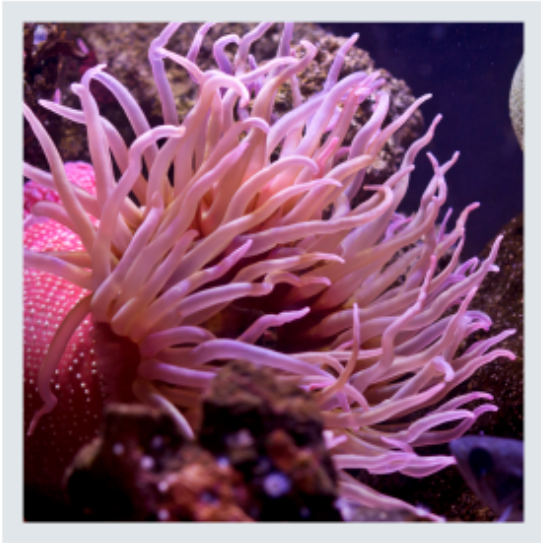


# Symbiotic Relationships



SEA ANEMONE



CLOWNFISH

### NISD GT Process Standards

GT Process Standards provide guidance on what GT students should know, understand, and do as part of GT program services. Each lesson makes a connection to specific standards; however, teachers are encouraged to incorporate every standard where applicable.

**I. Creative Thinking**

Ability to look at problems or situations from a unique perspective through the use of imagination and/or innovative ideas

**II. Critical Thinking**

Ability to demonstrate clear, rational, open-minded thinking, informed by evidence

**III. Depth & Complexity**

Ability to dig deeper into a concept and to understand that concept with greater complexity

**IV. Scholarly Inquiry & Research**

Ability to interpret information that leads to new understandings and connects to the world beyond the classroom

**V. Effective Communication**

Ability to convey new learning through the use of written, spoken, and technological media

**VI. Leadership & Responsibility**

Demonstrates initiative, task commitment, and the elements of compromise and diplomacy



Language of  
the Discipline

analogies

mutualism

commensalism

amensalism

parasitism

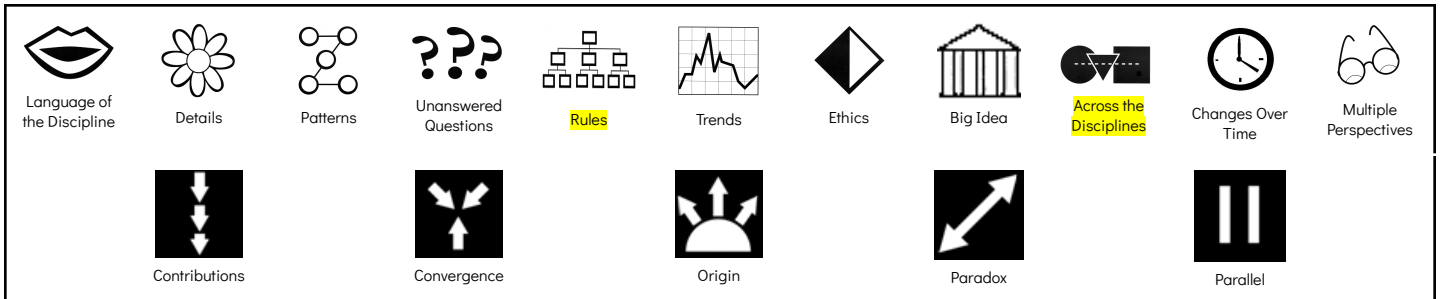
predation

competition

### Scholarly Habits

- Scholars utilize varied resources
- Scholars exhibit curiosity
- Scholars demonstrate academic humility
- Scholars save ideas
- Scholars ponder the big idea
- Scholars see from different perspectives
- Scholars are always prepared
- Scholars display perseverance
- Scholars set goals
- Scholars take intellectual risks

## Depth and Complexity & Content Imperatives



## Thinking like a Disciplinarian

Thinking like a **biologist** (an expert in the branch of science concerning living organisms).

Thinking like a **zoologist** (an expert in the behavior, physiology, classification, and distribution of animals).

Thinking like a **botanist** (an expert in the scientific study of plants).

Thinking like an **ecologist** (an expert in the study of relationships between organisms and their environment).

## Universal Generalizations

- Systems have parts that work to complete a task
- Systems are composed of subsystems
- Part of systems are interdependent upon one another and form symbiotic relationships
- A system may be influenced by other systems
- Systems interact
- Systems follow rules

## Essential Questions

- What is a system?
- How are the parts of a system related to the entire system?
- How are system models used to predict and understand real world situations?

## Supported TEKS

### Science

3.9A, 4.9A, 5.9A (observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem)

3.9B, 4.9B, 5.9B (identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field)

3.9C, 4.9C, 5.9C (describe environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations)

3.10A, 4.10A, 5.10A (explore how structures and functions of plants and animals allow them to survive in a particular environment)

### RLA

3.1A, 4.1A, 5.1A (listen actively, ask relevant questions to clarify information, and make pertinent comments)



3.1C, 4.1C, 5.1C (speak coherently about the topic under discussion, employing eye contact, speaking rate, volume, enunciation, and the conventions of language to communicate ideas effectively)

3.1D, 4.1D, 5.1D (work collaboratively with others by following agreed-upon rules, norms, and protocols)

3.6E, 4.6E, 5.6E (make connections to personal experiences, ideas in other texts, and society)

3.6F, 4.6F, 5.6F (make inferences and use evidence to support understanding)

3.7F, 4.7F, 5.7F (respond using newly acquired vocabulary as appropriate)

<b>Instructional Plan</b>	<b>Date:</b>
Symbiotic Relationships (1 week)	
<b>Objectives:</b> Students will understand... <ul style="list-style-type: none"> <li>all organisms are interdependent upon one another and form relationships.</li> </ul>	
<b>Learning Experiences</b>	<b>Resources/Materials</b>
<p><b>Skill Stations (Slide 2)</b></p> <p><b>Let's Get Curious (Slide 3)</b> An Octopus' Coconut Home</p> <ul style="list-style-type: none"> <li>What do you notice?</li> <li>What do you wonder?</li> </ul> <p><b>Scholarly Habits (Slide 4)</b> Discuss the scholarly habits of: Pondering Ideas (<i>scholars thinking about what they're learning and know that quality thoughts take time to develop</i>), Different Perspectives (<i>scholars look beyond themselves and understand we do not have to agree</i>), and Varied Resources (<i>scholars use and look at new resources when learning</i>) scholarly habits with students. Throughout the lesson, remind students to utilize their Scholarly Habits.</p> <p><b>Skill Focus: Analogies (Slide 5-7)</b> Review analogies with students. Explain that analogies show how unlike things are similar. Solving analogies requires critical and creative thinking to make the connection.</p> <ul style="list-style-type: none"> <li>Use the video on Slide 6 to provide additional background information including many analogy examples.</li> <li>Play <a href="#">Blooket</a> to practice analogies.</li> </ul> <p><b>System Generalizations (Slide 8)</b> Review and discuss our Systems generalizations. Ask students to think of examples of systems in our natural world.</p> <p><b>Symbiotic Relationships (Slides 9-17)</b> Analogy Construction (Slide 9): Pass out organisms cards and ask student groups to explore the cards and look for relationships. Challenge students to create their own analogies using their background knowledge. Give students</p>	<p> BI_Symbiotic Relationships Lesson...</p> <p><a href="#">Blooket: Analogies</a></p> <p> CI_Symbiotic Organism Cards.pdf</p> <p>*Before the lesson, print/cut out all organisms. Do not leave them connected in their analogy form.</p>

sufficient time to explore all organism cards. Have a class discussion to share ideas.

Scholarly Habit: Varied Resources (Slide 10): Remind students of the Scholarly Habit of Varied Resources. Explain that they will need to use that habit as they complete the activity. Students will need to research any unfamiliar organisms using several resources.

What's the Relationship? (Slide 11-17): Students will now be given a set of analogies. Each pair is related in the same way. Students will need to discover what that relationship is using their varied resources. Once students have determined the relationship, click the slide to transition to the language of the discipline that corresponds to the relationship. Continue this process for all 6 relationships.

**Symbiosis Selfie (Slide 18)**

Students will create their own photo analogies to fit into each of the 6 types of symbiotic relationships with themselves as a part.

Suggestion: Get with your librarian on how best for students to research unknown organisms. There may be potential for a mini-lesson on Library Resources/Britannica.

**DI\_Teacher Background: Symbiotic ...**

This provides teachers the definition of each of the 6 relationship types and explains the specific relationships within each. Teacher use only.

**EI\_Symbiosis Selfies Template**

Teacher note: These selfies would create a great bulletin board display for your hallway or showcase.

**Reflection/Metacognition (Slide 19)**

Pick one of your Selfie Analogies and fully explain how they go together.

- What would happen if the connection disappeared? What impacts might it have?