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Experiential Learning in the Collegiate Classroom: Impacts of a Foodborne Illness Investigation Scenario

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Objectives

As the number of students with an agricultural background declines, it is imperative to implement teaching methods that aid in understanding and retaining material. Experiential and hands-on learning strategies are often used to meet these objectives. In that light, a foodborne illness investigation scenario was developed for an undergraduate meat safety class at Colorado State University. The impact of the hands-on experience on retention of information related to foodborne pathogens and their role in the meat industry was assessed by surveying students prior to and following the case-study.

Materials and Methods

A foodborne illness investigation scenario was developed based on modules from the Centers for Diseases Control and Prevention (CDC). Students were divided into groups and one student per group was selected as the "patient" while the other group members formed the "investigation team". A list of symptoms was provided, and students were challenged with diagnosing the illness, identifying the causative organism, and confirming the source using CDC guidelines. To accomplish these objectives, students formulated hypotheses naming plausible pathogens and vectors, and followed appropriate diagnostic techniques to confirm or reject their hypotheses. Students then presented their findings and outlined strategies which could mitigate future illnesses. Prior to initiation and after completion of the project, students were surveyed to determine their knowledge of foodborne illnesses, perception of risk the meat industry poses with regard to foodborne illness, and their expectations for the project.

Results

All students were under 25 yr of age and represented the sophomore (6%), junior (26%) and senior (68%) baccalaureate ranks. The majority of the class was female (74%) and most (87%) were Animal Science majors. Pre-project surveys indicated 59% of students had little knowledge of foodborne illnesses and 7% had no previous knowledge. Many students indicated they were unfamiliar with the procedures utilized to diagnose a foodborne illness or the complexity of the investigation itself. The primary student expectations regarding the scenario were to understand the steps of a foodborne illness investigation and practice the diagnostic methods used in such investigations. Notably, one primary student objective was to learn how to convey information regarding foodborne illnesses and the meat industry to others. When asked of the risk the meat industry poses to foodborne illness, 15 and 44% of the students indicated the industry posed significant or moderate risk, respectively. The remaining 41% of students considered the meat industry to pose minimal risk.

Conclusion

Retention of information that is applicable in future careers is a significant challenge in higher education. Traditional methods for instruction relative to foodborne illness, pathogens, and the meat industry may inhibit information retention or limit the applicability to practical scenarios. Empowering students to take a more active role in their education through experiential learning has shown positive results in other classroom settings. When utilized in this class, the approach had positive impacts on not only student retention and potential application, but also aided in the development of critical thinking skills and student independence—skills which will serve the students in multiple capacities.

