

Life in the Food Chain

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| Strand | Interrelationships in Earth/Space Systems |
| Topic | Investigating marine food chains |
| Primary SOL | 5.6 The student will investigate and understand characteristics of the ocean environment. Key concepts include c) ecological characteristics. |
| Related SOL | 5.6 The student will investigate and understand characteristics of the ocean environment. Key concepts include a) geological characteristics; b) physical characteristics. |

Background Information

Plankton are tiny free-floating organisms that live in water. Plankton may be animal-like or plant-like. Animal-like plankton are called zooplankton. Plant-like plankton (phytoplankton) carry out most of the photosynthesis on Earth. Therefore, they provide much of Earth’s oxygen. Phytoplankton form the base of the ocean food web after the Sun provides energy to the phytoplankton. The Sun is the original source of all food chains.

Materials

- A game set of 64 cards from the attached food chain game cards “Food Chain Game 1 Cards” consisting of 8 cards of *each* of the 8 different food-chain organisms (plants or animals).
- A game set of 64 cards from the attached food chain game cards “Food Chain Game 2 Cards” consisting of 8 cards of *each* of the 8 different food-chain organisms (plants or animals).
- Masking tape

Vocabulary

food chain, dependence, organism

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Introduction

1. Display one set of the “Food Chain Game 1 Cards” out of sequence, and discuss with the class each organism shown.
2. Have the students help you arrange the cards in the correct sequence in the chain so that the students understand how they fit into the chain. Emphasize that the sun is the beginning (or starts the flow of energy) of all food chains and that its energy flows through the entire chain.

Procedure

1. Mark out a “tidal trading pool” area on the floor with masking tape, making it large enough for 8 students at a time to be inside it.
2. Sort students into 8 teams of 2-4 students each. Give each team a set of 8 cards showing *the same* ocean organism. They will be playing a game about food chains. The object of the game is to collect all 8 cards showing the complete food chain by trading them.
3. Place each team on a home base, located around the edge of the classroom, with the “tidal trading pool” in the center.
4. Each student will run into the trading pool, holding one card face-down. He or she will yell, “Trade!” The students in the pool must exchange cards without looking at them; then they may run back to their home bases. All cards must be held face-down in the trading pool. If a student breaks this rule, he or she must stay in the pool for an extra 10 seconds before going back to home base, which will reduce the team’s trading time.
5. When the newly traded card arrives back at home base, the team looks at it and decides either to keep it or to trade it. Then, another student from the team takes one card face-down into the trading pool and trades it. Students may trade only one card at a time.
6. The team that collects all 8 cards first yells, “Food chain!” and trading stops.
7. Once all trading has stopped, the team must create a food chain with the cards they have. They will receive 10 points for each card placed in the correct location in the food chain.
8. Repeat the game until all students have demonstrated an understanding of food chains. Then, play the game with the “Game 2” cards.
9. Have each student select another ocean animal. Have them conduct research about their animal and determine the food chain for their animals, noting where their animals fit in the food chain.
10. Have students share their food chains with the class.

Conclusion

1. Have students write an exit ticket by providing an example of a marine food chain that is different from one of the examples they just formed.

Assessment

- **Questions**
 - Where does the energy flow always begin in a food chain?
 - Where does the energy flow always end in a food chain?
- **Journal/writing prompts**
 - Draw a picture of the food chain and describe it in a paragraph.
 - What would happen to the food chain if one link was extinct? Explain.

- **Other**
 - Give students a list of marine organisms, and have them work individually to place them into a food chain.
 - Have students draw and label their own marine food chain.

Extensions and Connections (for all students)

- Have students create a food web, using both sets of cards.
- Have students try to combine the food chains they developed during their research into food webs with other students' food chains.

Strategies for Differentiation

- Start with two to three cards at first and discuss with the students why the animals in a food chain are dependent on each other. Gradually add in other links in the chain and have the students explain to you where they go in the chain and why.
- For students requiring more challenging material, have them create an “imaginary” food chain comprised of animals they create. Have them explain how each animal depends on the other and the effects of the extinction of a single animal (organism) would be in the environment.

Food Chain Game 1 Cards

Sun→Phytoplankton→Zooplankton→Bristle Worm→Anchovy→Rockfish→Dolphin→Shark

Sun



Rockfish



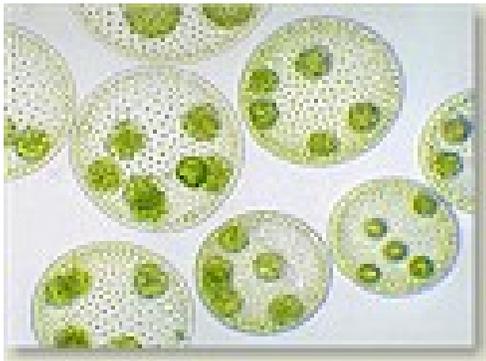
Shark



Anchovy



Phytoplankton



Bristle Worm



Zooplankton



Bottlenose Dolphin



Food Chain Game 2 Cards

Sun → Phytoplankton → Zooplankton → Featherduster Worm → Squid → Mackerel → Sea Lion → Orca

Sun



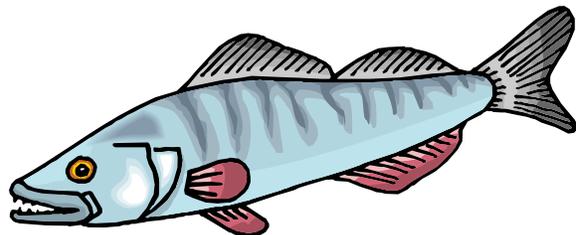
Sea Lion



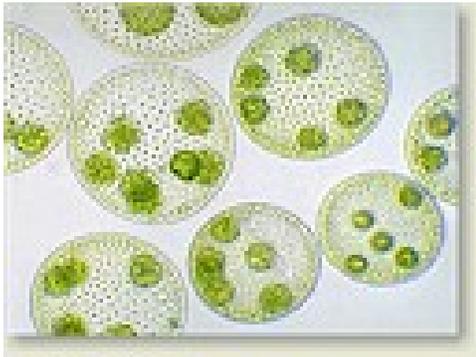
Squid



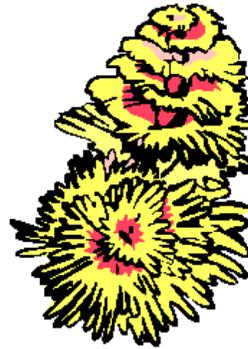
Mackerel



Phytoplankton



Featherduster Worm



Zooplankton



Orca

