy:**
- Read an infograph showing causes of pollution in the Chesapeake Bay
- Illustrate and write sentences that explain a dead zone

**STEM and Other Subject Areas:**
- Give examples of how the watershed brings pollution to the Chesapeake Bay
- Show how excess nitrogen can cause loss of habitat for Chesapeake Bay animals

#### Vocabulary and Expressions

**Content obligatory language:**
- *la agricultura*
- *la basura agrícola*
- *el fertilizante*
- *los químicos*
- *el agua de lluvia*
- *la escorrentía*
- *la contaminación/la polución*
- *el nutriente*
- *el oxígeno*
- *el nitrógeno*
- *las algas*
### World Language-STEM MODULE COVERSHEET

**The Chesapeake Bay – A Home for Many**

**La Bahía Chesapeake – Un hogar para muchos**

<table>
<thead>
<tr>
<th>Content compatible language:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- la marea caoba</td>
</tr>
<tr>
<td>- la zona muerta</td>
</tr>
</tbody>
</table>

**Materials/Resources**

- PowerPoint Slides 22 - 42
- **Resource 3a:** Experimento con una cuenca
- **Worksheet 3a:** Resultados del experimento
- **Worksheet 3b:** Una zona muerta
- **Worksheet 3c:** Contaminación de nitrógeno en la Bahía Chesapeake with photos
- one large roasting pan (one per group) (such as a disposable aluminum pan, 16” x 12” x 3”)
- sheets of newspaper
- plastic wrap
- aluminum foil
- spray bottle of water (one per group)
- large book (one per group)
- green and orange gelatin mix
- hot cocoa mix
- blue food coloring

**Lesson Storyline and Core Text**

Jim muestra a Danny las zonas muertas en la Bahía Chesapeake. Jim and Danny continue exploring the Chesapeake Bay. They stop and look at the water and notice a green slime on the surface. Jim explains how algae affect the food web of the Bay. They further investigate other pollution and dead zones. Later, Jim explains to Danny that the rivers from all of the states of the Chesapeake Bay Watershed bring pollution. Danny says, «Abuelito, que podemos hacer para ayudar a los animales en la Bahía?»
## World Language-STEM MODULE COVERSHEET

### The Chesapeake Bay – A Home for Many

### La Bahía Chesapeake – Un hogar para muchos

<table>
<thead>
<tr>
<th>Key Elements</th>
<th>Lesson 3 Procedures</th>
</tr>
</thead>
</table>
| **Engagement**  
- Object, event or question used to engage students.  
- Connections facilitated between what students know and can do | **Cómo afecta la contaminación la cuenca**  
T: ¿Cuáles son los estados en la cuenca de la Bahía Chesapeake?  
(Refer to PPT 21, if needed.)  
Students respond.  
T: También sabemos que muchos de los animales necesitan un ecosistema saludable en esta cuenca.  

**PPT 22-23**  
Invite a student to read the text on the slides.  
T: Jim dice que más personas y fábricas viven en la región Chesapeake. ¿Es bueno o malo? Engage students in conversation using familiar vocabulary, such as the animals they have learned and types of pollution. |
| **Exploration**  
- Objects and phenomena are explored.  
- Hands-on activities, with guidance. | **Experimento con una cuenca y los efectos de la contaminación**  
Vocabulary introduced: la contaminación (la polución)/el fertilizante/los químicos/la agricultura  
T: Hoy vamos a construir una cuenca para observar los efectos de contaminación.  

**PPT 24-25**  
Model the experiment.  
- Introduce the vocabulary la contaminación (la polución), el fertilizante, and la agricultura. (represented by the orange gelatin mix, green gelatin mix, and cocoa mix, respectively.)  
- Review the directions as you model each step.  
- Distribute the materials to each group (as listed on Resource 3a) and one Worksheet 3a per group.  
- Assist groups as needed.  
- Instruct students to write their responses on the worksheet in English.  
- Discuss results.  
T: ¿Qué sucede con las hierbas, los peces, y los otros animales en una cuenca contaminada?  
Students respond.  
Collect Worksheet 3a for inclusion in the Mi libro de la Bahía. |
| **Explanation**  
- Students explain their understanding of concepts and processes.  
- New concepts | **Definir la zona muerta**  
Vocabulary introduced: las algas, el cieno verde, la marea caoba, el nitrógeno, el oxígeno, la zona muerta  

**PPT 26-31**  
T: Vamos a escuchar a Jim. |
and skills are introduced as conceptual clarity and cohesion are sought.

- Invite students to read the text on the slides.
- Chorally repeat *las algas, el cieno verde, la marea caoba, el nitrógeno,* and *contaminación* context.
- Engage students in conversation using questions such as:
  - ¿De qué color es(son) la marea caoba/las algas?
  - ¿De dónde viene la contaminación?
  - ¿Qué pasa cuando los peces no pueden respirar? (Use gestures to convey meaning.)

  T: ¿Cómo podemos dibujar una zona muerta en nuestros libros?

- Distribute *Worksheet 3b* and colored pencils.
- Instruct students to draw a dead zone and to write at least three sentences that describe their illustration.
- Pair students and instruct them to share their drawing and sentences with their partners.
- Collect *Worksheet 3b* for inclusion in the *Mi libro de la Bahía.*

### Elaboration

- Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.

### Por qué está contaminada la Bahía

Vocabulary introduced: *las granjas de pollo, los químicos, el agua de lluvia (la escorrentía), las fábricas, las casas, las ciudades*

  T: *Jim explica el problema.*

**PPT 32-34**

Invite students to read the text on the slides. Chorally repeat the vocabulary in context.

**PPT 35-42**

  T: *¡Vamos a dar un paseo!*

- Invite students to read the text on the slide.
- Engage students in conversation and use choral repetition for each slide.
  - *las granjas de pollo*
  - *los químicos y el agua de lluvia*
  - *las fábricas*
  - *las casas y las ciudades*

**PPT 43**

  T: ¿Qué dicen los científicos acerca de la contaminación de nitrógeno en la Bahía?

- Discuss the percentages of each type of pollution listed in the infographic.
- Instruct students to engage in conversation with partners as they observe the infographic.
- Model one or two examples.
  - *La contaminación del aire es causada por las fábricas.*
  - *Una granja de pollo hace* ____________.
- Instruct students to share their sentences in small groups.
## Evaluation
- Students assess their knowledge, skills and abilities.
- Activities permit evaluation of student development and lesson effectiveness.

## Identificación de las causas de la contaminación en la Bahía Chesapeake

**PPT 43**

T: Vamos a repasar acerca de nitrógeno en la Bahía.
- Discuss the percentages of each type of pollution listed in the infographic.
- T: ¿De dónde viene la contaminación? (Solicit several responses.)

T: ¿Podemos conectar ejemplos de contaminación a la sección correcta en el infográfico?
- Distribute Worksheet 3c, one set of the photographs cut out for each student, and glue sticks.
- Model one or more examples. (Place the photograph next to its corresponding category and draw an arrow connecting it to that category on the pie chart.)
- Instruct students to glue the photographs in the correct section
- Assist as needed.
- Collect Worksheet 3c for inclusion in the Mi libro de la Bahía.

Options for reviewing student responses:
- Make a larger version of the graph and photographs and invite students to label the graph.
- Use Smart Board software to create an interactive chart for students to move the photographs to their correct location on the pie chart.

## Teacher Reflection Lesson 3 – Las zonas muertas en la Bahía

<table>
<thead>
<tr>
<th>What worked well?</th>
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<tbody>
<tr>
<td>What did not work well?</td>
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<td>What would I do differently?</td>
<td></td>
</tr>
<tr>
<td>Other comments or notes</td>
<td></td>
</tr>
</tbody>
</table>
### Objectives

**I Can:**

- **Oral language:**
  - identify reasons for the pollution in the Bay

- **Literacy:**
  - write short sentences, phrases about the ecosystem of the Chesapeake Bay

- **STEM and Other Subject Areas:**
  - describe the ecosystem of Chesapeake Bay
  - describe what makes Chesapeake Bay healthy

### Vocabulary and Expressions

- **Content obligatory language:**
  - **la escorrentía**
  - **la agricultura**
  - **el aire**
  - **las fábricas**
  - **las casas/los hogares**
  - **las ciudades**

- **Content compatible language:**
  - **el coche/el carro**
  - **la bicicleta**
  - **el papel**
  - **Reciclar, reutilizar, reciclar.**
  - **el agua de lluvia/la escorrentía**
  - **el jardín**
  - **los árboles**
  - **las plantas**
  - **plantar**
  - **el campamento/ir de camping**
  - **la basura**

### Materials/Resources

- PowerPoint slides 36-37, 44-49
- Internet access for brief videos (or photographs of pollution issues in the Bay watershed)
- Online video: [https://www.youtube.com/watch?v=o7kB7-UN7m4&list=PL33o4n6ClM9jcTSBNe7nj1QuBqZp-X8J2](https://www.youtube.com/watch?v=o7kB7-UN7m4&list=PL33o4n6ClM9jcTSBNe7nj1QuBqZp-X8J2)
- Optional: video camera
- **Resource 4a:** List of Resources for Stations Activity
- **Resource 4b:** Rubric for Team Presentational Task
- **Worksheet 4a:** *Explorar los problemas*
**World Language-STEM MODULE COVERSHEET**

**The Chesapeake Bay – A Home for Many**

**La Bahía Chesapeake – Un hogar para muchos**

| Lesson Storyline and Core Text | Danny and Jim visit farms and a housing development. They talk about the pollution that they contribute to the Bay. Danny and Jim discuss a plan to help Chesapeake Bay. Danny will ask his friends for help. |

<table>
<thead>
<tr>
<th>Key Elements</th>
<th>Lesson 4 Procedures</th>
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</thead>
</table>

**Engagement**
- **Object, event or question used to engage students.**
- **Connections facilitated between what students know and can do.**

**Identificar los problemas**
Students will watch 1:25 minutes of the following video as a summary of previous lessons:
https://www.youtube.com/watch?v=o7kB7-UN7m4&list=PL33o4n6ClM9jcTSBNe7nj1QuBqZp-X8I2

**Before viewing:**
- Brainstorm a list of reasons that the Bay is polluted.
- Write students’ responses on the board. (Examples: las granjas de pollo, las fábricas, las casas, las ciudades, la contaminación el aire.)
- Invite one or two students to the front of the room and instruct them to check off the items on the list as they occur in the video.

**During viewing:**
- Invite the class to raise their hands when one of their reasons is shown in the video.
- The student(s) in the front of the room will check off the reasons as their classmates raise their hands.

**After viewing:**
- Review the list of reasons.
- Add any additional reasons from the video.
- Prompt students to suggest solutions.
- Write the solutions on the board.

Finish the second part of the video, starting at 1.25 minutes.

**Explorar los problemas**

**Exploration**
- **Objects and phenomena are explored.**
- **Hands-on activities, with guidance.**

Arrange four stations for this small group activity.

- Each station will need a computer with speakers or headphones and Internet access so that students can view and listen to short videos.
- Each station should have a pre-loaded video (three minutes or less) about one of the following topics. (See **Resource 4a** for sources. The information will be in English.)
  - la agricultura
  - la escorrentía
  - el aire
  - las casas y las fábricas
- (If computers and/or videos are not available, provide a set of
photographs for each topic.)
- Provide bookmarks of websites for students to visit. (See Resource 4a.)
- Distribute Worksheet 4a for taking notes at each station.

T: Vamos a explorar los cuatro problemas principales que causan la contaminación de la Bahía. Hay cuatro estaciones.
  - Primero, vamos a ver un video.
  - Entonces, vamos a visitar sitios web para más información.
  - Finalmente, tomen apuntes en esta hoja y discutir con sus equipos.
- Assign students to teams of three or four.
- Allow approximately five to seven minutes for each station, and then rotate the teams to the next station.
- Continue until each team has visited each station.
- Assist as needed.
- Discuss their findings.

T: ¿Qué descubrimos? ¿Cuál es el problema principal en la Bahía?
Students respond.
T: ¡Correcto! Es la agricultura. Y la Bahía es famosa por sus granjas de pollo. Maryland es número siete en los Estados Unidos en la producción de pollo. Entonces, ¡vamos a visitar una granja de pollo!

En una granja de pollo

NOTE: If possible, take students to a chicken farm, or invite a chicken farmer to the class. If these options are not possible, show a video of a typical day at a chicken farm.

T: Antes de nuestra visita, ¿qué dijo Jim acerca de las granjas de pollo? PPT 36-37.
T: ¿Qué preguntas le pedimos al granjero?
Model questions include:
  - ¿Cuántos pollos tienes?
  - Es grande o pequeño su granja?
  - ¿Qué comen los pollos?
  - ¿Comen mucho?
  - ¿Cuánto tiempo tarda el pollo para crecer?
  - ¿Dónde viven los pollos?
  - ¿Qué pasa con la basura de los pollos?
Write the questions on the board.
After the visit or video, discuss the answers to the questions.
T: Hemos aprendido tanta información, ¿no? ¡Ahora, es momento de tomar acción!
Elaboration
- Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.

Podemos hacer una diferencia.
Vocabulary addressed: *el coche/el carro, la bicicleta, el papel, «Reducir, reutilizar,» reciclar/el agua de lluvia, el jardín, los árboles, las plantas, plantar, el campamento/ir de camping, la basura*

**PPT 44**
Invite students to read the text on the slide.
T: Clase, ¿qué podemos hacer para ayudar a la Bahía?

**PPT 45-49**
Engage students in a discussion about solutions to the problems of the Bay. Chorally repeat the vocabulary for each problem.
T: ¡Excelente! Primero, debemos compartir nuestra información. Su profesora tiene una idea. Podemos presentar la información en el sitio web de nuestra escuela. ¡Qué llegue a mucha gente!
Discuss and write ideas for the presentations on the board. Examples:
- una obra breve (skit)
- una película (*iMovie, E-presentation*) con with narración y música
- un collage/un cartel
- un video
- una canción/rap
- un folleto
- ¿otras ideas?
T: Por favor, escojen el tipo de presentación de esta lista.
Divide students into groups of three according their choice.
- Assign each group one of the issues: farming, air, houses/factories, stormwater runoff
- Instruct students to include the following information in their presentation:
  - *el problema*
  - *los detalles*
  - *los efectos*
  - *las soluciones*
- Share the Team Presentation Rubric. ([Resource 4b](#))
- Distribute materials needed for each group.
- Assist as needed.

**Evaluation**
- Students assess their knowledge, skills and abilities. Activities permit evaluation of student development and

**Solución, no polución**
- Allow a few minutes for the groups to rehearse their presentations.
- You may want to videotape the presentations.
- Encourage classmates to give feedback to each team.
- Refer to [Resource 4b](#) for a suggested rubric.
Lesson 5 – Final Performance Assessment

<table>
<thead>
<tr>
<th>Lesson 5 of 5</th>
<th>Final Performance Assessment</th>
</tr>
</thead>
</table>
| **Materials/Resources** | o flashcards of animals from Worksheet 1c placed in a bag or container (one per student)  
 o recording program (in a computer lab or on a portable recording device)  
 o materials to assemble the Mi libro de la Bahía  
 o Worksheet 5a: Final Performance Assessment: Mi vida en la Bahía  
 o Worksheets 1a – 5a |
| **Procedures** | **Mi vida en la Bahía podcast**  
Students will record an animal biography in a computer lab or with a portable recording device. Students will then listen to several of their classmates’ recordings and identify the animals described.  
- Place the flashcards from Worksheet 1c in a bag or container.  
- Instruct students to select one flashcard.  
- Distribute Worksheet 5a.  
- Display the following questions and allow five to ten minutes for students to take notes and to practice their recording.  
  o ¿Qué me parezco?  
  o ¿Dónde vivo?  
  o ¿Qué como?/¿Qué es mi presa?  
  o ¿Quién es mi depredador?  
  o ¿Por qué estoy triste? ¿Qué pasó en la Bahía?  
  o ¿Qué pueden hacer las personas para ayudarme?  
- Instruct students to record their presentation, using their notes.  
- After the recordings are completed, play several for the class and ask students to identify the animals. |
Completion of *Mi libro de la Bahía*
- Distribute students’ worksheets and materials for assembling *Mi libro de la Bahía*.
- Pair students and provide time for sharing.

Teacher Reflections on Lesson 5 – Final Performance Assessment

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<th>What worked well?</th>
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<th>What would I do differently?</th>
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<th>Other comments or notes</th>
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