

# Bumble bees are surprisingly innovative

*Presentation script  
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Good morning! My name is Dmitriy and I am going to tell you about one exciting research about bumble bees, which was recently carried out by British scientists. My report is based on the article “Bumble bees are surprisingly innovative”, published in Science Magazine last month. I will tell you some facts about bumble bees, then I’ll describe original experiment, carried out by researchers. Then we will look on its outcome and made some conclusions.

To begin with, everyone knows what are bumble bees, but not everyone knows how interesting they are. Different recent researches show that they possess complex navigational skills, rudimentary culture and emotions. They even can use tools. This research proves that they also can learn.

Now let’s move to my next point – the experiment. Its idea was quite simple – insects had to move small balls to specific target in the center of round platform. On success they received sugary reward.

Scientists divided insects into three group and each was learning in their own way. One group watched previously trained bee move one ball and get the reward. The second group watched a ‘ghost’ bee (actually a magnet beneath the platform) move the ball. The third group didn’t see the demonstration, they simply the ball already at the target with the reward.

In addition to that, the task was complicated. There were three balls on different distances from target, and in first two cases only the farthest was moved. Also, in some test cases yellow balls were replaced with black ones.

That brings us to the next slide with results of the experiment. As the charts shows, almost all bees in first group managed to learn, as 80% of second group and 30% of third group. Bees who was taught by another bee accomplished the task faster. And in all three groups most of bees have chosen the nearest to the target ball.

Now let’s go farther and discuss some conclusions about experiment results. First of all, the bees demonstrated great ability to learn. Also, as they preferred the nearest ball to other, they chose the optimal solution. When yellow ball was replaced with black, they accomplished the task as well as before, hence they understood general concept of moving the ball, not only of moving the yellow one. Finally, in some cases they pulled the ball, even if teachers were only pushing it, which shows that bumble bees are innovative.

To sum up, this research shows that small size of bumble bees’ brain doesn’t necessary cause absence of intelligence. Also it clearly proves that bumble bees (and possibly other insects) can quickly develop novel behaviors when the environment changes (because they don’t do such tasks in nature).

In conclusion I want to show you a photo from the experiment, where one bumble bee is teaching another.

Thank you for your attention. I am ready now to answer your questions.