

## Using Guided Discovery as an Active Learning Strategy

Teachers continuously search for innovative ways to help their students learn course content. Many curricula are organized to foster continual learning over a student's academic career, thus the implementation of pre-requisites for upper-level courses. However, seldom do students recognize the importance or utilize the knowledge acquired from the required pre-requisites of a given class. Bruner (1967) advocated a method of inquiry-based instruction known as discovery learning, where students use previous knowledge and experience to discover new facts for themselves. Critics argue that there are a high rate of misconceptions and inaccuracies when utilizing this learning method. Therefore, by including the instructor as a guide during discovery learning, students can still be involved with an active learning strategy, utilize previous knowledge and experiences, and not be wary of learning inaccurate information. Guided discovery can be used as a vehicle for learning in multiple instances in numerous courses. This teaching tip will explain how learning through guided discovery was implemented in a swine production and management course in an effort to improve student success of feedstuff identification and understanding the basics of swine nutrition. Students enrolled in the course must have previously completed an introductory animal science and nutrition class.

### Procedure

Twelve common feedstuffs utilized in swine diets were selected and placed into disposable paper cups. On the bottom of each cup a letter was written for identification purposes. Students formed self-selected groups of four and received a tray with the unidentified feedstuffs. The first activity was to identify each feedstuff using prior knowledge and experience from within the group. The consensus-based answers were written on a handout given to each group. After the initial identification was complete, hints were given to all the groups. For example, two different cups were identified as being from the same source (i.e. ground corn and shell corn). After a series of eight hints, the groups were allowed to change their answers if they discovered errors in their initial identifications. The next "round" consisted of each group identifying whether each feedstuff was classified as a carbohydrate or protein. At the end of the activity each group indicated whether their answer changed throughout the course of the activity and determined the accuracy of their answers by comparing their final answers to the actual answers.

### Assessment

Students were evaluated through pre- and post-activity assessments to determine if the guided discovery structure increased their understanding and application of knowledge, based on a scale where 1 = strongly disagree and 10 = strongly agree. Students enjoyed the method of learning ( $8.38 \pm 1.08$ ) and believed it increased their comprehension of the material ( $7.33 \pm 1.65$ ). Additionally, students believe that the guided discovery method was an appropriate learning strategy to use for various principles in swine production ( $8.96 \pm 1.11$ ) because it provided opportunities for active learning experiences ( $8.89 \pm 1.44$ ), which are continuously requested by students ( $9.25 \pm 0.79$ ).

The graded class average for the feedstuff and nutrition quiz increased six percentage points between the classes that utilized guided discovery learning compared to the classes that were not exposed to guided discovery learning. The improvement seen on the exam that included feedstuffs and nutrition questions followed the same trend as indicated above.

Based on the assessment results and student feedback, guided discovery can be used as an active learning strategy in multiple topics of any course. It is a low-resource, high-impact strategy that carries little risk to the teacher or student. Incorporating guided discovery methods into a traditional lecture-based course can improve student motivation to learn.

### Submitted by:

Brian D. Whitaker  
University of Findlay  
Email: whitaker@findlay.edu