

# Changes in Teacher Self-Efficacy from the Student Teaching Experience through the Third Year of Teaching

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*The purpose of this study was to examine changes in teacher self-efficacy from the student teaching experience to the third year of teaching. The population was the entire cohort of student teachers from The Ohio State University. Of the 34 individuals who student taught, 17 entered the teaching profession. The researchers utilized the Teachers Sense of Efficacy Scale (Tschannen-Moran and Woolfolk Hoy, 2001) to assess the individuals in the study four different times; at the conclusion of student teaching, and the conclusion of their first, second and third years of teaching. No previous research exists in agricultural education that tracks the changes in teacher self-efficacy from student teaching through the third year of teaching. Individuals reported the lowest levels of teacher self-efficacy at the end of their first year of teaching and the highest levels at the conclusion of their student teaching experience. Participants reported the lowest levels of teacher self-efficacy in the student engagement domain in each of the assessments. The results of this study support previous research conducted with teacher education candidates. However, as this research continues the assessment of teacher self-efficacy through the beginning years of teaching, the researchers recommended more thorough and comprehensive study.*

Keywords: teacher self-efficacy, beginning teachers

## **Introduction/Theoretical Foundation**

There is a critical teacher shortage in agricultural education at the secondary level. Kantrovich (2007) estimated a teacher deficit of 38.5% in 2007. The agriculture teacher shortage is not a new trend; “A de-facto ‘teacher shortage’ has been a constant problem for agricultural education for at least the 40 years covered by this study” (Kantrovich, 2007, p. 3). The shortage of qualified teachers has been further complicated by the National Council for Agricultural Education’s 10X15 initiative. One specific goal is to: “Meet the demand for well-trained, highly qualified agricultural educators for all roles within the profession” (Team Ag Ed, 2007, p. 18). Therefore, the agricultural education profession is further challenged to not only remediate the teacher shortage, but also to

prepare an abundance of highly qualified teachers. The 2005–2006 annual report estimates that there are 8,013 agriculture programs in the U.S. (including active and inactive FFA chapters); requiring the creation of an additional 1,987 programs. A minimum of an additional 2,000 *highly qualified* teachers, or at least an additional 20%, must be licensed and placed in classrooms by the year 2015. Kantrovich (2007) reported that only 69.8% of graduates enter the teaching profession. Therefore, an additional 600 graduates (on top of the 20% increase) will be required to meet the demands of the 10X15 initiative. This figure does not take into account the retirement of *Baby Boomers*, teacher attrition, or the current economic climate. These figures, coupled with the low retention rates of agriculture teachers create a significant challenge for the profession.

Overcoming the teacher shortage will involve the preparation of high quality future teachers; these individuals must hold the belief that they have the potential for success as an agricultural educator to remain in the classroom. A high sense of teacher self-efficacy can combat teacher burnout and attrition, thereby retaining teachers in the profession. Woolfolk Hoy and Hoy (2009) defined teacher self-efficacy as “. . . a teacher’s belief that he or she can reach even difficult students to help them learn, it appears to be one of the few personal characteristics of teachers that is correlated with student achievement” (pp. 167–168). In addition, “novice teachers completing their first year of teaching who had a high sense of teacher efficacy [teacher self-efficacy] found greater satisfaction in teaching, had a more positive reaction to teaching, and experienced less stress” (Woolfolk Hoy, 2000, p. 6).

No published research exists that examines the longitudinal changes in the teacher self-efficacy of secondary agriculture teachers from student teaching through the third year of teaching. Most studies in agricultural education related to the changes in teacher self-efficacy are conducted during pre-service education or do not investigate longitudinal trends within cohort groups (Harlin, Roberts, Briers, Mowen & Edgar, 2007; Knobloch, 2006; Knobloch & Whittington, 2002; Knobloch & Whittington, 2003; Roberts, Harlin & Ricketts, 2006; Rocca & Washburn, 2006; Swan, 2005; Whittington, McConnell & Knobloch, 2006; Wolf, Foster, & Birkenholz, 2008). Additionally, the researchers who utilized the Teachers Sense of Efficacy Scale (*TSES*) often did not report data related to the three domains (*student engagement, instructional strategies, and classroom management*) of teacher self-efficacy identified by Tschannen–Moran and Woolfolk Hoy (2001).

Bandura’s social cognitive theory (Bandura, 1986) and the associated theory of self-efficacy (Bandura, 1997) provided the theoretical framework for this study. Social cognitive theory is rooted in the view that individuals are agents proactively engaged in their own development. Key to social cognitive theory is the fact that, aside from personal and environmental factors, individuals possess self-beliefs that enable them to exercise a measure of control over their thoughts, feelings, and actions.

The idea that an individual has the potential to influence change, regardless of his/her skills, is central to social cognitive theory (Pajares, 2002). Bandura (1994) stated that individual self-efficacy is derived from four main sources: mastery experiences, physiological and emotional states, vicarious experiences, and social persuasion. Mastery experiences are generally considered to be the most effective way to foster a stronger sense of self-efficacy. Bandura described an individual experiencing success at a task as building self-efficacy, while failure undermines the sense of self-efficacy. Physiological and emotional arousal also affects the sense of self-efficacy. When a person can reduce their stress reactions and alter negative tendencies in the face of adversity, their sense of self-efficacy increases. Vicarious experiences involve observing others succeed at a task, which may raise the belief that the observer could also succeed in performing the task. Social persuasion occurs when an individual is convinced or persuaded that he or she has the capabilities to be successful at a task.

Teacher self-efficacy is related to teacher behavior, level of effort, enthusiasm, planning, resoluteness, creativeness, willingness to work with more difficult students, and commitment to teaching (Tschannen–Moran et al., 1998).

Teachers’ perceived efficacy [teacher self-efficacy] rests on much more than the ability to transmit subject matter. Their effectiveness is also partly determined by their efficacy in maintaining an orderly classroom conducive to learning, enlisting resources and parental involvement in children’s academic activities, and counteracting social influences that subvert student’ commitments to academic pursuits. (Bandura, 1997, p. 243)

Tschannen–Moran and Woolfolk Hoy (2001) suggested that teacher self-efficacy was a simple idea with significant implications. The authors described teacher self-efficacy as “. . . a judgment about his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p. 1). Teachers with a high sense of self-efficacy believe they can overcome problems through time and effort, while teachers with a low sense

of self-efficacy are typically inundated with discipline issues and resort to punitive methods of classroom management. Teachers with a low sense of teacher self-efficacy believe that little can be done to reach unmotivated students, and that their influence as a teacher is limited by environmental factors beyond their control. Conversely, an individual with a high sense of teacher self-efficacy is more inclined to create a dynamic, student-centered learning environment in which students take ownership of their learning; whereas teachers with a low sense of

self-efficacy would likely devote more time to non-academic, managerial tasks (Bandura, 1997). Further, Friedman and Kass (2002) stated that, "Teacher's effectiveness is, in part, determined also by their efficacy beliefs [teacher self-efficacy] in maintaining classroom discipline that establishes an environment of learning, in using resources, and in supporting parental efforts to help their children learn" (p. 676). The Model of Teacher's Perceived Efficacy is presented in Figure 1.

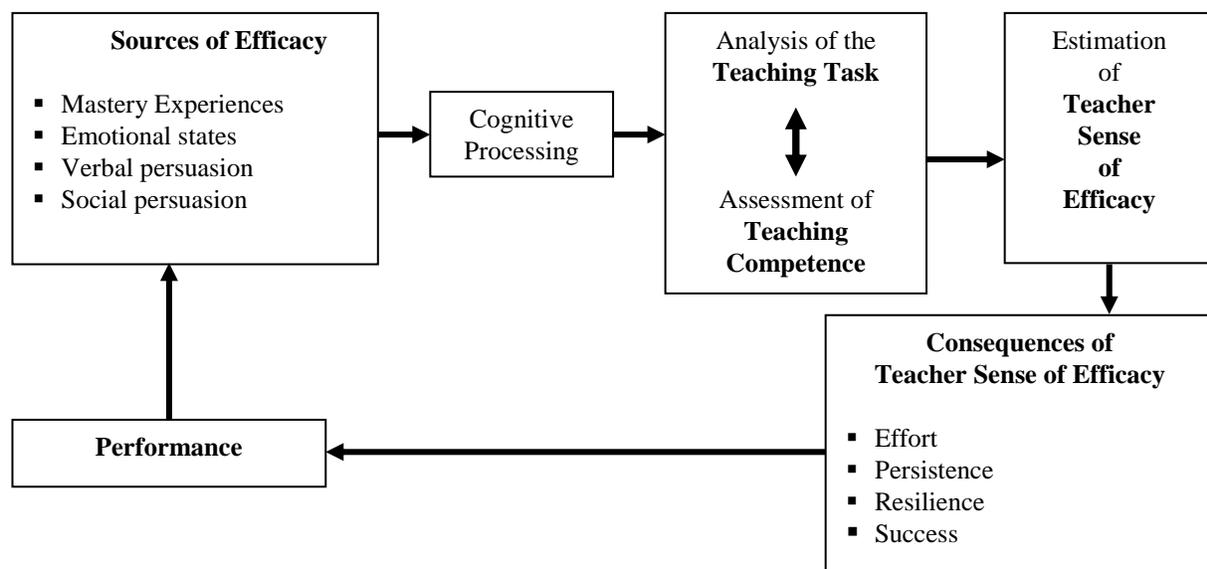


Figure 1. A Model of Teacher's Perceived Efficacy. Adapted from "Instructional Leadership: A Research Based Guide to Learning in Schools" by A. Woolfolk Hoy and W. Hoy, 2009, p. 169

Knobloch (2006) found that teacher candidates at two different institutions reported similarly high levels of teaching self-efficacy; however, they differed in their perception of environmental factors that contributed to teacher self-efficacy. The environmental factors were: supportive principal behaviors, cooperating teacher competence, and number of class preparations. Knobloch speculated that student teachers may have had an inflated sense of teacher self-efficacy, which remained inflated throughout the student teaching experience as a result of support from their cooperating teachers.

Roberts, et al. (2006) assessed teacher self-efficacy among student teachers at four different

points during a 15-week student teaching experience. The researchers examined the three domains of teacher self-efficacy (*student engagement, instructional strategies, and classroom management*) identified by Tschannen-Moran and Woolfolk Hoy (2001). In the student engagement and instructional strategies domains, the teacher candidates' scores dropped during the middle of the experience, and were the highest at the end. The classroom management domain followed a similar pattern, but was less noticeable. The researchers noted that "... limited knowledge exists about teaching efficacy of preservice agricultural science teachers, largely due to the

paucity of research in this area. Existing research has largely been conducted by just a few researchers, in only a few states” (Roberts et al., 2006, p. 84).

The results of this study were corroborated by a later study that measured teacher self-efficacy of teacher candidates at four institutions (Harlin et al., 2007). The teacher candidates at all institutions exhibited a similar pattern of change in their teacher self-efficacy, with scores decreasing in the middle of the experience, and increasing toward the end. Roberts et al. (2006) suggested that future research examine the changes in overall teacher self-efficacy in different teacher candidate populations. Additionally, the researchers questioned if different teacher candidate populations were the most efficacious in instructional strategies and the least efficacious in the student engagement domain. Student engagement has been the lowest of the three domains in several studies of preservice and beginning agricultural education teachers (Roberts, Harlin & Briers, 2009; Stripling, Ricketts, Roberts, & Harlin, 2008; Wolf et al., 2008).

Rocca and Washburn (2006) investigated differences in self-efficacy between traditionally and alternatively certified teachers. The two groups did not differ in their perceived self-efficacy; however, alternatively certified teachers were about 10 years older than traditionally certified teachers. The researchers questioned why the two groups were similar in their level of self-efficacy, since the alternatively certified teachers did not have formal training in education.

Wolf et al. (2008) found that teacher candidates’ self-efficacy increased during their student teaching experience. The individuals in this study had the lowest scores in the student engagement domain and the highest scores in the instructional strategies domain. The results of this study supported previous findings regarding the self-efficacy beliefs of pre-service teachers. The researchers concluded that the teacher candidates had inflated levels of teacher self-efficacy due to the supportive environment, supporting Knobloch’s assertion (2006). These results prompted the researchers to recommend further investigation into the lower scores in the student engagement domain. Additionally, the researchers recommended that the teacher candidates’ levels of teacher self-efficacy be

compared to their teaching performance to determine the amount of “inflation” in their levels of teacher self-efficacy.

Teacher self-efficacy is related to plans to stay in the profession of teaching (Darling-Hammond, Chung, & Frelow, 2002; Evans & Tribble, 1986). Therefore, to improve retention, teachers must believe that they are competent in the tasks they are required to perform as secondary agriculture teachers. The longitudinal study of how teacher self-efficacy changes from student teaching through the beginning teaching is essential for the retention of high quality agriculture teachers. This study will add to the body of knowledge on teacher self-efficacy by tracking individuals from their pre-service education through their induction years of teaching. Additionally, this study investigated the changes in the three domains (*student engagement, instructional strategies, and classroom management*) identified by Tschannen-Moran and Woolfolk Hoy (2001).

### Purpose/Objectives

The purpose of this longitudinal study was to describe changes in teacher self-efficacy from student teaching through the third year of teaching. The following research objectives guided the study:

1. Describe the differences in teacher self-efficacy between teacher candidates who entered teaching and teacher candidates who did not enter teaching.
2. Describe the changes in teacher self-efficacy from student teaching to the third year of teaching.
3. Describe the changes in the three domains of teacher self-efficacy: student engagement, instructional strategies, and classroom management from student teaching to the third year of teaching.

### Methods

The population for this longitudinal study was the 2004 student teacher cohort at The Ohio State University. Thirty-four individuals completed their student teaching experience during the Fall term of 2004 and graduated in Spring of 2005. Seventeen of the student teachers entered the teaching profession; these

individuals were contacted to complete the assessment through their third year of teaching. Of the 17 individuals who chose to enter the teaching profession, 9 responded to the assessment during their first year of teaching (Spring of 2006), 11 responded during their second year (Spring of 2007) and 11 responded during their third year (Spring of 2008). However, only three of the individuals responded to each assessment; therefore longitudinal data was only obtained from these three individuals between Fall of 2004 and the Spring of 2008. A pre-notice email was sent one week prior to the email containing the link to the survey instrument. Participants were sent an email with a link to the survey instrument and were asked to complete the instrument within two weeks. The researchers attempted to control non-response error through a follow-up email containing a link to the online survey instrument five weeks after the initial pre-notice email. After an additional two weeks, a reminder phone call was placed to participants who had not completed the instrument. Several teachers did not respond one year, but participated in a subsequent assessment. Some of the teachers cited lack of time as a reason for not participating, and some did not respond to either the email or the phone call. The researchers chose to report group means for each of the four years rather than utilizing inferential statistics. Therefore, the generalizability of these data is limited and readers should use caution when interpreting the results.

The researchers utilized the *Teachers' Sense of Efficacy Scale* or *TSES* (Tschannen-Moran et al., 1998; Tschannen-Moran & Woolfolk Hoy, 2001) to assess the teacher self-efficacy of the agricultural education teacher candidates. The instrument asked participants to rate their capabilities; "How much can you. . ." utilizing the following anchored scale: 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal. The *TSES* has been extensively utilized, and subjected to factor analysis procedures to assess construct validity (Tschannen-Moran & Woolfolk Hoy, 2001).

The present study utilized the long summated rating scale (24 items) consisting of three distinct domains: *efficacy for instructional strategies* (8 items), *efficacy for classroom management* (8 items), and *efficacy for student engagement* (8 items). The published reliabilities for each domain were 0.91, 0.90 and 0.87, respectively.

Data were collected at four different points: (a) the conclusion of student teaching, (b) the conclusion of the first year of teaching, (c) the conclusion of the second year, and (d) the conclusion of the third year. At the conclusion of student teaching data were collected in person. Data were collected at the conclusion of the first, second, and third years utilizing an online survey provider, following Dillman's (2000) guidelines. Descriptive statistics were calculated to answer the research objectives using the Statistical Package for the Social Sciences (SPSS v. 15). Cohen's *d* was calculated to interpret the difference between teacher candidates who entered the teaching profession and those who did not. Values of 0.2 to 0.5 are categorized as small effects, 0.5 to 0.8 as medium effects, and above 0.8 as large effects (Cohen, 1992).

### Findings/Results

Thirty-four individuals participated in the first phase of this longitudinal study; 19 were female and 15 were male. Seventeen individuals entered the teaching profession, seven were female and 10 were male. The first objective of this study was to describe the differences in teacher self-efficacy between teacher candidates who entered teaching and teacher candidates who did not enter teaching (see Table 1). Teacher candidates who entered teaching reported a higher sense of teacher self-efficacy than those who did not enter teaching at the conclusion of their student teaching experience. This difference was most pronounced in the student engagement domain, resulting in a large effect size (Cohen, 1992).

Table 1

*Differences in Teacher Self-Efficacy between Teacher Candidates Who Entered Teaching and Those Who Did Not Enter Teaching. (N = 34)*

Scores	Overall (N = 34) M (SD)	Entered teaching (n = 17) M (SD)	Did not teach (n = 17) M (SD)	Effect Size (Cohen's Index) d
Teacher Self-Efficacy	7.51 (0.68)	7.71 (0.76)	7.31 (0.53)	0.61 (medium)
Student Engagement	7.15 (0.73)	7.46 (0.71)	6.85 (0.63)	0.93 (large)
Instructional Strategies	7.71 (0.73)	7.84 (0.85)	7.57 (0.59)	0.34 (small)
Classroom Management	7.67 (0.81)	7.84 (0.90)	7.51 (0.70)	0.40 (small)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

The second objective of this study was to describe the changes in teacher self-efficacy from student teaching through the third year of teaching. These data are presented in Table 2. The participants reported their lowest level ( $M = 7.17$ ) of teacher self-efficacy at the conclusion of their first year of teaching, and their highest level at the conclusion of their student teaching experience ( $M = 7.71$ ).

The third objective of this study was to describe changes in the three domains of teacher

self-efficacy. In the student engagement domain (see Table 3), individuals reported the lowest levels ( $M = 6.79$ ) at the end of their first year of teaching and the highest levels ( $M = 7.46$ ) at the end of their student teaching experience. Individuals reported the lowest levels of teacher self-efficacy in this domain at each point of measurement when compared with the other two domains.

Table 2

*Overall Teacher Self-Efficacy of Individuals Who Entered Teaching (N = 17)*

Time	Min	Max	M (SD)
Student Teaching (n = 17)	6.38	8.62	7.71 (0.76)
First Year (n = 9)	5.96	8.46	7.17 (0.73)
Second Year (n = 11)	5.62	9.00	7.66 (0.94)
Third Year (n = 11)	6.29	8.04	7.19 (0.61)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

Table 3

*Teacher Self-Efficacy in the Student Engagement Domain (N = 17)*

Time	Min	Max	M (SD)
Student Teaching (n = 17)	6.38	8.62	7.46 (0.71)
First Year (n = 9)	5.75	8.62	6.79 (0.79)
Second Year (n = 11)	6.00	9.00	7.39 (0.88)
Third Year (n = 11)	5.75	7.75	6.88 (0.56)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

In the instructional strategies domain (see Table 4), individuals reported the lowest levels ( $M = 7.03$ ) of teacher self-efficacy at the end of their first year of teaching. Individuals reported

the highest levels of efficacy in the instructional strategies domain ( $M = 7.84$ ) at the end of their student teaching experience.

Table 4  
*Teacher Self-Efficacy in the Instructional Strategies Domain (N = 17)*

Time	Min	Max	M (SD)
Student Teaching (n = 17)	6.25	9.00	7.84 (0.85)
First Year (n = 9)	5.88	8.38	7.03 (0.86)
Second Year (n = 11)	5.25	9.00	7.83 (1.06)
Third Year (n = 11)	6.12	8.50	7.26 (0.61)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

In the classroom management domain (see Table 5), individuals reported the lowest levels of teacher self-efficacy at the end of their third year of teaching ( $M = 7.44$ ) and the highest levels ( $M = 7.84$ ) at the end of their student teaching experience. Individuals reported higher

levels of teacher self-efficacy in this domain when compared to the other two domains, at all points of measurement, except for the second year.

Table 5  
*Teacher Self-Efficacy in the Classroom Management Domain (N = 17)*

Time	Min	Max	M (SD)
Student Teaching (n = 17)	6.38	9.00	7.84 (0.90)
First Year (n = 9)	5.88	8.38	7.69 (0.79)
Second Year (n = 11)	5.62	9.00	7.77 (1.09)
Third Year (n = 11)	6.00	8.62	7.44 (0.92)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

Figure 2 summarizes the data for overall teacher self-efficacy and each domain. The student engagement domain was consistently the lowest domain. Overall teacher self-efficacy, the student engagement domain, and the instructional strategies domains all show a drop

in scores from student teaching to the first year of teaching and from the second year of teaching to the third year of teaching.

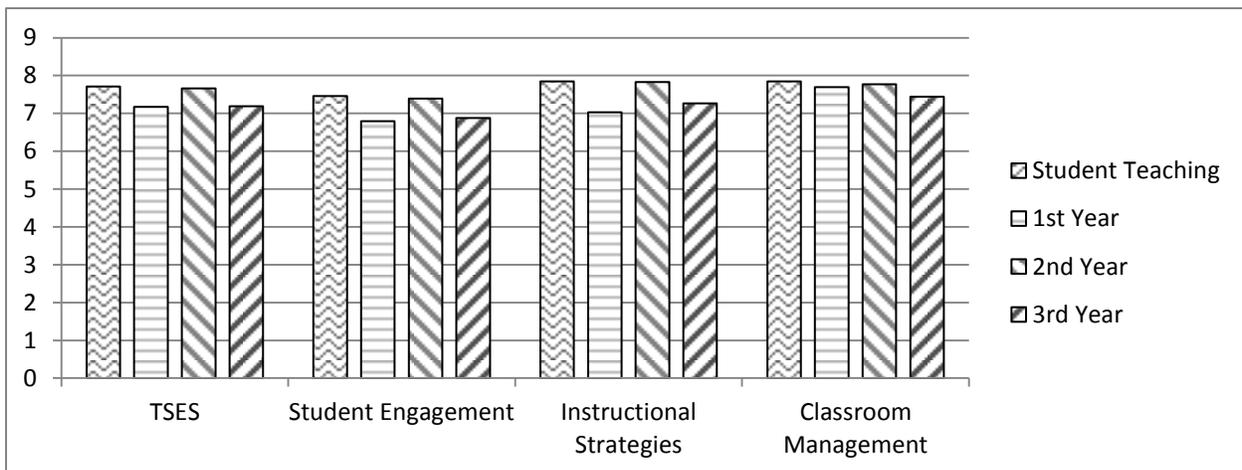


Figure 2. Changes in Teacher Self-Efficacy (N = 34)

The researchers attempted to describe the longitudinal changes in teacher self-efficacy. Only three individuals provided data at all four points of measurement. These data are

presented in Table 6. Figure 3 illustrates the changes in overall teacher self-efficacy and the three domains.

Table 6  
Teachers with Longitudinal Data (n = 3)

Time	TSES <i>M (SD)</i>	Student Engagement <i>M (SD)</i>	Instructional Strategies <i>M (SD)</i>	Classroom Management <i>M (SD)</i>
Student Teaching	7.46 (1.06)	7.42 (0.88)	7.67 (1.38)	8.29 (1.23)
First Year	7.29 (0.47)	6.75 (0.33)	7.12 (0.76)	8.00 (0.45)
Second Year	7.82 (0.32)	7.29 (0.44)	7.83 (0.26)	8.33 (0.56)
Third Year	7.56 (0.30)	7.04 (0.14)	7.54 (0.36)	8.08 (0.40)

Note. 1 = Nothing, 3 = Very Little, 5 = Some Influence, 7 = Quite a Bit, 9 = A Great Deal

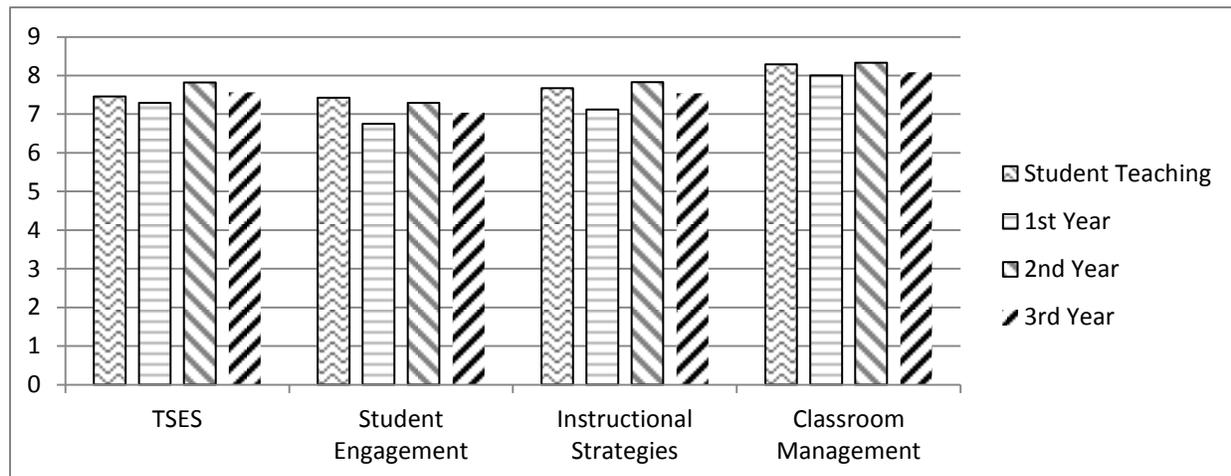


Figure 3. Longitudinal Changes in Teacher Self-Efficacy (n = 3)

**Conclusions/Recommendations/Implication**

Thirty-four student teachers participated in the first portion of this longitudinal study. Of those individuals, seventeen entered the teaching profession (50%). This figure is lower than the 69.8% reported by Kantrovich (2007). The underlying causes for a lower number of individuals in Ohio entering the teaching profession should be further investigated. Additionally, only one-third of the female student teachers entered the teaching profession compared to two-thirds of the male student teachers.

The researchers sought to describe the changes in teacher self-efficacy from student teaching through the third year of teaching. Overall teacher self-efficacy changed from each of the four measurement points. Readers are encouraged to use caution when interpreting the results, as mortality occurred in the sample. Additionally, as these assessments occurred at the conclusion of the year, the data cannot be compared with other studies measuring teacher self-efficacy at other times during the school year.

The researchers sought to describe the differences between teachers who entered the teaching profession and those who did not.

Teacher candidates who entered the teaching profession had higher levels of teacher self-efficacy. The difference was the most pronounced in the student engagement domain where a large effect size was observed. A medium effect was observed in overall teacher self-efficacy between the 17 teacher candidates who entered the teaching profession and the 17 who did not.

In this study, individuals reported the lowest levels of teacher self-efficacy at the conclusion of their first year of teaching. This finding supports previous research where teacher self-efficacy declines during the first year of teaching, possibly due to the absence of the cooperating teacher or other supporting mentor (Woolfolk Hoy & Burke-Spero, 2005). This drop in teacher self-efficacy is troubling, and may explain some of the attrition that occurs after the first year of teaching. Individuals who have low self-beliefs are less likely to persevere, and therefore may leave the teaching profession (Darling-Hammond et al., 2002; Evans & Tribble, 1986).

The increase in teacher self-efficacy from the first year of teaching to the second year of teaching is an encouraging finding. It may suggest that individuals who do persevere and continue teaching become more confident in their capabilities and are therefore more efficacious. Conversely, individuals with low teacher self-efficacy may have quit teaching by their second year and were not included in this sample. Obtaining longitudinal data from a larger sample of individuals would be useful in explaining the relationship between retention and teacher self-efficacy.

The high levels of teacher self-efficacy at the end of the student teaching semester support Knobloch's (2006) assertion that "... student teachers may have an inflated efficacy that they can teach, which remains inflated throughout student teaching because of the supportive teaching environment of a cooperating teacher" (p. 45). In light of these findings, the researchers recommend that teacher education programs provide adequate support, but do not foster an "inflated" sense of efficacy. Because teachers typically experience a decline in teacher self-efficacy from their student teaching experience to their first year of teaching, adequate support should be provided to ensure that individuals do not "crash" due to an inflated

sense of efficacy gained during their student teaching experience. A supportive mentor may be useful in promoting the retention of beginning teachers.

Further research is recommended to discover the reasons for the dramatic decline in teacher self-efficacy from student teaching to the first year of teaching. The researchers recommend that teacher induction programs during the first few years of teaching address the possible decline in levels of teacher self-efficacy. This recommendation is supported by Moore and Swan (2008) who advocated that contributor groups (local district, professional association, state department of education, and teacher education) takes an active role in the support and mentorship of beginning teachers, "... If it takes a village to raise a child, then perhaps it take four contributor groups to "raise" a teacher" (p. 68).

The levels of teacher self-efficacy reported at the end of the student teaching experience are similar to those reported by Roberts et al. (2006); students from this study were slightly higher in the student engagement domain ( $M = 7.46$ ) versus ( $M = 7.24$ ), higher in the instructional strategies domain ( $M = 7.84$ ) versus ( $M = 7.52$ ), and higher in the classroom management domain ( $M = 7.82$ ) versus ( $M = 7.40$ ) than the pre-service teachers studied by Roberts et al. (2006).

This study sought to describe the changes in the three domains (*student engagement, instructional strategies, and classroom management*) of teacher self-efficacy. Individuals in this study reported lower levels in the student engagement domain when compared to the other two domains at all four points of measurement. This finding supports previous research (Roberts et al., 2006; Stripling et al., 2008; Wolf et al., 2008). "... given the complex nature of interacting and connecting with diverse youth, coupled with a novice teacher's attention to the mechanics of instruction and classroom management, it is reasonable to expect efficacy in student engagement to be slightly lower than the other constructs" (Roberts et al., 2006, p. 90). The fact that teachers feel less capable of engaging students is worrisome. Teachers must hold the belief that they can influence students, therefore if they do not feel capable of engaging students, is learning taking place? The researchers

recommend further investigation into this phenomenon to discover the underlying reasons that teachers feel less capable of engaging students when compared with their instructional strategies and managing a classroom.

Further research should examine the cause(s) for lower scores in the student engagement domain, as well as studying the changes in the student engagement domain. The sources of teacher self-efficacy (mastery experiences, physiological and emotional states, vicarious experiences, and social persuasion) described by Bandura (1994), should be further studied in the context of agriculture teachers. The identification of experiences that increase pre-service teachers' sense of efficacy may assist teacher educators in their preparation of future teachers.

Only three individuals responded to all of the assessments. These three individuals reported the same pattern of change as the larger group; therefore it can be cautiously assumed that this pattern of change holds true for all 17 novice teachers in this study.

Further research is needed to determine if the trends identified are consistent for all novice agricultural educators and pre-service teachers. In order to meet the teacher demand created by retirements, teacher attrition and the 10X15 initiative, a large number of graduates in teacher education must be produced. However, as teacher self-efficacy is a significant factor in teacher retention (Darling-Hammond et al., 2002; Evans & Tribble, 1986), these teachers must hold the belief that they can make a difference in the lives of their students.

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