ACTIVITY: CROSS-MODAL PERCEPTION

Vocabulary:

Cross-modal ~ Understanding through the use of two or more senses.

Senses ~ Capabilities such as touch, sight, smell, hearing, and taste.

Identification ~ The ability to figure out what something is.

Perception ~ Using your sense(s) to understand and interpret something around you.

Echolocation ~ The use of reflected sound to determine an object's location.

Background:

Cross-modal perception is something we humans use every day, just like dolphins. Cross-modal perception is when we use one sense to identify an object that we normally recognize with a different sense. You might experience this when you're feeling in a bag for an item and find it by your sense of touch, rather than sight. Using your knowledge of that item and your sense of touch, you were able to recognize which item in that bag was the thing you were searching for. This is you using cross-modal perception!

Dolphins have the ability to use both echolocation and sight to identify objects, which allows them to use cross-modal perception. Research shows that when a dolphin identifies an object through sight, it can also recognize that object using its echolocation. It also works in reverse; when a dolphin first identifies an object through echolocation, it can then identify it using only vision (Pack et al., 2002). If not for their cross-modal perception abilities, this would not be possible!

In this activity, you're going to put your cross-modal perceptions skills to the test and see if you can identify objects using different senses!

Supplies:

For this activity, you will need:
-5 brown paper bags
-1 blindfold per participant (optional)
-5 random, but common, objects

The Game:

Overview: In this activity, you will be using your cross-modal perception skills to identify items kept in paper bags. Just like dolphins, you will have to use your thinking cap and other senses besides sight to figure out what items are inside each bag. By sharing information between your senses, you will hopefully solve the mystery of what is inside the bags!

Step 1: Have one person pick out 5 random (common) items from your surroundings, place them each in a paper bag, and tape them shut. Make sure nobody else knows what items you chose!

Step 2: One at a time, pass around the bags and allow the participants to feel the items through the bag. They are able to use their senses of touch and smell through the bag. NO OPENING THE BAGS!

Step 3: Have participants all make a guess of what is in each bag based on what they felt and possibly smelled.

Step 4: Repeat this for each bag and see if your cross-modal perception skills are as good as our dolphin friends' abilities!

Have fun!

Alternatives: Instead of taping the bags shut, blindfold each participant (or have them keep their eyes closed) and have them reach into the bag, feeling the object directly.
No bags? No worries. Just blindfold each participant and have them feel one object at a time. Then, let them see two objects – the object they touched and an object they did not. See if they can make a match!

Challenge: Choose less common/familiar objects for a real challenge!

Further resources:

The Dolphin Pod, 2006, "How does echolocation work":
https://www.dolphincommunicationproject.org/index.php/the-latest-buzz/the-dolphin-pod/item/94419-how-does-echolocation-work

Pack, A. A., Herman, L. M., Hoffmann-Kuhnt, M. & Branstetter, B. K. 2002. The object behind the echo: dolphins (Tursiops truncatus) perceive object shape globally through echolocation. Behav. Process. 58, 1–26.