

Utilizing Industry Experts to Enhance Agricultural Mechanics Instruction

Introduction

Agricultural Education teachers are expected to be competent in all content areas within agricultural education. However, agricultural education teachers continue to identify agricultural mechanics as a content area where additional training is needed (Shultz et al., 2013). Burris et al. (2010) indicated that agricultural Education teacher's confidence in teaching agricultural mechanics increased with experience. In order to increase confidence, a week long agricultural mechanics workshop was developed following the format utilized by Laboube et al. (2004). However, some issues that teacher education institutions may run into include the lack of expertise among faculty and access to tools and equipment that might be housed in other departments. The purpose of the workshop was to partner with industry leaders to assist beginning teachers develop the fundamental skills and management strategies to be successful in the operation of an agricultural mechanics laboratory.

How it Works

The instructor of the workshop started the process by identifying the essential agricultural mechanics skills that are critical for beginning teachers to possess as educators. An agricultural mechanics needs assessment was conducted to identify the areas of need among beginning teachers. After completion of the needs assessment the instructor needed to identify the companies that specialize in those content areas. In order to provide adequate instructional time and maximize the content areas covered the workshop was designed to cover one topic area per day over a five day span unless two topics could be covered in one day. For example on day one the teachers participated in an introduction to laboratory safety in the morning and a mock agricultural mechanics career development event (CDE) in the afternoon. The four skill areas tested in the mock CDE were aligned to the content areas that were being introduced on Days 2-5. Day Two focused on woodworking, Milwaukee tools provided a representative who covered the entire line of Milwaukee tools including tools that had not reached the market yet. The rep also demonstrated safety and proper use of each tool before the students were able to use the tools in the morning session. In the afternoon, the teachers were responsible for constructing a small woodworking project using the tools and equipment that was introduced in the morning session. The morning session of Day Three the participants received instruction from a local precision farming business focused on surveying and global positioning systems (GPS). The teachers then received instruction on basic electrical principles and applications in the afternoon session. Day four focused on welding; the participants received intense instruction on GMAW, SMAW, GTAW, and O-A welding processes. Lincoln Electric provided two instructors who covered two processes each in the morning and two processes each in the afternoon. Participants were broke into two small groups to get additional hands-on experience throughout the day. On Day Five, Briggs and Stratton provided three industry representatives to provide instruction on the introduction to small gas engines. The representatives also lead the participants through the tear down and reassembly process associated with small engines. Upon completion of the rebuild, the teachers were able to take their engines home.

It was critical to partner with industry leaders because the host institution did not have access to an adequate supply of tools and equipment at the time of the workshop. Additionally,

the industry leaders provided instruction that meet industry standards. Most industry partners also provided additional equipment, tools and other teaching materials for the participants to utilize in their classrooms. Majority of the companies provided at least two representatives from their training department to deliver up-to date technical content in their respective fields. Some examples included Briggs and Stratton who provided three representatives, small engines and all of the tools necessary to disassemble and reassemble overhead valve small engines along with curriculum and teaching aids. Lincoln Electric provided two instructors, welders, and consumable materials along with curriculum and other teaching aids.

Once the topics had been identified, industry commitments had been secured and a calendar of instruction set, the next step in the process was to advertise for the workshop. A flier was developed and emails were sent across the American Association of Agricultural Educators, National Association of Agricultural Educators, and State teachers association listserv. The fiscal technician at the host institution handled registration and billing. A workshop fee of \$500 could be charged to either the participant or the participants' school. Enrollment for the workshop was capped at 24 participants and it was filled on a first paid, first served basis.

Results to Date

The results of this workshop reinforced the results from Burriss et al. with the confidence level among the students improving significantly over the course of the week. Several participants noted they would integrate several of the topics into their curriculum which they would not have taught prior to taking the course. Informal evaluations indicated that all of the students would enroll in the course if they had the opportunity to do it again. The participants' also highly recommend the course to other beginning teachers. The university has also been able to strengthen their ties with the industry leaders who were represented during the workshop. Several representatives have assisted in acquiring equipment for the department to enhance instruction. In the past two years the teachers have been able to take home over \$30,000 in equipment, tools and other teaching materials to utilize in their classrooms.

Future Plans

The instructor has been in contact with additional industry leaders to provide training using their instructors and provide their equipment. The instructor intends to rotate topics on biennial basis in order to integrate multiple agricultural mechanics content areas within the workshop.

Costs/Resources Needed

The only cost to the host institution is the instructor's stipend. It is recommended that the host institution provide an agricultural mechanics laboratory or similar facility with proper electrical outlets and ventilation necessary for the topics covered. The companies that have agreed to participate in the workshop have provided state of the art equipment, tools and consumable products needed to conduct the training.

References

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