

Quick Fix

Two monks watched a flag flying. One said, "The flag is moving," said one monk. The other said, "No, the wind is moving." An old man heard this exchange, came over and said, "The flag is moving, not the wind; the mind is moving."

What is the sound of one hand clapping? What is the taste of water? Zen koans like these have been used for centuries to facilitate the enlightenment of the student. The illogic of these passages may cause some students to become free from traditional/engrained lines of thought. One version of the koan can be used in biology to help students develop critical thinking skills. In short exercises, they can be used ad hoc or as a planned part of a lesson. By practicing these, students learn to look beyond the obvious conclusion and question about the premise of a question before accepting the obvious answer.

My favorite is to examine the scenario of a shipwreck. Begin by asking the students if they believe the stories of people being rescued by dolphins. Have students conclude from that evidence. Then have students talk about the friendly dolphin rescues of humans. At this point, ask them to identify the evidence of the data. Guide them to the fact that the only evidence of the data (if the stories are true) is the fact that dolphins help people, given the source of the data. Lead them to the fact that they were on the side of the story. How many people were rescued when the dolphins came and pushed the "light bulbs" should go off in minds.

For a quick exercise, give students the fact that most shark attacks on people occur in shallow water. Ask them to come up with an explanation. They may answer that sharks are active in shallow water; or that lots of sharks can always be found in shallow water. Then ask the students to identify the depth where one would find the average shark. It's about three feet. (This is also a good starting point for talking about the difference between correlation and causation.)

If time permits, try this one: In the book *Walking with Dinosaurs* there was an episode about dinosaurs and reptiles. In recreating the lives of these animals, the extinct, prehistoric animal, most of the fossils were found. There exists one fossil of an Ophthalmosaurus. The animals were caught at the moment they were born. The fossil clearly shows the newborn exiting from the egg.

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