SEB Teaching Tips: Are Our Students Good at Splitting or Lumping?

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Berlin (1992) briefly described an informal class exercise he conducted in his ethnobiological classification class where his students were tasked to classify a collection of museum skins of Amazonian birds. We implemented a similar class exercise in the Botany Segue of our Introductory Ethnobotany course using fresh plant materials collected from the vicinity of our university campus with the intention of introducing plant taxonomy to non-biological science major students. This segment on Botany Segue was conducted as part of the Ethnobotany Segues to Science Research Project conducted in Fall 2007 at the University of Hawai‘i at Mānoa (see Reedy 2008 in this issue of SEB Teaching Tips for more information about the project).

One major goal of this segue is to expose non-biological science major students to botany in ways that they can relate to and consequently, have a better appreciation of biological science. The focus of this particular segue is plant taxonomy. In accordance with the principle of introducing science to students in a culturally non-intrusive way, we discussed the idea of plant identification and classification in the context of different cultures, specifically the cultures of the students themselves. This led to the comparison of folk taxonomy and plant taxonomy. Subsequently, the students were given the opportunity to develop their own plant classification schemes themselves based on useful indicators of similarities or differences.

This is a simple class exercise but we feel that the dynamics taking place during the exercise is fundamentally complex but at the same time meaningful to the students. For many of these students, this may be their first time that they are consciously making an effort to classify plants. In short, they have to generalize about plant classification based on their own culturally induced perspectives. The usefulness of the exercise is, therefore, not so much about how good a classification scheme the students can come up with but the actual taxonomic process. The visual cues available to the students are the physical characteristics of the plants and the physical arrangement of the plants in the classroom. In addition, the students, coming from a myriad of cultural and educational backgrounds, possess bodies of knowledge which influence their interpretation of the plants. This is evident from some of the names that students come up with for the plants. Examples of these names are “nerdsfruit”, “siren”, “ouch plant”, “tiny violets”, “Canadian leaf plant”, “surfboard white powder”, and “camouflage big leaf with fluff balls”. An interesting side note here is that students often develop their own polynomial nomenclature without any prompting from the instructors. Then, the students have to decide which physical characteristics constitute important criteria for splitting or lumping the plants, and how much of these delineating criteria can be conveniently denoted by one or more word terms. The fact that students are given the opportunities to answer these questions by themselves in class further enhances their appreciation of the need to develop tools and strategies to solve some of these problems. In fact, this may potentially encourage some students to enroll in an advanced-level course to learn more about the subject matter.
The usefulness of this simple class exercise is that students get to experience the problems that are generally found in any classification endeavor. Students who are more motivated may even relate their in-class experience to their everyday life experiences such as the classification of one’s personal collection of digital photographs. Hence, we feel that this simple class exercise is functionally effective and its potential immense.

Instructions for Conducting a Simple Plant Naming Exercise in Class

Preparation before class
Forty fresh plant samples are collected from the vicinity of university campus before each class section. A variety of whole plants and plant parts of different color, size and shape are selected. The plants are put in jars filled with water when necessary to help sustain the plants throughout the class session. Each plant is given a number at random. The plants are arranged on a table so that they are side by side to one another and in numerical order. This step is highly recommended if the same class exercise is to be conducted in more than one class section to achieve a certain level of consistency in the set-up across the different sections.

Class Exercise
The students are asked to get into groups of 2 to 5. The task for each group is to examine and name each of the 40 fresh plants. These students are given complete free reign in the naming process. We provide the students with 4x6 index cards to record the names that each individual group assigns to the plants. The next step is to have each group organize their plant names into 4 to 6 categories based on degrees of similarities or differences. We then have the groups share their classification schemes at the end of the class section.

References:


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