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Analyzing the Relationship between Four Teacher Competence Areas and Commitment to Teaching

Aaron J. McKim[1], Tyson J. Sorensen[2], Jonathan J. Velez[3], & Thomas M. Henderson[4]

Abstract

The success of education depends on highly competent teachers committed to stay in the teaching profession. In agricultural education, the need for teachers committed to teaching agriculture is heightened by the identified shortage of teachers. Previous research has linked teacher competence, most commonly operationalized as self-efficacy, and commitment to teaching. However, research has not explored the relationship between specific teacher competence areas in agricultural education and commitment to teaching. In this study, we explored the relationship between four discipline-specific competence areas (i.e., intra-curricular facilitation, pedagogy, program management, and technical knowledge) and commitment to teaching among school-based agriculture teachers. First, teacher competence in the four areas were compared by career phase, with statistically different levels of intra-curricular facilitation competence identified among teachers with varying levels of teaching experience. Therefore, career phase was included when analyzing the relationship between teacher competence and commitment to teaching. The final model, predicting commitment to teaching, was statistically significant. One of the four competence areas, technical knowledge, was identified as a statistically significant, positive predictor of commitment to teaching. The findings are discussed along with implications for teacher education and recommendations for further research.

Keywords: commitment to teaching; intra-curricular facilitation; pedagogy; program management; technical knowledge

Introduction and Theoretical Framework

Recruiting and retaining highly competent teachers is one of the foundational objectives of the agricultural education profession (Foster, Lawver, & Smith, 2014; Myers, Dyer, & Washburn, 2005). In this study, we focused on the retention of school-based agricultural education (SBAE) teachers. More specifically, this exploratory research analyzed the relationship between perceived competence and commitment to remain teaching agriculture. This analysis was conducted to provide critical insight into variables which influence the retention of current SBAE teachers.

[1] Aaron J. McKim is an Assistant Professor in the Department of Community Sustainability at Michigan State University, 480 Wilson Road Room 131, East Lansing, MI 48824, amckim@msu.edu.
[2] Tyson J. Sorensen is an Assistant Professor of Agricultural Education in the School of Applied Sciences, Technology and Education at Utah State University, 2300 Old Main Hill, Logan, UT 84322, tyson.sorensen@usu.edu.
[3] Jonathan J. Velez is an Associate Professor in the Department of Agricultural Education and Agricultural Sciences at Oregon State University, 108 Strand Agriculture Hall, Corvallis, OR 97331, jonathan.velez@oregonstate.edu.
[4] Thomas M. Henderson is an Instructor of Agriculture Education and Engineering Technology in the College of Agriculture at California State University Chico, 104 Plumas Hall, Chico, CA 95929, tmhenderson@csuchico.edu.

The need for research into the commitment of SBAE teachers to remain teaching agriculture, henceforth referred to as *commitment to teaching*, stems from the vulnerability of SBAE to a "significant shortage of qualified teachers" (Kantrovich, 2010, p. 43). A shortage of teachers limits the growth and positive impact of SBAE. The need for more teachers is not exclusive to SBAE, with many disciplines facing a teacher shortage (Grissmer & Kirby, 1987; Ingersoll, 2001; Shen, 1998). Efforts to understand the broad-reaching teacher shortage can be seen in a growing body of literature exploring why teachers leave teaching. Consistently, two variables influence the decision of teachers to leave the profession: (a) individual teacher characteristics - e.g., teacher competence and (b) career stage (Grissmer & Kirby, 1987; Ingersoll, 2001; Shen, 1998).

Throughout education, interest is high in exploring and understanding the ramifications of teacher competence (Roelofs & Sanders, 2007). Existing research details competent teachers have the requisite knowledge and skills to produce desired student learning outcomes (Medley & Shannon, 1994; Mulder, Weigel, & Collins, 2006) and are better able to facilitate an environment conducive to learning (Mulder et al., 2006; Roelofs & Sanders, 2007; Woolfolk Hoy, 2000). Beyond detailing advantages of competent teachers, existing literature distinguishes competence and competency. *Teacher competence* describes a broad category of teaching whereas a *teacher competency* refers to a specific teaching skill nestled within an area of teacher competence. SBAE requires teachers with a broad range of competencies in multiple competence areas (De Lay & Washburn, 2013; Phipps, Osborne, Dyer, & Ball, 2007). Essential competence areas for SBAE teachers include intra-curricular facilitation, pedagogy, program management, and technical knowledge. While there are additional competence areas required of SBAE teachers, this research focused on the four identified competence areas.

Intra-curricular facilitation competence includes the knowledge of, and ability to, structure FFA and Supervised Agricultural Experience (SAE) opportunities to enhance student learning. Within intra-curricular facilitation, many individual competencies emerge, for example, training career development teams. Pedagogical competence refers to connecting classroom strategies to the needs of students while encouraging student achievement of identified learning outcomes. Managing student behavior is one example competency within pedagogical competence. Program management competence entails facilitating the broad range of experiences within an SBAE program. Program management competencies include planning field trips, utilizing an advisory committee, and conducting adult programs. Finally, technical competence refers to the requisite knowledge and skills to offer the broad range of SBAE courses. As an example, teaching animal science would be a competency within the domain of technical competence.

The purpose of this study was to explore the relationship between competence and commitment to teaching among SBAE teachers. The theoretical foundation for the relationship between competence and commitment to teaching is rooted in self-efficacy research (Bandura, 1977, 1986). Self-efficacy is operationalized as an individual's confidence in his or her ability to successfully accomplish a given task. Furthermore, efficacious individuals (i.e., those with higher competence) are more likely to perceive challenges associated with a task as surmountable, and therefore, perceive more commitment to continue doing the task (Bandura, 1986; Coladarci, 1992). Alternatively, individuals with lower self-efficacy (i.e., those with lower competence) tend to have less commitment to continue a task because they are unsure of their abilities to overcome expected challenges. Accordingly, SBAE teachers who perceive higher competence within the identified areas should also perceive a higher commitment to teaching (see Figure 1).

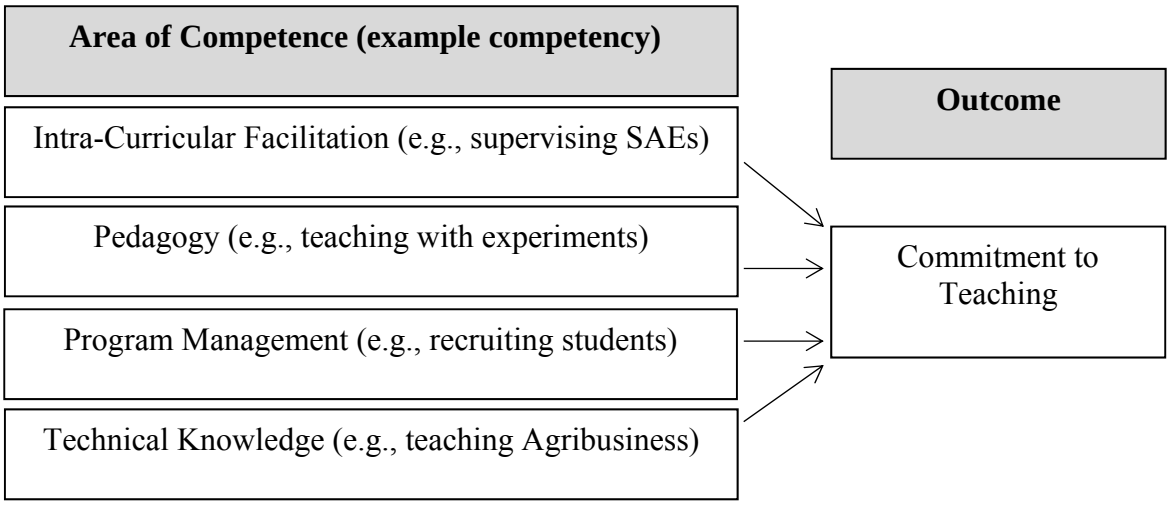

Figure 1. Conceptual model of the relationship between competence and commitment to teaching.

Literature Review

In this literature review, we explored the diverse nature of SBAE teacher competence and commitment to teaching. Specifically, three prevalent categories are reviewed: (a) teacher competence, (b) commitment to teaching, and (c) the relationship between teacher competence and commitment to teaching.

Teacher Competence

Within teacher competence literature, two areas of SBAE research (i.e., needs assessments and teacher self-efficacy) offered relevant insights. Needs assessments evaluate the importance and competence teachers perceive within a variety of relevant competencies to identify potential professional development topics (Borich, 1980). Analyzing needs assessment research helps identify specific competencies and competence areas to include in our analysis of SBAE teacher competence. Additionally, self-efficacy research extends our understanding of teacher competence by measuring teachers' "judgment of [their] capabilities to bring about desired outcomes" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783).

Four teacher competence area themes emerged from existing SBAE needs assessment research: (a) pedagogy, (b) intra-curricular facilitation, (c) program management, and (d) technical knowledge. Within pedagogy, common competencies have included motivating students to learn (Duncan, Ricketts, Peake, & Uesseler, 2006; Garton & Chung, 1996), managing student behavior (Duncan et al., 2006; Sorensen, Tarpley, & Warnick, 2010), teaching students with special needs (Duncan et al., 2006; Sorensen et al., 2010), and using technology as a teaching tool (Edwards & Briers, 1999; Garton & Chung, 1996; Joerger, 2002; Layfield & Dobbins, 2002). For intra-curricular facilitation, identified competencies include facilitating recordkeeping learning (Duncan et al., 2006; Layfield & Dobbins, 2002; Sorensen, Lambert, & McKim, 2014; Sorensen et al., 2010), completing FFA or proficiency award applications (Duncan et al., 2006; Garton & Chung, 1996; Layfield & Dobbins, 2002; Sorensen et al., 2010), and supervising or developing SAE opportunities for students (Duncan et al., 2006; Garton & Chung, 1996; Layfield & Dobbins, 2002; Sorensen et al., 2010). Within program management, competencies have included developing effective public relations (Duncan et al., 2006; Garton & Chung, 1996; Layfield & Dobbins, 2002), utilizing advisory committees (Duncan et al., 2006; Garton & Chung, 1996; Sorensen et al., 2014;

Sorensen et al., 2010), managing adult education programs (Edwards & Briers, 1999; Garton & Chung, 1996; Layfield & Dobbins, 2002), and completing reports and programmatic paperwork (Garton & Chung, 1996; Layfield & Dobbins, 2002). Finally, within technical knowledge, common competencies have included teaching biotechnology (Duncan et al., 2006), veterinary technology (Duncan et al., 2006), agricultural mechanics (Sorensen et al., 2014), and agribusiness (Layfield & Dobbins, 2002).

Needs assessment research in SBAE provides insight into competence areas and specific competencies to include in the current study. In addition to needs assessment research, studies exploring teacher self-efficacy, a concept closely linked to teacher competence, provide a foundation for understanding the confidence of SBAE teachers in discipline-specific areas. Duncan and Ricketts (2006) analyzed SBAE teacher self-efficacy in technical content knowledge, FFA/SAE/Leadership Development, program management, and teaching and learning, finding traditionally certified teachers most efficacious in program management and alternatively certified teachers most efficacious in teaching and learning. Similarly, Wolf (2008, 2011) and Hartfield (2011) evaluated discipline-specific areas of teacher self-efficacy, using FFA, SAE, and classroom categories. Research conducted by Wolf and Hartfield suggests SBAE teachers were most efficacious in the classroom domain and least efficacious in SAE. In the current study, like existing self-efficacy research (Duncan & Ricketts, 2006; Hartfield, 2011; Wolf, 2008, 2011), we explored discipline-specific domains, framed as competence areas. We selected competence areas based on themes found within SBAE needs assessment research representing important elements of SBAE teacher success. Selected themes included pedagogy, intra-curricular facilitation, program management, and technical knowledge.

Commitment to Teaching

Commitment to teaching is vital to reducing teacher turnover, implementing curricular innovations, enacting change within a discipline, maintaining program continuity, sustained success, and enhancing the depth of student development (Firestone & Pennell, 1993; Hausman & Goldring, 2001; Ingersoll & May, 2010; Robinson & Edwards, 2012). Research has identified a noteworthy range of variables which influence commitment to teaching (e.g., classroom management, curriculum delivery competence, work-life balance, and classroom organization issues), highlighting the need for research exploring the relationship between multiple competence areas and commitment to teaching (McKim & Velez, 2016; Mee & Haverback, 2014; Sorensen & McKim, 2014).

Analyses of commitment to teaching in SBAE are spurred by teacher retention challenges, especially among early-career teachers (De Lay & Washburn, 2013; Foster et al., 2014). Broader education literature has identified a quarter of teachers leave teaching within the first two years and up to half leave within the first five years (Ingersoll & Smith, 2003). In SBAE, national studies of commitment to teaching have found only one-third of first year teachers report being "highly likely" to continue teaching SBAE beyond five years (Warnick, Thompson, & Tarpley, 2010). The first five years of teaching SBAE can be described as a gauntlet of challenges (Myers et al., 2005; Osborne, 1992), requiring knowledge and skills in a broad range of competence areas to maintain a commitment to teaching SBAE.

Relationship between Teacher Competence and Commitment to Teaching

Enhancing commitment to teaching is a complex endeavor (Ingersoll, 2001) requiring coordinated efforts from multiple stakeholders. In this study, we explored teacher competence, and the relationship between teacher competence and commitment to teaching, to evaluate the role

discipline-specific competence areas play in the commitment to teaching of SBAE teachers. However, we were not the first to explore the links between competence and commitment in SBAE. Using foundations of self-efficacy (Bandura, 1977, 1986), SBAE research has consistently linked higher teacher self-efficacy with increased commitment to teaching (Blackburn & Robinson, 2008; Knobloch & Whittington, 2003; McKim & Velez, 2015; Swan, 2005; Wheeler & Knobloch, 2006). Existing literature, however, is limited in the variables of self-efficacy studied, as research has yet to explore discipline-specific areas in relation to commitment to teaching. We sought to address this gap by evaluating SBAE teacher competence in discipline-tailored constructs of pedagogy, intra-curricular facilitation, program management, and technical knowledge as well as the relationship between competence areas of commitment to teaching.

Purpose and Research Objectives

Understanding the relationship between SBAE-specific areas of teacher competence and commitment to teaching is an important next step for SBAE literature. In this study, we sought to elucidate the relationship between teacher competence and commitment to teaching by analyzing competence in intra-curricular facilitation, pedagogy, program management, technical knowledge, and SBAE teachers' commitment to teaching. More specifically, the following research objectives guided the development and execution of our research:

1.) Describe the sample of agriculture teachers.
2.) Describe SBAE teachers' perceived competence in intra-curricular facilitation, pedagogy, program management, and technical knowledge by career phase.
3.) Describe SBAE teachers' commitment to teaching by career phase.
4.) Evaluate the relationship between teacher competence and commitment to teaching.

Methods and Procedures

The population for this research included all Oregon SBAE teachers ($N = 111$) during the 2013-2014 school year. Contact information was obtained from the Oregon Agriculture Teacher Directory and vetted by a panel of SBAE experts. A census of potential respondents was attempted via an electronic, Qualtrics survey. Non-respondents were contacted up to five times including four e-mail follow-ups and subsequent phone calls to a random sample of non-respondents (Dillman, 2007; Lindner, Murphy, & Briers, 2001; Miller & Smith, 1983). A total of 80 usable responses ($n = 80$) were collected, for a useable response rate of 72%. On-time respondents (i.e., respondents prior to the fourth contact attempt) were compared to late respondents (i.e., respondents after the fourth contact attempt) using an independent samples *t*-test to compare the variables of interest. No statistically significant differences were observed, therefore, respondents were treated as a sample of the research population (Linder et al., 2001; Miller & Smith, 2003).

Instrumentation

Face and content validity of the research instrument were evaluated by a panel of SBAE experts with over 50 years of collective teaching and research experience. Constructs within the survey included commitment to teaching, intra-curricular facilitation competence, pedagogical competence, program management competence, and competence in technical knowledge. Post-hoc reliability estimates were conducted (i.e., intra-curricular facilitation competence $\alpha = .85$; pedagogical competence $\alpha = .82$; program management competence $\alpha = .86$; competence in technical knowledge $\alpha = .77$; and commitment to teaching $\alpha = .84$) with constructs exceeding minimum, Cronbach's alpha reliability standards (Nunnally & Bernstein, 1994).

The commitment to teaching construct was developed from the eight-item, professional commitment scale, a measure designed to evaluate an individual's identity with, and value toward, his or her selected profession (Blau, 1985). Professional commitment has been shown to reliably predict teacher turnover (Blau, 1985, 1988, 1989; Chapman, 1983; Raju & Srivastava, 1994; Singh & Billingsley, 1996). In this study, professional commitment was operationalized as commitment to teaching, and was measured on a seven-point scale, ranging from 1 "Strongly Disagree" to 7 "Strongly Agree."

The four constructs measuring competence areas (i.e., intra-curricular facilitation, pedagogy, program management, and technical knowledge) were developed as part of a larger study. Individual items (i.e., competencies) were derived from previous literature (Boone & Boone, 2007; Duncan et al., 2006; Garton & Chung, 1996; Layfield & Dobbins, 2002; Mundt & Connors, 1999; Myers et al., 2005; Sorensen et al., 2010) and concatenated into four competence areas by the researchers. Items were measured on a five-point scale, ranging from 1 "Very Low" to 5 "Very High," with higher scores indicating additional perceived competence. Within intra-curricular facilitation, respondents were asked to rate their competence offering FFA and SAE activities. Sample competencies included "training CDE teams" and "supervising students' SAE programs." Pedagogical competence evaluated SBAE teachers' competence using classroom teaching methods. Sample competencies included "teaching with experiments," "evaluating student performance," and "managing student behavior." Program management competence evaluated overall management of an SBAE program. Sample items included perceived ability "utilizing a local advisory committee," "maintaining agricultural equipment," and "recruiting students." Finally, competence in technical knowledge evaluated perceived ability teaching different technical areas of agriculture. Sample items included "teaching agribusiness" and "teaching about public issues regarding agriculture."

Data Analysis

Following collection, data were imported into the Statistical Package for the Social Sciences (SPSS) for analysis. Research objective one was completed using frequencies, means, and percentages. Objectives two and three, which sought to describe competence and commitment to teaching by career phase, were completed by grouping first through fifth year SBAE teachers (i.e., early-career), teachers with six to 19 years of teaching experience (i.e., mid-career), and teachers with 20 or more years of teaching experience (i.e., late-career). Competence and commitment to teaching were evaluated by career phase due to the importance of career phase in studies of teacher competence and commitment (Ingersoll, 2001). One-way analysis of variances (i.e., ANOVA) compared the competence and commitment to teaching of the three identified groups. Effect sizes were also calculated, with established criteria set at "small effect," $\eta = .100$; "medium effect," $\eta = .243$; and "large effect," $\eta = .371$ (Cohen, 1988). Statistical significance was established *a priori* at p-value $< .05$.

In research objective four, we sought to describe the relationship between perceived competence and commitment to teaching. A simultaneous entry, multiple linear regression was used in which the four competence areas and career stage were independent variables predicting commitment to teaching. Within the findings, standardized betas for each independent variable and an overall model R^2 are reported. Throughout our discussion, we make no attempt to generalize the findings beyond the population of Oregon agriculture teachers during the 2013-2014 school year.

Findings

Respondents to this study included a slight majority of male teachers (f = 44; 55.70%). The average age of respondents was just over 38 (M = 38.28), with a range from 23 to 65 years old. A majority of respondents had been traditionally certified in SBAE (f = 66; 83.50%). For career phase, the largest group were mid-career teachers (i.e., teachers with 6-19 years of teaching experience; f = 33; 44.00%), followed by early-career (i.e., first through fifth year teachers; f = 27; 36.00%) and late-career teachers (i.e., teachers with 20 or more years of teaching experience; f = 15; 20.00%).

The second and third research objectives focused on intra-curricular facilitation, pedagogy, program management, and technical knowledge competence (i.e., research objective two) and commitment to teaching (i.e., research objective three) by career phase (see Table 1). Significant differences in perceived competence or commitment to teaching would warrant inclusion of the career phase variable as a control within the relationship between teacher competence and commitment to teaching.

Table 1

Comparison of Teacher Competence and Commitment to Teaching by Career Phase

Variables	Career Phase			Total	*F*-value	*p*-value	Eta (η) effect size
	Early	Mid	Late				
Intra-Curricular Facilitation	2.96[a]	3.06[ab]	3.43[b]	3.10	3.50	.036	.30
Pedagogy	3.44	3.53	3.53	3.50	0.37	.694	.10
Program Management	3.16	3.29	3.49	3.28	2.04	.138	.23
Technical Knowledge	3.21	3.18	3.29	3.21	0.30	.742	.09
Commitment to Teaching	5.04	4.83	5.33	5.00	0.98	.380	.16

Note. Means with different superscripts in each row are significantly different at $p < .05$ based on Scheffe post-hoc test for unequal variances. Teacher competence items scaled from 1 "Very Low" to 5 "Very High." Commitment to teaching items scaled from 1 "Strongly Disagree" to 7 "Strongly Agree." Early-career teachers included those in their first through fifth year of teaching, mid-career teachers were those with six to 19 years of experience, and late-career teachers included teachers with 20 or more years of experience.

Respondents with the most teaching experience perceived the highest competence in intra-curricular facilitation (M = 3.43), pedagogy (M = 3.53), program management (M = 3.49), and technical knowledge (M = 3.29). Early-career teachers perceived the lowest teacher competence in three of the four areas, with the one exception being technical knowledge. Overall, respondents perceived the highest competence in pedagogy (M = 3.50) followed by program management (M = 3.28), technical knowledge (M = 3.21), and intra-curricular facilitation (M = 3.10). Comparing competence by career phase using ANOVA yielded statistically insignificant differences in pedagogy (F = 0.37; p-value = .694), program management (F = 2.04; p-value = .138), and technical knowledge (F = 0.30; p-value = .742). However, statistically significant differences were identified within intra-curricular facilitation (F = 3.50; p-value = .036) based on career phase. Post-hoc analysis revealed a medium difference (Cohen, 1988) between early-career teachers (M = 2.96) and late-career teachers (M = 3.43; η = .30) with respect to intra-curricular facilitation competence.

Transitioning to commitment to teaching, late-career teachers perceived the highest commitment to teaching ($M = 5.33$) followed by early-career ($M = 5.04$) and mid-career ($M = 4.83$) SBAE teachers. However, a comparison using ANOVA revealed these differences were statistically insignificant ($F = 0.98$; p-value = .380).

The final research objective sought to evaluate the relationship between teacher competence and commitment to teaching (see Table 2). Five independent variables were analyzed in relation to commitment to teaching. Independent variables included competence in intra-curricular facilitation, pedagogy, program management, and technical knowledge. Additionally, career phase was included to control for the statistically significant differences in intra-curricular facilitation by career phase (Cohen & Cohen, 1983).

Table 2

Relationship between Teacher Competence and Commitment to Teaching

	Dependent variable: Commitment to Teaching					
Variables	Zero-order correlation (r)	p-value	B	SEB	β	p-value
Intra-Curricular Facilitation	.25	.026	-.23	.34	-.12	.502
Pedagogy	.30	.008	.02	.40	.01	.962
Program Management	.30	.007	.40	.35	.18	.248
Technical Knowledge	.39	<.001	.84	.41	.36	.045
Career Phase	.06	.586	.06	.18	.04	.754

Note. $R = .41$, $R^2 = .17$, $F = 2.71$, p-value = .027. Teacher competence items scaled from 1 "Very Low" to 5 "Very High." Early-career teachers included those in their first through fifth year of teaching, mid-career teachers included those with six to 19 years of teaching experience, and late-career teachers included those with 20 or more years of teaching experience. Commitment to teaching items scaled from 1 "Strongly Disagree" to 7 "Strongly Agree."

In combination, independent variables established a statistically significant model of commitment to teaching ($F = 2.71$; p-value = .027) which explained 17% ($R^2 = .17$) of the variance in commitment to teaching. One of the predictors (i.e., technical knowledge) was a statistically significant, positive predictor of commitment to teaching ($\beta = .36$; p-value = .045) after accounting for the other predictors in the model. Three of the four remaining independent variables were statistically insignificant, positive predictors of commitment to teaching, with the one exception being intra-curricular facilitation, which was a statistically insignificant, negative predictor of commitment to teaching ($\beta = -.12$; p-value = .502).

Conclusions and Recommendations

Teacher competence is an important variable to teacher success and retention in the teaching profession (Blackburn & Robinson, 2008; Knobloch & Whittington, 2003; McKim & Velez, 2015; Swan, 2005; Wheeler & Knobloch, 2006). In this study, we sought to extend current knowledge on SBAE teacher competence by exploring discipline-specific competence areas and

the relationship between competence and commitment to teaching. In research objective one, we examined the demographics of responding teachers. The results revealed a fairly heterogeneous group of teachers who represented multiple phases of the SBAE teaching career. Demographic information was provided to allow readers to compare the sample of teachers in this study to agriculture teacher populations outside our frame.

The second and third research objectives described teacher competence and commitment to teaching by career phase with findings suggesting more experienced teachers perceive higher competence and commitment to teaching. These findings are what we would hope and expect from seasoned teachers; however, we recognize the potential for respondent mortality to influence results (i.e., only teachers with high competence and commitment being retained in the profession). Digging deeper into the findings on teacher competence, it was interesting to note pedagogical competence was most similar across the three career phases. The stability of pedagogy over time may belie a lack of pedagogical growth as teachers mature in their careers. Within SBAE, one effort to enhance pedagogy was the Delta Conference. The outcomes of the Delta Conferences revealed teachers engaged in a sustained, intensive pedagogical professional development perceived sizable growth in pedagogical competence (Coonrod, McGregor, & Bellah, 2009; McGregor, Bellah, & Coonrod, 2008). Therefore, we recommend teacher educators explore opportunities to encourage the pedagogical growth of teachers throughout their careers via opportunities like Delta.

In addition to similar pedagogical competence across career phases; we note statistically different levels of intra-curricular facilitation competence for early and late-career phase teachers. In contrast to pedagogical competence, these findings suggest SBAE teachers develop intra-curricular competence as they continue in their careers. The aforementioned challenges faced by early-career SBAE teachers (Myers et al., 2005; Osborne, 1992) paired with comparatively low competence structuring FFA and SAE opportunities may result in early-career SBAE teacher attrition. As an intervention, teacher educators are encouraged to provide additional support to early-career teachers with regard to balancing early-career challenges and intra-curricular facilitation.

Focusing on commitment to teaching, statistically insignificant differences were found between early, mid, and late-career teachers with higher reported commitment among teachers early and late in their careers. Similar patterns have been observed in broader education literature regarding work-related self-efficacy, a concept closely linked to commitment to teaching (Klassen & Chiu, 2010). Research suggests young teachers have youthful exuberance, and perhaps an excitement to be in a new profession, which supports a higher commitment to teaching. Additionally, late-career teachers may feel some measure of commitment based on nearness to retirement. Lower commitment to teaching among mid-career teachers suggests mid-career is a pivotal stage in which teachers decide to remain or exit the profession. We recommend teacher educators consider providing professional development opportunities for mid-career teachers. Anecdotally it seems many teacher development programs provide early-career teacher workshops and trainings. While this is critical, our findings warrant consideration for interventions to enhance commitment to teaching among mid-career teachers.

The final research objective evaluated the relationship between teacher competence and commitment to teaching. Technical competence, defined as knowledge and abilities related to the broad range of agricultural course offerings, was the only statistically significant predictor of commitment to teaching. The significant relationship between technical competence and commitment to teaching suggests teachers with more competence in the material they teach are more committed to remain in teaching. Furthermore, the link between technical competence and commitment to teaching bridges teacher competence literature and the theory of self-efficacy. Pre-

service teachers engaged in additional mastery (i.e., opportunities to interact with and teach technical material) and vicarious (i.e., opportunities to observe others teach and interact with technical material) experiences during teacher education programs should experience increased technical competence (Bandura, 1986, 1997). Teacher education programs must ensure preservice teachers have access to these essential technical competence building experiences.

One of the puzzling aspects of the relationship between competence and commitment to teaching was the role of intra-curricular facilitation. While statistically insignificant, we did wonder when intra-curricular facilitation emerged as a negative predictor of commitment to teaching. Prior literature highlights SBAE teachers exhibit high professional development needs related to FFA (Layfield & Dobbins, 2002) and have lower self-efficacy in offering SAE (Wolf, 2008). Given the challenges of FFA and SAE facilitation, especially among early-career teachers, additional research should examine the manner in which intra-curricular facilitation relates to commitment to teaching among early-career teachers. Unfortunately, a limited sample of early-career teachers precluded this analysis in our research. However, if future research supports a negative relationship between intra-curricular facilitation and commitment to teaching among early-career teachers, scholars are encouraged to consider examining work-family balance as a potential confounding variable.

The current study provides an initial examination of four teacher competence areas and commitment to teaching, however, further research is needed. We now have empirical evidence that technical competence is a significant predictor of commitment to teaching and we are able to evaluate, from a practical sense, the relationships between commitment to teaching and pedagogical competence, program management competence, and intra-curricular facilitation. While there is difficulty in examining the complexities of teacher retention, we need to be persistent in researching the many variables that comprise commitment to teaching.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. doi:10.1037/0033-295X.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Blackburn, J. J., & Robinson, J. S. (2008). Assessing teacher self-efficacy and job satisfaction of early-career agriculture teachers in Kentucky. *Journal of Agricultural Education, 49*(3), 1-11. doi: 10.5032/jae.2008.03001

Blau, G. (1985). The measurement and prediction of professional commitment. *Journal of Occupational Psychology, 58*(4), 277-288. doi: 10.1111/j.2044-8325.1985.tb00201.x

Blau, G. (1988). Further exploring the meaning and measurement of professional commitment. *Journal of Vocational Behavior*, *32*(3), 284-297. doi: 10.1016/0001-8791(88)90020-6

Blau, G. (1989). Testing the generalizability of a professional commitment measure and its impact on employee turnover. *Journal of Vocational Behavior*, *35*(1), 88-103. doi: 10.1016/0001-8791(89)90050-X

Boone, H. N., & Boone, D. A. (2007). Problems faced by high school agricultural education teachers. *Journal of Agricultural Education, 48*(2), 36-45. doi: 10.5032/jae.2007.02036

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31*(3), 39-42. doi:10.1177/002248718003100310

Chapman, D. (1983). A model of the influences on teacher retention. *Journal of Teacher Education*, *34*(5), 43-49. doi: 10.1177/002248718303400512

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences.* Hillsdale, NJ: Erlbaum.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences.* Hillsdale, NJ: Lawrence Erlbaum Publishers.

Coladarci, T. (1992). Teachers' sense of efficacy and career commitment. *The Journal of Experimental Education, 60*(4), 323-337. doi: 10.1080/00220973.1992.9943869

Coonrod, V., McGregor, K. W., & Bellah, K. A. (2009). *The effects of Delta Conference participation on agricultural educator lesson design and student learning*. Paper presented at the American Association for Agricultural Education Research Conference, Louisville, KY.

De Lay, A. M., & Washburn, S. G. (2013). The role of collaboration in secondary agriculture teacher career satisfaction and career retention. *Journal of Agricultural Education, 54*(4), 104-120. doi: 10.5032/jae.2013.04104

Dillman, D. A. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Duncan, D., & Ricketts, J. C. (2006). *Total program efficacy: A comparison of traditionally and alternatively certified agriculture teachers.* Proceedings of the Southern Region American Association for Agricultural Education Conference, Orlando, FL, 409-419.

Duncan, D. W., Ricketts, J. C., Peake, J. B., & Uesseler, J. (2006). Teacher preparation and in-service needs of Georgia agriculture teachers. *Journal of Agricultural Education*, *47*(2), 24-35. doi: 10.5032/jae.2006.02024

Edwards, M. C., & Briers, G. E. (1999). Assessing the inservice needs of entry-phase agriculture teachers in Texas: A discrepancy model versus direct assessment. *Journal of Agricultural Education*, *40*(4), 40-49. doi: 10.5032/jae.1999.03040

Firestone, W. A., & Pennell, J. R. (1993). Teacher commitment, working conditions, and differential incentive policies. *Review of Educational Research, 63*(4), 489-525.

Foster, D. D., Lawver, R. G., & Smith, A. R. (2014). *National agricultural education supply & demand study: 2014 executive summary.* A report from the American Association for Agricultural Education. Retrieved from http://aaaeonline.org/Resources/Documents/NSDSummary_3_1_2015_Final.pdf

Garton, B. L., & Chung, N. (1996). The inservice needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education, 37*(3), 52-58. doi: 10.5032/jae.1996.03052

Grissmer, D., & Kirby, S. (1987). *Teacher attrition: The uphill climb to staff the nation's schools.* Santa Monica, CA: RAND.

Hartfield, K. N. (2011). *Perceived levels of teacher self-efficacy among secondary Arizona agricultural education teachers.* (Unpublished master's thesis). University of Arizona, Tucson.

Hausman, C. S., & Goldring, E. B. (2001). Sustaining teacher commitment: The role of professional communities. *Peabody Journal of Education, 76*(2), 30-51. doi: 10.1207/S15327930pje7602_3

Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal, 38*(3), 499-534. doi: 10.3102/00028312038003499

Ingersoll, R. M., & Smith, T. M. (2003). The wrong solution to the teacher shortage. *Educational leadership*, *60*(8), 30-33.

Ingersoll, R. M., & May, M. (2010). The magnitude, destinations, and determinants of mathematics and science teacher turnover. *Educational Evaluation and Policy Analysis*, *34*(4), 435-464. doi: 10.3102/0162373712454326

Joerger, R. M. (2002). A comparison of the inservice education needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of Agricultural Education, 43*(3), 11-24. doi: 10.5032/jae.2002.03011

Kantrovich, A. J. (2010). *A national study of the supply and demand for teachers of agricultural education from 2006-2009*. American Association for Agricultural Education. Retrieved from http://www.naae.org/links/resources/docs/2010-supply-Demand-study-report.pdf

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*(3), 741-756. doi: 10.1037/a0019237

Knobloch, N. A., & Whittington, M. S. (2003a). Differences in teacher efficacy related to career commitment of novice agriculture teachers. *Journal of Career and Technical Education, 20*(1), 1-11.

Layfield, D. K., & Dobbins, T. R. (2002). Inservice needs and perceived competencies of South Carolina agricultural educators. *Journal of Agricultural Education, 43*(4), 46-55. doi: 10.5032/jae.2002.04046

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-53. doi: 10.5032/jae.2001.04043

McGregor, K. W., Bellah, K. A., & Coonrod, V. (2008). *The Delta Conference – Participant perceptions of learned instructional strategies and techniques*. Paper presented at the Western Region American Association for Agricultural Education Research Conference, Park City, UT.

McKim, A. J., & Velez, J. J. (2015). Exploring the relationship between self-efficacy and career commitment among early-career agriculture teachers. *Journal of Agricultural Education*, *56*(1), 127-140. doi: 10.5032/jae.2015.01127

Medley, D. M., & Shannon, D. M. (1994). Teacher evaluation. In T. Husen, & T. N. Postletwaite (Eds.), *The International Encyclopedia of Education*, *Vol. 10*, 2nd ed., pp. 6012-6020. New York, NY: Pergamon.

Mee, M., & Haverback H. R. (2014). Commitment, preparation, and early-career frustrations: Examining future attrition of middle school teachers. *American Secondary Education, 42*(3), 39-51.

Miller, L. E., & Smith, K. L. (1983). Handling non-response issues. *Journal of Extension, 21*(5), 45-50.

Mulder, M. T., Weigel, T., & Collins, K. (2006). The concept of competence in the development of vocational education and training in selected EU member states: A critical analysis. *Journal of Vocational Education and Training, 59*(1), 65-85. doi: 10.1080/2F13636820601145630

Mundt, J. P., & Connors, J. J. (1999). Problems and challenges associated with the first years of teaching agriculture: A framework for preservice and inservice education. *Journal of Agricultural Education*, *40*(1), 38-48. doi: 10.5032/jae.1999.01038

Myers, B. E., Dyer, J. E., & Washburn, S. E. (2005). Problems facing beginning agriculture teachers. *Journal of Agricultural Education, 46*(3), 47-55. doi: 10.5032/jae.2005.03047

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.

Osborne, E. (1992). A profession that eats its young. *Agricultural Education Magazine*, *64*(12), 3-4.

Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. (2007). *Handbook on agricultural education in public schools* (6th ed.). Clifton Park, NY: Thomson Delmar Learning.

Raju, P., & Srivastava, R. (1994). Factors contributing to commitment to the teaching profession. *International Journal of Educational Management, 8*(5), 7-13. doi: 10.1108/09513549410065684

Robinson, S. J. & Edwards, C. M. (2012). Assessing the teacher self-efficacy of agriculture instructors and their early-career employment status: A comparison of certification types. *Journal of Agricultural Education, 53*(1), 150-161. doi: 10.5032/jae.2012.01150

Roelofs, E., & Sanders, P. (2007). Towards a framework for assessing teacher competence. *European Journal of Vocational Training, 40*, 123-139.

Shen, J. (1998). Teacher retention and attrition in public schools: Evidence from SASS91. *Journal of Education Research, 98*(2), 81-95. doi: 10.1080/00220679709597525

Singh, K., & Billingsley, B. (1996). Intent to stay in teaching of students with emotional disorders vs other special educators. *Remedial & Special Education*, *17*(1), 37-47. doi: 10.1177/074193259601700105

Sorensen, T. J., Tarpley, R., & Warnick, B. K. (2010). Inservice needs of Utah agriculture teachers. *Journal of Agricultural Education, 51*(3), 1-11. doi: 10. 5032/jae.2010.03001

Sorensen, T. J., Lambert, M. D., & McKim, A. J. (2014). Examining Oregon agriculture teachers' professional development needs by career phase. *Journal of Agricultural Education*, *55*(5), 140-154. doi: 10.5032/jae.2014.05140

Sorensen, T. J., & McKim, A. J. (2014). Perceived work-life balance ability, job satisfaction, and professional commitment among agriculture teachers. *Journal of Agricultural Education, 55*(4), 116-132. doi: 10.5032/jae.2014.04116

Swan, B. G. (2005). *The relationship between the 2004 Ohio State University Agricultural Education student teachers' learning style, teacher heart, and teacher sense of efficacy.* (Unpublished doctoral dissertation). The Ohio State University, Columbus.

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*, 783-805. doi: 10.1016/S0742-051X(01)00036-1

Warnick, B. K., Thompson, G. W., & Tarpley, R. S. (2010). Characteristics of beginning agriculture teachers and their career commitment. *Journal of Agricultural Education*, *51*(2), 59-69. doi: 10.5032/jae.2010.02059

Wheeler, J., & Knobloch, N. A. (2006). *Relationship of teacher and program variables to beginning agriculture teachers' sense of efficacy.* Proceedings of the National Agricultural Education Research Conference, Charlotte, NC, 33, 590-600.

Woolfolk Hoy, A. E. (2000). *Changes in teacher efficacy during the early years of teaching.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

Wolf, K. J. (2008). *Agricultural education teacher self-efficacy: A descriptive study of beginning agricultural education teachers in Ohio.* (Unpublished doctoral dissertation). The Ohio State University, Columbus.