



Agricultural Mechanics Education Exposure Levels of Entry Year, Texas, School-Based Agriculture, Food, and Natural Resource Teachers

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Introduction

- Large range of skills that students should learn in agricultural mechanics related courses (TEA, n.d.).
- Skilled teachers are crucial to students achieving success (Sorensen, Lambert, & McKim, 2014).
- Agricultural mechanics teachers need to be prepared and confident in safely teaching their students agricultural mechanics skills (Saucier & McKim, 2011).
- Large number of school based teachers leaving the teaching profession prematurely (McIntosh, 2017). Almost half of all novice teachers will change professions during their first seven years of teaching (Blackburn & Robinson, 2008).
- Limited research on teacher confidence levels to teach agricultural mechanics curriculum.



Purpose and Research Questions

Purpose

Quantitative census to determine the agricultural mechanics exposure levels of entry year, Texas AFNR teachers during their undergraduate education and their demographic characteristics.

Research Questions

- Determine the agricultural mechanics exposure levels of entry year, Texas, School-based, AFNR teachers during their undergraduate education.
- Determine the personal, professional, & program demographics of entry year, Texas, AFNR teachers.

Theoretical Framework

- Ericsson's Theory of Expertise was utilized to better understand how individuals can master knowledge and skills related to agricultural mechanics (Ericsson, Krampe, & Tesch-Romer, 1993).
- Bandura's Theory of Self-efficacy allows us to understand that a teacher's beliefs in their abilities impacts their level of success and ability to convey learning (Bandura, 1986).

Results

Table 1

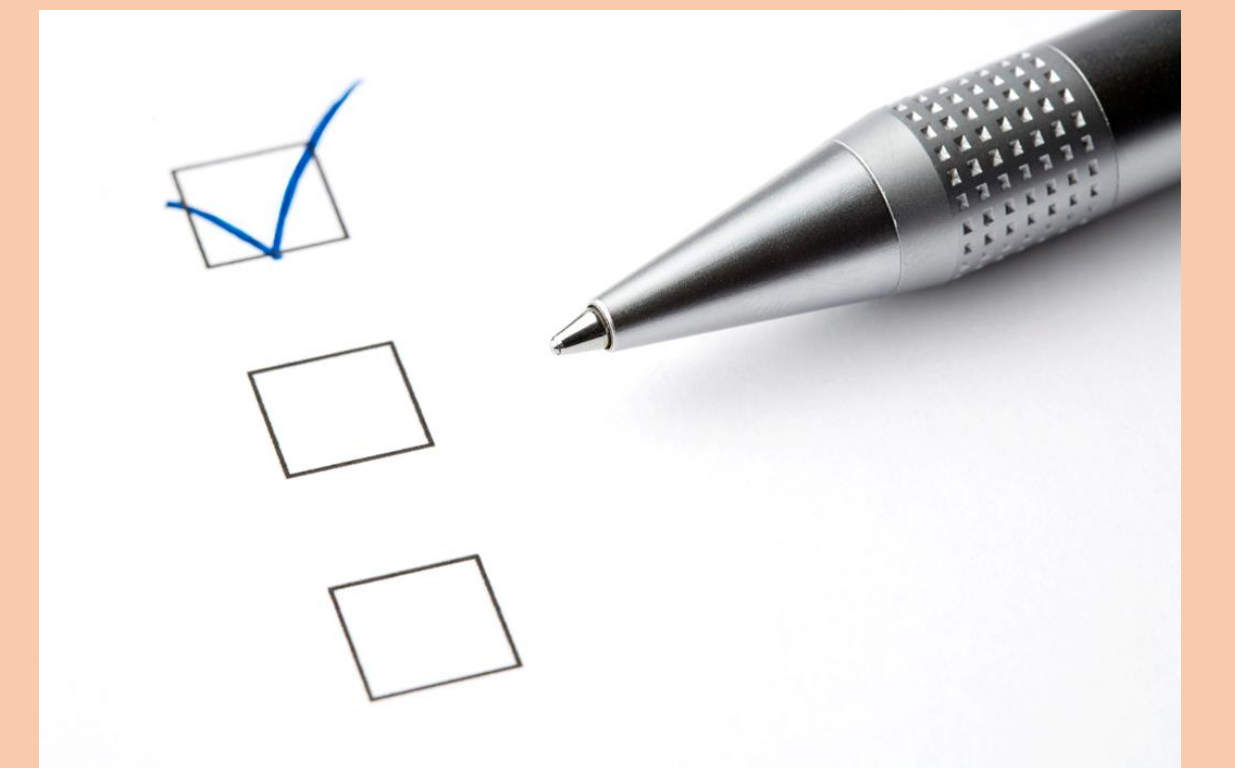
Agricultural mechanics exposure levels of entry year, Texas, school-based AFNR teachers during their undergraduate education (N = 143)

Rank	Agricultural Mechanics Skills (N = 24)	Yes		No	
		f	%	f	%
1	Employability/ Career Skills	124	86.7	18	12.6
2	Hand Tools	116	81.1	27	18.9
2	Handheld Power Tools	116	81.1	27	18.9
4	Stationary Power Tools	114	79.7	29	20.3
5	Oxygen Fuel Cutting	104	72.7	39	27.3
6	Supervised Agricultural Experiences (SAE)	103	72.0	39	27.3
7	Electrical	96	67.1	47	32.9
7	Shielded Metal Arc Welding	96	67.1	46	32.2
9	Gas Metal Arc Welding	94	65.7	49	34.3
9	Oxygen Fuel Welding	94	65.7	48	33.6
11	Plasma Arc Cutting	89	62.2	54	37.8
12	Carpentry	87	60.8	56	39.2
12	Cold Metal	87	60.8	55	38.5
14	Small Gas Engines	86	60.1	57	39.9
15	Gas Tungsten Arc Welding	71	49.7	72	50.3
15	Oxygen Fuel Welding	71	49.7	72	50.3
17	Construction Methods	69	48.3	73	51.0
18	Plumbing	64	44.8	79	55.2
19	Multi-Cylinder Engines	55	38.5	88	61.5
20	Concrete	52	36.4	91	63.6
20	Fencing	52	36.4	91	63.6
22	Hydraulics	43	30.1	100	69.9
23	Modern Machinery Technology	38	26.6	104	72.7
24	Pneumatics	24	16.8	118	82.5



Methods

- The population for this study was all entry year, Texas, school based, AFNR teachers who attended a three-hour new teacher meeting at the 2018 Texas AFNR teacher professional development conference (N = 150).
- Usable data was collected (N = 143) for a 92.26% response rate.
- Based on a review of research, a paper questionnaire was developed and then reviewed by a panel of experts (N = 5).
- Prior to the study, a pilot test (N = 19) was conducted with a similar population that resulted in a .96 confidence scale (Cronbach's alpha coefficient).
- Data was then analyzed using IBM SPSS Statistics 22.



Conclusions, Implications, & Recommendations

- Teachers had the highest agricultural mechanics exposure levels to employability/ career skills, hand tools and hand held power tools and the least exposure to more technology advanced skills such as hydraulics, modern machinery technology, and pneumatics.
- Why were respondents minimally exposed to more technology-rich agricultural mechanics skills? Is teachers' confidence levels to teach these skills impacted with little exposure?
- Additional research should be conducted and teacher educators/ professional development providers should offer more technology-rich learning opportunities.



References

- References available upon request

