Professional Development through Winter Technical Institutes: Agricultural Electrification

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Introduction

According to Phipps and Osborne (1988), a total secondary agricultural education program consists of three essential and interdependent components. Specifically, these components are: classroom and laboratory instruction; independent experiential learning, commonly known as Supervised Agricultural Experience (SAE); and participation in the student leadership organization, typically the National FFA Organization.

In the field of agricultural mechanics, laboratories are essential educational tools for student development. Johnson and [Author] (1989) stated that much of the instruction of the agricultural mechanics curriculum takes place in a laboratory setting. As such, a great deal of instructional time is spent in the agricultural mechanics laboratory. Phipps and Osborne (1988) estimated that in many courses, the time allocated for instruction in agricultural mechanics comprises 25% to 40% of the total instructional time. Shinn (1987) reported that the amount of time devoted to laboratory instruction may comprise one-third to two-thirds of the total instructional time in many agricultural programs. Furthermore, no one will dispute the fact that the use of a laboratory setting, where students can learn by doing, is a basic tenant of agricultural education programs (Sutphin, 1984).

In the curriculum area of agricultural mechanics, the basic objective for teachers is to foster the development of students' abilities to perform the mechanical tasks needed in agriculture (Phipps & Osborne, 1988). Johnson, [Author], and Stewart (1990) stated that students learn important psychomotor skills in agricultural mechanics education and that much of the instruction takes place in the school's agricultural mechanics laboratory. In order for teachers to effectively instruct agricultural mechanics curriculum to students, it is essential for them to be able to safely demonstrate these agricultural mechanics skills. Birkenholz and Harbstreit (1987) found that electricity skills were the third highest rated professional development need of [State] agricultural educators. Furthermore, in a 2008 study of [State] agricultural educators, electricity was one of the agricultural mechanics curriculum areas that teachers reported as having professional development education needs in ([Authors], 2009). With the continuing emergence of this agricultural mechanics area as a topic for professional development education by [State] teachers, agricultural education institutions and the professional development staff of the [State] [Department of education] should provide agricultural mechanics educators with professional development education opportunities to learn agricultural electrification skills and curriculum development techniques ([Authors], 2008; [Authors], 2009).

Methodology

As a result of a statewide agricultural education professional development study ([Authors], 2009), the Agricultural Electrification Winter Technical Institute was designed and implemented by the professional development staff of the [State Department of Education] to provide [State] agricultural teachers professional development education in the area of agricultural electrification. During this winter technical institute approximately 20 teachers received professional development education. Among the objectives of the winter technical institute were construction and wiring of a comprehensive electrical wiring board. Additionally, participants

were required to learn electrical theory, electrical safety, and electrical circuit planning and installation. This activity and others provided the participants with the opportunity to learn, demonstrate, and ultimately develop agricultural electrification curriculum to further educate secondary, agricultural education students. At the conclusion of this winter technical institute, teachers received a comprehensive electrical wiring board and a wire size display board.

Results to Date

At the conclusion of the agricultural electrification winter technical institute, participants were asked about the benefits they received from the course. Specific comments from the participants included:

- "It was about the right amount of lecture and discussion…"
- "This was very helpful. It will benefit me in our Agricultural Structures class."
- "Good instructions and good hands-on activities…"
- "The most beneficial part of the session were all the hands-on activities."

Future Plans

The Winter Technical Institutes will continue to be an integral part of the professional development plan for [State] agricultural education. The timing of these winter technical institutes will be designed to meet the specific needs of [State] agricultural educators: after the conclusion of the National FFA Convention, before the end of the fall semester, and before the beginning of the preparation of career development event teams. The content for future winter technical institutes will be prioritized based on empirical professional development research concerning [State] agricultural educators and the availability of facilities and content experts.

Costs/ Resources Needed

The costs for these winter technical institutes vary depending upon the content provided. For the agricultural electrification winter technical institute, the administration costs and supplies were $84 per person. To adequately instruct this institute, the instructors required a laboratory with work tables, a variety of electrical hand tools, safety glasses, and a computer with projector. Handouts and consumable supplies such as electrical wire, wire nuts, etc. were needed as well.

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