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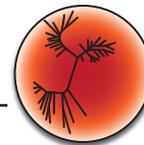
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## Species Shout-Outs From Abdul to Zebra: Encouraging Nonmajors to Communicate in the Biology Classroom

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### INTRODUCTION

To combat reluctance to participate and to encourage greater dialogue with the instructor and among students, a simple verbal prompt was employed as a nonthreatening discussion starter for non-Biology majors in a biology class at a community college. This learning activity, called “Species Shout-Outs,” uses daily attendance to encourage students to be actively engaged during class. By calling out the name of their favorite species, then relating new content to this organism, these “Species Shout-Outs” fostered enthusiasm among students by promoting engagement and creating relevance, all of which are important to improving higher education. This activity also combined the elements of academic and social interaction, as well as active learning, which have been shown to be necessary to foster student retention through college.

Overcoming barriers to classroom participation is challenging in biology classes, particularly for nonmajors, where many students prefer to remain anonymous. Active learning fosters critical thinking and improves retention (3), while verbal interaction between faculty and students increases learning (6) and motivation, while helping students stay in college (5). This article describes a learning activity, called “Species Shout-Outs,” that uses daily attendance to engage students in low-stakes dialogue and encourages students to be actively engaged during class. These were piloted at Kingsborough Community College, in the nonmajors Biology class, *People and the Environment*. The 42 students enrolled each semester are usually unfamiliar with scientific terminology and concepts. To combat reluctance to participate and encourage greater dialogue with the instructor and among students, a simple verbal prompt was employed as a nonthreatening discussion starter.

### PROCEDURE

To begin the “Species Shout-Outs,” students were asked to state their favorite animal when their name was

called for attendance during the first week of class. Students could not select the same species as a classmate, but could choose a related family (e.g., grey fox and red fox) since they were not told of this activity before it was initiated. By understanding that they were expected to relate new concepts to their chosen species and share their understanding with their classmates, who were also responsible for this information, students took a more active role in their own learning. “Species Shout-Outs” initially took 25 to 30 minutes, but as students became accustomed to the procedure they took only 15 minutes. Noting the student’s answers helped the instructor get to know students through association with their mascot species. Some students selected domestic species, while others selected wild ones. This difference was used to discuss selective breeding and domestication. Similarly, when some students specified a genus (e.g., dog, shark) rather than a species (e.g., domestic dog, hammerhead) students were asked to explain how these categories differ, and speciation was discussed.

For the next class, students were asked to again state their favorite species, this time being as “specific” as possible. Some students arrived with the name of a subspecies (e.g., great hammerhead) or race (Siberian husky); this was used to spark a discussion about adaptive radiation, and biodiversity.

Students were then asked to learn their species’ scientific name for the next and subsequent roll calls. Challenges with pronunciation and taxonomy inspired a discussion of binomial nomenclature and classification, while additional practice helped students to better recall and pronounce these often difficult names.

Any redundancy among popular taxa (e.g., *Felis*, *Canis*), was used to discuss the value of scientific nomenclature as a means to group and sort related organisms. A planned added extension activity will be to have students break into groups according to taxa to discuss similarities as well as differences, and then share these with the class to illustrate anatomical similarities and adaptations.

Questions about why binomial nomenclature is confusing were addressed by having students research the etymology of each species for the next class (e.g., “American eagle, *Leucocephalus haleatus*, white headed fish eagle”). At this point, students exhibited a willingness to contribute verbally without the *attendance prompts*.

When biomes were being taught later in the semester, students were asked to select a favorite plant, or as an

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alternative, their favorite ice cream flavor, since these are predominantly plant based. This exercise reinforced the importance of plants as food, spices, and flavorings. Alternatively, students could be asked to list plants they used that day (e. g., fruit, coffee, aloe, wheat, cotton, wood, rubber, oil) to reinforce the importance of plants in nearly every aspect of their lives, whether for food, clothing, furniture, tires, gasoline, fragrance, or medicine.

Stating the scientific name of their chosen plant helped reinforce the fact that plants, like animals, are classified into species. Since many plant names have interesting etymology (cocoa—*Theobroma cacao*, food of the Gods), this prompted discussion of ethnobotany and pharmacology. Students who selected cannabis and tobacco provided an opportunity to present the concepts of secondary metabolites, allelopathy, and medicinal plants.

“Species Shout-Outs” could be further employed to spark dialogue, assess prior knowledge, and scaffold new material. For example, when covering trophic roles, students could state their species’ role (e.g., top predator, omnivore) or biome (e.g., desert, tundra). When discussing conservation, students can research and share the conservation status of their species, threats it faces, and conservation actions needed. The taxonomy of their selected plants could be built upon by having students identify the geographic origin of their plant, its ecological role, or medicinal, historic, or cultural uses. Their plant can also launch dialogue on ecosystem services, invasive species, agriculture, crop domestication, or the genetic value of wild relatives.

## CONCLUSION

At the start of the semester, each student was asked to shout-out their favorite animal as part of attendance. This served as a personally relevant thematic starting point from which they were able to relate new information and scaffold new concepts. “Species Shout-Outs” fostered enthusiasm among students by promoting engagement and creating relevance, all of which are important to improving higher education (7). This activity also combined the elements of academic and social interaction, as well as active learning, which are necessary to foster student retention through college (5).

During the semester this activity was piloted, students showed enthusiasm for these verbal interactions, and were less hesitant to speak during class than previous cohorts. For their culminating oral presentations, students who chose to report on their selected species, exhibited unusually high confidence and clarity, which made them more effective communicators. This may have resulted from students being

actively engaged throughout the semester, which has been shown to improve content and clarity of speech outlines (2). Compared with previous semesters, audience members exhibited higher attendance at and greater interest in peer presentations. They asked more questions, perhaps because they were already familiar with their fellow classmates, as well as their classmate’s totem animals and plants.

There are several possible reasons why “Species Shout-Outs” appeared to enhance student engagement. Students had greater inherent interest in their species and its relevance to them (4). In addition, the students seemed to enjoy the opportunity to interact with their classmates, which has been reported by students as a valuable classroom experience (1). Finally, students may have also gained a sense of empowerment from dictating aspects of the class discussion (7). In future semesters, focus groups and questionnaires will be used to help gather additional information about the students’ reactions to this activity.

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