Comparison of Preservice Teachers' Time Allocation and Performance Evaluations while Student Teaching: An Exploratory Study

Abstract

Student teachers' experiences during their internship are crucial in their development as a teacher. In agricultural teacher education programs, it is common for student teachers to record where their time is allocated each week on categorized timesheets. The purpose of this study was to examine the preservice teachers' performance over the 14-week student teaching experience and how their performance was affected based on their weekly allocation of time. It was found that hours spent on observation had a small, positive effect on teacher professionalism and reflective and autonomous practitioner performance constructs. In addition, hours logged for direct student contact had a small positive effect on the reflective and autonomous practitioner construct. However, the measures of model fit suggest that these effects were trivial. Time allocations were excessive and sporadic. Therefore, discussion regarding the expectations of appropriate thresholds and distributions of time for student teachers and trainings on time management strategies should be conducted across the profession. Additionally, continued research should be conducted on student teachers' time allocation and its effect on their performance.

Keywords: Student teachers; preservice teachers; time allocation; teacher professionalism; reflective and autonomous practitioner; student teaching experience; observation

Introduction & Literature Review

The student teaching experience is one of the most critical factors in determining a preservice teacher's decision to enter a teaching career or another profession (Stewart et al., 2017). These experiences as a student teacher during their internship are crucial in their development as a professional educator (Schumann, 1969). Due to high demands, coupled with high attrition rates, for agricultural educators, there is an even greater need to explore the early experiences of preservice teachers and how this might affect their observed performance (Retallick & Miller, 2007; Roberts & Ball, 2009; Smith et al., 2017). Determining how student teachers allocate their time can help teacher preparation programs better communicate internship expectations and best practices before the internship experience begins (Torres & Ulmer, 2007).

Although specific experiences during student teaching vary, a central function of internship experiences is to prepare future teachers for an ever-changing career (National Research Council, 1988; McGhee & Cheek, 1990). Agricultural teacher education programs typically provide student teaching handbooks that outline required skills and activities meant to provide the most well-rounded field experience for well-prepared future teachers. Activities and skills generally focus on the areas such as planning instruction, evaluation of student performance, and school/community relationships (Smalley et al., 2015). These categories align with previous studies that have explored student teachers' and cooperating teachers' perceptions of the essential elements of student teaching (Covington & Dobbins, 2004; Edwards & Briers, 2001; Harlin et al., 2002). The use of categorized time sheets is a common practice that allows teacher education programs to see where student teachers are allocating their time during each week of their field experience (Torres et al., 2008). Student teachers have been found to

spend most of their time in classroom or laboratory instruction (Edwards & Briers, 2001; Smalley et al., 2015). However, the job of the agricultural educator expands beyond the confines of the classroom.

Time management has been noted as a particularly challenging portion of the student teaching experiences, specifically balancing FFA, SAEs, and lesson planning (Fritz & Mantooth, 2005). It has also been found that student teachers and first-year teachers distribute their time in similar ways (Torres et al., 2008), indicating time management practices from the student teaching experience carry into inservice teaching. Further, as more positive perceptions of time management correlate with lower feelings of stress, time management should be of particular concern for teacher preparation programs as student teacher are prepared to enter the field (Lambert et al., 2011; Lambert et al., 2012). The need for time management and balance is accentuated by the fact that feeling overworked is a reason why agricultural educators leave the profession (Murray et al., 2011). When looking at the balance between career and family, Murray et al. (2011) found that Georgia agriculture teachers spent an average of 57 hours per week on their job, with a single FFA event counting for as much as 30 hours.

Torres and Ulmer (2007) reviewed time allocation of student teacher experiences and organized the time spent within five specific teaching roles: (1) observation, (2) planning, (3) teaching, (4) teaching-related activities, and (5) administrative-related activities. Results revealed that eight percent of the student teachers' time was spent observing, 26% spent on planning, 25% on teaching, 34% on teaching activities, and six percent on administrative activities (Torres & Ulmer, 2007). The data were divided into five three-week intervals. Within the first three-week time interval, preservice teachers who spent two and a half hours more observing their cooperating teacher were also the ones who received an A in the class when compared to the time spent observed of those who received an A- or below. Alternatively, student teachers who received a grade of "A" spent less time teaching in the beginning weeks than those with lower scores, and those with lower scores spent more time planning than those who received an "A." Torres and Ulmer (2007) concluded, however, that the allocation of time failed to have predictability on student teacher's performance grade (Torres & Ulmer, 2007). Students who scored marginally higher spent more time in the beginning of their internship observing their cooperating teacher and were more immersed in administrative duties (Torres et al., 2007). These results are especially interesting when paired with the finding by Krysher et al. (2015) that teachers who believe themselves to be effective teachers reported more time in school activities, while student teachers who believed they had more to learn reported more time in activities outside of school.

Student teaching experiences allow preservice teachers to practice managing their time effectively, potentially making them more effective and less-stressed teachers in the future (Covington & Dobbins, 2004). As a result of previous findings, researchers have suggested the continued need to delve deeper into time allocation and the observed performance of student teachers while engaged in the student teaching experience (Krysher et al., 2015; Lambert et al., 2012; Murray et al., 2011; Torres & Ulmer, 2007). While there is existing literature regarding student teachers' time allocation and performance, there is a gap in literature in the agricultural education discipline that utilizes statistical modeling to make inferences on the phenomenon. Therefore, this exploratory study aims to further investigate time allocation and performance of student teachers through statistical modeling.

Conceptual Framework

This study was framed using two complementary theories: self-efficacy (Bandura, 1997) and experiential learning (Kolb, 1984). Self-efficacy has been touted as a predictor of success in many areas, including teaching (Bandura, 1995). Teacher self-efficacy is developed through four different types of experiences: (1) mastery experiences, (2) vicarious experiences, (3) social persuasion, and (4)

physiological and emotional states (Bandura 1977, 1986). More precisely, teacher self-efficacy is a teacher's belief that they can produce student learning (Tschannen-Moran & Hoy, 2001). In the student teaching experience, student teachers engage in vicarious experience by observing the cooperating teacher. Vicarious experience entails observing someone who is performing a task and is most effective when the observer watches someone who is like them (Bandura, 1986). Mastery experiences include the successful completion of a specific task (Bandura, 1986). In the case of student teaching, this could include several different tasks, but most often observed by the cooperating teacher would be the successful delivery of lessons. Social persuasion is being told that you can indeed complete a specific task. The fourth, and final type of experience that can influence self-efficacy, includes the responses that our body emits (i.e., shaky voice, increased sweating) from the perception that they can or cannot complete a task (McKim & Velez, 2016).

Building self-efficacy through all four varieties of self-efficacy experiences is vital in strengthening the self-efficacy of student teachers as they enter their beginning years of teaching (McKim & Velez, 2017). These experiences help to develop the perceptions of the student teachers, based on how these factors affect their teaching (Krysher et al., 2015). Bandura (1986, 1997) postulated that the time in vicarious learning experiences provides opportunities for reflection, which helps the learner to strengthen their understanding and skill toward mastery experiences. Teaching efficacy affects behavior and is determined by the belief that student teachers can or cannot accomplish the task of instructing students in a positive learning environment (Tschannen-Moran & Hoy, 2001). To build upon previous experiences, learners reflect upon their observations and performance and form generalizations that inform their future practice (Kolb, 1984). The time spent by student teachers provides a framework for understanding where their experience has been focused and how this time invested might be reflected in weekly observations by the cooperating teacher. Various types of experiences help to build self-efficacy of learners (Bandura, 1995). Previous research has shown that self-efficacy and career commitment have been positively associated (Knobloch & Whittington, 2003; McKim & Velez, 2016).

Mastery experiences are most influential in increasing self-efficacy (Bandura 1986, 1997). To develop self-efficacy through a mastery experience, the experiential learning environment of the student teaching internship provides preservice teachers the avenue to grow their skillset in an authentic setting (Knobloch, 2003). Kolb's (1984) experiential learning theory describes four learning modes: active experimentation, reflective observation, concrete experience, and abstract conceptualization. To have the opportunity to remove the proverbial training wheels and learn by doing, student teachers have the real-life experience of their capstone student teaching internship (Cullingford, 1990; Mabie & Baker, 1996). One of the most impactful pieces of the student teaching experience is the relationship and influence of the cooperating teacher (Harlin et al., 2002; Kasperbauer & Roberts, 2007; Smalley & Retallick, 2012). This relationship, and the legitimacy given to student teachers by their cooperating teacher, can have lasting effects on the student teacher and their future practice (Cuenca, 2011). Time invested in learning experiences as a student teacher should translate into being better prepared for a career as an agricultural educator. Student teaching allows for the application of experiential learning theory through concrete experiences that involve interactions related to all four experiences that have been known to build self-efficacy (Roberts et al., 2006).

Purpose and Objectives

The purpose of this study was to examine the preservice teachers' performance over the 14-week student teaching experience and how their performance was affected based on their weekly allocation of time. This study is part of a larger study by (Coleman et al., 2021); however, this study

expands upon the previous work by also including the preservice teachers' allocation of time as a predictor of performance. Three research objectives guided this study:

1. Describe the preservice teachers' performance scores and their allocation of time (in hours) over the 14-week student teaching experience.
2. Using statistical modeling, examine the effect of preservice teachers' time allocation (in hours) on their performance scores over a 14-week student teaching experience.
3. Using model fit statistics, determine the best longitudinal linear model, either the performance by week model (Coleman et al., 2021) or the performance by week and time allocation model, for predicting preservice teachers' performance scores over time.

Methods

This study was part of a large-scale study (Coleman et al., 2021). This longitudinal study consisted of a census of all agricultural education preservice teachers ($N = 81$) enrolled in the student teaching internship 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. Most preservice teachers were white (90%), with 7% Hispanic and 3% Black. Seventy-six percent of the sample were female, and 24% were male.

The preservice teachers all successfully completed their 14-week student teaching internship experience at their placement site in a public-school setting in Florida. As part of their student teaching internship 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, which included: (a) pre-internship experiences, (b) teaching calendar, (c) internship experiences, (d) clock hour worksheets, (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. For this study specifically, clock hour worksheets and cooperating teacher evaluation forms over the 14-week student teaching internship experience for all preservice teachers between the years 2015-2019 were examined. Preservice teachers were asked to indicate their hourly time allocation each day, then total their weekly time allocation in seven different areas for each week during the 14-week internship. The cooperating teachers were then asked to evaluate the preservice teacher using a cooperating teacher evaluation form administered once weekly over the 14-week internship.

Instruments

The weekly clock hour sheets consisted of seven areas: (a) *direct student contact*, (b) *observations*, (c) *other teaching duties*, (d) *preparation*, (e) *conferences*, (f) *professional meetings*, (g) *other*. *Direct student contact* included teaching individual students, student small group interactions, and entire class interactions in which the preservice teacher spent time engaged. *Observations* encompassed time spent observing the cooperating teacher, other teachers, and students in the learning process. *Other teaching duties* contained any time when the preservice teacher engaged in field trips, grading assignments, additional classroom assignments, and SAEs/FFA/CDEs. *Preparation* entailed time allocated to activities such as planning lessons and developing learning materials. As for *conferences*, any time the preservice teachers spent time in conversation with their cooperating teacher, university supervisor, school administration, and parents was to be included. *Professional meetings* included time spent in faculty meetings, in-service training, parent-teacher conferences, and seminars. *Other* includes any residual time.

The instrument used by the cooperating teachers to evaluate the preservice teachers was developed by the Florida Department of Education (Florida Department of Education, n.d.). This original instrument was used to measure the standardized educator practices of in-service teachers; however, it was modified by the university faculty for appropriate length and criteria for a weekly performance assessment. The modified instrument included a total of 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 loaded into five 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). An exploratory factor analysis using principal axis factoring was used to analyze the relationship between variables (Coleman et al., 2021; Floyd & Widaman, 1995). According to Kaiser's (1970) criteria, the factor loadings were deemed strong with eigenvalues one or greater (Coleman et al., 2021). Reliability analysis was conducted to ensure the internal consistency of each construct's items using Cronbach's alpha (Coleman et al., 2021). The Cronbach's alpha coefficients for each construct were: (a) instructional design = .88, (b) instructional practice = .88, (c) student-centered teaching = .81, (d) teacher professionalism = .81, and (e) reflective and autonomous practitioner = .84 (Coleman et al., 2021). According to DeVellis (2012), all five constructs were deemed reliable with alpha coefficients exceeding .7.

Data Analysis

All data were analyzed using SPSS version 27. 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), with 37.44% (n = 19,482) of the values missing at random (Coleman et al., 2021). The proportion of missing data was considered to be relatively large (Schafer, 1999); therefore, multiple imputation was conducted to address the missing values.

We calculated means for each of the five constructs (instructional design, instructional practice, student-centered teaching, teacher professionalism, and reflective and autonomous practitioner) and mean hours for each of the seven categories hours logged by the preservice teachers and obtained pooled results from the ten imputed datasets for each week. Next, a longitudinal linear mixed model procedure was conducted on this nested data (i.e., within and between subjects) to address the objectives. 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) ranged from .274 to .378. The linear mixed model was used to estimate two models. The first included (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 and the second included (a) the fixed effects of time, (b) the fixed effects of time-varying hours logged for each type of activity and (c) the variance components for performance score over the 14-week internship (Field, 2018; Fitzmaurice & Ravichandran, 2008). We examined the pooled estimate for the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) statistics, as well as the reduction in the residual variance of nested models to assess model fit (Field, 2018; Singer & Willett, 2003). AIC and BIC measures can be used for selecting the best fit model when conducting regression analyses. The value of the AIC and BIC measures is not as important to consider as the difference between the values for each model. The statistical model with the lowest value is often evidence of a superior fitted model (Field, 2018; Singer & Willett, 2003). In addition, we explored alternative specifications of nested models and various measures of the logged hours (data not reported). The analysis procedures were

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

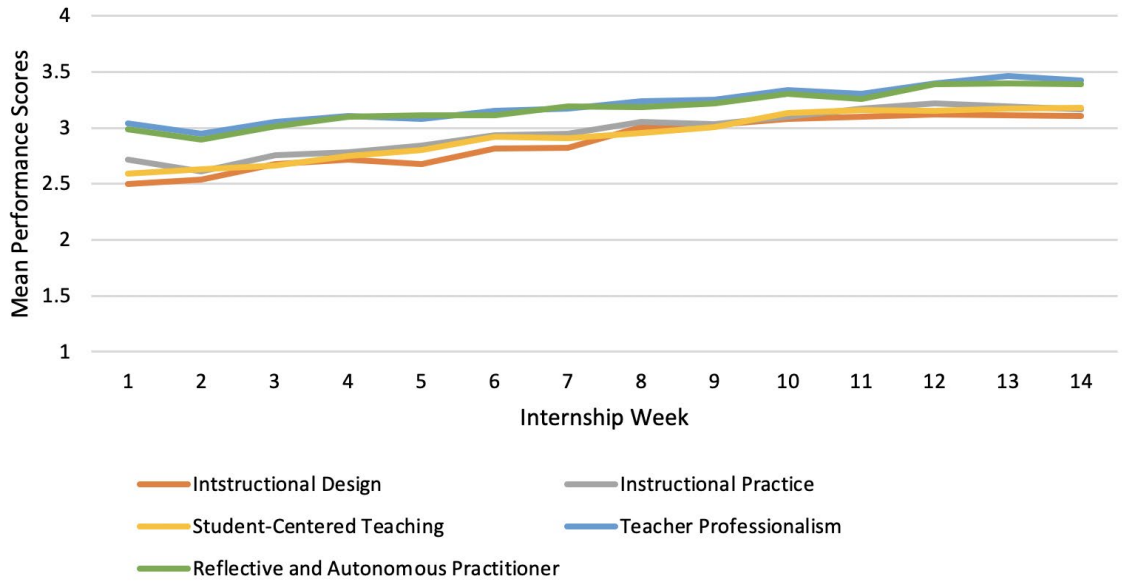
It should be noted that the amount of data that were missing was relatively large (37.44%), and this is a limitation of the study. However, this was likely due to the nature of the student teaching experience. Preservice teachers may have missed days during the semester for several reasons (i.e., observation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

Findings

As shown in Figure 1, preservice teachers demonstrated a modest increase in all five professional competencies over the 14-week period. The preservice teachers tended to be evaluated at higher levels for instructional practice and teacher professionalism than instructional design, student-centered teaching, and reflective and autonomous practitioners (Coleman et al., 2021).

Figure 1

Cooperating Teacher Mean Evaluation Scores by Construct over the 14-Week Student Teaching Experience (Coleman et al., 2021)

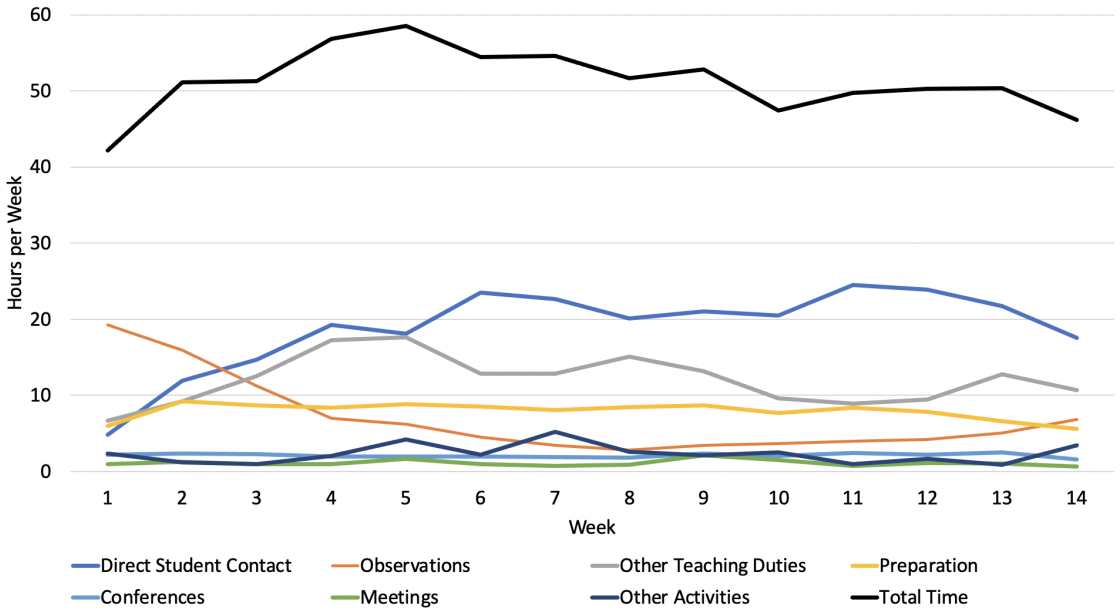


Preservice teachers reported working a weekly average of 40 to 60 hours over the 14 weeks (Figure 2). This average peaked in weeks four to six and declined slightly in the latter third of the internship period. In addition, the pattern of hours logged by type of activity varied over time. Preservice teachers logged more weekly hours for time spent on observation during the first three weeks, with the highest mean hours in week one. Hours logged for direct student contact were relatively low at the start of the internship and climbed to an average of about 20 hours per week by week four. The weekly mean for direct student contact remained fairly stable, with an average between 20 and 25 hours for week four through week 14. Average hours logged for other teaching duties showed a similar

growth pattern to that for direct student contact for the first four weeks and then declined slightly over the remainder of the internship. Overall, hours for other teaching duties comprised the second largest amount of time expended by preservice teachers after that for direct student contact. Preservice teachers logged an average of slightly fewer than 10 hours per week for preparation and there was little variation over time (Figure 2). Even fewer hours were recorded weekly for conferences, meetings, and other activities on average, and these did not vary much from week to week.

Figure 2

Mean Hours Logged by Preservice Teachers by Activity Category over the 14-Week Experience



Results from the longitudinal linear mixed model procedure are presented in Table 1. The fitted model for the fixed effect of time (Model 1; Coleman et al., 2021) 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%).

The results for the model including the fixed effects for hours logged by type of activity are shown in the lower panel of Table 1. As with model one (Coleman et al., 2021), the fixed effects of time in model two are positive and significant ($p < .001$) for each of the five construct areas. On the other hand, the time-varying measures of hours logged are generally not significant effects across all categories of activity for model two of each construct. One exception is that hours spent on observation had a small, positive effect on teacher professionalism. That is, preservice teachers who had a higher number of hours logged for observation tended to score higher than those with fewer hours in a given week. Hours of observation also had a small, positive effect on the construct of reflective and autonomous practitioner. In addition, hours logged for direct student contact had a small positive effect on the reflective and autonomous practitioner construct. Preservice teachers who had a higher number

of hours logged for observation or for direct student contact tended to be evaluated higher than those with fewer of these hours. Finally, the addition of the variables measuring hours logged for various activities resulted in a smaller residual variance in model two as compared to model one for each of the five constructs.

Table 1

Summary of Results of the Longitudinal Linear Mixed Models

	Instructional Design	Instructional Practice	Student Centered Teaching	Teacher Professionalism	Reflective and Autonomous
Model 1: Weeks only (Coleman et al., 2021)					
Fixed Effects					
Intercept	2.4958***	2.6295***	2.5597***	2.9384***	2.9179***
Time (in weeks)	.0511***	.0447***	.0492***	.0364***	.0356***
Variance Components					
Residual variance	.1633***	.1561***	.1529***	.1224***	.1258***
Intercept variance	.2141***	.2514***	.2106***	.2304***	.2203***
Intercept*Time covariance	-.0147**	-.0179**	-.0132**	-.0139**	-.0126**
Time variance	.0018***	.0022***	.0016***	.0015***	.0012***
Model 2: Weeks plus Hours by Type					
Fixed Effects					
Intercept	2.4135***	2.6043***	2.4973***	2.8496***	2.7945***
Time (in weeks)	.0512***	.0443***	.0483***	.0385***	.0364***
Direct student contact	.0027	.0020	.0021	.0028	.0042*
Observation	.0028	.0022	.0011	.0058*	.0056*
Other teaching duties	-.0006	.0015	.0015	.0004	.0008
Preparation	.0003	-.0066	-.0016	-.0041	-.0053
Conferences	.0048	.0043	.0088	.0017	.0086
Meetings	.0052	-.0030	-.0049	.0028	.0069
Other activities	.0008	.0013	.0011	.0010	.0033
Variance Components					
Residual variance	.1619***	.1545***	.1521***	.1205***	.1224***

Table Continued

Intercept variance	.2235***	.2606***	.2170***	.2339***	.2298***
Intercept*Time covariance	-.0154**	-.0185***	-.0138**	-.0138**	-.0133**
Time variance	.0019***	.0022***	.0016***	.0015**	.0013**

Note. Significant at $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Measurements of model fit for both models are presented in Table 2. While the measurements of model fit were strong with explained residual variance attributed to time (in weeks) ranging from 26.1% to 32.8% in model one (Coleman et al., 2021), the improvement in the amount of reduction in residual variance was modest for model two, ranging from 0.4% to 2.0% for the five constructs with the addition of seven predictors. Moreover, the AIC and BIC measures are larger in model two than in model one for all five constructs.

Table 2

Model Fit Statistics for Longitudinal Linear Mixed Models

	Instructional Design	Instructional Practice	Student Centered Teaching	Teacher Professionalism	Reflective and Autonomous
Model 1: Weeks only (Coleman et al., 2021)					
Reduction in residual variance[a]	32.8%	32.4%	32.0%	29.1%	26.1%
AIC	1069.063	1045.708	1017.191	854.8828	859.5506
BIC	1087.919	1064.565	1036.048	873.7392	878.4073
Model 2: Weeks plus Hours by Type					
Reduction in residual variance[a]	33.3%	33.1%	32.4%	30.1%	28.1%
AIC	1127.706	1101.789	1076.771	907.1719	904.4198
BIC	1146.529	1120.612	1095.593	925.9942	923.2423
Intraclass Correlation Coefficient	.274	.300	.301	.378	.361

Note. [a]Compared to intercept-only model

Conclusions, Discussion, and Recommendations

Objective one of this study included describing how preservice teachers allocated their time over the 14-week internship. The preservice teachers in this study logged an average of 40 to 60 hours

each week, which is comparable with the finding of Murray et al. (2011) that agriculture teachers work an average of 57 hours per week. Similar to findings by Torres et al. (2008), the time allocated by student teachers varied across activities and throughout the student teaching experience. Noting that time allocations were excessive and sporadic, along with time management strategies can reduce job-related stress in agricultural educators (Lambert et al. 2011; Lambert et al., 2012), there are two implications for supervisors of student teaching programs. First, these findings beget discussion regarding the expectations of appropriate thresholds and time distributions for student teachers. Second, it is the responsibility of program supervisors and cooperating teachers to set examples of time management. However, the findings of this study, and others (Fritz and Mantooth, 2005; Murray et al., 2011; Torres et al., 2008), showcase that time management can be challenging for cooperating and student teachers. Trainings on time management strategies for allocating suitable amounts of time should be included for cooperating teachers and student teachers before the student teaching experience.

Time allocations of the student teachers in this study were similar to those in the study conducted by Torres and Ulmer (2007). We found that the largest amount of time was allocated to direct student contact, which aligns with Torres and Ulmer's (2007) finding that the largest time was spent teaching. This also aligns with Edwards and Briers' (2001) finding that student teachers ranked direct instruction as the most critical part of the student teaching experience. Also consistent with Torres & Ulmer (2007) and most student teaching experience expectations, the proportion of time spent in observation was largest during the beginning of the internship, declined, and plateaued after the first three weeks.

Torres and Ulmer (2007) found a marginal difference in performance grade (A versus A-) for student teachers who spent more time observing at the beginning of their experience. Similarly, model two in this study displayed a statistically significant effect for observation time allocation on student performance in the constructs of teacher professionalism and reflective and autonomous practitioner. These findings align with the concept by Bandura (1986, 1995, 1997) that vicarious experiences, observation in this case, can strengthen learners' understanding and skill toward mastery experiences. Model two was also significant for the effect of time spent in direct student contact on reflective and autonomous practitioners' performance construct. However, although the parameter estimates for the fixed effects of hours logged for observation were significant in model two for two constructs and hours logged for direct student contact was significant in model two for one construct, the measures of model fit suggest that these effects are trivial. Using the fit statistics for model one as a basis of comparison, the reduction in residual variance should be larger in model two and the AIC and BIC measures should be smaller for model two to be considered a better fit of the data than model one. Despite having some significant fixed effects for observation or direct student contact hours logged, the overall model does not fit the data better than the more parsimonious model one. Further, the remainder of the time allocation variables had no significant effect on student teachers' performance, congruent with Torres and Ulmer (2007) who found time allocation data had no predictability for student teachers' performance grade.

There are some plausible reasons for the lack of statistically significant effects that arose during our data analysis that provide implications for future data collection and research projects. First, it was noticed that there were some extreme outliers with egregious amounts of time allocated to specific activities in a single week. Such outliers could be a result of two issues. The activity categories in which preservice teachers could log weekly hours were unevenly aggregated in some cases. For example, the category labeled *other teaching duties* contained time engaged in field trips, grading assignments, additional classroom assignments, and SAEs/FFA/CDEs. Reconsideration and adjustments should be made to the clock hour worksheet, so the instrument is better suited to collect more specific allocations

of student teachers' time. It may also be helpful to provide student teachers with more specific instructions and expectations for completing the clock hour worksheet. With revised instrumentation and student teachers' who are better oriented with the instrument, the elimination of egregious outliers may occur, leading to differences in variance.

Lastly, continued research should be conducted on student teachers' time allocation and its effect on their performance. It is no secret that the student teaching experience is significantly influential upon pre-service teachers' growth and development. Therefore, identifying the most appropriate allocations of time that lead to the largest amounts of growth and development will have important implications for how our profession prepares its teachers.

References

Bandura, A. (1977). *Social learning theory*. Prentice-Hall.

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

Bandura, A. (1995). *Self-efficacy in changing societies*. Cambridge University Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Coleman, B. M., Ferand, N. K., Bunch, J. C., & Israel, G. D. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. *Journal of Agricultural Education, 62*(3), 258–274. https://doi.org/10.5032/jae.2021.03258

Covington, C. A., & Dobbins, T. R. (2004). Student teaching experiences for agricultural education: A national study. *Journal of Southern Agricultural Education Research*, *54*(1), 100–112. http://www.jsaer.org/pdf/vol54Whole.pdf

Cuenca, A. (2011). The role of legitimacy in student teaching: Learning to "feel" like a teacher. *Teacher Education Quarterly, 38*(2), Spring 2011, 117–130. https://files.eric.ed.gov/fulltext/EJ926863.pdf

Cullingford, C. (1990). *The nature of learning: Children, teachers, and curriculum*. Paul Chapman.

DeVellis, R. F. (2012). *Scale development: Theory and applications* (3rd ed.). SAGE Publications.

Edwards, M. C., & Briers, G. E. (2001). Cooperating teachers' perceptions of important elements of the student teaching experience: A focus group approach with quantitative follow-up. *Journal of Agricultural Education*, *42*(3), 30–41. https://doi.org/10.5032/jae.2001.03030

Field, A. P. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

Fitzmaurice, G. M., & Ravichandran, C. (2008). A primer in longitudinal data analysis. *Circulation, 118*(19), 2005–2010. https://doi.org/10.1161/CIRCULATION AHA.107.714618

Florida Department of Education (n.d.). *The Florida educator accomplished practices (FEAPs)*. https://www.fldoe.org/teaching/professional-dev/the-fl-educator-accomplished-practices.stml

Floyd, F. J. & Widaman, K. F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment, 7*(3), 286–299. https://doi.org/10.1037/1040-3590.7.3.286

Fritz, C. A., & Mantooth, L. J. (2005). Challenges expressed by cooperating teacher mentors when working with agricultural education student teachers: A Delphi study. *NACTA Journal*, *49*(4), 51–56. https://www.jstor.org/stable/43766000

Harlin, J. F., Edwards, M. C., & Briers, G. E. (2002). A comparison of student teachers' perceptions of important elements of the student teaching experience before and after an 11-week field experience. *Journal of Agricultural Education*, *43*(3), 72–83. https://doi.org/10.5032/jae.2002.03072

Kaiser, H. (1970). A second generation Little Jiffy. *Psychometrika, 35*, 401–415. https://doi.org/10.1007/BF02291817

Kasperbauer, H. J., & Roberts, T. G. (2007). Influence of the relationship between student teacher and cooperating teacher on student teacher's decision to enter teaching. *Journal of Agricultural Education*, *48*(1), 8–19. https://doi.org/10.5032/jae.2007.01008

Knobloch, N. A. (2003). Is experiential learning authentic? *Journal of Agricultural Education*, *44*(4), 22–34. https://doi.org/10.5032/jae.2003.04022

Knobloch, N. A., & Whittington, M. S. (2003). Difference in teacher efficacy related to career commitment of novice agriculture teachers. *Journal of Career and Technical Education, 20*(1), 87–98. https://doi.org/10.21061/jcte.v20i1.625

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Krysher, S., Robinson, J. S., & Edwards, M. C. (2015). How time allocation impacts teacher efficacy of student teaching interns in agricultural education: A Q-sort study. *Journal of Agricultural Education*, *56*(2), 93–109. https://doi.org/10.5032/jae.2015.02093

Lambert, M. D., Henry, A. L., & Tummons, J. D. (2011). How do early career agriculture teachers talk about their time? *Journal of Agricultural Education*, *52*(3), 50–63. https://doi.org/10.5032/jae.2011.03050

Lambert, M. D., Torres, R. M., & Tummons, J. D. (2012). The influence of time management practices on job stress level among beginning secondary agriculture teachers. *Journal of Agricultural Education*, *53*(1), 45–56. https://doi.org/10.5032/jae.2012.01045

Mabie, R., & Baker, M. (1996). A comparison of experiential instructional strategies upon the science process skills of urban elementary youth. *Journal of Agricultural Education*, *37*(2), 1–7. https://doi.org/10.5032/jae.1996.02001

McGhee, M. B., & Cheek, J. G. (1990). Assessment of the preparation and career patterns of agriculture education graduates. *Journal of Agricultural Education*, *31*(2), 17–22. https://doi.org/10.5032/jae.1990.02017

McKim, A. J., & Velez, J. J. (2016). An evaluation of self-efficacy theory in agricultural education. *Journal of Agricultural Education*, *57*(1), 73–90. https://doi.org/10.5032/jae.2016.01073

McKim, A. J., & Velez, J. J. (2017). Developing self-efficacy: Exploring pre-service coursework, student teaching, and professional development experiences. *Journal of Agricultural Education, 58*(1), 172–185. https://doi.org/10.5032/jae.2017.01172

Murray, K., Flowers, J., Croom, B., & Wilson, B. (2011). The agricultural teacher's struggle for balance between career and family. *Journal of Agricultural Education*, *52*(2), 107–117. https://doi.org/10.5032/jae.2011.02107

National Research Council. (1988). *Understanding agriculture: New directions for education*. The National Academies Press. https://doi.org/10.17226/766.

Retallick, M. S., & Miller, G. (2007). Early field experience in agricultural education: A national descriptive study. *Journal of Agricultural Education, 48*(1), 127–138. https://doi.org/10.5032/jae.2007.01127

Roberts, T. G., & Ball, A. L. (2009). Secondary agricultural science as content and context for teaching. *Journal of Agricultural Education, 50*(1), 81–91. https://doi.org/10.5032/jae.2009.01081

Roberts, T. G., Harlin, J. F., & Ricketts, J. C. (2006). A longitudinal examination of teaching efficacy of agricultural science student teachers. *Journal of Agricultural Education*, *47*(2), 81–92. https://doi.org/10.5032/jae.2006.02081

Schafer, J. L. (1999). Multiple imputation: A primer. *Statistical Methods in Medical Research, 8*(1), 3–15. https://doi.org/10.1177/096228029900800102

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7*(2), 147–177. https://doi.org/10.1037//1082-989X.7.2.147

Schumann, H. B. (1969, January). The cooperating teacher's role in student teaching. *The Agricultural Education Magazine*, *41*(7), 156. https://www.naae.org/profdevelopment/magazine/archive_issues/Volume41/v41i7.pdf

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence.* Oxford University Press.

Smalley, S. W., & Retallick, M. S. (2012). Agricultural education early field experience through the lens of the EFE model. *Journal of Agricultural Education*, *53*(2), 99–109. https://doi.org/10.5032/jae.2012.02099

Smalley, S. W., Retallick, M. S., & Paulsen, T. H. (2015). Relevance of student teaching skills and activities from the perspective of the student teacher. *Journal of Agricultural Education*, *56*(1), 73–91. https://doi.org/10.5032/jae.2015.01073

Smith, A. R., Lawver, R. G, and Foster, D. D. (2017). National agricultural education supply and demand study, 2017 executive summary. http://aaaeonline.org/resources/Documents/NSD2017Summary.pdf

Stewart, J., Lambert, M. D., Ulmer, J. D., Witt, P. A, & Carraway, C. L. (2017). Discovering quality in teacher education: Perceptions concerning what makes an effective cooperating teacher. *Journal of Agricultural Education, 58*(1), 280–299. https://doi.org/10.5032/jae.2017.01280

Torres, R. M., Ulmer, J. D., & Aschenbrenner, M. S. (2008). Workload distribution among agriculture teachers. *Journal of Agricultural Education*, *49*(2), 75–87. https://doi.org/10.5032/jae.2008.02075

Torres, R. M., & Ulmer, J. D. (2007). An investigation of time distribution of preservice teachers while interning. *Journal of Agricultural Education*, *48*(2), 1–12. https://doi.org/10.5032/jae.2007.02001

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1