Student Preferences regarding Gender of Instructor in a Post-Secondary Welding Course

Kjersti Clawson Decker
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
A02366513@usu.edu

Michael Pate
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
michael.pate@usu.edu

Tyson J. Sorensen
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
tyson.sorensen@usu.edu

Don Edgar
New Mexico State University
111 Gerald Thomas Hall
PO Box 30003
Las Cruces, NM 88003
(575) 646-4511

Introduction/Need for Research

Social stereotypes maintain the theory that certain careers are to be held by a specific gender. For example, agricultural mechanics and agricultural education have traditionally been viewed as career pathways reserved for males, yet in recent decades the number of female secondary agricultural educators has increased substantially (Tummons et at., 2017). In 1987 females held a mere 5.1% of secondary agricultural education teaching positions nationwide (Knight, 1987). In 2021, 76% graduates of agricultural education teacher preparation programs were female (Smith et al., 2021). Agricultural educators teach on average four different courses daily and one of the four courses is an agricultural mechanics competency (McKim, et al. 2011). Evidence of gender bias in student evaluations in post-secondary courses is prevalent in previous literature in which females consistently receive lower ratings compared to their male counterparts (MacNell et al., 2015; Mitchell & Martin, 2018). The potential for gender bias in agricultural education classrooms may rise with the increased number of female educators in the profession and if students perceive females to have lower capabilities to teach agricultural mechanics content compared to a male counterpart. Yet little research has been conducted regarding student perceptions of instructors in agricultural education.

Conceptual Framework

Multiple theories help to explain gender bias. For this study, we rely on Pygmalion effect theory and Eagly's social role theory (Eagly, 1987; Karakowsky et al., 2016; Merton, 1948) to explain the effects of gender on student perceptions of their instructors. Social role theory suggests the behavioral differences between males and females are consequences of gender stereotypes taught to children from society (Eagly, 1987). Incongruent work roles (e.g. welding instructor) in combination with gender (e.g. female) increase the potential for negative perceptions of the teacher from the student perspective. The Pygmalion theory phenomenon indicates a student's perceptions of a teacher influence the student's actions towards a teacher and high expectations of a teacher lead to higher teaching performance. Gender bias and stereotypes are responsible for the Pygmalion effect to trigger (Karakowsky et al., 2016). Through social role and Pygmalion theory, researchers can better understand student perceptions of their teachers regarding gender.

Methodology

The purpose of this study was to examine students' perceptions of male and female instructors in a post-secondary welding course. The design was a two group repeated measures counterbalance quasi-experimental design. The population for this study consisted of undergraduate students enrolled in an introductory welding course in the Fall of 2021 (*n=28*) at Utah State University. Students enrolled and attended one laboratory section. Two sections of laboratory were offered. Laboratory sections were randomly assigned either a male or female lab instructor. Both instructors were deemed similarly skillful and proficient to teach the course by a senior instructor. During week 4 of the semester, students completed a course evaluation to collect data on gender preference of instructor. At week 8, lab instructors switched sections. At week 12, the same course evaluation was administered. At week 14, students were informed of the research and asked to provide consent by an independent observer. Deception practices were in place to

minimize the research experiment effect (Fox et al., 2008). Demographics information on students' gender, major and age were collected. Students were asked to respond to the prompt "given an option of instructors with similar background and knowledge of welding, which instructor gender would you choose". Students were asked to select one of two responses to indicate either male or female. Student responses were analyzed by descriptive statistics and content validity was confirmed by knowledgeable faculty.

Results/Findings

Descriptive statistics for the research objective are presented in table 1. Several students wrote their own answer which was analyzed as "either" or "neutral". During the pre-test, a total (both lab sections) of 71.4% selected a male instructor which dropped significantly to 57.1% during the post-test. The number of students who selected a female instructor dropped from 14% to 9% and in the post-test two male students selected they would prefer to learn from a female which was contrary to their pre-tests. The number of students who selected "either" increased from three to six in the post-test.

Table 1

Given an option of instructors with similar background and knowledge of welding, which instructor would you choose?

		Week 4			Week 12		
		Preferred Instructor			Preferred Instructor		
Lab Section	Student Gender	Male	Female	Either	Male	Female	Either
Tuesday	Male (n =9)	8 (88.9%)	0 (0%)	1 (11.1%)	6 (75%)	2 (25%)	0 (0%)
	AFAB* (n = 1)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	1 (100%)
Thursday	Male (n = 9)	6 (85.7%)	1 (14.3%)	0 (0%)	3 (50%)	0 (0%)	3 (50%)
	Female (n = 4)	1 (25%)	2 (50%)	1 (25%)	2 (50%)	0 (0%)	2 (50%)

**Note.* AFAB = Assigned female at birth. Several students left this question blank.

Conclusions/Recommendation/Impact on Profession

The majority of students preferred a male instructor at the beginning of the course, yet after being taught by a qualified female instructor their perceptions changed toward whether they would/could learn welding content regardless of the instructor's gender. This research supports the need to emphasize gender representation in agricultural education (Thoron et al., 2016). This research is critical as gender bias in agricultural mechanics does not support female professionals in agricultural education which are the current future of the profession (Smith et al., 2021) or help teacher retention. We recommend more qualitative and quantitative research methods be conducted to verify gender bias held by students to determine factors to reduce this bias.

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