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Assessing the Teacher Self–Efficacy of Agriculture Instructors and Their Early Career Employment Status: A Comparison of Certification Types

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The purpose of this descriptive–correlational study was to assess the level of teacher self–efficacy of first–year, secondary agricultural education teachers in Oklahoma at the beginning and end of their entry–year in the profession and describe their early career retention. This study found that these first–year teachers increased their level of teacher self–efficacy throughout the year. The alternatively certified (AC) teachers indicated the largest amount of perceived growth across three teacher self–efficacy constructs. However, when considering the assessment scores of university supervisors, it was found that traditionally certified (TC) teachers outperformed their AC counterparts by roughly a one–half point margin on each construct. Further, statistically, the TC teachers performed significantly better on the student achievement indicators standard than did the AC teachers. It was found that the difference in effect size between TC and AC teachers was between "medium" and "large" for all constructs. Finally, this study revealed that, statistically, the TC teachers had significantly higher retention rates as compared to their AC teacher counterparts.

Keywords: certification types; early career employment status; teacher self–efficacy

Introduction

The National Research Agenda for Agricultural Education and Communications identified as a priority area to "prepare and provide an abundance of fully qualified and highly motivated agriscience educators at all levels" (Osborne, 2007, p. 3). This priority area was targeted, in part, because of the teacher shortage in agriculture (Kantrovich, 2007). In fact, a teacher shortage has been an issue across all domains and disciplines of teaching at the primary and secondary school levels (Feistritzer & Haar, 2008; Good et al., 2006; Hess, 2000), and is prevalent in agricultural education as well.

Researchers have noted that teacher preparation institutions have struggled to meet the increasing demand of the teacher shortage problem (Lynch, 1996; Steadman & Simmons, 2007), due, in part, to high teacher turnover rates. Ruhland (2001) stated that, "it is far more cost effective to retain teachers than to hire [them]" (p. 3). As a result of the teacher shortage crisis, alternatively certified (AC) teachers have been employed to *fill the gap* (Feistritzer & Haar, 2008; Shoho & Martin, 1999). However, the effect and credibility of AC teachers has been questioned because they have not received formal pedagogical preparation in college, nor have they experienced the student teaching internship (Young & Edwards, 2006).

"Alternative certification routes are non–traditional routes designed for individuals who have not completed a baccalaureate degree in education" (Ruhland & Bremer, 2002, p. 2). Due to this lack of experience, AC teachers arrive at teaching differently than traditionally certified (TC) teachers. As such they ". . . do not receive the same degree of pedagogical instruction and experience as traditionally certified teachers" (Blackburn, 2007, p. 19). Robinson (2010) found that first–year, AC agriculture teachers in Oklahoma became teachers because they recognized a shortage

existed in that state and believed they could be part of the solution by providing a *service* to the profession by opting to teach.

Because of their lack of pedagogical preparation, it is important to understand how AC teachers compare to TC teachers regarding their level of self–efficacy to teach secondary agricultural education. Self–efficacy is the belief an individual has for accomplishing a specific task or job (Bandura, 2003). Ingersoll (2001) found that teachers leave the profession due to retirement, school staffing actions, personal reasons, to pursue another job, and dissatisfaction overall. However, could self–efficacy impact teachers' willingness to remain in the teaching profession?

Roberts and Dyer (2004) compared TC and AC agriculture teachers in Florida to determine their perceived inservice professional development needs. They found that AC teachers expressed the fewest needs in the area of instruction and curriculum. Comparatively, TC teachers expressed less need for professional development in the areas of technical content, FFA advisement, and supervising students' projects (i.e., SAEs).

Rocca and Washburn (2005) conducted a study to determine if differences existed between TC and AC agriculture teachers in Florida on their perceived levels of self–efficacy. They found that AC teachers were roughly ten years older than their TC counterparts. Further, the researchers also found that AC teachers had similar levels of self–efficacy when compared to TC teachers. It was implied that, because TC teachers had experienced more pedagogical preparation, they were more critical of their teaching abilities than AC teachers.

Duncan and Ricketts (2008) conducted a study in which they compared TC and AC agriculture teachers in Georgia on program efficacy. They concluded that TC teachers had the highest levels of efficacy related to program management. In contrast, AC agriculture teachers had the highest levels of efficacy in common pedagogical practices. The lowest levels of program efficacy for both groups were in content knowledge related to technical agriculture subjects. The authors recommended professional development for both groups of teachers through statewide, in–service workshops to improve their overall level of program efficacy.

The conceptual framework of this study relied on Bandura's (1977) self–efficacy theory. Bandura (1993) posited that an individual's perception of self–efficacy dictated how they perceived themselves and reacted in certain situations. Bruinsma and Jansen (2010) stated that, "Teacher self–efficacy is one of the self–efficacy belief types studied in education" (p. 188). Tschannen–Moran, Woolfolk Hoy, and Hoy (1998) asserted that teacher self–efficacy is "the teacher's belief in his or her own capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 223). Bruinsma and Jansen (2010) also opined that, "people with high self–efficacy approach difficult tasks as challenging instead of as threats" (p. 188). As such, it could be implied that higher levels of teacher self–efficacy are related to higher levels of teacher retention (Bruinsma & Jansen, 2010; Coldarci, 1992; Rots, Aelterman, Vlerick, & Vermeulen, 2007; Tschannen–Moran & Woolfolk Hoy, 2001).

Coladarci (1992) found that, ". . . efficacy significantly predicted commitment to teaching" (p. 332). Gender, school class size, and administrative support were also predictors of teacher commitment. Bruinsma and Jansen (2010) suggested that the quality of an individual's teacher preparation program is related to teacher commitment (i.e., retention). However, the literature is lacking regarding how a teacher entry program (e.g., alternative certification) relates to teacher efficacy and retention. Roberts and Dyer (2004) opined, "Traditional thinking is that professionally prepared agriculture teachers (teachers with a degree in agricultural education) would be better prepared than their counterparts who entered teaching through alternative certification" (p. 68). Moreover, Darling–Hammond and Sykes (2003) stated that more emphasis should be placed on retaining current teachers than on developing new professionals.

Woolfolk Hoy and Spero (2005) stated that people tend to overestimate their abilities often and assume they are capable of doing more than they actually can. However, Hoy and Miskel (2005) maintained that teachers who are efficacious will persist with greater resiliency when faced with challenges. As such, Woolfolk

et al. (2005) concluded that, "Efficacy is a future–oriented judgment that has to do with perceptions of competence rather than actual level of competence" (p. 344). To that end, a measure of *actual* competence assessing classroom teaching is warranted in addition to teachers' *perceptions* of their levels of competence to understand differences in teacher self–efficacy better.

Purpose of the Study

The purpose of this descriptive–correlational study was to assess the level of teacher self–efficacy of first–year, secondary agricultural education teachers in Oklahoma at the beginning and end of their entry–year in the profession. Further, this study sought to compare TC and AC teachers on the assessment scores of their university supervisors, as well as teachers' retention as agricultural educators. Four research objectives guided this study:

1. Describe selected personal and professional characteristics (i.e., age, gender, highest degree earned, type of certification received) of first–year teachers by certification type;
2. Describe the level of teacher self–efficacy (e.g., student engagement, instructional practices, classroom management) of first–year teachers, by certification type, at the beginning and end of their entry–year of employment;
3. Compare university supervisors' assessments of first–year teachers' classroom teaching performance by certification type;
4. Compare teachers' self–efficacy and early career employment status (i.e., retention) by certification type.

Because a portion of this study sought to determine differences between TC and AC teachers regarding their performance and retention in the profession, a series of four independent *t*–tests were calculated for objective three. The first null hypothesis for objective three stated that, in the population studied, no statistically significant ($p < .05$) difference existed between TC and AC teachers' performance assessments as perceived by their university supervisors regarding teacher management indicators (H_o: $\mu_{1\ TC} = \mu_{2\ AC}$). Null hypothesis two stated, in the population studied, no statistically significant ($p < .05$) difference existed between TC and AC teachers' performance assessments as perceived by their university supervisors regarding teacher instructional indicators (H_o: $\mu_{1\ TC} = \mu_{2\ AC}$). Null hypothesis three stated, in the population studied, no statistically significant ($p < .05$) difference existed between TC and AC teachers' performance assessments as perceived by their university supervisors regarding teacher products (H_o: $\mu_{1\ TC} = \mu_{2\ AC}$). Null hypothesis four stated, in the population studied, no statistically significant ($p < .05$) difference existed between TC and AC teachers' performance assessments as perceived by their university supervisors regarding student achievement indicators (H_o: $\mu_{1\ TC} = \mu_{2\ AC}$). To address objective four, a Chi–square analysis was conducted. The null hypothesis stated that, in the population studied, no statistically significant relationship ($p < .05$) existed between teacher certification (i.e., TC and AC) and teaching status (H_o: $\mu_{1\ TC} = \mu_{2\ AC}$).

Methods

This study focused on all entry–year, agricultural education teachers ($N = 46$) in Oklahoma who entered the resident teacher (RT) program during the 2007–2008 academic year. The lead researcher has been involved as a university supervisor and professional development provider for first–year teacher cohorts in Oklahoma's RT program. Based on that experience, this group was deemed similar in terms of the variables measured in this study (i.e., age, gender, highest degree awarded, and type of certification received). So, this study was deemed a *time and place* sample (Oliver & Hinkle, 1982), thus permitting the use of inferential statistics.

The RT program in Oklahoma is a mandatory induction year program for all entry–year teachers. Three individuals – principal, mentor teacher, and university supervisor – comprise the RT committee to assist and assess each first–year teacher. The committee provides observations, critiques, support, mentorship, guidance, and suggestions for improvement during the year–long, RT program. At the conclusion of the academic year, a committee meeting is scheduled to inform the teacher of

his/her status. The committee either *passes* the teacher to allow the receipt of full teaching licensure or opts for the teacher to *repeat* the RT program for another year. As such, university supervisors provide assessments using the Resident Teacher Observation Instrument (RTOI) during their observations of the first–year teachers.

The RTOI encompasses the 15 competencies in which all students, who desire to certify to teach in Oklahoma, must demonstrate proficiency prior to certification (Oklahoma Commission for Teacher Preparation, n.d.), regardless of educational field. The 15 competencies include effective teaching criteria. Ten competencies were derived from the Council for Chief State School Officers Interstate New Teacher Assessment and Support Consortium, three competencies were developed by Oklahoma educators, and two competencies were included as a result of Oklahoma state law.

To create consistency regarding how each individual rater scored teachers on the RTOI (i.e., inter–rater reliability), the three university supervisors who served on RT committees participated in a training session at Oklahoma State University. The raters met and discussed their perceptions and understanding of the 15 competencies represented on the RTOI. After a consensus of understanding was created, the instrument was used to critique a video–taped presentation of a former student teacher at Oklahoma State University in an effort to establish consistency among the three raters. After observing and scoring the teaching presentation, additional discussion ensued to reiterate each member's understanding of the 15 competencies. Through ocular review of the three ratings, it was identified that the raters had exact agreement on four of the items. Two of the three raters reached consensus of agreement on seven items. Only one item, *The teacher relates subject topics to existing student experiences,* did not reach a consensus of agreement among the raters.

Teachers in the RT program were also assessed on their perceived levels of teacher self–efficacy. The long form of the Teachers' Sense of Efficacy Scale (TSES), developed by Tschannen–Moran and Woolfolk Hoy (2001), was used to determine teacher self–efficacy for this study. This instrument measured teacher self–efficacy across three constructs: student engagement, instructional practices, and classroom management. It consisted of a nine–point, summated–rating scale ranging from 1 = (*nothing*) to 9 = (*a great deal*). Face and content validity were established by a panel of experts consisting of departmental faculty at Oklahoma State University. Tschannen–Moran and Woolfolk Hoy reported reliabilities for each construct based on prior research. The student engagement construct had a reliability estimate of 0.87. The instructional practices construct had a reliability estimate of 0.94, and a reliability estimate of 0.91 was reported for the classroom management construct.

Objective one was addressed by assessing frequencies and percentages of participants' ages, gender, education levels, and years of teaching experience. Objective two employed means and standard deviations to describe teacher self–efficacy. The analysis of objectives three and four used inferential statistics to compare the university supervisors' performance ratings and teachers' employment intentions, respectively, of the two certification types (i.e., TC and AC) assessed in the study. Because this study was deemed a *time and place* sample (Oliver & Hinkle, 1982), inferential statistics were used. Yet, because of the relatively small numbers of teachers who comprised the comparison groups (i.e., n = 34 TC teachers; n = 12 AC teachers), the reader is cautioned against generalizing the study's results. For objective three, a series of independent *t*–tests were used to determine if statistically significant differences ($p < .05$) existed between university supervisors' assessments of entry–year teachers' classroom teaching performance. To accomplish objective four, a Chi–square analysis was conducted to determine the relationship between teacher self–efficacy and early career teaching status (i.e., retention).

The majority of the data (objectives one through three) were collected during the Fall 2007 and Spring 2008 semesters. However, the researchers allowed some time to elapse before assessing teacher retention (i.e., objective four). As such, in Fall 2010, the researchers revisited the status of the individuals who had participated in the study during the 2007–2008 academic year to determine how many were still teaching.

It should be noted that not all entry–year teachers were employed during the first data

collection period in August of the school year studied. Further, not all entry–year teachers attended the end–of–year meeting in May either (i.e., the last data collection period). Finally, the researchers did not receive an RTOI assessment from all university supervisors. So, the numbers of responses and/or participants in the study from the initial data collection period to the final data collection period are inconsistent, i.e., some data are missing. This inconsistency is a limitation of the study.

Findings

The first objective sought to describe the personal characteristics of first–year, secondary agricultural education teachers by certification type. In all, 34 first–year teachers entered the profession via the traditional route (i.e., these teachers graduated from a teacher preparation institution and completed a student teaching experience) (see Table 1). In comparison, 12 first–year teachers entered the profession via an alternative route (i.e., these teachers graduated with a degree other than agricultural education and did not complete a teacher preparation program, including student teaching).

The largest number of first–year teachers who were traditionally certified reported being 21 to 25 years of age (58.5%) (see Table 1). Five (14.7%) first–year teachers indicated they were 26 to 30 years of age, and nine (26.4%) were 31 years of age or older. Slightly more than 85% (*f* = 29) of the TC teachers were male. An overwhelming majority (94%) indicated a bachelor's degree as their highest degree earned; two (6%) had earned a master's degree.

In comparison, two–thirds (67%) of the AC teachers were 26 to 30 years, and three–fourths (*f* = 9) were male. All 12 of the AC teachers had earned a bachelor's degree only (see Table 1).

Table 1
Personal Characteristics of First–year, Secondary Agricultural Education Teachers in Oklahoma by Certification Type (*N* = 46)

	Traditionally Certified (*n* = 34)		Alternatively Certified (*n* = 12)	
Variable	*f*	%	*f*	%
Age				
21 to 25 years	20	58.5	2	16.7
26 to 30 years	5	14.7	8	66.7
31 to 35 years	4	11.7	—	—
36 to 40 years	2	5.9	—	—
Over 40 years	3	8.8	1	8.3
Missing	—	—	1	8.3
Gender				
Male	29	85.3	9	75.0
Female	5	14.7	3	25.0
Degree				
Bachelor's	32	94.1	12	100.0
Master's	2	5.9	—	—

Objective two sought to describe the level of teacher self–efficacy (i.e., student engagement, instructional practices, classroom management) of the first–year teachers, by certification type, at the beginning and end of their entry–year of employment. This study found that an increase occurred in all constructs of teacher self–efficacy. However, when comparing TC and AC teachers on the Fall and Spring semester data collection periods, the mean differences and their directions varied by group (see Table 2).

Entry–year teachers, overall, had the highest increase in efficacy for the area of classroom management (+.16) (see Table 2). Of note, this construct also represented teachers' highest level of efficacy on all three constructs during both the Fall (*M* = 7.07, *SD* = .93) and Spring semesters (*M* = 7.23, *SD* = .89). Instructional practices was the next highest efficacy construct

(+.11) for teachers during the Fall (M = 6.93, SD = .80) and Spring semesters (M = 7.04, SD = .92). Entry–year teachers experienced the least amount of growth associated with the student engagement construct (+.04). This construct also represented teachers' lowest level of efficacy regarding all three constructs during the Fall (M = 6.63, SD = .76) and Spring semesters (M = 6.67, SD = .86) (see Table 2).

Table 2
First–year, Secondary Agricultural Education Teachers' Self–Efficacy at the Beginning and End of Their Entry–Year of Employment (N = 46)

	Fall Semester (August 2007)		Spring Semester (May 2008)		Total Change
Efficacy Constructs	*M*	*SD*	*M*	*SD*	*Mean Difference*
Student Engagement Overall	6.63	.76	6.67	.86	+.04
Traditionally Certified	6.67	.73	6.64	.80	-.03
Alternatively Certified	6.47	.92	6.76	1.03	+.19
Instructional Practices Overall	6.93	.80	7.04	.92	+.11
Traditionally Certified	7.03	.80	7.02	1.00	-.01
Alternatively Certified	6.48	.68	7.07	.72	+.59
Classroom Management Overall	7.07	.93	7.23	.89	+.16
Traditionally Certified	7.03	.97	7.20	.84	+.17
Alternatively Certified	7.27	.79	7.28	1.06	+.01

Note. Scale: 1 = (*nothing*), 3 = (*very little*), 5 = (*some influence*), 7 = (*quite a bit*), and 9 = (*a great deal*)

When considering certification types, TC teachers' level of self–efficacy decreased in the student engagement (-.03) and instructional practices (-.01) constructs and increased by .17 in the classroom management construct during the course of the school year (see Table 2). However, AC teachers' self–perceived levels of teacher self–efficacy increased in all three constructs during the course of the school year (i.e., student engagement = +.19; instructional practices = +.59; and classroom management = +.01).

Objective three was to compare university supervisors' end–of–year assessments of first–year teachers' classroom teaching performance by certification type. In all performance standards of the RTOI, TC teachers outperformed their AC counterparts by nearly a one–half point margin or more (see Table 3). A statistically significant difference ($p < .05$) was found between TC and AC teachers regarding student achievement indicators; therefore, the null hypothesis was rejected. In the case of teacher management indicators, teacher instructional indicators, and teacher products, no statistically significant differences were noted between certification types; so, the researchers failed to reject those null hypotheses. Further, when considering Cohen's d as a measure of effect size, or *practical significance*, three of the four constructs (i.e., teacher instructional indicators, teacher products, and student achievement indicators) demonstrated a *large* effect size (Cohen, 1988) (see Table 3).

In addition, a comparison of the teacher management indicators construct yielded a *medium* effect size (Cohen, 1988) regarding teacher certification route. So, in the case of all four constructs, the mean difference between the two certification types held *practical significance* regarding university supervisors' assessments of entry–year teachers' performance (see Table 3).

Table 3
University Supervisors' Assessments of First–year, Secondary Agricultural Education Teachers by Certification Type at End of the Entry–Year

Performance Standards	*f*	*M*	*SD*	*t*–value	*p*–value*	Cohen's *d*
Teacher Management Indicators						
Traditionally Certified	17	2.56	.47	1.70	.23	.72
Alternatively Certified	6	2.13	.70			
Teacher Instructional Indicators						
Traditionally Certified	17	2.39	.35	2.72	.12	1.37
Alternatively Certified	6	1.78	.52			
Teacher Products						
Traditionally Certified	17	2.35	.56	3.33	.65	1.54
Alternatively Certified	6	1.44	.62			
Student Achievement Indicators						
Traditionally Certified	16	2.23	.43	2.95	.00	1.14
Alternatively Certified	6	1.33	1.03			

Note. $*p < .05$; Scale: 0 = (*strongly disagree*), 1 = (*disagree*), 2 = (*agree*), and 3 = (*strongly agree*)

Objective four sought to compare type of certification and teaching status (i.e., retention) by certification type. To achieve this objective, a Chi–square analysis was conducted. To determine retention, the researchers compared frequencies of the TC and AC teachers in fall semester of 2010 (i.e., two years after the initial data were collected). As such, it was found that nearly 59% ($f = 20$) of the TC teachers were still teaching compared to 17% ($f = 2$) of the AC teachers (see Table 4). This difference was statistically significant ($p < .05$); so, the null hypothesis (H_o: $\mu_{1\ \text{traditionally certified}} = \mu_{2\ \text{alternatively certified}}$) was rejected.

Table 4
A Comparison of First–Year, Secondary Agricultural Education Teachers' Teaching Status and Certification Type

Teaching Status	*f*	%	Chi–value	*p*–value*
Traditionally Certified ($n = 34$)			6.32	.01
Currently teaching	20	58.82		
Not teaching	14	41.18		
Alternatively Certified ($n = 12$)				
Currently teaching	2	16.67		
Not teaching	10	83.33		

Note. $*p < .05$

Conclusions

The purpose of this study was to assess the level of teacher self–efficacy of first–year, secondary agricultural education teachers in Oklahoma at the beginning and end of their entry–year in the profession. Further, this study sought to compare TC and AC teachers on university supervisors' assessment scores regarding their teaching. The largest number of first–year, TC teachers were 21 to 25 years of age, and the largest number of first–year, AC teachers were 26 to 30 years of age. Rocca and Washburn (2005) found that AC teachers in Florida were roughly ten years older than their TC counterparts. Although this study did not find that large of an age difference, the AC teachers were the older group.

Regarding teacher self–efficacy, entry–year teachers increased their level of efficacy on all three constructs (student engagement, instructional practices, and classroom management) during the course of the school year. The TC teachers had higher beginning scores on two of the three constructs (student engagement and instructional practices) as

compared to their AC counterparts. However, AC teachers perceived the largest amount of growth in student engagement and instructional practices during the year. This finding is consistent with Roberts and Dyer (2004) who noted that AC teachers had the higher mean scores on teacher self–efficacy as compared to their TC counterparts.

When accounting for the three teacher self–efficacy constructs, AC teachers experienced the largest amount of perceived growth in instructional practices. This finding also resonates with research conducted by Roberts and Dyer (2004) who found that AC teachers in Florida perceived they had the lowest in–service needs in the areas of instruction and curriculum. However, the TC teachers perceived more growth in classroom management than their AC counterparts. In all, AC teachers perceived growth in all three constructs. So, it was concluded that AC teachers perceived they achieved the most positive change in teacher self–efficacy from the start of the school year to its end.

Although AC teachers had higher perceived efficacy scores throughout the year, they did not receive the higher performance scores based on their university supervisors' assessments. In fact, the TC teachers outperformed their AC counterparts by an approximate margin of one–half point or more on each construct (see Table 3). The largest margin of difference was found on teacher products (i.e., lesson plans and assessments) (see Table 4). Moreover, a statistically significant difference existed ($p < .05$) when comparing TC and AC teachers on their ability to perform student achievement indicators, with the TC teachers performing better overall. Finally, when considering retention, a significant relationship existed between certification type and whether a teacher remained in the profession. The TC teachers were more apt to remain in teaching than their AC counterparts, with population estimates being approximately 59% and 17%, respectively.

Limitations

Although this study was performed in a rigorous way, several limitations emerged. As such, the reader is cautioned about generalizing beyond this study's population. The RT program was the only induction program in place in Oklahoma at the time of the study. As such, this study was limited to first–year, secondary agricultural education teachers in Oklahoma during the 2007–2008 school year. Moreover, the researchers' reliance on *time and place* sample rationale, per Oliver and Hinkle (1982), to support the use of inferential statistics may be considered a limitation by some consumers of this research.

Although the researchers attempted to ensure no statistically significant differences existed between the raters (i.e., faculty) who provided supervision for the first–year teachers studied, it should be noted that the raters were assigned to their teachers. No two raters observed the same teacher. Therefore, measurement errors may have occurred. Further, somewhat incomplete data sets were relied on for the study's data analyses. Moreover, not all first–year teachers were employed at the beginning of the year when one of the instruments was disseminated. Finally, not all teachers remained employed until the year was complete. So, the number of individuals who participated in this study varied throughout the school year.

Recommendations for Research

Because teacher shortage is a critical concern to the agricultural education profession, further research should include determining whether or not teacher self–efficacy can be attributed to long–term teacher retention. Also, self–assessments can be problematic. So, further research should be conducted with school administrators, parents, and even students to determine better the needs and abilities of entry–year teachers. Feedback from these individuals could be tied to Bandura's social persuasion source of teacher self–efficacy (Bandura, 1997). In addition to social persuasion, other sources of teacher self–efficacy (e.g., mastery experiences, physiological and emotional states, and vicarious experiences) should be studied through the lens of agricultural education teachers to determine which experiences, per these sources, are most crucial to the improvement or demise of teacher self–efficacy for agriculture teachers. Understanding this phenomenon better could

improve teachers' effectiveness and, perhaps, their professional longevity.

It could be assumed that, over time and through experiences, an individual's self–efficacy would improve vis–à–vis his or her performance of various tasks (Bandura, 1993). However, why did the self–efficacy of the TC teachers decrease in regard to student engagement and instructional practices from the beginning of the school year to its end? Perhaps, these teachers would have benefitted from professional development that emphasized student–centered teaching approaches. Further research (e.g., qualitative interviews) should be conducted to understand better what caused this decline in teacher self–efficacy.

Finally, this study should be replicated with the intention to determine how school size and administrative support influence teacher retention. Coladarci (1992) found that these variables predicted teacher commitment. However, do they predict teacher job retention? Although this study assessed only those teachers who were in the profession at the time of data collection, follow–up, qualitative interviews should be conducted with teachers who left the teaching profession to explore their rationale for exiting.

Recommendations for Practice

Prolonged, sustained professional development calibrated to assist all teachers with their professional self–efficacy should occur. Special attention should be devoted to assisting AC teachers improve student achievement in the classroom and laboratory settings. Further, inservice workshops should also exist to inform AC teachers on the importance of developing appropriate teacher products (i.e., lesson plans, examinations, and assessments). A focus for these teachers should be on the process of lesson planning. Because AC teachers have not had pedagogical preparation, they may not know how to create the products necessary to be effective classroom and laboratory educators. However, with proper professional development, the creation of such teacher products can be improved, which could assist in increasing student achievement.

Further, two of the four sources of teacher self–efficacy are vicarious experiences and social persuasion (Bandura, 1994). Vicarious experiences involve observing others succeed at performing a task. Social persuasion involves other individuals convincing a *novice* that he or she has the ability to perform a specific task well. As such, all teachers could benefit from additional observations and critiques of their instruction. However, because AC teachers have not experienced the student teaching process and have missed the opportunity to undergo vicarious experiences and social persuasion, they are in need of these experiences the most. Therefore, efforts should be devoted to assisting AC teachers in developing a network of colleagues who can mentor them during difficult times throughout the school year. The AC teachers could be provided opportunities for observational experiences via *externships*. In essence, AC teachers need to observe veteran teachers instructing students in the field. Observing the behaviors of credible teachers as they conduct class, manage unruly students, and plan lessons could improve AC teachers' levels of teacher self–efficacy.

Finally, with the current federal administration focused on the *Educate to Innovate* initiative, *teacher quality* accountability is needed in today's school systems now more than ever (The White House, 2009). Teacher educators should continue to address ways of developing and advancing the human capital necessary to improve, validate, and assess teacher quality. Teacher self–efficacy and performance measures related to student learning should be monitored continually to understand better the deficiencies that exist in teacher preparation programs. After the needs are identified, professional development should be delivered for the purpose of providing more competent and qualified teachers to the education workforce.

Implications

It could be assumed that TC teachers would have higher levels of teacher self–efficacy when compared to AC teachers (Roberts & Dyer, 2004). However, this study did not support that assumption. Why not? Perhaps, this finding can be explained by the fact that the TC teachers had received pedagogical preparation and, therefore, were more critical of their performance because they knew what was expected of them regarding teaching effectiveness (Rocca & Washburn,

2005). Conversely, AC teachers have more room to improve because of their lack of pedagogical preparation and understanding. Therefore, these findings supported research by Roberts and Dyer (2004), who suggested, AC teachers do not know that to which they have not been exposed, such as effective pedagogical practices and why they are used.

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