

# Resource Needs of Dual Enrollment Agricultural Mechanics Adjunct Faculty

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## Abstract

The purpose of this study was to determine the resources needed by agriculture dual enrollment adjunct faculty. A Delphi approach was implemented to reach three-round consensus of needed resources. The expert panel were those individuals who were currently serving or had served as dual enrollment adjunct faculty at Eastern New Mexico University. Consensus resulted in the following needed resources: local school administration support, adequate tools and supplies, access to technology, effective communication with dual enrollment partner university, presentation materials, adequate space for teaching activities, course curriculum, current syllabi, detailed study guides, and planning time. Practitioner recommendations include creating open lines of communication between local schools and dual enrollment partner universities. Providing human and financial capital is required of local public schools to ensure dual enrollment programming is fully supported. Partnering universities can provide course materials including syllabi, curriculum, study guides, and other presentation materials. The partnering universities can ensure these materials as well as teaching methodologies are updated through regular in-service programming for the adjunct instructors.

## Introduction

Dual enrollment programs, also known as concurrent enrollment or dual credit, have existed for several years (Chumbley et al., 2015). Dual enrollment is an innovative program which allows high school students to simultaneously enroll in a high school class and a corresponding college course and earn credit for both (Estacion et al., 2011). These courses are offered in a variety of modalities, including face-to-face taught by the high school teacher or college faculty, online, or in a hybrid model in which the post-secondary curriculum is facilitated by the high school teacher (Barnett and

Hughes, 2010). A study by Ball et al. (2010) found students who enter college with prior college credit have greater academic performance, retention to their sophomore year, and degree completion rates than students with no prior college credit.

Regarding secondary school based agricultural education programs, teacher needs in agricultural mechanics have been well documented, however little research exists documenting the needs of dual credit agriculture mechanics faculty. Numerous researchers have identified agricultural mechanics laboratory management as a key teacher need (Dyer and Andreasen, 1999; Hubert et al., 2003; Johnson et al., 1990; McKim and Saucier, 2011; Saucier and McKim, 2010; Saucier et al., 2009; Schlautman and Silletto, 1992; Swan, 1992). Furthermore, Dobbins and Camp (2000) identified a variety of agricultural mechanics teacher needs including academic integration methods, curriculum development, learning styles, teaching methods and techniques, and technical content. Modifying curriculum to meet technology changes and effective laboratory teaching methods were also identified as needs specific to school based agricultural education teachers (Custer and Daugherty, 2009; Peake et al., 2007; Washburn et al., 2001). Finally, Joerger (2000) recognized, to be effective, teacher needs should be assessed at timely intervals to ensure teachers are equipped to teach in ever-changing classroom and laboratory settings.

However, support for adjunct faculty, who teach face-to-face courses, is often left to the secondary school where they are employed. Ineffective teachers, because of a lack of appropriate training (Darling-Hammond, 2000) and the scantiness of adequate teaching materials, can be detrimental to the educational process (Darling-Hammond, 2007). Without adequate teaching materials, students are limited in their ability to master related skills and the quality of instructional activities may also

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be hindered (Byrd et al., 2015). High-quality learning experiences are necessary for students to reach their full potential with curriculum integrated in the agricultural mechanics laboratory (Wells et al., 2013).

Although universities are increasingly providing adjunct faculty support through training and curriculum updates (Fagan-Wilen et al., 2006), little research exists documenting the resources needed by adjunct dual enrollment faculty. Much of the research published has been descriptive in nature or primarily based upon opinions and attitudes toward concurrent enrollment programs (Ball et al., 2010). There is a greater void in the research documenting the needs of adjunct dual enrollment faculty in agricultural mechanics. Therefore, the primary objective of this study was to document the needed resources of adjunct dual enrollment faculty in the area of agricultural mechanics.

### Methods

To meet the objective of the study, the Delphi method was employed and administered with the guidance provided by Dillman et al. (2007). The Delphi method is employed when a controlled debate, where panelists can maintain anonymity, is desired (Gordon, 1994). Panelists are asked to provide feedback on a series of sequential questionnaires. Each questionnaire is constructed based upon the responses of the previous round (Henson, 1997). Participant opinions are synthesized by the researchers and distributed to the panel for analysis and feedback until consensus is reached.

The Delphi method is reliant upon the selection of an expert panel (Dalkey, 1969). For this study, those individuals (N=20) who were currently serving or had served, within the past two years, as an adjunct dual enrollment instructor for Eastern New Mexico University were selected to participate as panelists. The identified instructors were sent an email request to participate. Of the 20 instructors invited to participate, 13 accepted and returned the initial instrument. Thirteen completed the second and third round questionnaires. When Delphi studies include groups of 13 or larger, reliability has been identified as greater than 0.80 (Dalkey, 1969).

This Delphi study employed three stages and was initiated through an email detailing the research process and anticipated timeline. The entire study was conducted electronically as the expert panel was distributed throughout the state. Each round was closed after 21 days, and data collection lasted 63 days. Thirteen panelists responded to each round, which was sufficient for ensuring reliability (Dalkey, 2002). IBM SPSS Statistics Version 22 was used to create frequency tables. For data analysis, variables were recoded to combine Somewhat Agree, Agree and Strongly Agree to examine the percentage of overall agreement among the panel. Consensus was defined as two-thirds agreement or strong agreement on a seven-point Likert-type scale.

Prior to commencing this study, this research protocol was reviewed and approved by the Eastern New Mexico University Human Subjects Review Board.

The first round consisted of one open-ended statement: What resources are most important to you to be a successful dual enrollment faculty member? The question reflected the objective of the study, and remained unchanged throughout the study. Round one data was analyzed using the constant-comparative method (Lincoln and Guba, 1985). The constant-comparative method is characterized by a continuous evaluation of data with emerging perceptions through a series of coding and categorization (Lincoln and Guba, 1985). During data analysis, multiple responses were coded into one need if it was determined they had like meanings and separated divisible responses into multiple single needs as required. The needs were compared to the initial data to ensure the suggestions were fully captured. Thirteen of the 20 panel members participated in round one for a 65% response rate.

In round two, panel members were presented with the resulting needs alongside a Likert-type scale and asked to rate their level of agreement or disagreement to each identified need. The Likert-type scale was constructed with seven-points ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The panel was also asked to revisit the complete list from round one and provide additional needs that were missing from the list. The same data analysis process used in round one was repeated to analyze the additional suggestions. Consensus was defined a priori as items that achieved two-thirds consensus of Somewhat Agree, Agree, or Strongly Agree (Boyd, 2003; Conner et al., 2013; Shinn et al., 2009). Individual items that achieved consensus in round two advanced to round three and were subject to an iteration of the same process and criteria. Data analysis on round two responses revealed that a total of 10 items achieved at least two-thirds consensus. Three needs did not achieve consensus and were removed from future consideration. The response rate for round two was 65% (n=13).

The ten needs which met the two-thirds threshold from round two were retained for round three to finalize consensus among the panel. In round three, all ten needs met the two-thirds threshold and additional iterations were deemed unnecessary. The response rate for round three was 65% (n=13).

### Results

Round one resulted in a total of 33 initial responses, which were condensed into 13 needs. The needs ranged from program support and effective communication with the dual enrollment partner university to teaching supplies and materials. The needs from round one can be found in Table 1.

The data from round one were re-distributed to the panel to determine consensus. Three needs were removed from the list and included community support, resource speakers/presenters and textbooks. All participants agreed that local school administration was a need to be a successful dual enrollment adjunct faculty member. Over 80% of the participants agreed effective

communication with the dual enrollment partner university, technology access, course curriculum and syllabi, and presentation materials were a needed to be a successful dual enrollment agriculture mechanics faculty member. These data can be found in Table 2.

The needs from round two, meeting the two-thirds consensus threshold, were re-distributed to the study participants in round three. All 10 needs meeting the threshold from round two met the two-thirds consensus in the final round. As may occur in Delphi studies, consensus among study participants can change between rounds. In this study, consensus was higher for adequate tools and supplies in round three (92.3%) than in round two (76.9%). Furthermore, decreases in consensus were found in the need areas of communication with the partnering university (92.3%, round two; 84.6%, round three), course syllabi (84.6%, round two; 69.2%,

round three), and detailed study guides (76.9%, round two; 69.2%, round three). These data can be found in Table 3.

### Discussion

The purpose of this Delphi study was to gain insight into the needs of adjunct faculty teaching dual enrollment agricultural mechanics courses. The adjunct faculty, participating in this study, identified ten needs ranging from support and communication to a variety of course specific needs. Specifically, adjunct faculty were unanimous in their identification of local school administration support. Dual enrollment programs are based upon partnerships between post-secondary institutions and local K-12 school districts. School administrators must be willing to provide the financial and human capital to support the partnership. Financial capital includes the funding required to provide equipment and consumable supplies to teach agricultural mechanics courses. Furthermore, the school district must provide the human capital to teach the courses and administrative support personnel required for enrollment services and academic reporting to the partnering university.

Effective communication between the K-12 school district and partnering university is vital. The university is required to provide information to the school district ranging from student admission requirements to course descriptions and curriculum to adjunct faculty requirements and expectations. In addition to meeting state teaching licensure requirements, university adjunct faculty must meet expectations outlined by the Higher Learning Commission (HLC). It is the responsibility of the partnering university to examine the qualifications of the potential adjunct faculty and communicate with school districts these requirements and expectations.

Similar to previous studies indicating the need of school based agricultural education teachers, the participants in this study identified a variety of needs regarding course content. Most notably, adjunct faculty identified presentation materials, course curriculum and syllabi, and detailed study guides for students. Partnering universities can address these needs through in-service programming where faculty are provided updated materials and new or innovative teaching methodologies in a university setting.

The adjunct faculty in this study also identified needs beyond the scope of the partnering university. Adequate tools and supplies, technology access, and space for teaching activities are the responsibility local school districts to provide. These findings are not isolated to this study. McCubbins et al. (2016) concluded agricultural mechanics laboratories in Iowa were poorly equipped to teach many agricultural mechanics skills. Furthermore, Byrd et al. (2015) found \$2,000 was the average equipment and supply budget for secondary agricultural mechanics programs and space allocation for instruction was smaller than state recommendations. Partnering uni-

**Table 1. Round One Results in a Delphi Study Conducted to Identify Adjunct Agricultural Mechanics Dual Enrollment Faculty Needs (n=13)**

Needs
Local school administration support
Effective communication with dual enrollment partner university
Access to technology
Course Curriculum
Presentation materials
Current Syllabi
Adequate space for teaching activities
Adequate tools and supplies
Detailed study guides
Planning time
Community support
Resource speakers/presenters

**Table 2. Round Two Results in a Delphi Study Conducted to Identify Adjunct Agricultural Mechanics Dual Enrollment Faculty Needs (n=13)**

Needs	Percent Somewhat Agree, Agree, or Strongly Agree
Local school administration support	100.0
Effective communication with dual enrollment partner university	92.3
Access to technology	84.6
Course Curriculum	84.6
Presentation materials	84.6
Current Syllabi	84.6
Adequate space for teaching activities	76.9
Adequate tools and supplies	76.9
Detailed study guides	76.9
Planning time	69.2
Community support	61.5
Resource speakers/presenters	61.5
Textbooks as a resource	61.5

**Table 3. Round Three Results in a Delphi Study Conducted to Identify Adjunct Agricultural Mechanics Dual Enrollment Faculty Needs (n=13)**

Needs	Percent Somewhat Agree, Agree, or Strongly Agree
Local school administration support	100.0
Adequate tools and supplies	92.3
Access to technology	84.6
Effective communication with dual enrollment partner university	84.6
Presentation materials	84.6
Adequate space for teaching activities	76.9
Course Curriculum	69.2
Current Syllabi	69.2
Detailed study guides	69.2
Planning time	69.2

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universities cannot control school district budgets and facilities however, recommendations can be made prior to the development of partnerships to ensure the adequacy of equipment, supplies, and facility space. To better meet programming requirements, when partnerships with other post-secondary institutions offering dual enrollment or relationships with private industry are better equipped to meet the needs of individual school districts they must be explored to ensure program success.

### Summary

Assessing the needs of adjunct dual enrollment faculty is vital to the success of these programs. Universities should consider the needs of adjunct faculty before dual enrollment programs are established. It is recommended that timely needs assessments are conducted to ensure the faculty are prepared to teach the content and skills in an environment where students will be successful.

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