

**Investigating the Relationship Between Secondary Agricultural Science Teachers' Self-Efficacy and Their Beliefs about Decision-Making: Results from a Pilot Study**

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# Investigating the Relationship Between Secondary Agricultural Science Teachers' Self-Efficacy and Their Beliefs about Decision-Making: Results from a Pilot Study

## Introduction

Decision-making is central to effective teaching because the decisions teachers make profoundly impact their students (Eggleston, 2018; McMillan, 2003). Teacher decision-making is a multifaceted construct influenced by a variety of factors, including teacher characteristics (Borko & Shavelson, 1990). Qualitative evidence suggests that one of these characteristics is self-efficacy (Siuty et al., 2018). Self-efficacy influences teacher decision-making because it guides teaching practices and contributes to teaching effectiveness (Taimalu et al., 2010).

Agricultural science teacher decision-making has received little attention by scholars but is especially important to investigate because of the complex social landscape in which agriculture teachers work (Traini et al., 2021). They work “with multiple accountability partners who have different expectations of them” (Traini et al., 2021, p. 71). As a result, they work long days, often feel stress, and are allowed little room for error (Traini et al., 2021). Thus, studying how self-efficacy affects agriculture teacher decision-making is a novel and important inquiry in agricultural education research.

## Theoretical Framework/Purpose of Study/Research Questions

Teacher beliefs (e.g., self-efficacy) are affective, derived using judgement, and often used to understand teacher decision-making (Ng et al., 2010; Pajares, 1992). Therefore, we used teacher beliefs theory, which posits that teachers' beliefs are the philosophical principles that guide their decision-making, to determine the relationship between secondary agriculture teachers' self-efficacy and their beliefs and abilities related to decision-making (Attias, 2020). Two research questions guided the study: 1) What is the relationship between teachers' self-efficacy and the extent to which they believe teachers are decision-makers?; and 2) What is the relationship between teachers' self-efficacy and their perceived ability to teach students decision-making skills?

## Method

We used a survey research design and collected self-reported data from secondary agricultural science teachers. To develop the survey instrument and measure teachers' self-efficacy, we used the short (12-item) version of Tschannen-Moran and Woolfolk Hoy's (2001) *Teachers' Sense of Self-Efficacy* scale. The scale contains three subscales that measure efficacy in student engagement, instructional strategies, and classroom management. Then, we used the literature to develop a 5-point Likert scale (*strongly agree* to *strongly disagree*), which consisted of 9 items, and measured the extent to which teachers believed they are decision-makers. We also used the literature to develop a 5-point Likert scale (*strongly agree* to *strongly disagree*), which consisted of 6 items, and measured teachers' perceived ability to teach students decision-making skills. We used Cronbach's alpha to assess reliability of the three scales, and we achieved face validity and content validity of the two scales we developed by asking two secondary agricultural science teachers and two agricultural education faculty members to assess

scale items. We recruited participants by relying on an agricultural science teacher, who is also a member of our research team, to distribute recruitment emails to fellow agricultural science teachers. The Qualtrics instrument took respondents approximately 25 minutes to complete. We incentivized participation by providing respondents with a \$20 gift card. Results reported herein were collected from pilot testing the survey instrument.

## Results

We received  $n = 39$  responses and analyzed data using Microsoft Excel. All respondents taught agriculture in California to students in grades 9–12. Most respondents identified as white females with 11–20 years of teaching experience. The *Teachers' Sense of Self-Efficacy* scale was reliable with a Cronbach's alpha coefficient of 0.73, the *Beliefs About Teachers as Decision-Maker's* scale was reliable with a coefficient of 0.91, and the *Ability to Teach Decision-Making* scale was reliable with a coefficient of 0.83. We used Pearson product-moment correlation coefficients to determine the relationship between variables (see Table 1). Preliminary results revealed weak, positive relationships between teachers' self-efficacy and the extent to which they believed teachers are decision-makers and moderate, positive relationships between teachers' self-efficacy and their perceived ability to teach decision-making skills. The strongest relationship existed between teachers' efficacy in student engagement and their perceived ability to teach decision-making skills ( $r = 0.46$ ).

**Table 1**

*Pearson Product-Moment Correlation Coefficients Representing the Relationships Between Agricultural Science Teachers' Self-Efficacy and Their Beliefs About Decision-Making*

	Efficacy in Student Engagement	Efficacy in Instructional Strategies	Efficacy in Classroom Management
Beliefs About Teachers as Decision-Makers	0.31	0.29	0.20
Ability to Teach Decision-Making Skills	0.46	0.43	0.10

## Conclusions, Implications, and Recommendations

Overall, as teachers' self-efficacy increases, their positive beliefs about aspects of decision-making increase. The higher their self-efficacy, the more they believe teachers are decision-makers and the more confident they feel in their ability to teach decision-making. We recommend scholars develop strategies to improve agricultural science teachers' self-efficacy and, as a result, improve their beliefs and abilities related to decision-making. In addition, because decision-making is a multifaceted construct central to effective teaching, it is important to further investigate how self-efficacy and other teacher characteristics (i.e., teaching style) affect teachers' decision-making abilities. This project was supported by USDA National Institute of Food and Agriculture Grant no. 2019-38414-30265.

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