Unit # 4 1

How do predators catch their prey? (Adaptations)

Introduction & Materials:

Introduction:

Every predator has different strategies for catching prey. Some have great endurance for outlasting their prey over long chases; some are very quick and sneaky; some use brute strength; others have more tact and precision. From these activities,

Students will:

- Become familiar with the variations among large predators
- Gain an understanding of what an adaptation is
- Understand how adaptations make animal's lives easier

Materials:

- 2 buckets or bins of some kind with the same size opening
- 2 or more baseball sized balls
- A handful of dice, pennies or marbles
- 2 small buckets or cups with a large mouth
- 1 long table or a hard, smooth surface (i.e., the floor, finished plywood, etc)
- 1 piece of paper per student
- 2 pencils or pens
- 2 pieces of rope or similar items easily tied and untied
- Masking tape or 2 rubber bands for each player (to attach their thumb to their hand!)

See the diagram on the last page for clarification

Discussion: Get the gears turning

After playing the Predator Prey game last time, students should have an idea of how prey are caught. On a white board or piece of paper make two columns and write "Behavior/Strategy" on the top of one and "Adaptations" at the top of the other. Ask the question, "How do predators catch their prey?" You can explain what falls under "behavior/strategy" or "adaptations" at the beginning, but it may be easier to explain once they have given you a few examples to place in the correct column. This way you will not give away examples. Look at the example below:

Behavior/Strategy	Adaptations
Chase	Fangs
Pounce	Claws
Sit and wait	Talons
Stalk	Strength
Caching	Eye sight
Choke	Camouflage
Group hunting	Hearing
Ambush	Agility
Dive	Endurance
Strike	Speed
Hide	Wings

Note: The Behaviors/Strategies listed here do not necessarily correspond or have any relation to the Adaptations they are adjacent to (i.e., fangs are not necessarily an adaptation that is needed for a predator to chase its prey)

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Unit # 4 2

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Discussion: Cool Adaptations

Share these facts with the students briefly, doing your best to help them understand size scales:

- Cougars have the ability to leap 45 feet horizontally forwards and 15 feet vertically into the air!
- Black and Grizzly bears can go up to 7 months in hibernation- this means no eating, drinking, or going to the bathroom for 7 whole months!
- Bald Eagles build the largest nest of any North American bird and the largest tree nests ever recorded for any animal species, up to 4 m (13 ft) deep, 2.5 m (8.2 ft) wide!
- Cheetahs can run up to 70 miles per hour! They can only sustain this speed for 30 seconds though, and must get close to their prey.

Prior to doing the activity, run a quick demonstration to show humans also have adaptations:

Have everyone get a partner. Partner #1 will close and cover their eyes for 10 seconds and then open it and look directly at #2. When they open their eyes, #2 will watch eyes to see if they change. Switch roles and repeat.

They will observe the change in pupil size. Tell them this is an adaptation to the amount of light our pupil lets in so that we can see in dimly lit rooms, but also on bright sunny days! (Because of that fact, this works best in well lit areas or outside. People have many adaptations. The game we will play will highlight some of the adaptations we have (and probably take for granted)! If they are not amused with this adaptation, another simple but silly one is the fact that our fingers fit in our nostrils so that we can keep our airways clear!

Activity:

To run the activity:

1. Have the course set up ahead of time.
2. Demonstrate what must be done at each station prior to running the activity.
3. Split the group into 2 teams.
4. Tape or rubber band everyones' thumbs so they cannot use them.

Setup:

See the diagram at the end to aid in setup. This will be a race to see which group can get through a series of tasks that will highlight some of our human adaptations (primarily how useful opposable thumbs are). The students will either have their thumbs taped to their palm or a rubber band around their hand pinning their thumb through the **entire activity!** You will need to set up the stations before hand as follows:

1. Determine where the starting lines for each group will be. Place a bucket 6-8 feet away from the starting point. Place the balls at the starting points. Each student must successfully throw the ball into the bucket by any means without using their thumbs. You or another person will be standing by the buckets to return the balls to the throwers. Having multiple balls at the start will lower the number of balls you will have to return for them to keep trying.

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How do predators catch their prey? (Adaptations)

Activity setup continued:

2. Place a table or station 20 feet away. Students must hop on one foot from station #1 to #2. At station #2 set up one cup or small bucket on the ground for each of the teams and a container of dice, pennies, marbles etc. that can be dropped.

At this station each player must pick up the droppable objects without their thumbs. After picking it up, with one hand they must **cover their eye** and holding the object in the other hand, **extend the arm straight** while positioning themselves so that when they release the object, it will fall into the container. This is done without thumbs and will demonstrate depth perception. Each player must make 3 attempts before moving on.

3. Place a station another 20 feet away, this time they must go from #2 to #3 on all 4's using either feet or knees. At this station place a piece of rope or something similar that will be easy to tie and untie. Each player must tie a basic overhand knot and then untie it- again no thumbs!

4. Place another station about 20 feet away, this time they must shuffle sideways between #3 and #4. At this station, place a table or utilize a smooth surface that will make it difficult for students to lift a piece of paper without using their thumbs. This can be one long table with a station for each team at either end. Place one piece of paper at the station and also a stack of paper. The pieces of paper can be cut in half to save paper if you wish.

Students must first pick up the piece of paper that is on the table without using their thumbs and fold it in half matching up the corners as best they can. Then take one piece from the stack and place it on the table for the next person (this can be done by an adult, if they need extra help). They will bring their folded piece of paper to station #5 with them.

5. Place the last station another 20 feet away. Between #4 and #5 they must run normally. At this station place pens or pencils for them to use. Tape a piece of paper to the table and write "Fun Furry Friends" on it. They must copy the phrase on the piece of paper they brought with them- without using thumbs!

6. Tag the next person in line! Have them hold onto their paper while they encourage their teammates. First group done is the winner!

After they have gone through the course the first time, reset it, and have the students go through with their thumbs unbound, eyes open, and a normal stride from station to station. When you are finished with this second "unrestricted" trial, go through the debrief.

Predator of the day:

#4: The Wolf! Refer to the Predator of the Day packet

Photo Credit: Tom Mangelsen

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Unit # 4 4
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Activity debrief:

Debrief:

Run through the following questions quickly, but try to foster as deep a discussion as you can without them losing interest.

1. **Was it easie or harder to throw without your thumbs?**

   A: Harder

2. **Turn to your neighbor and think of other things you do daily that would be hard to do without thumbs.**

   - Have them share

3. **Are there other animals that have opposable thumbs?**

   A: Primates (monkeys, apes)

4. **Why do our dogs or cats not have opposable thumbs?**

   A: They don't play catch! When they do catch things they will use their nails or teeth.

5. **Was it easier or harder to drop the object using one eye?**

   A: Harder

6. **Why was it harder?**

   A: Depth perception- you could not easily tell how far or close your hand was without the other eye!

7. **Would a cougar with one eye have problems surviving? Why?**

   A: Yes! Without depth perception they would not be able to judge how far things are like when they need to jump or how far away prey is!

8. **Turn to a different neighbor and talk about things in your daily life that may be harder with one eye.**

   - Have them share

9. **What was the easiest way to get from station to station**

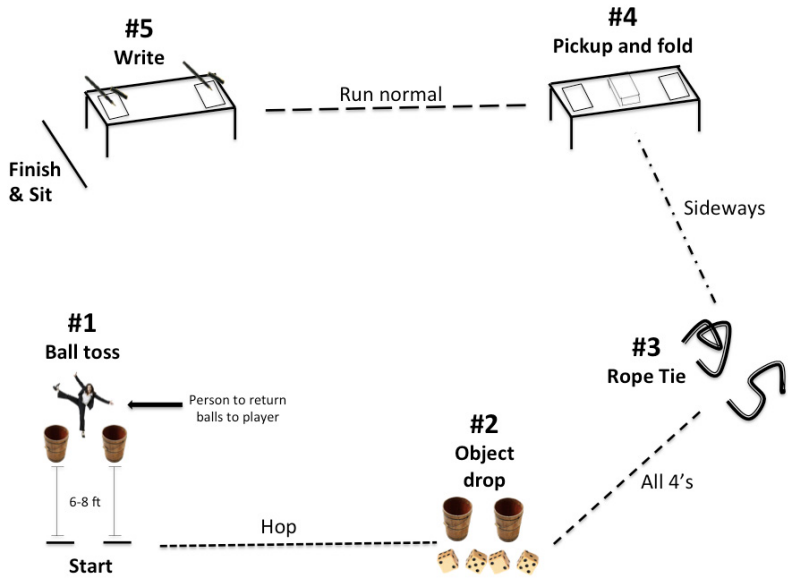
   A: Running normally!

10. **Why?**

    A: Because we have adapted to walk on two legs and in the direction that our knees bend!

11. **Were you able to write "fun furry friends" well enough you can read it?**

    - If students are still engaged you can ask them how they held the pen without their thumb and show how people adapted to not having a thumb and were able to do it differently!



Sources:

del Hoyo, J., Elliott, A., & Sargatal, J., eds. (1994). *Handbook of the Birds of the World* Vol. 2. Lynx Edicions, Barcelona ISBN 84-87334-15-6.

Hansen, Kevin (1990). "Ch. 4 – An Almost Perfect Predator". *Cougar: The American Lion.* Mountain Lion Foundation.

Schwartz, C. C., S. D. Miller, and M.A. Haroldson. 2003. Grizzly bear. Pages 556-586 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman, editors. Wild Mammals of North America: Biology, Management, and Conservation. Second edition. Johns Hopkins University Press, Baltimore, Maryland, USA

Spada, Ada. *Fangs, claws & talons.* New York: Lark Books, 2005. 8. Print.

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