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Examining Preservice Teachers' Performance During a 14-Week Student Teaching Experience: A Longitudinal Study

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Abstract

The student teaching experience is one of the most impactful and formative experiences of any preservice teachers' career. Student teaching provides preservice teachers with the professional knowledge and skills needed to be successful teachers through concrete experiences, which formalize professional behaviors. This longitudinal linear mixed model study aimed to examine the change of preservice teachers' performance over time during the student teaching experience. Preservice teacher performance was measured with a modified instrument, and instrument reliability was tested and confirmed as part of this study. As such, it was found that a positive and significant linear trend over the 14-week placement existed and a clear pattern of growth among preservice teachers in the constructs of instructional design, instructional practice, student-centered teaching, teacher professionalism, and reflective and autonomous practitioner. It is evident that the student teaching experience is a valuable macro-level experience that provides a plethora of beneficial micro-level experiences. It is recommended that teacher educators continue to provide preservice teachers with the opportunity to participate in the immersive student teacher experience for a prolonged period. Recommendations for conducting evaluations and delivering feedback to student teachers were also made. As demonstrated in this study, time spent in the student teaching experience is a key attribute to preservice teachers' growth and development as professional educators.

Keywords: student teaching; experience; preservice teachers; longitudinal; instructional design; instructional practice; student-centered teaching; teacher professionalism; reflective and autonomous practitioner

Introduction

The student teaching experience is one of the most impactful and formative experiences of any preservice teachers' career (Miller & Wilson, 2010). A capstone experience of the entire teacher preparation program, the student teaching semester, has been shown to positively correlate to career commitment and teacher retention (McKim & Velez, 2015). While the rate of agricultural education graduates who choose to enter the profession has increased in recent years, a conversion rate of 77% is still not enough to fill all available positions (National Association of Agricultural Educators, 2019).

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Ranging from ten to sixteen weeks in length, the student teaching experience should provide various experiences for skill development in (a) classroom instruction, (b) student management, (c) lesson preparation, (d) personal and professional growth, and (e) reflection as an educator (Miller & Wilson, 2010). Student teaching placement and cooperating teacher matches should be based on the preservice teachers' needs to maximize growth. The cooperating teacher should provide mentorship, support, and formal evaluation through observation to document the preservice teachers' progress over time (Miller & Wilson, 2010).

An effective agricultural educator should display characteristics in instruction, balance, diversity and inclusion, professionalism, teaching through the total program, all in addition to having specific personal dispositions (Eck et al., 2019). Student teaching provides preservice teachers with the professional knowledge and skills needed to be successful teachers through concrete experiences, which formalize professional behaviors (Harlin et al., 2002; Miller & Wilson, 2010). During the student teaching experience, the cooperating teacher serves as a model for preservice teachers (Miller & Wilson, 2010). Cooperating teachers should (a) display mastery of instructional design and practices through their teaching and classroom management; (b) display professionalism through their relationship with other faculty, timeliness, and communication skills; (c) foster a positive cooperating teacher/student teacher relationship by utilizing student-centered teaching strategies with the preservice teacher; and (d) be a reflective practitioner through flexibility and a willingness to try new ideas (Roberts, 2006a).

Research related to the student teaching experience has focused on preservice teachers' perceptions of the student teaching experience (Fritz & Miller, 2003; Harlin et al., 2002; Krysher et al., 2012, 2015; McKim & Velez, 2017; Smith & Rayfield, 2017; Sorensen et al., 2018; Young & Edwards, 2006), experiences during student teaching (Doss et al., 2020; Krysher et al., 2015), and views of the student teaching experience as perceived by the cooperating teacher (Edgar et al., 2011; Edwards & Briers, 2001; Roberts, 2006a; Smalley et al., 2015). Preservice teachers' perceptions of the student teaching experience are noted as transformative throughout the experience. Sorensen et al. (2018) indicated that preservice teachers had difficulty taking on their teacher identity and owning their instructional practices at the beginning of their placement, wanting to be friendly with students. Instructional design, lesson planning, and content knowledge were also the preservice teachers' significant areas of concern (Sorensen et al., 2018). However, more than halfway into their placements, preservice teachers embraced their position as the teacher and moved past most instructional design struggles, focusing their efforts on motivating students and student-centered learning practices (Sorensen et al., 2018). Young and Edwards (2006) also reported changes in preservice teachers' perceptions over the course of their placement as related to what they viewed as valuable experiences before and after the semester. Instructional practices of daily classroom instruction and discipline management were reported as having the most substantial growth in perceived importance, increasing by almost half a point on a five-point scale (Young & Edwards, 2006). Overall, the importance of classroom and laboratory instruction was perceived as the second most crucial element of the student teaching experience, behind only the student teacher-cooperating teaching relationship (Young & Edwards, 2006; Harlin et al., 2002).

The impact of self-efficacy and preservice teachers' perceptions of student teaching can impact the overall experience. This relationship has been examined through individual's specific viewpoints and attitudes related to various aspects of the overall experience (Krysher et al., 2012). Fritz and Miller (2003) found that beliefs in one's ability related to classroom instruction, student management, discipline, and overall time management were a consistent struggle for preservice teachers. However, the ability to acknowledge and communicate with mentors about these struggles was noted as a powerful tool that should be used by all reflective practitioners (Fritz & Miller, 2003).

While the preservice teachers' experiences and perceptions have been shown as impactful on their decision to continue into the profession, the relationship between cooperating teacher and student teacher is vital to a positive apprentice experience (Edgar et al., 2011; Edwards & Briers, 2001; Roberts, 2006a; Smalley et al., 2015). Edgar et al. (2011) reported that communication and feedback within the student and cooperating teacher relationship influenced preservice teachers' teaching self-efficacy. As cooperating teacher evaluation and feedback is a large piece of the experience, this element is of particular importance for a positive overall experience. Further, it is essential to understand cooperating teachers' views related to what is seen as important experiences during the student teaching experience. Edwards and Briers (2001) noted that classroom and laboratory instruction, student-centered reinforcement techniques, and a preservice teacher willing to be monitored and receive feedback as important elements of the experience. Similarly, instructional design and planning, teaching practices, and professionalism were all perceived as very relevant to the experience by cooperating teachers (Smalley et al., 2015).

As previously stated, cooperating teachers serve as a model of an effective and master teacher. Cooperating teachers should guide and help develop the preservice teacher throughout the student teaching experience informally through the interpersonal relationship and formally through frequent evaluation and structured feedback (Miller & Wilson, 2010). Micro-experiences within the total experience can positively influence preservice teachers' decision to teach (Doss et al., 2020; McKim & Velez, 2017). However, while the student teaching experience is intended as a period of growth and development for the preservice teacher, the change in school-based agricultural education (SBAE) preservice teachers' performance as evaluated through the eyes of the cooperating teacher has been overlooked and, thus, is the focus of this study.

Conceptual Framework

The student teaching experience is an integral part of agricultural education at all levels (Miller & Wilson, 2010). Real-life, concrete experiences provide a foundation for learning to reflect on experiences, understand different perspectives, and apply information to new and unique situations. Preservice teachers are provided an authentic experiential learning opportunity through their student teaching experience (Miller & Wilson, 2010). This study was framed using the theory of experiential learning. Experiential learning is a process by which one's experiences are transformed into learning (Dewey, 1938; Kolb, 1984, 2015). New experiences and how one makes meaning of them are often influenced by one's former experiences and are subject to further influence by the environment in which they occur (Dewey, 1958). Further, Dewey (1958) offered, "experience is already overlaid and saturated with the products of the reflection of past generations and by-gone ages" (p. 40). In order to learn from experience and transfer knowledge to future situations, it is necessary to process experience through reflection (Dewey, 1938). Joplin (1981) concurred that experiential learning was indeed a process and hypothesized it was cyclical with five stages: (a) focus, (b) challenging action, (c) support, (d) feedback, and (e) debrief. The process is viewed as cyclical due to its continuality, where when one iteration of the process ends, the next begins (Joplin, 1981).

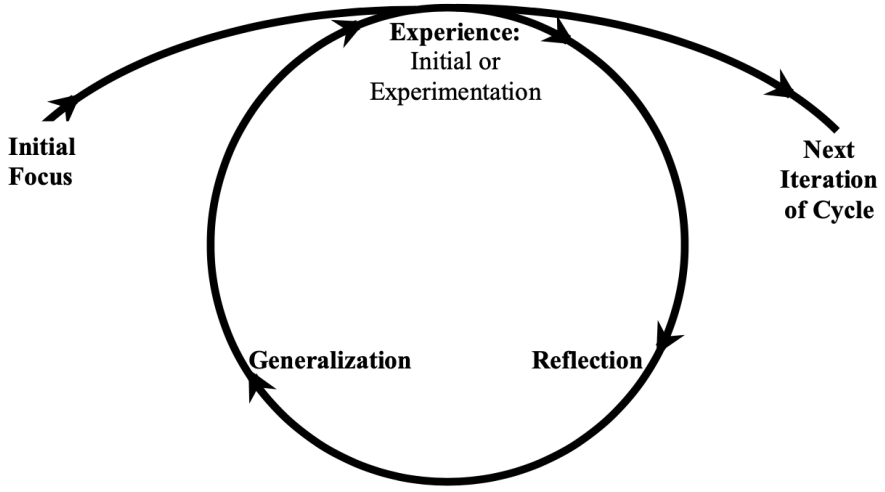
Kolb's (1984) model of the experiential learning theory (ELT) also reflects the cyclical process through two modes of grasping knowledge (concrete experience and abstract conceptualization) and two modes of transforming knowledge (reflective observation and active experimentation). While learners must interact with all four modes of the cycle for learning to have occurred, the learning process may commence at any of the four modes (Kolb, 1984). Kolb (2015) purported that the 1984 model simplifies the learning cycle into just four modes, although experiential learning is rather complex. Experiential learning does not occur as a lone process and is subject to the historical, cultural, and social contexts in which it occurs. Further, the experience itself is not always pure or isolated. Instead,

experience should be viewed as an ongoing learning spiral connected to one's past and future experiences (Kolb, 2015).

Roberts (2006b) proposed a model of experiential learning in which learners begin with an initial focus or prior knowledge, followed by an initial experience, reflection, generalization, and experimentation. The model continues with the next iteration of the cycle to showcase experiential learning as an ongoing process in which one's learning experiences are connected to previous and future knowledge and experiences (Roberts, 2006b). The experiential learning cycle can occur at both a macro and micro-level (Knowles et al., 2015). In the context of this study, the entire 14-week student teaching experience can be viewed as a single macro-level experience. However, each individual week of the student teaching semester at the micro-level is its own experience within the grander learning experience.

Figure 1

Roberts' (2006b) Model of the Experiential Learning Process



Purpose and Objectives

The purpose of this study was to examine the change of preservice teachers' performance over time during the student teaching experience. Two research objectives guided this study:

1. Describe preservice teachers' performance scores over the 14-week student teaching experience.
2. Examine the variance in preservice teachers' performance scores over the 14-week student teaching experience using linear mixed modeling.

Methods

This longitudinal study consisted of a census of all agricultural education preservice teachers (N = 81) enrolled in the student teaching placement at the University of Florida during the spring semesters of 2015 through 2019. However, 22 preservice teachers were removed from the study due to frame error (i.e., corrupted files and missing hard copies of portfolios). Thus, 59 preservice teachers

remained in the study to be analyzed. Ninety percent of the participants were White, 7% were Hispanic, and 3% were Black. Most of the sample (76%) was female.

All student teachers successfully completed their 14-week student teaching experience at their placement site in a public-school setting in Florida. As part of their student teaching experience, each preservice teacher was charged with completing an electronic student teaching portfolio to be turned in after the 14-week experience. The required electronic portfolio consisted of 12 elements: (a) pre-placement experiences, (b) teaching calendar, (c) placement experiences, (d) clock hour worksheet, (e) weekly reflection journal, (f) SAE visits, (g) case study, (h) mock interview, (i) weekly lesson plans, (j) weekly self-evaluation forms, (k) weekly cooperating teacher evaluation forms, and (l) university supervisor evaluation forms. The weekly preservice teacher evaluation instrument was examined over the 14-week student teaching experience for all preservice teachers included in the study. The cooperating (supervising) teachers were asked to provide written ratings and verbal feedback to the preservice teacher every week using the university faculty designed instrument.

Instrumentation

The instrument used to evaluate the preservice teachers was adapted from the Florida Educator Accomplished Practices (FEAPs), which are standards developed by the Florida Department of Education (Florida Department of Education, n.d.). The FEAP standards are used to measure the performance of in-service educators in Florida. University teacher education faculty from the Department of Agricultural Education and Communiation adapted the FEAPs into an instrument for a preservice teacher weekly performance assessment. Therefore, there was a need to measure if latent constructs existed within the modified preservice teacher performance assessment. Individual items were selected to construct an index to measure said constructs (Kumar Chaudhary & Israel, 2015). The modified instrument had 26 items. One item, develops learning experiences that require students to demonstrate skills and competencies, was removed because more than half (52.9%) of the data were missing. The 25 remaining items measured five latent constructs: (a) instructional design (five items), (b) instructional practice (six items), (c) student-centered teaching (four items), (d), teacher professionalism (five items), and (e) reflective and autonomous practitioner (five items; see Table 2).

Reliability analysis was conducted to check the internal consistency of each construct's items using Cronbach's alpha. All five constructs exceeded the ideal alpha coefficient recommended by DeVellis (2012) of .7; thus, the items were deemed reliable (Table 1). Because the instrument was modified significantly, exploratory factor analysis (EFA) using principal axis factoring was used to analyze the relationship between variables (Floyd & Widaman, 1995). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was utilized to assess the suitability of the data for factor analysis. Results were inspected for a value of .6 or above (Kaiser, 1970, 1974). Further, Bartlett's Test of Sphericity was assessed for significance ($p \leq .05$; Bartlett, 1954). The KMO Measure of Sampling Adequacy and Bartlett's Test of Sphericity are reported in Table 1.

Table 1

Cronbach's Alpha, KMO Measure of Sampling Adequacy, and Bartlett's Test of Sphericity for Factors of the Weekly Preservice Teacher Evaluation

Construct	Cronbach's Alpha	KMO Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
			Approx. Chi-Square	*df*	*p*-value
Instructional design	.88	.83	2149.00	10	.00
Instructional practice	.88	.89	2533.98	15	.00
Student-centered teaching	.81	.79	1080.75	6	.00
Teacher professionalism	.81	.77	1563.99	10	.00
Reflective and autonomous practitioner	.84	.79	1784.77	10	.00

Based on Kaiser's (1970) criteria, factor loadings with eigenvalues of one or more should be retained. All factors, with eigenvalues greater than one, and the total common variance explained, are listed in Table 2. The communalities of a factor are measures of the proportion of common variance (Field, 2018). The factor loadings were strong, and the range of values is reported in Table 2. The mean values of the factors' commonalities are as follows: (a) instructional design (M = .59), (b) instructional practice (M = .57), (c) student-centered teaching (M = .53), (d) teacher professionalism (M = .48), (e) reflective and autonomous practitioner (M = .53).

Table 2

Eigenvalues, Percent of Variance, Factor Loadings, and Communalities for Factors of the Weekly Preservice Teacher Evaluation

Factor 1: Instructional Design	Eigenvalue	% of Variance
	2.95	58.98
Item	Factor Loading	Communalities
Designs instruction for students to achieve mastery	.87	.46
Selects appropriate formative assessments to monitor learning	.79	.55
Uses diagnostic student data to plan lessons	.74	.76
Sequences lessons and concepts to ensure coherence and required prior knowledge	.74	.63

Table 2

Eigenvalues, Percent of Variance, Factor Loadings, and Communalities for Factors of the Weekly Preservice Teacher Evaluation, Continued…

Aligns instruction with state-adopted standards at the appropriate level of rigor	.68	.55
Factor 2: Instructional Practice	Eigenvalue	% of Variance
	3.44	57.28
Item	Factor Loading	Communalities
Organizes, allocates, and manages the resources of time, space and attention	.81	.67
Establishes and maintains rapport with students	.70	.48
Communicates challenging learning expectations to each student	.79	.63
Establishes and maintains consistent standards of classroom behavior	.81	.66
Makes the physical environment as safe and conducive as possible	.59	.35
Uses instructional time effectively	.81	.65
Factor 3: Student-Centered Teaching	Eigenvalue	% of Variance
	2.10	52.50
Item	Factor Loading	Communalities
Makes learning goals and instructional procedures clear to students	.74	.55
Makes content comprehensible to students	.62	.38
Encourages students to extend their thinking	.75	.57
Monitors students' understanding through a variety of means, providing feedback to students to assist learning, and adjusting learning activities as the situation demands	.78	.60
Factor 4: Teacher Professionalism	Eigenvalue	% of Variance
	2.42	48.37
Item	Factor Loading	Communalities
Builds professional relationships with colleagues to share teaching insights to coordinate learning activities for students	.65	.42
Communicates with parents or guardians about student learning	.62	.38

Table 2

Eigenvalues, Percent of Variance, Factor Loadings, and Communalities for Factors of the Weekly Preservice Teacher Evaluation, Continued…

Is punctual, uses mature judgement, provides accurate reports and records (professional responsibility)	.75	.56
Presents a professional appearance in dress, grooming, attitude, and demeanor	.67	.45
Professional behavior is consistent with the Code of Ethics & Principles of Professional Conduct of the Education Professionals in Florida	.78	.61
Factor 5: Reflective and Autonomous Practitioner	Eigenvalue	% of Variance
	2.64	52.83
Item	Factor Loading	Communalities
Reflects on the extent to which learning goals were met	.64	.41
Demonstrates a sense of efficacy	.64	.41
Demonstrates enthusiasm for teaching	.71	.51
Demonstrates responsiveness to supervision (ability to accept constructive criticism and incorporate suggestions into teaching performance)	.78	.61
Demonstrates initiative and self-reliance	.85	.71

Data Analysis

All data were analyzed using SPSS version 26. Three elements of the student teaching portfolio were included in this dataset: (a) the weekly clock hour worksheet, (b) the weekly self-evaluation forms, and (c) the weekly cooperating teacher evaluation forms. The data were analyzed for the distribution of missingness (Schafer & Graham, 2002), and 37.44% (n = 19,482) of the values were missing at random. The proportion of missing data was considered to be relatively large (Schafer, 1999). Therefore, multiple imputation was conducted to address the missing values. Using the pooled results from the analysis of ten multiply imputed data sets, descriptive statistics (mean, standard deviation, frequency, and percentage) were used to describe the preservice teacher population and to accomplish objective one.

A longitudinal linear mixed model procedure was conducted on this nested data (i.e., within and between subjects) was used to address objective two. This method is appropriate for data where a substantial proportion of the variance occurs between subjects (i.e., preservice teachers) as well as within teachers (Singer & Willett, 2003). In the case of the preservice teachers in this study, the between subject variance (or Intracorrelation Coefficient) for the five constructs ranged from .274 to .378. The linear mixed model was used to estimate (a) the fixed effect of time for the repeated measures for each preservice teacher and (b) the variance components for performance score over the 14-week internship (Field, 2018; Fitzmaurice & Ravichandran, 2008). This procedure was conducted for each of the five constructs. Assumptions of independence and homogeneity of variance were met as a function of the statistical procedure (Fitzmaurice & Ravichandran, 2008).

Limitations

It should be noted that the amount of data that were missing was relatively large (37.44%), and this is a limitation of the study. However, this was likely due to the nature of the student teaching experience. Preservice teachers may have missed days during the semester for several reasons (i.e., observation days, spring break or other holidays, sick days, etc.), which resulted in evaluations that were not recorded on such days.

Results

To describe preservice teachers' performance scores over the 14-week student teaching experience (objective one) means and standard deviations for each construct are reported in Table 3. For *instructional design*, the four weeks with the highest mean scores were week 14, week 12, week 11, and week 10. The weeks with the two lowest mean scores included week two and week one. Regarding *instructional practice*, the two weeks with the highest means were weeks 12 and week 14. Weeks 10, 11, and 13 shared the third highest mean score with slightly varying standard deviations. The two weeks with the lowest mean scores were weeks two and week four.

As for *student-centered teaching*, the three weeks with the highest means included week 14, week 12, and week 11. Week one and week two had the lowest mean scores. Concerning *teacher professionalism*, week 13, week 14, and week 12 were the three highest means. The weeks with the lowest two means were week two and week one. Lastly, for the construct of *reflective and autonomous practitioner*, the three weeks with the highest means included week 14, week 12, and week 13. The two lowest mean scores were in week two and week 1. Each construct's mean evaluation scores were plotted over the 14-week student teaching experience, displayed in Figure 2. There was an upward trend with the mean scores over the 14-week placement across each construct. The week one scores ranged from 2.54 to 3.03, and the week 14 scores ranged from 3.13 to 3.45. Two constructs, *teacher professionalism* and *reflective and autonomous practitioner*, had consistently higher scores across the 14 weeks than the other constructs.

Table 3

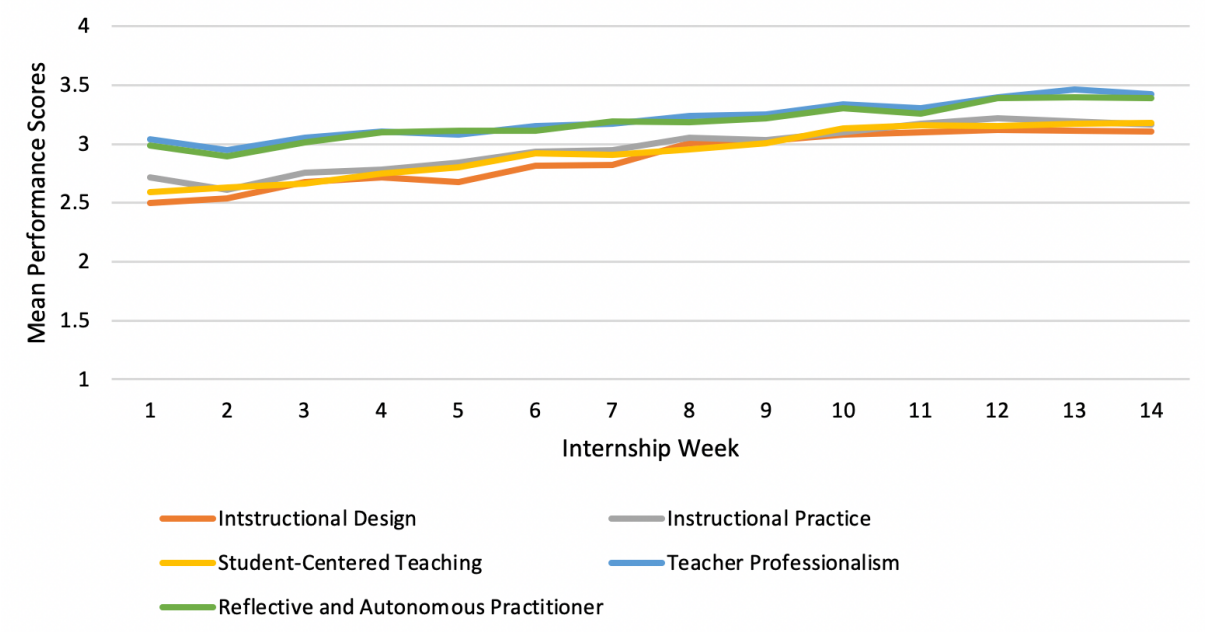
Construct Means and Standard Deviations over the 14-Week Student Teaching Experience

Week	ID		IP		SC		TP		RA	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
One	2.54	0.52	2.82	0.54	2.61	0.51	3.03	0.54	2.99	0.49
Two	2.53	0.54	2.65	0.55	2.68	0.59	2.90	0.55	2.85	0.54
Three	2.69	0.56	2.80	0.55	2.69	0.51	3.11	0.49	3.06	0.55
Four	2.74	0.57	2.76	0.54	2.73	0.55	3.08	0.51	3.12	0.53
Five	2.62	0.53	2.86	0.57	2.79	0.55	3.08	0.53	3.13	0.53
Six	2.84	0.59	2.94	0.58	2.93	0.57	3.17	0.50	3.13	0.54
Seven	2.83	0.57	2.95	0.55	2.92	0.51	3.18	0.54	3.22	0.47
Eight	3.00	0.51	3.04	0.52	2.93	0.46	3.21	0.46	3.14	0.45
Nine	2.94	0.52	3.01	0.55	3.02	0.47	3.24	0.46	3.27	0.46
Ten	3.09	0.51	3.13	0.51	3.14	0.51	3.28	0.52	3.29	0.49
Eleven	3.09	0.51	3.13	0.51	3.18	0.51	3.34	0.52	3.30	0.46
Twelve	3.13	0.52	3.21	0.51	3.18	0.53	3.41	0.51	3.41	0.47
Thirteen	3.04	0.57	3.13	0.56	3.13	0.59	3.55	0.44	3.38	0.45
Fourteen	3.13	0.52	3.17	0.58	3.19	0.55	3.45	0.46	3.42	0.42

Note. ID = instructional design; IP = instructional practice; SC = student-centered teaching; TP = teacher professionalism; RA = reflective and autonomous practitioner.

Figure 2

Cooperating Teacher Mean Evaluation Scores by Construct over the 14-Week Student Teaching Experience



Results from the longitudinal linear mixed model procedure are presented in Table 4. The fitted model shows a positive and significant ($p < .001$) linear trend over the 14-week internship for each of the five construct areas. Intercepts ranged from 2.469 to 2.938, and slopes, as a function of time in weeks, ranged from .036 to .051. The slope parameter estimates translate into the following growth in performance rating: *instructional design* (28%), *instructional practice* (23.6%), *student-centered teaching* (26.3%), *teacher professionalism* (16.9%), *reflective and autonomous practitioner* (17.1%). Measurements of model fit were strong with explained residual variance attributed to time (in weeks) ranging from 26.1% to 32.8%.

Table 4

Summary of Results of the Longitudinal Linear Mixed Model

	Instructional Design	Instructional Practice	Student Centered Teaching	Teacher Professionalism	Reflective and Autonomous
			Fixed Effects		
Intercept	2.496***	2.629***	2.560***	2.938***	2.918***
Time (in weeks)	.051***	.045***	.049***	.036***	.036***
			Variance Components		
Residual variance	.163***	.156***	.153***	.122***	.126***
Intercept variance	.214***	.251***	.211***	.230***	.220***
Intercept * time covariance	-.015**	-.018**	-.013**	-.014**	-.013**
Time variance	.002***	.002***	.002***	.002***	.001***
			Model Fit		
Reduction in residual variance of intercept-only model	32.8%	32.4%	32.0%	29.1%	26.1%
Intraclass Correlation Coefficient	.274	.300	.301	.378	.361

Note. Significant at $^{**}p < .01$, $^{***}p < .001$

Conclusions and Discussion

This research provides four important implications for the agricultural education profession. Some findings affirm our profession's widely held beliefs regarding the effectiveness of the student teaching experience and other findings contribute to the body of knowledge regarding how we implement and measure student teachers' experiences. First, the positive and significant linear trend over the 14-week placement indicated a clear pattern of growth among preservice teachers in the areas of *instructional design*, *instructional practice*, *student-centered teaching*, *teacher professionalism*, and *reflective and autonomous practitioner*. Therefore, this trend supports the notion that student teaching is an effective experience for preservice teacher growth and development across all five constructs. Second, while it is expected that student teachers would experience growth and development over the capstone experience, this research outlines the five specific constructs in which growth occurred. Consistent with previous research, the student teaching experience is an essential piece of teacher development, adding to preservice teachers' knowledge, practice, and self-efficacy (Edgar et al., 2011; Harlin et al., 2002; McKim & Velez, 2018; Miller & Wilson, 2010; Sorensen et al., 2018). Further, these results support the sentiments by Dewey (1938) and Kolb (1984) that experiences alone are not enough to constitute learning. Instead, experiential learning is an ongoing process in which experiences are transformed into knowledge (Joplin, 1981; Kolb, 1984; Roberts, 2006b). During the macro-level,

14-week experience, preservice teachers are continually cycling through iterations of the experiential learning process at the micro-level (i.e., each week, each day, each class period, or even each learning objective they teach). Through each experience, preservice teachers have opportunities to reflect, conceptualize, and try again (experimentation), all of which can contribute to their knowledge, growth, and development as a practitioner.

Third, while preservice teachers experienced significant growth during student teaching, the pattern in which growth occurred is equally informative. Interestingly, the areas of *instructional design*, *instructional practice*, and *student-centered teaching* had the largest level of growth over the 14-week experience. These pedagogically skill-based areas had the lowest initial mean scores in week one, which left larger margins for growth and development throughout the experience. Sorensen et al. (2018) noted that preservice teachers relayed fewer concerns about their professional identities, lesson planning, and classroom management in the early phases of the experience, indicating similar growth patterns. Perhaps, the lower initial scores can be attributed to the nature of the experience where preservice teachers likely spent the first few weeks in more of an observation role and less of a performance role. Connected to Kolb's (1984, 2015) experiential learning model, preservice teachers' experience as an observer would lead them to reflect, conceptualize, and ultimately experiment in later weeks within their own pedagogical practices. In subsequent weeks following observation, preservice teachers continued to show growth and development in these areas over time. As such, cooperating teachers have ranked items within instructional design as a highly important element of the student teaching experience (Edwards & Briers, 2001). While there was significant growth in *teacher professionalism* and *reflective and autonomous practitioners*, these soft-skill areas had the highest initial mean scores, leaving a smaller margin of potential growth, unlike the previously mentioned areas. Again, this might be a result of time in observation mode rather than performance. However, preservice teachers had likely developed characteristics of professionalism and autonomy during their undergraduate coursework before the student teaching experience. The student teaching experience could simply have been a new context to transfer those previously developed soft skills. This aligns directly with the notion that all experiences result from previous experiences, and even new experiences are already saturated with previous knowledge and learning (Dewey, 1958; Kolb, 1984).

Lastly, it is crucial to recognize that preservice teachers' growth in all five areas was measured with reliable instrumentation. The reliability of the modified instrument was tested and confirmed as part of this study. This instrument could be used as a tool across the profession to reliably measure preservice teachers' performance during the student teaching experience.

Recommendations

Recommendations for Practice

Based on this study's conclusions, it is evident that the student teaching experience is a valuable macro-level experience that provides a plethora of beneficial micro-level experiences. It is recommended that teacher educators continue to provide preservice teachers with the opportunity to participate in the immersive student teacher experience for a *prolonged* period. As demonstrated in this study, *time in experience* is a key attribute to preservice teachers' growth and development as professional educators. Additionally, it is recommended that evaluations be conducted regularly throughout the experience. In this study, evaluations were conducted weekly to examine preservice teachers' growth and development. However, as noted in the limitations of the study, missing evaluations were an issue. This is likely due to the nature of the experience (i.e., observation days, spring break or other holidays, sick days, etc.), and the numerous evaluation collection points. Therefore, it is recommended that formal evaluations be conducted bi-weekly versus weekly to prevent evaluator fatigue and allow for days not at school. This practice might result in a more accurate

examination of preservice teacher growth and development while engaged in the student teaching experience.

Further, it is recommended that face-to-face verbal feedback conversations continue to occur during the formal evaluation process to discuss scores and performance. Frequent two–way communication between the preservice teacher and cooperating teacher has been observed as beneficial to the preservice teacher's overall experience and growth (Edgar et al., 2011; Fritz and Miller, 2003). Lastly, the modified instrument used to evaluate preservice teachers in this study was effective and reliable in measuring the five identified construct areas. This instrument should continue to be used as a tool to provide consistent feedback from the cooperating teacher and to measure preservice teachers' overall growth and development. However, it is recommended that the original 4-point scale be reevaluated to allow for more variance (i.e., 4-point scale versus 6-point scale) and a more thorough evaluation of growth and development.

Recommendations for Research

This study analyzed preservice teacher performance as evaluated by the cooperating teacher. Cooperating teachers are often selected as mentors due to their high level of experience and knowledge. Future research should continue to include their perspective as a measure of preservice teacher growth and development. While the cooperating teachers may serve as expert evaluators, this should not discount the preservice teacher's perspective. Therefore, future research should also include the preservice teacher's self-evaluation of their performance.

Further, this study only considered time (in weeks) as a predictor variable for preservice teacher performance. As variance component estimates were significant, additional predictors such as gender, cohort year, preservice teacher time allocation, among others, could help explain changes over time within and between preservice teachers. Lastly, while this study was purely quantitative, valuable qualitative data sources within the student teaching portfolio could also be analyzed. Although this study identified *where* growth happened, data sources such as student journals and reflections could help identify *how* or *why* growth occurred.

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