Agriculture by the Numbers: Using State Agricultural Data to Create a Localized Introduction to Agriculture Unit of Instruction

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Introduction/Need for Innovation or Idea

Food and fiber production systems impact critical matters like human health, environmental sustainability, community vitality, and career opportunities. In their synthesis of research on agricultural literacy, Kovar and Ball (2013) highlighted the need and rationale to increase the public's general knowledge and improve perceptions about agriculture. They pointed out people need to understand trends and changes in agriculture associated with population growth, animal rights, genetic engineering, and uses of land, water, chemicals, and hormones. The National Research Council recommended all people have a basic understanding of agriculture, including "its history and current economic, social, and environmental significance" (1988, p. 1).

School-based agricultural education (SBAE) programs play an important role in developing agricultural literacy. In fact, the vision statement generated from the initiative *Reinventing Agricultural Education for the Year 2020* stated, "agricultural education envisions a world where all people value and understand the vital role of agriculture, food, fiber, and natural resources industries in advancing personal and global well-being" (NCAE, 1999, p. 2). Curriculum standards for SBAE programs vary from state to state; however, it can be concluded the focus is to provide students a general and diverse understanding of the agricultural industry and career opportunities therein. There are, of course, benefits to emphasizing local aspects of curricular subject matter. Theobald (1997) espoused the importance of relating curriculum subjects to the community. He stated rural students, in particular, gain pride and allegiance to their home area when they learn more about its place in the broader world. It stands to reason, then, SBAE students would benefit from agricultural literacy education that includes information about agriculture in their community and state.

How it Works/Methodology/Program Phases/Steps

An undergraduate student majoring in agricultural education created the *Oklahoma Agriculture by the Numbers* curriculum unit as part of an individual, special problems project. The primary objective of the unit was to introduce SBAE students to the agriculture they see around their home and across the state. The target audience for the unit was first-year SBAE students; however, it could be used with other SBAE classes, as well.

Lesson content addressed major commodities produced in the state, including geographic regions of production, economic impacts, national rankings, and relevant statistical data. Lessons also provided information about the people involved in agriculture and career opportunities in the industry.

Content for the lessons came primarily from the annual *Oklahoma Agricultural Statistics* (2016) cooperatively issued by the National Agricultural Statistics Service and the Oklahoma Department of Agriculture, Food and Forestry. The report provides up-to-date agricultural production information in narrative, table and graphic formats.

Structurally, the unit was composed of a pre-test, four lessons, and a unit examination. The lessons were: (a) Overview of Oklahoma Farming Operations, (b) Livestock Production in Oklahoma, (c) Crops of Oklahoma, and (d) Your Future in Oklahoma Agriculture. Each of the four lessons contained a detailed instructional plan, student handouts, visual aids, worksheets, and a learning assessment instrument. The instructional plan was formatted using the lesson plan template used in pre-service courses by the Oklahoma State University agricultural education program. Visual aides ranged from PowerPoint® files to materials needed for student activities used in the lessons. The complete unit was bundled into a single, 106-page .pdf file. PowerPoint® presentations were in accompanying digital files.

Results to Date/Implications

The undergraduate student who crated the unit pilot tested it during his student teaching field experience. He taught the unit to an Introduction to Agriculture class and gathered data about the cognitive and affective impact of the instruction. An objective-based unit pre-test assessed students' knowledge about topics of the unit prior to instruction. At the conclusion of the instruction phase, a post-test was administered. The average score on the objective-based pre-test was 45.5% and the average post-test score was 91.5%. The vast improvement in this score indicates the unit has a positive impact on students' knowledge about agriculture in the state. A semantic differential instrument was administered to assess students' attitudes about Oklahoma agriculture before and after being taught the unit. Those data have not yet been analyzed.

Future Plans/Advice to Others

More data needs to be collected and analyzed regarding the effectiveness of the instructional unit. The student who created the unit will update the content and the next class of student teachers from the Oklahoma State University agricultural education program will be encouraged to teach the lesson and gather data from their students about cognitive and affective impacts. After any necessary modifications are made to the unit, it will be made available for teachers to download from a website.

A similar unit of instruction can be created easily in other states. Statistical data and other information about agriculture in each state can be obtained through USDA websites and state agricultural agencies. Information from those sources can be plugged in to the format of the *Oklahoma Agriculture by the Numbers* unit plan to develop a curriculum for other states.

Costs/Resources Needed

Costs associated with developing and teaching this curriculum were minimal. Sources of information used to create the unit content were available free of charge. The only costs were for materials used with student activities and printing of handouts, which totaled less than $50.

References

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