

**A Review of Entry-Level Technical Skills in Agricultural Power, Structures, and  
Technology in an Oklahoma Adopted Curriculum: A Delphi Study**

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### Introduction

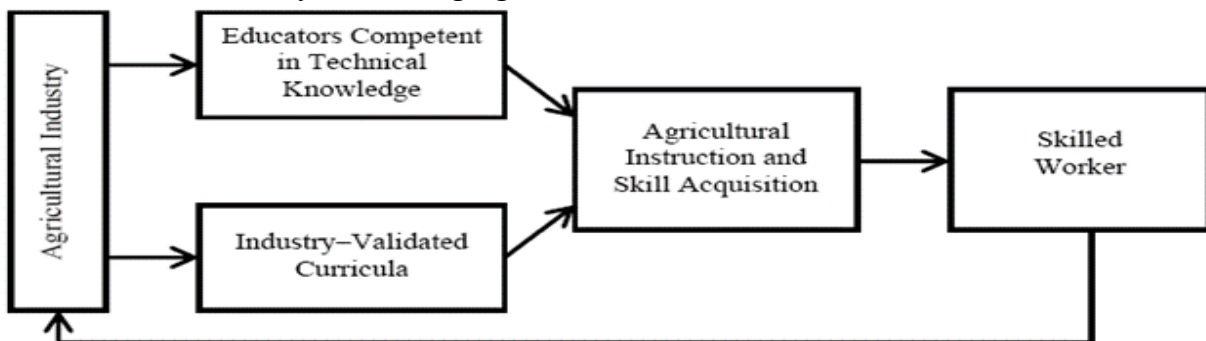
Do you recall anyone questioning the curriculum currently being taught in schools? This question comes up frequently among parents, teachers, and school administrators when reviewing current trends in education (Mkandawire et al., 2018). Research conducted in the mid-to-late 2000s identified what agricultural power, structures, and technology (APST) industry experts expected students to learn from their respective Supervised Agricultural Experiences (SAEs). However, when compared to the perceptions of agricultural educators, those skills did not align (Ramsey & Edwards, 2011, 2012). The purpose of this study was to identify the level of agreement of agricultural power, structures, and technology (APST) technical skills being taught by selected agricultural educators in Oklahoma.

### Conceptual Framework

The conceptual framework for this study was grounded in the content-based model for teaching agriculture (Roberts & Ball, 2009, p. 84) [Fig. 1]. The model was based on the works of John Dewey and David Snedden, and conceptualized “agriculture as content” (p. 82). The model represents a simplified conception of how a skilled worker in agriculture is prepared. This study focuses on the “Agricultural Instruction and Skill Acquisition” to better identify technical skills being taught that aids in creating “Skilled Workers” who re-enter the “Agricultural Industry”.

**Figure 1**

*A Content-Based Model for Teaching Agriculture.*



*Note.* Adapted from “Secondary Agricultural Science as Content and Context for Teaching,” by T. G. Roberts and A. L. Ball, 2009, *Journal of Agricultural Education*, 50(1), p. 84. Copyright 2009 by the American Association for Agricultural Education. Reprinted with permission.

### Methodology

For this exploratory study, a three-round Delphi approach was utilized. The population for the SBAE panel consisted of 467 Oklahoma SBAE teachers. The selection criterion for the study’s expert panel had connections to the Oklahoma Youth Exposition Agricultural Mechanics Competition, had a minimum of one student competing in the 2021 competition, and taught

APST courses in the Central Region of the Oklahoma Agricultural Education Teachers Association during the 2020 – 2021 school year. Thirty-one panelists were identified based on the selection criteria. Panelists were asked to identify technical skills taught within five APST areas as identified by the curriculum commonly found in Oklahoma APST courses. An additional area was identified to address the Curriculum for Agricultural Science Education (CASE) courses of Agricultural Power & Technology (APT) and Mechanical Systems in Agriculture (MSA). The panelists were requested to indicate their level of agreement using a six-point summated scale, i.e., 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Slightly Disagree*, 4 = *Slightly Agree*, 5 = *Agree*, or 6 = *Strongly Agree* (Hainline & Wells, 2019; Wells et al., 2021). Consensus was met when an item garnered 70.00% or more agreement from panelists by scoring a “5=Agree” or “6=Strongly Agree” on the six-point summated scale.

### Results

The first round of data collection sought to identify current technical skills taught within Oklahoma APST courses. Nine panelists (30% response rate) responded to the round one questionnaire and indicated 156 technical skills across five of the six content sections. The CASE content section had zero responses provided. Ninety-two items were kept after condensing like and similar items. The round two questionnaire asked panelists to rank their level of agreement for 92 items retained from round one. Nine panelists responded (100.00% response rate) to the second-round questionnaire for the five content areas kept for round two. Eighty-six items were found to garner consensus greater than or equal 70.00% consensus. The third-round questionnaire contained four items reflecting 51.00% to less than 70.00% level of agreement from round two. Panelists were asked to indicate either *yes* if they wanted to include the item in the final list of consensuses, or *no* if they wanted to have the item removed from the study (Veugelers et al., 2020). Two additional items reached the 70.00% consensus threshold of agreement. Examples of the technical skills kept included: 1) change oil in a motor, 2) perform basic carpentry skills (e.g., frame a wall), and 3) perform basic maintenance on a GMAW machine. The content area with the most technical skills identified was Ag Welding/Ag Construction in which 36 technical skills were found to have met the 70.00% consensus being rated a five or six on the summated scale. The content area with the least technical skills identified was Small Gas Engines with 10 technical skills found to have met the 70.00% consensus being rated a five or six on the summated scale.

### Conclusion

The researchers concluded the content area of Ag Welding/Ag Construction is a technical skill focused on by most of the expert panelists. Additionally, the CASE curriculum is not regarded as an important curricular resource. Six of the nine (66%) SBAE teachers indicated an advisory committee was not used in their SBAE programs. It is recommended SBAE teachers work with key stakeholders in their communities to create advisory committees to help guide their programs. Evaluating resources used to teach technical skills to students should be conducted periodically to ensure students are provided with up-to-date, hands-on training in regards to industry technology. Further research on technical skills being taught within the secondary education classroom can allow for curriculum modification and updates, professional development opportunities, as well as career development event modifications and updates.

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