

BEEPS, CHIRPS & BLASTS

Science and Engineering Education Center

The University of Texas at Dallas

Challenge

Explore how bats use sound to communicate and to navigate their environments.



Activity 1

- clicker ● bandana

Select one “bat” and one “mosquito” (bat prey). In an open space, blindfold the bat with a bandana. Give the mosquito the clicker. Let the remaining learners stand as “obstacles” who are allowed to clap only when directly faced by the bat. The obstacles do not move. The mosquito can move to avoid the bat, but must make sounds frequently. The objective is for the bat to avoid the obstacles and tag the mosquito. Repeat the activity with different bats and mosquitoes.



Activity 2

- 2–4 balls with bells

Go to an empty room (like a gym) or hallway. Holding two jingle bells, close your eyes and spin in a circle a few times. Keeping your eyes closed, stop and roll your bell in front of you. Listen how long it takes to hit the wall. Turn to the right and roll the other ball. Which wall is closer. How do you know? You just used echolocation!



Activity 3

- Bandanas for all

Most female bats give birth to one or two pups at a time. A pup is born without fur; it stays warm by clinging to its mother when it nurses or by sharing body heat with other pups as they roost together in a nursery colony.

A female doesn't nurse just any pup. She locates her own pup by recognizing its unique call and scent. When she returns to the nursery colony after an evening flight, she calls her pup, listens for its call, and then sniffs her pup when united.

In an open area, divide the learners into 2 groups: mothers and pups. Create mother and pup pairs and assign each pup a distinct call. Allow for practice time for the mothers to listen to their pups calls, then blindfold and spread out the mothers. Have the pups call for their mothers using the assigned call. Continue until each pair is united.

Calls:

- 1) single hand clap, 2) 2 quick hand claps, 3) 3 quick hand claps, 4) single snap of fingers, 5) 2 quick snaps of fingers, 6) 3 quick snaps of fingers, 7) single hand clap followed by a snap of fingers, 8) 2 hand claps followed by a snap of fingers.

Science Scoop

Bats are capable of making many different sounds. Pups often chirp, and roosting bats tend to squeak and squeal. Some bats emit warning calls, and others croak loudly during mating season.

Bats also emit sounds too high in frequency for people to hear. They are created in the bat's larynx and emitted through the mouth or nose. Called echolocation, these ultrasonic clicks bounce off objects in a bat's path and return to the bat's ears.

Many bats that eat insects have a piece of cartilage, or tragus, at the base of each ear thought to provide better sound definition.

By echolocating, a bat can create an image of its completely dark environment. With this image, it can avoid obstacles and locate food.

A bat flying and searching for insects might emit 10-50 ultrasonic sounds per second. A bat that has located an insect might emit 200 or more sounds per second!

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