

Principles of Project Design and Fabrication Taught as an Intensive Weekend Course

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(See abstract for references)

Introduction/Need for Innovation or Idea

Student-built projects designed and constructed as part the agricultural mechanics classroom and laboratory experience provided unique opportunity for students to apply knowledge and skills.

- Blackburn, Robinson, and Fields (2015) noted a 4-6 hours national average of mechanized agricultural coursework in SBAE teacher certification degree programs.
 - Teacher educators must use innovative approaches to effectively teach and supervise agricultural mechanics.

To better prepare teacher aspirants to deliver mechanized agriculture curriculum, the agricultural education program at Oklahoma State University developed a one-credit-hour, weekend course that highlighted the knowledge and skills needed to implement project-based instruction in mechanized agriculture.

How it Works/Methodology/Program Phases/Steps

The Design and Fabrication course focused on concepts and skills pre-service teachers need to teach student-built, mechanized agricultural projects. The course included aspects of design and planning, along with the construction of an actual project.

Segment 1 (2 hours): Laboratory management, including laboratory safety, budgeting basics, and equipment selection.

Segment 2 (3 hours): Basics of project design and drafting (methods of scaled drawing and basic computer-aided design techniques).

Segment 3 (2 hours): Planning phase. Students replicated the design of the project, shown resources needed to plan details of the project, including an itemized bill of materials.

Segment 4 (8 hours): Construct of project.

At the conclusion of the course (15 contact hours = 1 credit hour) each student developed a project record book that included: a project description, blueprints, itemized budget, bill of materials, safety/tool information, and photos.

Costs/Resources Needed

Standard metal fabrication equipment found in most SBAE mechanics laboratories were used in the construction of the project. Blueprints and materials lists were based on the *Red Wing Steel Works 6x10 Utility Trailer* instruction booklet. The total costs for materials was \$1064.66. Oklahoma State University agricultural education program compensated the host SBAE program an additional \$200.

Results to Date/Implications

Feedback from students was positive and provided ideas for improvements to be made when course is offered in the future. Students expressed the desire to utilize the same assignment for “project books” in their future teaching career. Eighteen students took the course during the spring 2017 semester.

Student Feedback:

- “Learning about project design makes me feel more confident teaching shop”
- “It was very rewarding seeing a complete project at the end of the course”
- “I enjoyed the drafting and design aspect, and putting it all together in one book”

Future Plans/Advice to Others

Oklahoma State University will continue to offer this and similar weekend courses on annual basis. Faculty recognize intensive, one-credit-hour, weekend courses can be used to introduce technical agriculture content, present innovative teaching methods, address new problems, issues and opportunities, and to provide other unique experiences not be included in the degree program.

