

Teacher Perceptions of California Agricultural Mechanics Teacher Preparation

Justin Pickard
Michael Spiess
California State University, Chico

College of Agriculture
California State University, Chico
Chico, CA 95929-0310
Telephone: (530) 898-4554
E-mail: mspiess@csuchico.edu

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Introduction

Teacher preparation for agricultural mechanics instruction is an increasing concern in California. Of the states 670 agricultural teachers 39% teach at least one course in this area. FFA student numbers have grown by 17% over the last 8 years while at the same time agricultural mechanics students have increased by 37% (California Department of Education, 2007). Since 1990 agricultural mechanics course offerings at the university level have been noticeably reduced. Of the five universities offering agricultural credentials only two offer more than the basic coursework in agricultural mechanics. Teachers and state staff have expressed concerns as to preparation of teachers in agricultural mechanics instruction. The objectives of this study were to determine 1) how well teachers felt prepared to teach in specific areas of agricultural mechanics, 2) if there were differences in gender, 3) if there were differences in outside experience between the specific areas, and 4) if teachers had experiences outside their college preparation and in what areas as well as where did they gain their experience.

Conceptual Framework

Burris, et.al. (2005) found that “the need exists to structure teacher education programs to more adequately prepare graduates in agriculture mechanics.” These findings coincided with McLean and Camp (2000), who concluded that “Increasing credit requirements in other areas and limited availability of courses may force agricultural education programs to develop creative and innovative solutions to ensure that program graduates, as well as practicing teachers, are given the opportunity to develop technical competencies in the field of agricultural mechanics. To meet this charge, institutions will have to look beyond traditional outlets for preparation.”. On average 43.3 credits in technical agricultural training are required by U.S. universities with an average of 9.1 credits dedicated to agriculture mechanics (Connors and Mundt, 2001). In California the minimum requirement at CSU Fresno, Cal Poly San Luis Obispo and CSU Chico are 9, 5 (qtr.), and 9 credits respectively for credential candidates.

Methodology

A survey instrument was developed using the nine areas established by Burris, et.al. (2005) of electrical, metal fabrication, tools, ag power, building construction, project planning, plumbing, concrete, machinery and small engines (a specific area of instruction in California). For each area the survey asked if they had college instruction in the subject, how well the college had prepared them to teach the area, if they taught the subject, and if they had outside (non-college) experience. For the preparation questions a four-point Likert scale was used ranging from “very well prepared” to “not prepared”. Demographic data was also collected. The instrument was tested for content validity by teachers outside the survey area. The survey was placed in an online form which stored responses in a database. A solicitation was emailed to teachers of agricultural mechanics in the Superior and Central regions of the state. These two regions were chosen because of their strong agricultural mechanics programs and because they represented both small and large programs. The original solicitation was sent to 125 teachers. The email to two teachers was undeliverable. Three solicitations were sent approximately two weeks apart. The first solicitation was emailed to all teachers in the group; the second and third were sent to non-respondents.

Results Summary

Seventy-one teachers (58%) responded to the survey. The responses were found to be representative of the population by gender and region using a Chi square analysis. The mean years of teaching for the respondents was 12.93 years compared to the population mean of 12.74 years. 20% of the respondents were female. Teacher's preparation results are summarized in Table 1 indicating that teachers felt most prepared in the tool area and least in the electrical area. Plumbing ($r=.396$, $p=.01$) was the only area where a significant correlation was found between preparation and teaching. A correlation analysis showed that more experienced teachers reported being more prepared in electrical ($r=.285$, $p<.05$), ag power ($r=.289$, $p<.05$), project planning ($r=.318$, $p<.05$), and concrete ($r=.368$, $p<.05$). A T test showed no significant differences were found in university preparation between female and male teachers. The majority of teachers reported having experience outside their university preparation. 96.9% of teachers reported that they thought outside experience was important. No significant correlation was found between teaching experience (years) and outside experience in any of the areas. A T test found that female teachers had significantly less outside experience in all areas ($p<.05$ for all areas).

Table 1 – Preparation, Teaching, and Outside Experience

	No Preparation	Well/Very Well Prepared	Teach in the Area	Outside Experience
Electrical	23%	18.6%	75.7%	68.6%
Metal Fabrication	34%	20.0%	70.0%	78.6%
Tools	18%	50.0%	95.3%	73.9%
Ag Power	21%	35.7%	47.7%	77.1%
Building Construction	34%	27.1%	61.2%	78.3%
Project Planning	38%	25.7%	84.1%	62.7%
Plumbing	39%	20.0%	62.7%	73.5%
Concrete	38%	27.1%	48.5%	83.3%
Machinery	45%	28.6%	33.3%	77.9%
Small Engines	52%	20.0%	46.0%	64.7%

When asked where they received outside experience teachers commonly cited a wide variety of work experiences including summer jobs and working on the “university farm” as well as industry classes (e.g. Briggs and Stratton, Miller, and Lincoln).

Conclusions/Implications

The lack of significant gender differences in perceived preparation is a positive result since the percentages of women entering the profession continues climb and the number of women teaching agricultural mechanics is also climbing. However, given the importance teachers place on outside experience female teachers reported having significantly less experience than their male peers. The number of teachers reporting that their university experience did not prepare them to teach the subject is disturbing and should be investigated further. In some areas more experienced teachers reported that they were better prepared. This finding is consistent with a decline in agricultural mechanics instruction at the university level. The outside experiences should also be examined to better determine if these experiences

occurred prior to entering teaching or have been obtained after the teacher entered the profession. Given the general perception of their preparation, and the importance that teachers place on outside experience a strong in-service program in agricultural mechanics may be indicated.

References

Burris, S., Robinson, S.J., and Terry, R. (2005). Preparation of Pre-Service Teachers in Agricultural Mechanics. *Journal of Agriculture Education*, 46 (3) 23-34.

California Department of Education. (2007). Agricultural Education Unit R2 Data. Accessed online November 20 2007. <http://www.calaged.org/r2>

Connors, J. J. & Mundt, J. P. (2001). Characteristics of preservice teacher education programs in agricultural education in the United States. *Proceedings for the 28th Annual National Agricultural Education Research Conference*, 109-118.

McLean, R. C., & Camp, W. G. (2000). An examination of selected preservice agricultural teacher education programs in the United States. *Journal of Agricultural Education*, 41(2), 25-35.