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ABSTRACT

“Biology Myth-Killers” is an activity designed to identify and correct common misconceptions for high school and college introductory biology courses. Students identify common myths, which double as biology misconceptions, and use appropriate sources to share the “truth” about the myths. This learner-centered activity is a fun and engaging way to correct misconceptions and prepare students to overcome other important misconceptions.

Key Words: *Misconception; inaccuracy; peer-reviewed literature.*

Misconceptions are significant barriers that must be overcome to build conceptual understanding in life sciences. Misconceptions can be difficult to overcome because of the prevalence and ease of access of misinformation. Unfortunately, the majority of students choose to access online information that is not traceable to the original source, nor has it been rigorously reviewed before publication. Regardless of the origin, the difficulty in recognizing and correcting misconceptions has led to challenges in getting students to accept essential concepts such as climate change and evolution.

A variety of well-known “old wives’ tales,” urban legends, and idioms are biological in nature and function as misconceptions that are more easily corrected than those about climate change and evolution. For example, many students should be familiar with the following misconceptions:

- Bulls are enraged by the color red.
- Birds abandon chicks that humans have touched.
- Camels store water in their humps.
- “Daddy longlegs” are the most venomous spiders in the world.

“Biology Myth-Killers” was developed to expose students to common, easily corrected misconceptions in order to better prepare them

for correcting more significant misconceptions. This activity can be used in high school and introductory biology courses and is recommended when introducing concepts of organismal biology and ecology. “Biology Myth-Killers” has been a successful in-class activity and can also be a homework assignment. If used for active learning, students should work in pairs or small groups. The steps of “Biology Myth-Killers,” and best practices, are outlined below.

Part 1: Identify the Misconception

I have had the most success with engagement and creativity when having the class brainstorm these together as one group to create one list. Smaller groups, pairs, or individuals can then select from the list to complete the activity. When left to their own devices, students generally do a web search and all come to the same websites with the same lists of “myths” (such as <http://www.cracked.com>).

Part 2: Correct the Misconception

The method of correcting the misconception can fit anywhere along the spectrum from a brief exercise to an extended collaborative learning activity. If selecting the shorter approach, many of the correct concepts behind the misconceptions can be obtained through simple web searches. Generally, websites with

lists of myths give the accurate concept as well. If the extended method is preferred, instruct students to search databases of peer-reviewed biological journals, depending on what exposure they have previously had to this type of literature. This activity is a good time to introduce your institution’s online library or database access.

Part 3: Write the Type of Inaccuracy That Has Created the Misconception

Students use information from class to explain why the misconception exists. For instance, camels storing water in their humps is not

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possible because those cells and tissues are physiologically not specialized to do so. If possible, it is interesting to further explore the background and origin of the misconception. If pursuing the origin, be cautious that the information used to locate the origin is itself properly sourced!

Part 4: Provide One Reference Used to Correct the Misconception

This is mostly used to ensure that students use accurate, original sources, and can write a correctly formatted reference. In my experience, students will usually ask if they need to format according to MLA or APA guidelines.

Conclusion

Reflection about these misconceptions and others with the entire class is the suggested way to conclude the activity. Brief student presentations can be included. Overall, “Biology Myth-Killers” is a fun activity or assignment that works effectively early in a course as low-stakes preparation to critically examine often-misunderstood concepts.

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