Bees surprise scientists by proving they can be problem-solvers

By Kerry Sheridan, AFP, adapted by Newsela staff on 02.23.17
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Bees help our plants grow by bringing pollen from plant to plant. It turns out that they are able to do much more than we once thought. Photo from: Pixabay/Thomas Schiewer.

How smart is that bumblebee buzzing around your garden? Smarter than you might think!

A new study wanted to find out if bumblebees could learn to roll a tiny ball into a goal. Surprisingly, they can. They seem to learn best by watching other bees. Sometimes bees can find even better ways to reach the goal than the way they were taught.

Bees Not Problem Solvers, Scientists Thought

Scientists once thought bees couldn't learn how to solve a complex problem in order to reach a goal. Humans can, of course. So can primates, marine mammals and birds. Insects were not thought to be part of this special group of problem solvers, though.

Clint Perry is a cognitive biologist at a London university. He studies how animals think, including insects. Perry asks questions like, "How does the brain work?" "How does it make decisions?" "How does it hold onto memories?" Perry also studies how big a brain has to be to do these things.

Could Bees Learn Something New?

What about bumblebees? Perry wondered. Could a bumblebee's brain do the kind of thinking needed to learn something new?

Perry was part of a team of researchers studying how bees think. They decided to explore whether bees could learn to move an object. In this case, the object was a small, yellow ball.

Pulling On A String To Get Food

Earlier studies had shown that bees could learn certain tasks. For example, they could learn to pull on a string to get food. But these studies used learning processes that bees might have come across naturally. This means bees might have to learn something similar in the wild. Learning this "pulling" task might help them find food or protection.

Perry's study was different. It used a non-natural object. The tiny yellow ball was new to bumblebees. No bee would have encountered such an object in its daily life.

Rewarding Bees With Sugar Water

First, the research team built a platform. They placed a yellow ball in the middle. The ball was as big as the bees themselves. Bees that checked out the ball would get a reward: sweet sugar water.

Next, they moved the ball to the outer edge of the platform. They wanted to find out if bumblebees could learn to roll the yellow ball to the center. Then they would get another sugary treat. The bees were trained one at a time.

The bees were trained in different ways. Some bees watched a bee that had already learned to roll the ball. Other bees watched the ball being rolled by a hidden magnet under the platform. A third group received no training at all.

Which bees learned most quickly? The ones that watched other bees.

Some Bees Did Not Just Copy What They Saw

The researchers also discovered something they did not expect. Some bees did not just copy what they saw. They improved on it. These bees watched the trainer-bees pick the ball that was farthest from the goal. But they did not do that. With more than one ball on the platform, they chose a ball that was closer to the goal. This shows bee brains are more able to solve problems than scientists once thought.

Bumblebees Need A Push

Will that bumblebee buzzing in your garden join your football team soon? Not likely. Bumblebees may be able to figure out how to solve problems. But they won't do it without a push from something in their surroundings — like the promise of a sweet treat.

Quiz

1 Read the summary below. Choose the answer that BEST fits into the blank to complete the summary.

Scientists wanted to find out whether bees could solve new problems. Their study asked bees to move a ball and gave them sugar water as a prize when they succeeded.

_____

They found out that bees can learn more than many people thought.

(A) The bees have brains that are different, which means they cannot do tasks like other animals.

(B) The bees learned how to use strings to pull, which is important because it can help them get food.

(C) The bees learned how to move the ball and even came up with new ways to do it, which surprised the scientists.

(D) The bees can move balls into goals and can do tasks with footballs, which helps them get treats.

2 Which selection from the article helps the reader understand WHY Perry chose to use balls in his study?

(A) It used a non-natural object. The tiny yellow ball was new to bumblebees. No bee would have encountered such an object in its daily life.

(B) First, the research team built a platform. They placed a yellow ball in the middle. The ball was as big as the bees themselves.

(C) Some bees watched a bee that had already learned to roll the ball. Other bees watched the ball being rolled by a hidden magnet under the platform.

(D) Will that bumblebee buzzing in your garden join your football team soon? Not likely. Bumblebees may be able to figure out how to solve problems.

3 How did Clint Perry get involved in this new study of bumblebees?

(A) Perry is a scientist who studies different kinds of animals and wants to know if bees are the smartest.

(B) Perry is a scientist who studies the memories of animals and wants to know if bees can have memories.

(C) Perry is a scientist who studies animals in the wild and wants to know how bees find food and shelter.

(D) Perry is a scientist who studies brains of animals and wants to know how bees will do with a new task.

4 Which section of the article BEST explains how the bees learned new tasks?

(A) “Could Bees Learn Something New?”

(B) “Pulling On A String To Get Food”

(C) “Rewarding Bees With Sugar Water”

(D) “Bumblebees Need A Push”