# Self-Efficacy of Early Career Agriculture Teachers (ECATs): Focusing on Gains and Detractors in the Time of a Pandemic

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## Introduction

Self-efficacy has been studied in agricultural education since 1997 (McKim & Velez, 2017). Developed out of social cognitive theory by Alfred Bandura in 1977, self-efficacy theory (c. 1986) has evolved to be the popularized version that shapes the most common perspective today. Self-Efficacy Theory, as it currently stands, is a construct of mastery experiences, vicarious experiences, social persuasion situations, and physiological and emotional states (Bandura, 1986) that impact the efficacy of teachers in this case. The first three facets (mastery, vicarious, social persuasion) have a hierarchical effect on the positive development of self-efficacy while the presence of physiological (e.g. sweating) and emotional states (e.g. stress) can be a potential detractor of self-efficacy. We take this into consideration for the current study because little is known in agricultural education about physiological and emotional impacts on self-efficacy.

Wolf, Foster, & Birkenholz (2010) found that verbal and written feedback for student teachers was positively related to self-efficacy development, which expresses the potential benefit through mastery-related and emotional bolstering. However, it is unclear in the literature about how extremely challenging circumstances and experiences can impact self-efficacy. There appears to be some link to the decay of self-efficacy from student teaching through the first year of full professional practice (Swan, Wolf, & Cano, 2001), but in a situation like the most recent pandemic which shifted the teaching paradigm for many teachers, let alone early career agriculture teachers (ECATs), so immediately and drastically there may be more opportunity to develop our understanding about impacts on self-efficacy. Therefore, as a starting place to developing an understanding about how these phenomena impact ECATs we developed the following guiding questions:

1. How does self-efficacy differ between first-year teachers and those with 2 or more years teaching?
2. How does self-efficacy differ between type of mentoring experience?
3. How does self-efficacy differ between 2018 and 2019 cohorts of ECATs?

## Framework

Guided by Bandura's work on social cognitive theory, we examined the perceptions of ECATs around reported self-efficacy and its manifestation in their profession (agricultural education). Self-efficacy of teachers is linked to how impactful they feel their work is, how much experience they have, and how capable they feel about attaining designated goals (Soodak & Podell, 1996; Bandura, 1986). These levels of efficacy leading to confidence are different for all teachers, but may be unique for agriculture teachers given their workload (Terry & Briers, 2010; Torres, Ulmer, Aschenbrenner, 2008).

## Methodology

A biannual survey instrument was developed to examine self-efficacy and mentoring satisfaction, among other phenomena, of ECATs in California. The instrument consisted of limited and free-choice response questions and integrated the Teacher's Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001), which has been previously used in similar populations (Ermis, Stewart, & Thomason, 2018; Knobloch, 2006). For the purposes of this study the sample of ECATs consisted of all respondents from the population of secondary school-based agricultural education programs who were within the first three years of teaching, responded in the 2018-2019

or 2019-2020 academic year-end survey, and were enrolled in an induction (professional mentoring) program. The population sample was derived from the California Agricultural Teachers' Induction Program (CATIP) and the California Agricultural Teachers' Association (CATA). The survey instrument was developed and disseminated in accordance with Dillman's (2007) tailored design method. A total of 178 responses were recorded, and data were analyzed through independent sample t-tests using Statistical Protocol for Social Sciences (SPSS, v25).

## Results

Analysis of the data under research question 1 reveals there are many differences between first year (Y1) agriculture teachers and those ECATs with two or more (Y2+; up to 3) years of experience. For this question there were some trends that fit into the constructs of *Student Engagement*, *Instructional Strategies*, and *Classroom Management* from the TSES (Tschannen-Moran & Woolfolk Hoy, 2001). For *Student Engagement*, small but significant differences ($t$ = 4.78, $p$ = 0.00) between groups were noted for Y2+ respondents who reported higher self-efficacy ($M$ = 7.71) when compared to their Y1 contemporaries ($M$ = 6.69) in their ability to calm a student who is disruptive or noisy. The rest of the data generally report unremarkable differences in teacher's self-efficacy toward student engagement. Under the construct of *Instructional Strategies*, Y2+ respondents reported more frequent significant differences from Y1 respondents. Y2+ respondents reported significantly more efficacy in their abilities to enact varied and alternative instructional strategies. Most notably Y2+ respondents reported a higher efficacy ($M$ = 7.51) to implement alternative teaching strategies in their classroom than Y1 respondents ($M$ = 6.79) ($t$ = 2.97, $p$ = 0.04); however, equal variances between the groups was not assumed. The construct of *Classroom Management* was generally unremarkable as the differences between groups were either not significant or equality of variance (via Levene's test) could not be assumed. Even so, Y2+ respondents generally reported higher scores for self-efficacy within the constituent areas.

Research question two showed no significant differences between self-efficacy scores between participants in the California Agricultural Teachers' Induction Program and participants in other induction programs. However, there was a noticeable drop in reported self-efficacy scores (when visually compared to all other questions on self-efficacy) for both groups when asked, "How much they can assist families in helping their children do well in school." Research question three generally revealed slightly higher self-efficacy scores of 2019 cohort teachers over the 2018 cohort of ECATs, but none of the data were significantly different between groups.

## Conclusions and Implications

It is clear that more work needs to be done in this area to ascertain how self-efficacy impacts ECATs. From the current study we understand that experience by ECATs after their first year bolsters self-efficacy, and that there is little difference between reported self-efficacy scores of ECATs in different induction programs or between differing academic years. The differences in reported self-efficacy between years of teaching (Y1 vs. Y2+) supports previous research (Swan et al, 2001), but more work needs to go into understanding the lack of difference between the two academic years included (2018-2019 and 2019-2020)—given the extenuating circumstances of a pandemic that could have hypothetically impacted self-efficacy). Maybe ECATs are more resilient than we give them credit for, or maybe the academic community has an opportunity to engage in qualitative study that will yield grounded theory to help describe the phenomena we see here. The next step is to understand context behind these findings.

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