

The Benefits of Student-Created Plant Identification Notebooks.

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Electronic resources are effective when it comes to the identification of plants in agriculture (Sabota, Beyl & Ghale, 1995; Seiler, Peterson, Taylor, & Feret, 1999, White, Beattie, and Kubek, 1990). However, many electronic resources are designed to replace instead of supplement the instructor (Jonassen, Carr, & Yueh, 1998).

The creation of study tools is a very effective way of creating knowledge and encouraging critical thinking (Leggette, Rutherford, & Dunsford, 2015). Supplementing plant identification with manuals allows for students to study identification outside of the classroom or laboratory environment when plants are not available to the student (Kirchoff, Delaney, Horton & Dellinger-Johnston, 2014).

At the University of Mount Olive, students are required to learn hundreds of plants and pests in an upper-level horticulture class. The class follows the guidelines of the NCNLA Certified Plant Professional (CPP) exam, which allows for students to earn an industry certification upon their success in the course. One of the main assignments that students in the course are required to do is an electronic or printed plant identification notebook that includes identification entries for each plant and pest present on the CPP Exam. While the assignment has been required for multiple classes, it was deemed important by the researchers to see if the student-created notebooks were effective.

Theoretical Framework

Experiential learning theory states that people learn best when they are able to have time to have an experience, reflect on the experience, and apply what they learned from the experience to develop a new experience (Kolb, 1984). The students in the plant identification course modeled experiential learning theory with their assignments. The student experience was represented when they engaged with in-person plant identification. Students demonstrated reflection when they created, added to and modified their notes. The students applied what they learned through self-teaching of the plant characteristics. The students also planned a new experience when they prepared for the next round of in-person plant identification.

Purpose and Research Question

The purpose of the study is to see whether or not it is beneficial for students to create a plant identification notebook when preparing for the CPP Exam. Therefore, the main research question for the study is “What is the benefit of a student-generated plant identification notebook?” The research question addresses AAAE Research Priority 4, Meaningful, engaged learning in all environments (Edgar, Retallick & Jones, 2016).

Methodology

A semi-structured interview was used to collect data from students enrolled in a 2017 plant identification course at the University of Mount Olive. All 24 students enrolled in the plant identification course were invited to participate in the study, of which 21 (87.5%) agreed to be interviewed for the study. The interview followed eight sub-questions determined via an *a priori* table (Kahtz, 2000; Karpicke & Blunt, 2011; Kirchoff et al., 2014; Sabota et al., 1995; Teolis, Peffly & Webster, 2007; Uno, 2009; Wilson, Miller, Bloedow, 2017).

The interviews were collected one-on-one by the researchers at times and places that were conducive to the schedules of individual participants. These interviews were conducted by the researchers who were not responsible for teaching the course, so that the students were more willing to open up and share their experiences (Seidman, 2013). The conducted qualitative interviews consisted of questions based on the plant identification notebooks. The participants were interviewed to receive feedback on their opinions of the plant identification notebooks. The

interviews were coded using words that represented phrases for passages in the interview text (Saldaña, 2009). The codes were analyzed using a two-cycle coding method. The first cycle was structural coding, which allowed for a “content-based or conceptual phrase,” to relate to a specific research question (Saldaña, 2009, p. 66). The second cycle used for the code was the development of themes based upon the generated codes from the first interviews. The findings reported the main themes generated through the two-cycle coding analysis.

Findings

The creation of the plant identification notebook showed that the students developed critical thinking skills when organizing and collecting information for each plant. The plant identification notebooks also served as a reliable reference that the students could use outside of class to review previously taught plants and to preview plants not yet taught in the class. One student made the comment that “It helped identify plants that looked similar using identifying characteristics.” Another student made the statement that “It would have been better with a physical part of the plant like a leaf, in hard copy format”. A key factor in plant identification is that physical plants need to be present or available for studying characteristics that are not visible in pictures.

The reliability of online resources was an issue during the creation of the plant identification notebooks. Students struggled to find the correct information to add to their portfolios. Lack of time was an issue for 18 of the interviewed students as it concerned the creation of the notebooks. Most of the interviewed students felt rushed during the assignment. Fourteen out of twenty-one of the students referred to the plant identification notebook when plants were not readily available, even if infrequently referenced.

Conclusions

The creation of the plant identification notebooks assisted students in improving plant identification knowledge. Previous research agrees that that viewing a plant physically allows for students to remember it better (Teolis et al., 2007). When finding information for the plant identification books, the class textbook was very reliable, also some websites were useful and the information the instructor gave was very useful. Although the creation of a plant identification notebook is time consuming, it has been proven to be beneficial. The more time spent using the book as a resource, the greater chance that the individual had an increase in their identification skills. Interview responses and test results both conclude that the more time spent studying the plant identification notebook; there is a better chance at passing the state exam. This is reflected in experiential learning theory that acknowledges that the longer time spent trying to learn something, the better it will be understood (Kolb, 1984).

Implications

In a plant identification course, there should be a main focus on practicing plant identification with live plants. It has shown that incorporating a method that involves the creation of study materials by the individual can be helpful if managed correctly. When requiring a large assignment such as a plant identification notebook, it is important to have an adequate amount of time to complete the creation and set deadlines to assist students with time management. Electronic sources do not replace actual plants; live specimens must be available for viewing by the students in order to learn adequate plant identification skills. Research that focuses on time management for students completing major projects is needed. Procrastination was the main reason why some students were unsuccessful with the creation of the plant identification notebook.

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