Professional Development for Social Science Agriscience Fair CDE Projects

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Introduction

Through a partnership with Devon Energy, Agriscience Fair has become Oklahoma's fastest growing Career Development Event (CDE) (JudgingCard.com, 2019). In this event, students design, conduct, and present scientific research at local, state, and national levels. Projects span the agricultural industry to include animal, plant, power, structure, technical, food products and processing, environmental services, and natural resources systems as well as social sciences. Six divisions allow students in grades seven through twelve to participate as an individual or with a partner (National FFA Organization, 2019).

The Next Generation Science Standards include multiple inquiry-based standards requiring students to "plan and conduct an investigation to gather evidence" (Next Generations Science Standards, 2019, para. 2). These experiential learning tasks engage students in the curriculum by igniting a natural curiosity (Schmidt & Ketler, 2017). Students gain practice utilizing the scientific method (National FFA Organization, 2019) while also increasing mastery of the content area (Metcalf et al., 2018). Science fairs have also been shown to improve students' perceptions of science, technology, engineering, and math (STEM) careers (Grinnell, Dalley, Shepherd, & Reisch, 2018; Schmidt & Ketler, 2017).

With the multiple, valuable student learning outcomes (Grinnell et al., 2018) and rewards including plaques and cash prizes (National FFA Organization, 2019), it is no surprise Oklahoma school-based agricultural education (SBAE) teachers are motivated to encourage students to participate in the Oklahoma FFA Agriscience Fair. Although participation has greatly increased, the Social Science division continues to be the least populated (JudgingCard.com, 2019). Olive (2017) identified teachers' lack of knowledge in science fair procedures as a main detractor to student participation in science fairs. To overcome this obstacle, students completing agriscience fair projects often partner with university faculty to improve the study (National FFA Organization, 2019). However, no Oklahoma State University (OSU) agricultural education faculty members had been contacted to assist with social science projects. Therefore, state SBAE staff requested OSU agricultural education faculty to present professional development on planning and conducting Social Science division Agriscience Fair CDE projects.

How it Works

A one-day professional development session was planned, hosted, and delivered by OSU agricultural education faculty and graduate students in early August. The purpose of this training was to increase participation in the Social Science division of the Oklahom FFA Agriscience Fair CDE by providing SBAE teachers needed skills and knowledge to coach a social science project. Ten Oklahoma SBAE teachers attended. This training was offered at no cost to attendees.

The day was divided into morning and afternoon sessions. Attendees first completed a pre-evaluation upon arrival. It was determined these individuals felt least confident in their knowledge of qualitative research methods with minimal familiarity with research design and quantitative data analysis. They were most familiar with Survey Monkey and Google Forms platforms. All but one teacher planned to coach a Social Science Agriscience Fair CDE project in

the coming school year. Presenters used this information to tie into what these SBAE teachers already knew and identify areas of weakness.

Morning topics included an overview of social science research, areas of investigation, and conceptualizing the problem, purpose, and objectives within social science. The American Association for Agricultural Education's National Research Agenda was used as a framework for generating research questions. The sessions were kept interactive with opportunities for idea exchange. Multiple breaks and an extended lunch were provided.

Afternoon topics focused on quantitative and qualitative research methods, sampling procedures, and ethical research considerations. Survey design and interview protocols were major topics of discussion. A question and answer opportunity was provided that seemed very beneficial for participants. Participants were provided with a list of resources for future reference. Light refreshments were offered throughout the day.

Results to Date

A post-evaluation was administered to participants at the conclusion of the professional development training. For each of the session topics, attendees reported greater knowledge with at least an improved understanding of the basics after the training sessions. The reaction to the training sessions was overwhelmingly positive. SBAE teachers reported they would recommend this training to other SBAE teachers, they would apply the concepts to their program, and the resources gathered were helpful. They requested additional information regarding data analysis, designing tables and figures, establishing reliability and validity, agricultural education topics in social science, and current agricultural education research. Participants recommended additional information in creating and presenting Agriscience Fair CDE projects. In future holdings of the Oklahoma Agriscience Fair, participation in and quality of the social science division will be compared to previous years. This data will serve to evaluate the extent to which the program met its objectives.

Future Plans

The OSU agricultural education faculty and graduate students are interested in hosting future session of social science agriscience fair professional development. Additional topics and areas of interest listed above will be incorporated. The trainings may be extended to two days where attendees will design and carry out a mini social science project complete with data collection and analysis. The possibility of a catered lunch has been discussed.

Needed Resources

The inaugural Social Science Agriscience Fair Professional Development incurred minimal costs. The sessions were held in the department computer lab. The cost for copies, other materials, and refreshments was less than $50. Time was the greatest resource investment. Presenters were career-long social scientists and willingly provided their expertise. A registration fee may be applied in the future should the training be extended and include catered lunch.

References

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