

To Teach is to Learn Twice: Enhancing Subject Matter Knowledge Through Microteaching

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Introduction & Need for Innovation or Idea

Microteaching assignments are commonly used in agricultural teacher education programs. In fact, all programs included in McLean and Camp's (2000) national study of agricultural teacher education programs employed the use of microteaching presentations. Microteaching is defined as a learning activity allowing preservice teachers an opportunity to refine their teaching techniques in a simulated classroom environment (Bales, 2020). Ghafour, et al. (2012) stated microteaching exercises help future teachers improve their ability to develop simple lessons based on any teaching subject. They went on to suggest "microteaching helps teachers to improve both contents and methods of teaching and develop specific teaching skills such as questioning, the use of examples and simple artifacts to make lessons more interesting, using effective reinforcement techniques, introducing and closing lessons effectively" (p. 224).

Benefits of microteaching extend beyond developing pedagogical knowledge and skills. Long et al. (2019) concluded microteaching experiences have a positive impact on the subject matter competence of preservice teachers. McKim et al. (2017) stated subject matter knowledge, also referred to as technical knowledge, is an essential component of school-based agricultural education (SBAE) teacher competence. They described technical knowledge as "the requisite knowledge and skills to offer the broad range of SBAE courses" (p. 2). Teachers with a high level of content knowledge teach the content at more depth and with more meaning than those with less content knowledge (Croom et al., 2023). Therefore, when developing microteaching assignments, teacher educators must consider what is to be taught (subject matter) in the lesson as well as how the lesson is to be taught (pedagogy). When formulated to do so, the microteaching experience can affirm the belief of 18th Century French philosopher Joseph Joubert who said, "To teach is to learn twice."

How it Works

AGED 3103: Foundations and Philosophy of Teaching Agricultural Education is a staple of the professional educational coursework for agricultural education majors at Oklahoma State University (OSU). The course has always included microteaching assignments; however, assignment details and expectations have been modified over the years. In addition, the topics taught for microteaching have also changed over time. At one time, students were allowed to choose whatever subject matter they wanted. Most often, students selected a topic with which they were familiar, such as breeds of livestock or types of soil particles. Later, students were assigned a subject included in the state curriculum for the introductory SBAE class. Again, this resulted in students teaching basic information directly from a textbook intended for ninth-grade students. Although using such topics for microteaching experiences provided students opportunities to put into practice the pedagogical theories they learned in the class, it did little to enhance their knowledge of agriculture, food and natural resources subject matter.

We, the lead instructor and teaching assistants of the course, had specific goals in mind when we considered alternative approaches to identifying what students should teach for the microteaching assignment. First, topics needed to be associated with the national career pathways for agriculture, food, and natural resources (The Council, 2024). Optimally for our students, the topics would help students become more familiar with the pathways of Agribusiness Systems, Biotechnology Systems, Natural Resource Systems, and Plant Systems. Second, we wanted topics to be atypical of what our students learned when they were SBAE students. We aspired to push students to inquire into the subject by researching the topic and

synthesizing it to meet the needs, abilities, and interests of SBAE students. Finally, we wanted the content of the microteaching lessons to have value and utility beyond the class assignment. We anticipated the lesson plans and instructional materials developed through the microteaching assignment might be of use when the students become teachers. We hoped the most exemplary lessons would be of such value and quality they could be made available to in-service teachers.

Applying these goals, we determined to have students teach about agriculture around the world. Agriculture is a key component of international relations and trade. It is unique to regions and countries due to climate, topography, culture, and other social factors. We also believe basic information about global agriculture is a good fit for lower grades of SBAE and it integrates well with other classes seventh-, eighth-, and ninth-graders typically take.

Guidelines for the microteaching assignment placed students in groups of four with each group assigned a selected nation. Each group member, then, was assigned one of the following topics upon which to develop their microteaching lesson: (a) Overview of the nation, including location, population, culture, political issues; (b) Resources, including geography, climate, weather, economic impact, labor market, and human capital; (c) Animal agriculture, including common species and breeds produced as well as products, by-products, value add, and other unique attributes; and (d) Plant agriculture, including common varieties, products, by-products, value add, and other unique attributes.

Each student was to research their topic and then develop a lesson plan and supporting materials such as visual aids, worksheets, and assessments of learning. Individuals presented their lesson to peers in their lab section and received immediate feedback. Lessons were video recorded and students were required to submit a self-critique reflection. The group approach was implemented so students could work together during the planning process; however, the microteaching assignment was an individual learning activity with no grade for teamwork.

Results to Date

At the end of the semester, the instructional team met to assess the course, including this new approach to the microteaching assignment. After reflecting on our experiences and feedback provided by students, we believe we achieved our goals. There is, however, room for improvement. As expected, some students exceeded expectations, most met expectations, and a few disappointed us. Specifically, poor attendance by some students caused challenges for some groups. Overall, students acknowledged they learned new information from the experience and enhanced their understanding of food and fiber production in other parts of the world.

Future Plans

This fall, we are repeating this approach with the microteaching assignments. A different set of countries will be assigned; however, most other aspects will remain the same. We believe this topic will continue to work well for a few more iterations of the course and it is likely the relevance of this subject matter will increase. The *Agriculture* section of the latest version of *Career and Technical Education National Career Clusters Framework* (Careertech.org, 2024) emphasizes the global nature of modern food systems. In addition, lessons addressing global agriculture could be useful to teachers seeking content for their seventh-grade SBAE classes. There is currently no established curriculum in Oklahoma for that grade level. For those reasons, we are weighing options for the best way to disseminate lessons of appropriate quality developed from these microteachings so they might be used by in-service SBAE teachers.

Costs and Resources Needed

There were no additional costs or resources needed to implement this innovation.

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