The Influence of Peer Teaching and Early Field Experience on Teaching Efficacy Beliefs of Preservice Educators in Agriculture

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Abstract

Agricultural teacher educators continue to face the problem of retention and recruitment of teachers who teach agriculture in public schools. In an effort to improve the preparation of teachers in agricultural education, this study was framed conceptually that the recruitment and retention of agricultural educators could be influenced by their teaching efficacy beliefs. Teaching efficacy is the belief that teachers have in their "capacity to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233) and they are motivated to exert effort to overcome difficulties (Woolfolk, 2001).

Teacher efficacy provides a promising future to help teachers, especially novices, be more successful in their teaching experiences. Teacher efficacy has been shown to be a powerful construct related to student outcomes such as achievement, motivation, and sense of efficacy (Ashton & Webb, 1986; Guskey & Passaro, 1994; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Moreover, teachers' sense of efficacy has been related to teachers' aspiration, planning and organization, persistence, resilience, enthusiasm, and commitment to teaching and their careers (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998).

Although teaching efficacy beliefs are difficult to change once they are established (Woolfolk Hoy, 2000), some researchers have found that teaching efficacy beliefs change throughout the teacher preparation program and through the first year of teaching (Hoy & Woolkfolk, 1990; Spector, 1990; Woolfolk Hoy, 2000). Bandura (1997) purported that there are four sources that influence efficacy beliefs: mastery experience, physiological arousal, vicarious experience, and verbal persuasion. The purpose of this exploratory study was to investigate the influences of peer-teaching and early field experience on the personal and general teaching efficacy of preservice educators during their first year of professional studies in agricultural education.

This pre-experimental study used two intact groups of students enrolled in a foundations of agricultural education course during the spring and autumn quarters of 2000. In the spring cohort, students' personal and general teaching efficacy did not increase significantly after peer teaching. In the autumn cohort, students' personal and general teaching efficacy did not increase significantly after their early field experience. However, the students' personal teaching efficacy did significantly increase after peer teaching for the autumn students, whereas their general teaching efficacy did not increase significantly after early field experience. Although this study raised some interesting questions for further investigation, the conclusions should be interpreted with caution because of uncontrolled extraneous variables related to history or maturation.

Introduction and Theoretical Framework

Effective agricultural education teachers are motivated and confident in their teaching abilities (Miller, Kahler, & Rheault, 1989). Teachers have greater job satisfaction when they believe they can teach and foresee that they can have positive impacts (Hoy & Miskel, 2001). Confidence and satisfaction appear to be related to important teacher affective reactions. For example, past studies have found that personal achievement and feelings of satisfaction were critical to whether beginning teachers remained in or left the teaching profession (Henderson & Nieto, 1991). Beginning agricultural education teachers were stressed, (Joerger & Boettcher, 2000), quiet, reserved, and hesitant to act (Mundt, 1991). Further, beginning agriculture teachers had low self-esteem, low self-confidence (Mundt), and low morale (Henderson & Nieto). Beginning teachers believed that events related to control, student respect, self-confidence, personal satisfaction, and student success had a major impact on teaching (Joerger & Boettcher). Therefore, the literature suggests that motivated teachers who have higher teaching efficacy are more likely to remain in the profession.

Retention of teachers is not the only concern in the profession. Agricultural educators have long been concerned with why agricultural education graduates do not enter the teaching profession (Camp, 1987). Nearly half of the agricultural education graduates in Ohio (Baker & Hedges, 1991), one-tenth (Garton & Cartmell, 1999) to one-third (Birkenholz, 1986) in Missouri, and 28% in Florida (McGhee & Cheek, 1990) did not become agricultural educators in public schools. Some researchers suggest various reasons why agricultural education graduates do not teach in public schools. Baker & Hedges (1991) found that agriculture teachers who entered the teaching profession earned higher grades in their professional courses and student teaching experiences, which suggests that preservice teachers who do better in the teacher preparation program are more likely to teach in public schools. Furthermore, teachers require more and better preparation than ever before (American Council on Education, 1999). Specifically, agricultural education needs to examine and reform its undergraduate program (National Research Council, 1988).

In an effort to improve the preparation of teachers in agricultural education, this study was framed conceptually that the recruitment and retention of agricultural educators could be influenced by their teaching efficacy beliefs. Because beliefs, expectations, and perceptions influence how teachers learn to teach (Borko & Putnum, 1996; Smylie, 1988), teacher efficacy has become an important construct in teacher education and teacher educators should continue to explore how teacher efficacy develops and how they can help preservice teachers develop high teacher efficacy (Pajares, 2000). Teacher efficacy provides a promising future to help teachers, especially novices, be more successful in their teaching experiences. Teacher efficacy has been shown to be a powerful construct related to student outcomes such as achievement, motivation, and sense of efficacy (Ashton & Webb, 1986; Guskey & Passaro, 1994; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Moreover, teachers' sense of efficacy has been related to teachers' behavior, effort, goals, aspiration, openness to new ideas, innovation, planning and organization, persistence, resilience, reluctance to use of criticism, enthusiasm, willingness to work with difficult students, and commitment to teaching and their careers (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998).

The theoretical framework of this study was teacher efficacy. Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) defined teacher efficacy as "the teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 233), and the teachers' motivation to persist when faced with setbacks and their willingness to exert effort to overcome difficulties (Woolfolk, 2001). Teacher efficacy had its genesis from Rotter's (1966) social learning theory with the Rand studies (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). These early studies found that teachers determined the reinforcement of their actions through an internal or external locus of control. Moreover, Bandura (1997) identified teacher efficacy as a type of self-efficacy related to his social cognitive theory that has two expectations: efficacy expectation and outcome expectation. Perceived self-efficacy is typically a stronger predictor of behavior than outcome expectation or locus of control (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998).

Teacher efficacy has been most widely measured with Gibson and Dembo's (1984) Teacher Efficacy Scale. The dichotomous measurement was developed based on the two concepts of Bandura's (1997) social cognitive theory. Personal teaching efficacy (PTE) measures efficacy expectancy. PTE is more intrinsic in nature and relates to an "I can" orientation (Guskey & Passaro, 1994). General Teaching Efficacy (GTE) measures outcome expectancy. GTE is more external in nature and relate to an "I can't" orientation.

Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) developed a model (see Figure 1) of teacher efficacy based on an extensive review of the literature. Teacher efficacy develops from a

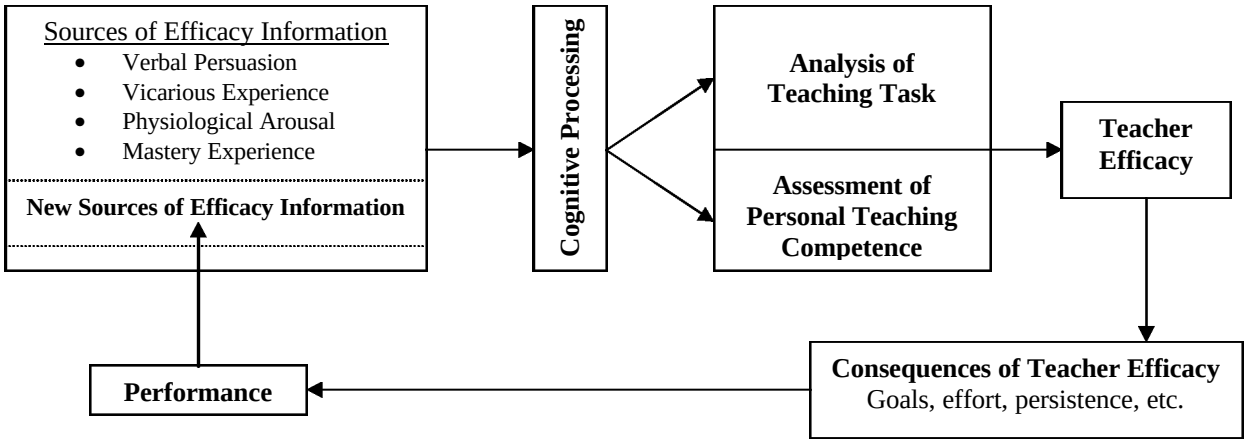

Figure 1. Tschannen-Moran, Woolfolk Hoy, and Hoy's (1998) model of teacher efficacy.

complex process of self-persuasion (Bandura, 1997). The sources of efficacy are inter-related and typically, they are not single sources of efficacy (Bandura, 1997). The four sources of efficacy are: mastery experience, vicarious experience, verbal persuasion, and physiological and affective coping (Bandura, 1997). Efficacy is a product of the cognitively processing information from the four sources of efficacy (Bandura, 1997). The heart of the model is when a teacher analyzes the specific task that will be taught in a specific context and his or her assessment of teaching competence related to the task and context (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). The development of teacher efficacy is cyclical. Information from the four sources that are perceived and interpreted positively helps the teacher feel more competent in

organizing and executing the courses of action of the specific task in a particular context which leads to greater motivation, efforts, goals, persistence, and performance. Positively perceived and interpreted information from the performance helps the teacher develop a stronger belief in his or her teaching competence related to the task and context. This cycle can also lead to lower teaching efficacy if the teacher perceives, processes, and interprets the information from the four sources of efficacy in a negative manner. Teacher efficacy influences human functioning and performance (Bandura, 1997). Efficacy beliefs become more stable over time and are rarely changed unless the teacher is faced with compelling evidence to change (Bandura, 1997). Saklofske, Michaluk, and Randhawa (1988) found that preservice teachers with higher teaching efficacy had higher teaching performance. Consequently, helping teachers develop a strong sense of efficacy early in their careers could potentially have long-term dividends to them and their students throughout their teaching careers.

Several studies reported salient conclusions regarding teacher efficacy in the development of preservice teachers. First, there appears to be a difference in the development of personal teaching efficacy and general teaching efficacy. Personal teaching efficacy increased throughout the teacher preparation program and through the first year of teaching (Housego, 1992; Woolfolk Hoy, 2000). Whereas, general teaching efficacy rose during teacher preparation but then it declined after student teaching (Hoy & Woolkfolk, 1990; Spector, 1990; Woolfolk Hoy, 2000). Therefore, general teaching efficacy appears to be more sensitive to external factors when teachers are immersed in real teaching situations. Second, the support for beginning teachers influences teaching efficacy. Woolfolk Hoy (2000) suggested that teaching efficacy declined after support for the beginning teacher was withdrawn. Therefore, mentors and teacher educators wrestle with the degree of support they should provide to enable preservice teachers to develop autonomous competence.

Teacher educators have struggled for a long time over the issues of what teachers should know and what environments would create meaningful learning (Putnam & Borko, 2000). Preservice teachers typically learn how to teach in more controlled, structured classrooms on campus and in real, natural classrooms through field-based experiences (Putnam & Borko, 2000). Experience, both positively and negatively, influenced the teaching efficacy beliefs of preservice science teachers (Watters & Ginns, 1995). Although field-based experiences are important in preparing teachers, on-campus laboratory-based programs are also important in developing teachers (Metcalf, Hammer, & Kahlich, 1996).

Understanding the construct of teaching self-efficacy of prospective and beginning teachers as they develop beliefs, attitudes, and teaching skills in teacher education programs is important to the future of the agricultural education profession. Few researchers have studied the interactions and relationships of teacher efficacy and the various components of teacher preparation in agricultural education. Rodriquez (1997) completed a dissertation on teacher efficacy in agricultural education using early field experience preservice teachers, student teachers, first-year teachers and second-year teachers in agricultural education. Although his finding was not statistically significant, student teachers had the highest teaching efficacy and 2nd-year teachers had the lowest teaching efficacy (Rodriquez, 1997). Further, all groups had higher personal teaching efficacy than general teaching efficacy.

In some studies related to teaching efficacy, Deeds and Barrick (1986) found that preservice teachers' attitudes toward teaching as a career or themselves as teachers did not change significantly after a 3-week early field experience. Joerger and Boettcher (2000) found that novice agriculture teachers were moderately confident and felt that a teacher's confidence had a major impact on their success as a beginning teacher. Mundt (1991) found that novice agriculture teachers lacked confidence and expressed feelings of loneliness, isolation, frustration, and stress. Grady's (1990) career mobility study supported Bandura's social cognitive theory. Grady stated that a person's feelings, attitudes, and behaviors influence their confidence as a teacher. Although the construct of teacher efficacy has revealed promising findings in the field of education, there remains a need for further research in building the body of knowledge for a more clearly defined and structured construct. Therefore, this study was conducted because teacher efficacy is situation specific, including context and subject matter, and thereby teaching efficacy needed to be investigated in agricultural education.

Purpose and Objectives

The purpose of this exploratory study was to investigate the influences of peer-teaching and early field experience on the personal and general teaching efficacy of preservice educators during their first year of professional studies in agricultural education. The four research questions for this study were:

1. Will students score significantly higher on personal teaching efficacy after peer teaching?
2. Will students score significantly higher on general teaching efficacy after peer teaching?
3. Will students score significantly higher on personal teaching efficacy after the early field experience?
4. Will students score significantly higher on general teaching efficacy after the early field experience?

Methods and Procedures

A one-group pretest-posttest design using two intact groups was used for this pre-experimental study. The accessible population of this study was undergraduate students in two intact groups enrolled in a foundations course in agricultural education at a large Midwestern land-grant university. This study was a census of all undergraduate students enrolled in the foundations course in 2000. Forty-three students were enrolled in the foundations course during the Spring, 2000 quarter and 44 students were enrolled in the Autumn, 2000 quarter. Seventy-three students completed the Teacher Efficacy Beliefs Questionnaire during the early field experience orientation, resulting in an eighty-four percent response rate. Because a convenient population was used, the researcher cautions that the findings and conclusions of this study should not be generalized beyond the accessible population of this study.

Students in the course were mostly sophomores and juniors pursuing three career options in agricultural education: (a) teaching certification, (b) extension education, or (c) agribusiness education and training. This was the first professional education course for students with a major or minor in agricultural education. Students self-selected their enrollment in the course and random assignment of students to the course sections or the treatments were not possible. Each section of the foundations course met for 108 minutes twice a week and was taught using

interactive video technology in a distance education environment between a classroom at the main campus and a classroom at a branch campus. The course content of the course included: (a) ten days of early field experience in public schools or county extension offices, (b) history, philosophy, and careers related to agricultural education, and (c) psychology and sociology related to agricultural education.

There were two treatments conducted: X_1 = peer teaching, and X_2 = early field experience:

Spring Group (N = 43): O X_1 O

Autumn Group (N = 44): O X_2 O X_1 O

For the early field experience, students completed an application for placement in a public school agricultural education program or a county Extension office throughout the state. The students were placed in the order the applications were received. Then, the students attended an orientation to learn about the responsibilities and assignments of the early field experience. Cooperating educators were also sent correspondence of their responsibilities. The length of the early field experience was 10 days with an agricultural education teacher or 80 hours with a county Extension agent during the summer of 2000. The students completed collected information, made observations, and assisted their cooperating educator with teaching or facilitating responsibilities. Although each early field experience varied depending on the situations of the placement site and the cooperating educators' style, the summated mean scores for personal and general teacher efficacy should have minimized the differences among the early field experience sites. However, location for this treatment could be considered a threat to internal validity.

One section was taught during the spring quarter and the other was taught during the autumn quarter. The students were instructed how to plan for and conduct the four peer-teaching activities for the last five weeks of the term related to the psychological and sociological content portion of the course. The four peer-teaching activities were: discussion, application, synthesis, and reflection. The topics were chosen by the instructor from the textbook, Educational Psychology (Woolkfolk, 2001). Teams of four to five students conducted the discussion and application activities. The instructor assigned to students to teams using random blocking based on temperament (Kiersey, 1998). Each group rotated through the two in-class teaching activities—discussion and application—and the two out-of-class teaching activities—synthesis and reflection. The spring course section did their synthesis teaching activity during class. Each group was responsible to teach the assigned topics using the assigned teaching activity. Further, every student had to share a speaking part to be evaluated by the instructors. The class schedule for peer teaching was: 10:00 minutes for the introduction and interest approach by the instructor; 50:00 minutes for the discussion by a peer group; 5:00 minutes for a break and to switch groups; 30:00 minutes for application by a student group; and, 13:00 minutes for the summary by the instructor. The synthesis teaching activity was posted on an electronic bulletin board using Web Course Tools. The reflection activity was a self-evaluation that was sent to the instructor via private electronic mail after each student taught in the discussion and application activities.

Students were given the pretest at the early field experience orientation using the Teacher Efficacy Scale. The researcher adapted the items used in the instrument from Woolfolk & Hoy's (1990) short-version of Gibson and Dembo's (1984) Teacher Efficacy Scale. The wording of the items were adapted to be relevant to preservice agricultural educators in formal (public

schools) and non-formal (Extension and business/industry) settings. The questionnaire contained 31 items related to beliefs about personal teaching efficacy and general teaching efficacy. Efficacy beliefs were measured using a 6-point summated rating scale. Students were asked to respond to each statement using the following rating scale: Strongly Disagree (1), Moderately Disagree (2), Slightly Disagree (3), Slightly Agree (4), Moderately Agree (5), and Strongly Agree (6). Initially, the Teacher Efficacy Scale was pilot- and field-tested to establish content and construct validity by Gibson and Dembo (1984). Woolfolk and Hoy (1990) conducted further construct validity using factor analysis to suggest that Gibson and Dembo's 30-item scale could be reduce to 10 items, known as the Short Version—Teacher Efficacy Scale.

Construct validity was also established using factor analysis statistics to analyze the data sample as recommended by Woolfolk & Hoy (1990). Five items loaded (.627 to .785) on the personal teaching efficacy factor and the other five items loaded (.585 to .783) using the principal components varimax method, which explained 48 percent of the variance. Further, a panel of experts on teaching and learning in agriculture in the department established content and face validity because of the slight word changes in some of the items. The estimates of reliability, using Cronbach's alpha, were 0.76 for the five items related to personal teaching efficacy and 0.78 for the five items related to general teaching efficacy. Negatively worded items were reverse coded prior to analyzing the data. The data set was analyzed using SPSS. Summated means and standard deviations were calculated for the composite scores of personal teaching efficacy and general teaching efficacy. The pretest mean of the two intact groups was not significantly different ($p < .001$) for personal teaching efficacy; however, the pretest mean of the two groups was significantly different ($p = .045$) on general teaching efficacy. The data met the assumptions of normality, homogeneity of variances, and independence for dependent *t*-tests. Descriptive statistics and paired samples *t*-tests were conducted to test for significance. Directional tests and alpha (" = .05) were set *a priori.* The results and conclusions should be interpreted within the context of this study because of the researcher used intact groups and did not control for extraneous variables related to maturation, history, and testing.

Results and Findings

At the outset, the students in the spring and autumn groups agreed they were moderate for personal teaching efficacy and were indifferent to slight agreement for general teaching efficacy. The spring group (Table 1) had a personal teaching efficacy of 4.43 (σ =.65) and a general teaching efficacy of 3.71 (σ =.87) for the pre-test measurement. Their personal teaching efficacy was 4.60 (σ =.61) after the peer-teaching treatment, and it did not increase significantly. The spring group of students' general teaching efficacy was 3.74 (σ =.79) after the peer-teaching treatment, and it did not increase significantly. Therefore, students in the spring group did not score significantly higher on personal teaching efficacy (Research Question 1) or on general teaching efficacy (Research Question 2) after peer teaching.

The autumn group (Table 2) had a personal teaching efficacy of 4.44 (σ =.63) and a general teaching efficacy of 3.32 (σ =.78) at the time of the pretest measurement. Their personal teaching efficacy was 4.54 (σ =.74), which did not increase significantly after the early field experience. The autumn students' general teaching efficacy was 3.51 (σ =.93), which did not increase significantly after the early field experience. Therefore, the early field experience did

not increase the students' personal teaching efficacy (Research Question 3) or general teaching efficacy (Research Question 4).

Table 1. Descriptive Statistics and Tests of Significance for Spring Quarter Students

Peer-Teaching Treatment	*N*	Pre-test μ (σ)	Post-test μ (σ)	*t*	*p*
Personal Teaching Efficacy	34	4.43 (.65)	4.60 (.65)	1.64	.055
General Teaching Efficacy	34	3.71 (.87)	3.80 (.74)	.83	.205

Note. Scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Moderately Agree, 6 = Strongly agree.
*p<.05 (one-tail)

Table 2. Descriptive Statistics and Tests of Significance for Autumn Quarter Students

Early Field Experience Treatment	*N*	Pre-test μ (σ)	Post-test μ (σ)	*t*	*p*
Personal Teaching Efficacy	39	4.44 (.63)	4.54 (.74)	.89	.190
General Teaching Efficacy	39	3.32 (.78)	3.51 (.93)	1.28	.104

Note. Scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Moderately Agree, 6 = Strongly agree.
*p<.05 (one-tail)

The autumn group (Table 3) of students' personal teaching efficacy was 4.52 (σ =.76) and their general teaching efficacy was 3.48 (σ =.92) on the pretest prior to the peer-teaching treatment. The students' personal teaching efficacy was 4.74 (σ =.58) after the peer teaching treatment. This increase in personal teaching efficacy was significant (*p*=.008). The autumn students' general teaching efficacy was 3.64 (σ =.84), which did not increase significantly after the peer-teaching treatment. Therefore, the autumn students' personal teaching efficacy did increase significantly after peer teaching (Research Question 1), but their general teaching efficacy did not increase significantly after peer teaching (Research Question 2).

Conclusions, Implications, and Recommendations

Prospective agricultural, extension, and agribusiness educators in their foundations course in agricultural education moderately agreed with the items related to personal teaching efficacy. They were indifferent to being in slight agreement with the items related to general teaching efficacy. The spring students did not report a significant increase in personal and general teaching efficacy after they taught each other through the peer teaching activities—discussion, application, synthesis, and reflection—during the foundations in agricultural education course. The autumn students did not report a significant increase in personal and

general teaching efficacy after they conducted their ten days or eighty hours of early field experience in a public school or county Extension office.

Table 3. Descriptive Statistics and Tests of Significance for Autumn Quarter Students

Peer-Teaching Treatment	*N*	Pre-test μ (σ)	Post-test μ (σ)	*t*	*p*
Personal Teaching Efficacy	43	4.52 (.76)	4.74 (.58)	2.51	.008*
General Teaching Efficacy	43	3.48 (.92)	3.64 (.84)	1.39	.086

Note. Scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Moderately Agree, 6 = Strongly agree.
*p<.05 (one-tail)

In addition, the autumn students reported a significant increase in personal teaching efficacy after they completed the peer teaching activities in the foundations course, yet they did not report a significant increase in general teaching efficacy after they completed they taught their peers. Tenably, the difference between spring and autumn students could be that the autumn students grew more when they conducted peer teaching activities in a structured on-campus classroom following field experiences in real teaching situations that gave them relevant teaching experience. This conclusion should be interpreted with caution because this increase in personal teaching efficacy of the autumn students could have occurred due to history or maturation. Further, although the spring group was not measured after they completed the early field experience, it would be imperative to compare their teaching efficacy to the autumn students to determine if their personal teaching efficacy increased significantly after both treatments.

It is interesting to note that peer teaching significantly increased personal teaching efficacy after students had completed the early field experience. This could imply that students become more efficacious in their teaching after they have observed and experienced teaching in a natural setting. Further, these findings support that teachers should be developed in field-based and on-campus laboratory settings (Metcalf et al., 1996; Putnam & Borko, 2000). Furthermore, it is plausible to conclude that students in this foundations of agricultural education course exhibit greater teaching efficacy when they believe they can make a difference with their teaching skills (personal teaching efficacy) than they would when they feel they have less control over the learning situation due to family, parental, and community influences on their learners (general teaching efficacy).

The increase in personal teaching efficacy of the autumn students after peer teaching supports other studies that teaching experience increases teaching efficacy (Rodriquez, 1997; Woolfolk Hoy, 2000). However, the findings that peer teaching and early field experience alone did not increase teaching efficacy is also congruent with some researchers. Hoy and Woolfolk (1990) found that although personal teaching efficacy increased and general teaching efficacy fell during the student teaching experience. Therefore, the nature of the subjects in this study should be considered because this course was the first teaching experience for many of the

students. Initial teaching and field-based experiences can cause stress and anxiety for novices (Woolfolk Hoy, 2000).

The findings of this study can also be explained in part with Bandura's (1997) self-efficacy theory. Bandura's four sources of efficacy—mastery experience, physiological arousal, vicarious experience, and verbal persuasion—contributed to the students growth in personal teaching efficacy through their peer teaching activities in the foundations course after their early field experience. Teacher efficacy is more likely to be influenced by a combination of sources rather than a single source (Bandura). It appears that the students benefited more from peer teaching after they gained real-life experience in the field. The combination of early field experience and teaching peers in a more controlled environment probably contributed more to the students' personal teaching efficacy because they felt a sense of mastery after they were instructed how to teach in the course. The early field experience and peer teaching events should have contributed to the development of teacher efficacy assuming that the preservice teachers felt supported by a mentor or experienced educator. However, the brevity of the early field experience and peer teaching events may not have provided a sustained, supportive experience for teacher efficacy to grow significantly.

The findings of this study are also congruent with other researchers who agree the teaching efficacy is complex and difficult to measure and understand (Tschannen-Moran, 2000; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998; Watters & Ginns, 1995). Although the peer teaching activities and early field experiences can be sources of teaching efficacy, it appears that students may get limited mastery and vicarious experiences in teaching two activities over five weeks or a few days during their ten days of early field experience. Support and guidance (Woolfolk Hoy, 2000; Watters & Ginns, 1995) from cooperating educators during the early field experience can also be a source of teaching efficacy, however, this variable not controlled for or measured.

Due to the exploratory purpose of this study, the findings may inform agricultural educators to consider the variables related to the teacher development process of beginning educators. Teacher educators should consider developing preservice teachers through a combination of peer teaching activities in a more controlled environment and in a more contextually-rich teaching environment through field-based experiences. Further, teacher educators and cooperating educators should consider the sources of teacher efficacy when interacting with and mentoring prospective agricultural and extension educators. Teacher educators, cooperating educators, and supervisors should design learning opportunities for preservice educators to gain mastery experience, learn vicariously, receive constructive feedback and coaching, and control their physical emotions.

This exploratory study raised some important questions that need to be investigated using quasi-experimental designs for greater internal validity. A non-equivalent control group should be used to determine the effects and interaction of various treatments in developing prospective agricultural educators. Moreover, it is recommended that longitudinal trend studies be conducted to chart the development of teacher efficacy beliefs over several years of the undergraduate studies and the beginning years of educators. Furthermore, qualitative-interpretivist inquiry should be conducted to understand the development of teacher efficacy, its sources of growth,

and its sources of decline. Future studies should also be conducted to determine how teacher characteristics, collective efficacy, and organizational variables influence the development of teacher efficacy beliefs.

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