



TED Connection: The dance of the dung beetle

Overview

Mensa for Kids' TED Connections are short, easy to use guides that help teachers, parents and youth use TED talks in a classroom or home setting. Rather than a lesson plan format, they have a list of discussion questions, all at higher levels of thinking.



Entomologist Marcus Byrne invites us into the fascinating world of the dung beetle, sharing how this remarkable insect uses celestial navigation and sophisticated temperature control techniques – all with a brain the size of a grain of rice.

WATCH THE TED TALK AT:

http://www.ted.com/talks/marcus_byrne_the_dance_of_the_dung_beetle.html



Think about it

1. Dr. Byrne explains that dung beetles have evolved to optimally handle their food source. They are all about their food. If you were optimized for the thing that you are “all about,” what would it be? What changes could be made to you to make you more suitable for that activity?

2. There are 800 species of dung beetle in South Africa, 2,000 on the African continent, and 6,000 in the world. That’s just dung beetles. Texas A&M University says that one in five living animal species on the planet is some type of beetle. Why do you think beetles are so prevalent? Which insect would you pick to be the most common if you could choose?

3. Dr. Byrne specifically focused on the 10 percent of dung beetles that make a ball of the dung and bury it in a remote space. Can you see any advantages to being a roller beetle as opposed to the king that digs a tunnel under the dung? Disadvantages?

4. One of the videos depicted a dung beetle having its ball of dung “dungjacked” away by another beetle. If you have something valuable, will it always be in danger of being stolen? What makes something more or less likely to be perceived as having value?



5. The way they roll the ball is intriguing – head down, pushing with the back legs. Can you think of some advantages of this method over the dragging method we saw in one of the video clips?



6. Dr. Byrne explained that the dung beetle does its little dance on top of the ball to deal with the heat. When it got moved off course, it just “did its little dance” and went right back on course. Think about the challenges you face and something you do to cope with it that may seem strange to other people. Then think of something that you have observed someone else doing that was their own “dung beetle dance.”



7. Dr. Byrne asserts that the dung beetle knows where it’s going and it knows where it wants to go so that when its world is literally turned, it reorients itself right away. To make sure it’s on track, it sometimes climbs on top of the ball to gauge where it is. What are things you do to reorient yourself? What happens to people who don’t have that dung beetle singleness of heart and don’t know where they’re going or where they want to go?



8. When the sun isn't available for orientation, the dung beetle can use polarized light that people can see but beetles can. Would you rather hear what others cannot hear or see what others cannot see?

9. Dr. Byrne's hypothesis was that the dung beetle climbed up on the ball and wiped its face on it as a cooling strategy (a practice he called "stilting"). To test this, he put boots on the dung beetles and found that they climbed less often when they're feet weren't hot. Think of three other reasons a dung beetle might want to climb on top of its ball.

- a. _____
- b. _____
- c. _____

10. The dung beetle that dragged was from the subgenus pachysoma. Etymologically, pachy- means thickness or related to thickness, and soma refers to the whole axial part of an animal (the head, neck, trunk, and tail – not arms nor legs). Do you think this is a good description of a beetle – basically "thick bodied"? Why or why not?





11. Dr. Byrne listed three main traits/skills/characteristics of the dung beetle, including:

- Ball rolling (in a straight, undissuaded line, using celestial cues)
- Homing (path integration)
- Dancing (orientation and thermoregulation)

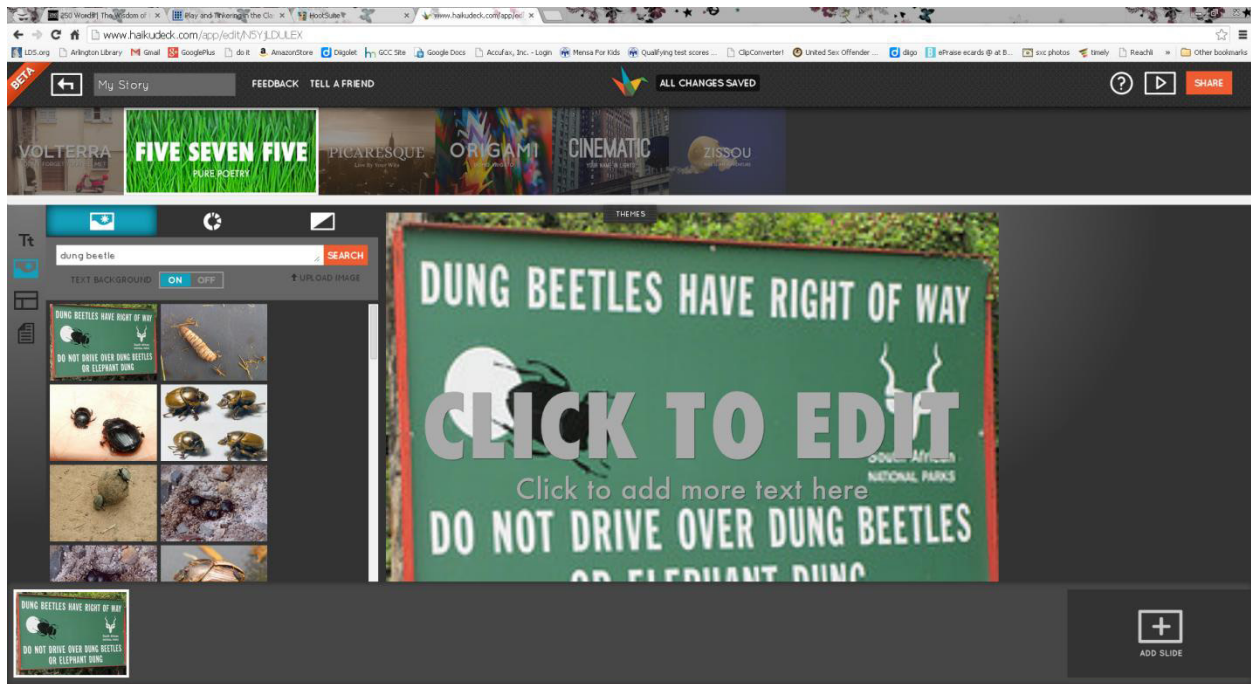
Rank these in order of importance (in your opinion) and then explain which one you feel is most useful and which one you found most surprising.

12. Dung beetles were ranked number 8 in Discovery's list of most important insects (you can find the list here <http://bit.ly/disc-imp-insects>). After viewing Dr. Byrne's talk, would you agree or disagree with this ranking? How would you justify moving the beetle up in the rankings? (It may help to read even more about them in the "Surf It" section below.)



Do it

- Make a beetle out of a walnut shell <http://bit.ly/beetlecraft>.



- Use <http://www.haikudeck.com> to create a presentation about dung beetles. Email a link to your presentation to GiftedYouth@mensafoundation.org.
- Color one of the pages
<http://twistynoodle.com/beetle-coloring-page>
<http://bit.ly/dungbeetlecolor>
and, if you can, use the Aurasma app (<http://www.aurasma.com/aura>) to bring the image to life.
- Make a beetle out of origami:
<http://bit.ly/beetleorigamivideo>
<http://craftyville.squidoo.com/origamibeetle>



Read about it

- *Donnie the Doubtful Dung Beetle* by Mark Eischen (young readers)
- *The Beetle Book* by Steve Jenkins (young readers)
- *Every Dung Beetle Rolls Poop* by Craig Fischer (young readers)
- *An Inordinate Fondness for Beetles* by Arthur V. Evans & Charles Bellamy (older readers)

Watch it

- Watch these short (less than three minutes) *National Geographic* videos on dung beetles
<http://bit.ly/dungbeetlevid>
<http://bit.ly/dungbeetlevid2>

Surf it

- Visit the website of Australia's dung beetle expert John Feehan <http://dungbeetleexpert.com.au>
- Learn a lot more about dung beetles from the BBC show *Nature* <http://bit.ly/bbc-beetle>
- Listen to a short podcast about dung beetle navigation <http://bit.ly/dungbeetle-listen>
- Listen to 37-minute podcast on dung beetles from NPR <http://bit.ly/dungbeetles>
- Learn about how dung beetles use the Milky Way to navigate <http://bit.ly/dung-beetle-navigate>
- Learn more about dung beetles from *National Geographic* <http://bit.ly/ng-dung-beetle>
- Learn more about dung beetles from the San Diego Zoo
<http://animals.sandiegozoo.org/animals/dung-beetle>