Learn to Survive!

An Activity About Social Learning by Observation

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Teacher's Guide

Introduction:

Animals can learn through a variety of different methods. One way they can learn is through their social connections. If you've ever studied for a quiz with a friend, you've done this! Other animals learn from or with others, too. A few examples are birds learning songs from one another, orcas/killer whales learning hunting techniques from each other, and monkeys learning to use tools from interacting with other monkeys. The activity we're about to go through will demonstrate one way that social learning can happen for animals!

Grade Level: Middle School

Timing: Plan for 1 class period; Activity may be set within the "Social Learning in Embryonic Fish" ADI Unit

Standards:
See the alignment table in Figure 1.

Materials:

- "Learn to Survive" Video
- Behavior Cards
- Objects on the table, selected by teacher
- Notepad or paper and writing utensil for each student

Figure 1. Standards Alignment (NGSS Lead States, 2013)

Performance Expectations		
MS-LS1-8: Gather & synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. **MS-LS2-2:** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. **MS-LS-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
• Developing and Using Models • Planning and Carrying Out Investigations • Constructing Explanations • Engaging in Argument from Evidence • Obtaining, Evaluating and Communicating Information	**LS1.D:** Information Processing **LS2.A:** Interdependent Relationships in Ecosystems	• Patterns • Cause and Effect • Systems and System Models • Energy and Matter • Stability and Change

Teacher Prep for Activity:
Before the class period when you plan to use this activity, you should:

- Print the Behavior Card sets – 1 set per group of 4, printed front and back, in color if possible. Cut the cards on the solid lines, and fold on the dotted lines.
- Download the video, found at strides.bsu.edu/fishembryos.
- Select the "response" you want students to do when they see the "predator cue." See page 2 for list of possible responses.

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Teacher Instructions for Activity:

1. Students should work in groups of 3-4, seated at a table or group of desks. Arrange the students so they can watch each other and view the TV/Screen in the classroom.

2. Hand out a set of "Behavior Cards."
   One student in the group should be given the "Conditioned" card.
   The other students should each get a "Control" card.
   Instruct them read the cards quietly to themselves. They should not tell their groups what is written on their cards.

- Show the video called "Learn to Survive!" As the group watches the video, instruct students to observe their classmates' behavior and copy it when they decipher what the conditioned classmate's cue is, and how that person responds to the cue.

3. During the video, students with "conditioned" instructions should complete <*The Response*> each time the hogfish swims on screen. (See the photo of a hogfish on the "Conditioned Fish" card!)
4. Students with "control" instructions should keep an eye on their classmates while watching the video and attempt to figure out when/why their classmates are doing <*The Response*>. When they figure it out, or think they have, they should also perform <*The Response*>.

List of Possible Response Behaviors:
(Be mindful of your students' physical abilities and inclusivity when choosing a behavior. Feel free to create your response and add it to this list of suggestions.)

1. Move your pen from one side of the desk to the other
2. Snap your fingers
3. Rearrange a stack of two different color plastic cups
4. Make a tally mark on a piece of paper
5. Do a jumping jack
6. Raise your hand in the air
7. Say "Seaweed!" (or some other verbal response)
8. Clap their hands once
9. Drop a token or bead into a cup or beaker on the table
10. Tap a pencil or pen on a beaker or flask on the table

If you want to try this activity on "difficult mode," give each group different behaviors. This lets you observe and discuss if you think students copying their groupmates' behaviors, or copying behaviors from a different group.

You can include a discussion question about what happens to an animal in the wild if it improperly learns a behavior – that does happen in nature!)

Make sure you only tell the behaviors to the "Conditioned Fish" in each group.

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After the Activity:
Once your group does the activity, collect the cards so later class periods don't find out what to look for. Then you can use select from the set of Discussion Questions to lead a discussion about the activity.

Questions for Discussion After Activity:

1. If you were a control fish, did you figure out what the cue was that the conditioned fish were responding to? What was it?

2. What do you think the words "control" and "conditioned" mean in the context of this activity?

3. Discuss briefly with nearby classmates: if you were a control fish, how close were you sitting to a conditioned fish? How quickly did you learn the response? Do you think the distance made a difference to how quickly you learned?

4. What does "response" mean in this context?

5. Do you think social learning makes a difference for animals? Why or why not?

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Learning Through Social Observation
Student Guide

Introduction

Animals can learn through a variety of different methods. One way they can learn is through their social connections. If you've ever studied for a quiz with a friend, you've done this! Other animals learn from or with others, too. A few examples are birds learning songs from one another, orcas/killer whales learning hunting techniques from each other, and monkeys learning to use tools from interacting with other monkeys. The activity we're about to go through will demonstrate one way that social learning can happen for animals!

Directions

- Work in groups of up to four people.
- Your teacher may give your group some objects that might help with a "response" when you see a predator.
- Don't talk during the activity – You're a fish, and fish don't tell each other anything!

Cards –

- Your teacher will also give each of you a Card. Don't show others in your group what card you have!
- One person will get a card telling them they are a "Conditioned Fish." This person will know what the "predator cue" is. The predator cue is what that person sees that tells them to "avoid the predator." The Conditioned Fish will also know how to "respond" to the predator cue.
- Other group members will be "Control Fish." If you get this card, your job is to watch everyone else in your group, trying to learn what the "predator cue" is, and how you should respond. In other words, you are trying to copy what the "Conditioned Fish" does, but you won't know which fish is "Conditioned."

Video

Once you get your cards, the teacher will play the video from the Animal Behavior Lab website. Watch closely, but keep an eye on others in your group!

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Post-Lab Discussion:

When you are done with the lab, give your cards back to the teacher!

Then read the following discussion questions, and be ready to discuss them in class. You can write some ideas on this page before or during the discussion.

Questions for Discussion After Activity:

1. If you were a control fish, did you figure out what the cue was that the conditioned fish were responding to? What was it?

2. What do you think the words “control” and “conditioned” mean in the context of this activity?

3. What does “response” mean in this context?

4. Discuss briefly with nearby classmates:
   - If you were a control fish, how close were you sitting to a conditioned fish?
   - How quickly did you learn the response?
   - Do you think the distance from the “conditioned fish” made a difference to how quickly you learned?

5. Do you think social learning makes a difference for animals? Why or why not?

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