

How Programmatic Changes Impact the Lesson Plan Quality of Student Teaching Interns: A Comparison of Two Formats

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Effective teaching is a multidimensional concept that encompasses a need for instructional planning to make a positive impact on students. The purpose of this study was to determine the extent to which the student teaching format for pre-service teachers at Oklahoma State University impacted their lesson plan quality. A quasi-experimental design using a non-equivalent control group was implemented to compare student teaching formats at Oklahoma State University. Personal characteristics between the counterfactual and the treatment groups were similar. When considering lesson plan quality, a statistically significant finding was detected in favor of a longer student teaching internship. Based on the findings of this study, it is recommended that agricultural education teacher preparation programs evaluate their student teaching format, as well as the progression and delivery of courses, to allow for the greatest potential for the development of human capital related to teaching.

Introduction

Effective teaching can be considered “an elusive concept to define when we consider the complex task of teaching and the multitude of contexts in which teachers work” (Stronge et al., 2011, p. 340). Further, it is a multidimensional construct (Farrell, 2015) that includes instructional delivery, student assessment, learning environments, and personal qualities of the teacher (Stronge et al., 2011). Effective teaching requires individuals who can relate to the demographic and cultural differences between the teacher and the students (Hollins & Guzman, 2005). Teachers who are considered effective have high expectations, contribute to positive student learning outcomes, use a variety of resources, celebrate diversity within a classroom, and collaborate with their students in the learning process (Goe et al., 2008). These attributes of effective teaching assume a certain level of lesson planning and execution.

Preparation through instructional planning forms the basis for effective teaching and student learning (Reiser & Dick, 1996). Sung (1982) found that students taught by teachers who used highly structured lesson plans had a higher level of academic achievement than those who were taught by teachers who used less structured lesson plans. Lesson planning is a proactive strategy used by teachers to anticipate how topics will be delivered in the learning environment (Bond & Peterson, 2004). Lesson plans allow the instructor additional control of classroom experiences and outcomes instead of merely reacting to what happens (Duke & Madsen, 1991). Thus, it is critical for teacher preparation programs to facilitate pre-service teachers’ development in an efficient means for instructional planning (Baylor & Kitsantas, 2005; Kitsantas & Baylor, 2001; Kress et al., 2008).

One of the roles of higher education institutions that include agricultural education programs is to prepare students for teaching careers (Franklin & Molina, 2012; Myers & Dyer, 2004). Despite working toward the same goal of pre-service teacher preparation, each institution requires its own admission criteria, coursework, and student teaching experiences within their respective teacher education programs (Franklin & Molina, 2012; Graham & Garton, 2003; Myers & Dyer, 2004; Shinn, 1997; Swartzel, 1999). Such programs in agricultural education seek to assist teacher candidates in achieving licensure according to specific state and national

teacher education accreditation standards (Myers & Dyer, 2004; Swortzel, 1999; Retallick & Miller, 2007, 2010). What is more, the student teaching internship has been incorporated into the accreditation standards (CAEP, 2019; CCSO, 2013; Retallick & Miller, 2007, 2010).

Traditionally, agricultural education programs have focused on preparing pre-service teachers to teach in middle schools and high schools across the country (Myers & Dyer, 2004). Most teacher educators are tenure-track faculty who were former secondary agricultural education teachers (Myers & Dyer, 2004; Swortzel, 1998). Unfortunately, not every agricultural education program is actively producing certified agricultural education teachers (McLean & Camp, 2000; Myers & Dyer, 2004). Although the majority of agricultural education programs are housed in colleges of agriculture, around one-fifth are situated in colleges of education (Myers & Dyer, 2004; Swortzel, 1999). Despite degree requirements varying across programs (Franklin & Molina, 2012; Graham & Garton, 2003; Myers & Dyer, 2004; Shinn, 1997; Swortzel, 1999), courses of commonality include methods of teaching, program planning, and student teaching (McLean & Camp, 2000; Myers & Dyer, 2004; Retallick & Miller, 2007, 2010).

The role of an agricultural teacher educator includes preparing pre-service teachers to transition into professional educators while also providing professional development to in-service teachers (Franklin & Molina, 2012; Myers & Dyer, 2004). In addition, recruitment, faculty development, and delivering college-wide, service-type courses are important responsibilities of teacher educators in agricultural education (Hillison, 1998; Myers & Dyer, 2004). Despite this expansion of responsibility, various school-based agricultural education (SBAE) teachers and state staff consider pre-service teacher preparation to be the greatest responsibility of university agricultural education programs (Myers & Dyer, 2004). After completing coursework in a teacher preparation program, pre-service teachers typically culminate their learning experience through the student teaching internship, which links the university experience to the secondary classroom (Franklin & Molina, 2012; Torres & Ulmer, 2007; Retallick & Miller, 2007, 2010).

The Student Teaching Internship

The student teaching internship is a highly influential component of preparing pre-service teachers (Franklin & Molina, 2012; Myers & Dyer, 2004; Retallick & Miller, 2007, 2010; Zuch, 2000). Pre-service teacher attitudes often change throughout the student teaching internship (Myers & Dyer, 2004) based on the mentorship, communication, expectations, and discipline management plans provided by their cooperating teachers (Harlin et al., 2002; Myers & Dyer, 2004; Young & Edwards, 2006). Further, cooperating teachers highly influence future instructional practices of pre-service teachers (Garton & Cano, 1996; Harlin et al., 2002; McKee, 1991; Myers & Dyer, 2004; Young & Edwards, 2006). The relationship between the cooperating teacher and the university supervisor also plays an important role in pre-service teachers' development during the student teaching internship (Deeds et al., 1991; Franklin & Molina, 2012; Myers & Dyer, 2004).

The student teaching internship provides pre-service teachers opportunities to demonstrate knowledge and skills regarding pedagogy in an actual classroom under the guidance of a cooperating teacher (Kelleher et al., 1995; Retallick & Miller, 2007, 2010; Torres & Ulmer, 2007). The Agricultural Education program at Oklahoma State University (OSU) highly values the student teaching experience and considers it "the most dynamic and vital phase of the total

curriculum for preparing teachers of Agricultural Education” (Oklahoma State University, 2012b, p. 1). During the student teaching experience in Oklahoma, pre-service teachers are expected to acquire competence in fifteen areas. Some of these areas include teaching high school students, advising the FFA chapter, facilitating supervised agricultural experiences, preparing students for competitions, organizing community events, and counseling students (Oklahoma State University, 2012b).

Pre-service teachers work through four phases during their student teaching experience: Phase 1: orientation and observation – allows pre-service teachers to familiarize themselves with the classroom and discuss observations with their cooperating teacher; Phase 2: progressive teaching experience – allows pre-service teachers to begin routine procedures such as planning, preparing, grading, tutoring, and eventually teaching one or two courses under the close supervision of their cooperating teacher; Phase 3: extensive teaching experience – allows pre-service teachers to assume responsibility for the full course load while receiving regular feedback from their cooperating teacher; and Phase 4: culminating experience – allows pre-service teachers the opportunity to observe other teachers in the school (Oklahoma State University, 2012b).

The valuable, real-life experience of the student teaching internship provides a safe space for pre-service teachers to implement pedagogical knowledge and skills under the guidance of a veteran mentor teacher (Roberts & Ball, 2009; Robinson et al., 2010; Swanson, 1971; Talbert et al., 2005; Torres & Ulmer, 2007). Although the importance of student teaching has been well documented, the delivery (i.e., duration of the internship) and its impact on student teachers is lacking. Over the past 40 years, student teaching internships have ranged from less than 10-week, part-time placements to full-time immersive experiences greater than ten weeks in duration (Wasburn-Moses, 2018). “Although student teaching has been and continues to be the most intensive field experience of traditional teacher preparation, little research has been conducted on the student teaching experience, or changes to that experience over time” (Wasburn-Moses, 2018, p. 703).

What is more, although pre-service teachers dedicate the majority of their time in their student teaching internship to planning, research has shown they do so at an inconsistent rate (Torres & Ulmer, 2007; Torres et al., 2008). Further, because the contents of a lesson plan can directly impact what is taught and learned in the classroom (Ball et al., 2007; Torres & Ulmer, 2007), it is imperative to determine how a pre-service teachers’ preparation program impacts student teachers’ lesson plan quality.

Theoretical Framework

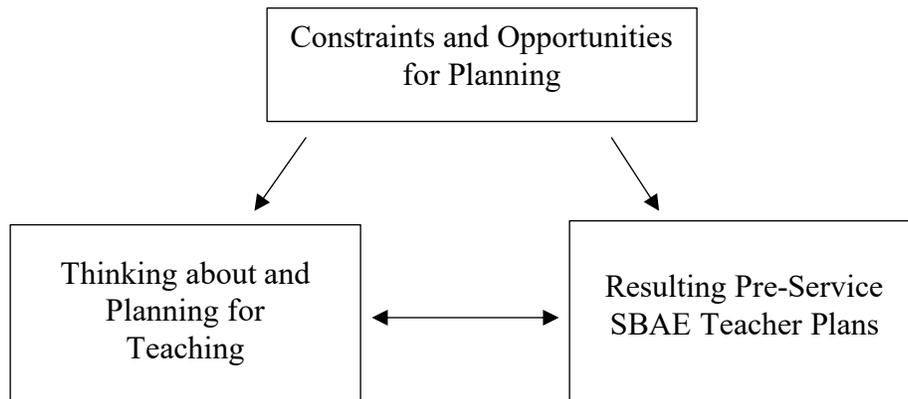
This study was framed in the human capital theory, which includes the pertinent education, skills, and training (Becker, 1964; Little, 2003; Schultz, 1971; Smith, 2010; Smylie, 1996) provided through an agricultural education teacher preparation program. Pre-service SBAE teachers are preparing for their student teaching internship and, ultimately, a career; therefore, the teacher preparation coursework provides an opportunity to increase human capital and improve personal competence related to their future vocation (Heckman, 2000). This development of human capital is impacted by the individual’s previous experiences, most of which are acquired through informal training and experiences (Sweetland, 1996), leading to a

variety of needs within a pre-service teaching cohort. The agricultural education teacher preparation program at OSU serves as a formal opportunity (Sweetland, 1996) for students interested in a career as an SBAE teacher to acquire the necessary skills for the teaching profession (Schultz, 1971). The culminating experience during the agricultural education teacher preparation program at OSU is the student teaching internship, which serves as an apprenticeship or on-the-job training, which Schultz (1961) identified as one of the five major categories of human capital development.

To further conceptualize the teacher preparation program and the human capital development of pre-service teachers within the program, Clark's and Peterson's (1986) model of teacher thought and action was used. Constraints and opportunities have a direct impact on the individual's actions and thought processes (Clark & Peterson, 1986). Further, an individual's thought process has a bi-directional relationship with his or her actions (Clark & Peterson, 1986). Ball et al. (2007) used Clark's and Peterson's (1986) model as a conceptual frame, where they connected the model with lesson planning. The conceptual model adapted from Ball et al. (2007) includes the reciprocal relationships between and among the constraints and opportunities for planning, the impact of those constraints on thinking about and planning for teaching, and the resulting plans (Figure 1). Additionally, the model (Figure 1) depicts the bidirectional relationship between "what teachers think and believe and what teachers do" (Ball et al., 2007, p. 57).

Figure 1

Conceptual model adapted from Ball et al. (2007) from the model of teacher thought and action of instructional planning (Clark & Peterson, 1986).



The model (Figure 1) served as a conceptual framework for this study, allowing the researchers to consider the constraints and opportunities presented within the student teaching format at OSU for pre-service SBAE teachers. The combination of constraints and opportunities provided through two different student teaching formats can be assessed by the quality of lesson plans developed by pre-service SBAE teachers in both formats. Further, the model can help demonstrate the preparedness of pre-service SBAE teachers at OSU based on their overall human capital development within the program's two formats.

Purpose of the Study

The purpose of this study was to determine the extent to which making programmatic changes, such as the student teaching internship for pre-service teachers at OSU, impacted their lesson plan quality by comparing two distinct formats. Two research questions guided this study: (1) What is the level of lesson plan quality of pre-service SBAE teachers who student taught in the Fall 2011 and Spring 2012 semesters compared to those who student taught in the Fall 2019 and Spring 2020 semesters? (2) What impact did the student teaching format have on the lesson plan quality of pre-service SBAE teachers at OSU during the two timeframes?

Methods and Procedures

A quasi-experimental design using a non-equivalent control group (Privitera, 2017) was used to compare two distinct student teaching formats in agricultural education at OSU. Because students complete their student teaching internships at the end of their academic studies and cannot be randomly assigned to a particular cohort, the quasi-experimental design was appropriate for this study (Privitera, 2017). The non-equivalent control group consisted of those who student taught during Fall of 2011 and Spring of 2012. The treatment group consisted of those who student taught during Fall 2019 and Spring 2020.

Student Teaching Cohort – Fall 2011 and Spring 2012

The format used during the 2011 to 2012 school year served as the study's non-equivalent control group and required pre-service teachers at OSU to participate in three courses during their student teaching semester. Pre-service teachers in the non-equivalent control group enrolled in 15-credit hours of coursework during their student teaching semester. The courses consisted of a three-credit hour teaching methods course, a three-credit hour laboratory supervision course, and a nine-credit hour course that included the student teaching internship. The semester began with two four-week *block* courses, which consisted of pedagogical training in the classroom and laboratory settings (Oklahoma State University, 2010a).

During the block experience, students learned pertinent teaching methods related to agricultural education in a laboratory setting. In addition, the block experience assisted in pre-service teachers' ability to identify community resources and secure teaching resources through involvement in professional organizations (Oklahoma State University, 2010a). Students simultaneously acquired facets of the teaching and learning processes, which included course content related to teaching methods, basic teaching skills, proper classroom management techniques, and motivational techniques and ideas (Oklahoma State University, 2012a). The laboratories embedded in the four-week block experience provided opportunities for students to practice behavioral management techniques, develop a complete unit of instruction, design formative and summative assessments, and deliver lessons using multiple methods and media (Oklahoma State University, 2012a). On completion of the four-week block experience, students transitioned to their cooperating center communities to complete their 12-week student teaching internship.

Student Teaching Cohort – Fall 2019 and Spring 2020

The format used during the 2019 to 2020 school year served as the study’s treatment group and required pre-service teachers at OSU to participate in one one-week course during the student teaching semester. The Teaching Methods course, which was part of the four-week experience for the Fall 2011 and Spring 2012 cohort, was converted to a 16-week course for the Fall 2019 and Spring 2020 cohort and was designed to provide the learning experiences through the context of the InTASC Model Core Teaching Standards and Performance Indicators (Oklahoma State University, 2019). Specifically, learning experiences in the Teaching Methods course sought to prepare pre-service teachers with the instructional capability to positively impact student learning. The lens of the Praxis Performance Assessment for Teachers (PPAT) served as a framework for the course objectives (Oklahoma State University, 2019).

Pre-service teachers in the treatment group enrolled in 12-credit hours of coursework during their student teaching semester. Three of those credit hours included the *Student Teaching* course, which is a full-time, directed experience in agricultural education at OSU. It included applications of methods and skills in agricultural education as related to selecting, adapting, using, and evaluating curriculum materials to meet educational goals and facilitate learning for individual students. Experiences also involved identifying the roles, responsibilities, and interactions related to other school personnel, parents, and professional education groups.

The remaining nine credit hours were acquired in a *Professional Development* course, which focused on professional preparation and development for careers as agricultural education teachers. Professional correspondence, interviewing, networking, and other employability skills were taught in the course. Reflection and evaluation of instruction, project supervision, and advising of youth leadership development organizations also were emphasized. The course consisted of a one-week, on-campus seminar before students transitioned to their respective student teaching centers, a two-day midterm seminar, and a three-day capstone seminar. Table 1 provides a side-by-side comparison between the non-equivalent control (Fall 2011 and Spring 2012) and treatment groups (Fall 2019 and Spring 2020).

Table 1

Comparison of Student Teaching Formats at OSU

Facet	Non-equivalent Control Group ^a	Treatment Group ^b
Courses		
Teaching Methods	4-week block ^c	16-week course ^d
Laboratory Instruction	4-week block ^c	N/A
Student Teaching Internship	12-week internship ^c	15-week internship ^c
Professional Development	N/A	16-week course ^c
Certification Requirements		
Oklahoma General Education Test	Required	Required
Oklahoma Subject Area Test (Agriculture)	Required	Required
Oklahoma Professional Teaching Exam	Required	N/A
Praxis Performance Assessment for Teachers	N/A	Required

Note. ^aFall 2011 and Spring 2012 Student Teaching Cohort; ^bFall 2019 and Spring 2020 Student Teaching Cohort; ^cCourses are taken within the same 16-week semester during student teaching. ^dCourse is taken during the 16-week semester prior to the 16-week student teaching semester.

Prior to entering the student teaching experience, pre-service teachers must pass the Oklahoma General Education Test (OGET), which is required for teacher certification (Oklahoma State University, 2018). The OGET measured various areas of knowledge such as reading, communication, mathematics, science, art, literature, social sciences, and writing (Oklahoma Commission for Teacher Preparation, 2007). The OGET consists of broad competencies which “reflect the general education knowledge and skills an entry-level educator need[ed] to teach effectively in Oklahoma public schools” (OCTP, 2007, p. 2-1). Mathematic competencies range from problem-solving using data interpretation and analysis to problem-solving using a combination of mathematical skills (OCTP, 2007). Science competencies include understanding and analyzing major scientific principles, concepts and theories as well as applying skills, principles, and procedures associated with scientific inquiry (OCTP, 2007).

Oklahoma requires two additional test requirements for teacher certification (Certification Examinations for Oklahoma Educators (CEOE), 2020). Those include the Oklahoma subject area test (OSAT) for agricultural education and the Oklahoma professional teaching exam (OklahomaPTE). The professional teaching exam was the OPTE before changing to the Praxis Performance Assessment for Teachers (PPAT) in 2019. The change in professional education exams is another factor impacting the preparation of pre-service SBAE teachers at Oklahoma State University.

The agricultural education subject area test consists of one constructed response in addition to 80 selected-response questions covering six subareas including agricultural business, economics, and marketing; animal science; plant and soil science; agricultural mechanics; environmental science and natural resources; and foundations of agricultural education (CEOE, 2020). The OPTE is a written exam spanning three subareas (i.e., learners and learning, instructional practice, and the professional environment) with a total of 10 competencies (CEOE, 2020). The exam includes “75 selected response questions and 3 written performance assignments” (CEOE, 2020, p. 1). Scaled scores for the OPTE range from 100 to 300, with a passing score of 240 or greater (CEOE, 2020). The OPTE was replaced with the adoption of the PPAT in 2019. The PPAT was adopted to evaluate “test takers on their abilities to impact student learning as it relates to the InTASC Model Core Teaching Standards, demonstrating that they have the basic pedagogical content knowledge and application for the classroom to begin teaching as an entry-level teacher” (ETS, 2020, para. 2).

The personal characteristics of pre-service agricultural education teachers ($N = 70$) during the Fall 2011 and Spring 2012 ($n = 30$) and Fall 2019 and Spring 2020 ($n = 40$) semesters are outlined in Table 2. Specifically, the participants’ age, gender, and ethnicity are included.

Table 2

Personal Characteristics of Two Cohorts of Pre-service SBAE Teachers at OSU during the 2011 to 2012 and 2019 to 2020 Academic Years

Variable	2011 to 2012 Cohort (n = 30)		2019 to 2020 Cohort (n = 40)	
	f	%	f	%
Current Age				
20 years	1	3.3	2	5.0
21 years	7	23.4	18	45.0
22 years	12	40.0	17	42.5
23 years	6	20.0	2	5.0
Prefer to not respond	4	13.3	1	2.5
Gender				
Male	11	36.7	14	35.0
Female	19	63.3	26	65.0
Ethnicity				
Black	0	0.0	0	0.0
White	26	86.7	35	87.5
Asian	0	0.0	0	0.0
Hispanic	1	3.3	0	0.0
Native American	3	10.0	5	12.5
Black	0	0.0	0	0.0

Lesson plan quality was evaluated using the Lesson Plan Evaluation Rubric, which is the same rubric used by the [Oklahoma State University Department of Agricultural Education] to evaluate students' lesson plans throughout all the department's agricultural education courses (Oklahoma State University, 2010b). Participants of the study were introduced and required throughout their agricultural education courses to use the same lesson plan format for which the grading rubric aligned (Oklahoma State University, 2012a). The lesson plan template and grading rubric were founded around Allen's (1919) 4-step instructional model and Tyler's (1949) four questions. This lesson plan format was based on a maximum of 20 points possible during the 2011 to 2012 school year. However, during the 2019 to 2020 school year, the rubric was updated to reflect the principles of the Praxis Performance Assessment for Teachers (PPAT) and was based on a maximum of 25 points, but still included the same primary principles as the one used with the Fall 2011 and Spring 2012 student teaching cohort. The PPAT was introduced as a new certification requirement during the 2019 to 2020 school year; therefore, the changes to the rubric were necessary to reflect the additional expectations required by the certifying agency.

For the 2011 to 2012 school year, a panel of three experts who had in excess of 10 years of school-based agricultural education (SBAE) teaching experience and two years of post-secondary teaching experience was organized to evaluate the quality of those lesson plans. The panel consisted of graduate students in agricultural education at OSU who were familiar with the departmental grading rubric, having used it to evaluate students in agricultural education courses and laboratories previously. In comparison, for the 2019 to 2020 school year, a panel of three

experts who had in excess of 30 years of SBAE experience and 20 years of post-secondary experience was organized to evaluate the quality of those lesson plans. The panel consisted of a faculty member, instructor, and a graduate student of agricultural education at OSU.

For inter-rater reliability (Ary et al., 2010; Gay et al., 2009), the panelists evaluated 10 lesson plans individually and then together. Panelists scored, discussed, and ultimately settled on a normative scoring procedure for the lesson plans prior to receiving their own sets of lesson plans to score. Data analysis began with three randomly selected lesson plans from each participant in the two cohorts using www.randomizer.org. The lesson plans were divided randomly among the respective panel members. Microsoft Excel® was used to organize the data, followed by the Statistical Program for Social Sciences (SPSS), Version 23 for data analyses.

Basic descriptive statistics (i.e., frequencies and percentages) were used to summarize the data for research questions one. Specifically, the lesson plan quality score was attributed based on the departmental lesson plan rubric, which aligned with the department lesson plan template. The 2011 to 2012 rubric allows for scores to range between zero and 20; whereas, the 2019 to 2020 rubric was evaluated on a scale ranging from zero to 25. The analysis of overall percentage scores was used to assess the overall quality of the lessons. A one-way ANOVA was used to assess the study's dependent and independent variables (Field, 2009) for research question two, which consisted of the actual quality score assigned to the pre-service teachers' lesson plans and the student teaching format (12-week or 15-week), respectively.

The researchers acknowledge the limitations of this study, as two chronologically disparate groups (2011 to 2012 and 2019 to 2020) were evaluated using different rubrics and experts to evaluate the lesson plans. The gap in years serves as a major limitation to the study, although the research team acknowledges this as existing data (2011 to 2012 non-equivalent group) was utilized to compare to the treatment group (2019 to 2020) for data collection and analysis. Additionally, changes in program delivery (i.e., teaching methods course, student teaching format, and changes in instructors) limit the findings of this study. The research team addressed these limitations through a priori decisions in this post-hoc research design considering the multitude of limiting factors. Therefore, these limitations should be considered when interpreting the findings, conclusions, and recommendations.

Findings

Research question one sought to describe the quality of pre-service SBAE teachers' lesson plans during the student teaching internship, per the departmental lesson plan rubric. Lesson plan scores for pre-service teachers during the Fall of 2011 and Spring of 2012 resulted in three (3.3%) lesson plan quality scores ranging between 0 and 2.50, six (6.7%) between 2.51 and 5.00, 11(12.2%) between 5.01 and 7.5, five (5.6%) from 7.51 to 10.00, seven (7.8%) between 10.10 and 12.50, 18 (20.0%) from 12.51 to 15.00, 15 (16.7%) between 15.10 and 17.50, and 25 (27.8%) lessons had a quality score range of 17.51 to 20.00 (Table 3). Lesson plan scores for pre-service teachers during the Fall of 2019 and Spring of 2020 resulted in three (2.5%) lesson plan scores between 0 and 12, four (3.3%) from 13 to 15, 24 (20.0%) between 16 and 18, 39 (32.5%) from 19 to 21, and 50 (41.7%) between 22 and 25 (Table 3).

Due to the difference in lesson plan quality score scales (i.e., 0 to 20 for 2011 to 2012 and 0 to 25 for 2019 to 2020), percentage scores were used to compare the two cohorts of student teachers (Table 3). Table three identifies the breakdown in lesson plans by percentage scores, which relate to a specific letter grade (i.e., F = 0 to 59.99, D = 60.00 to 69.99, C = 70.00 to 79.99, B = 80.00 to 89.99, and A = 90.00 to 100.00). The greatest number of lesson plans reviewed in the 2011 to 2012 cohort received a failing quality score ranging between 0.00 to 59.99 ($f = 27$, 30%). In contrast, the greatest number of lesson plans reviewed in the 2019 to 2020 cohort received a “B” quality score ranging between 80.00 to 89.99 ($f = 45$, 37.5%).

Table 3

Lesson Plan Quality Scores of Two Cohorts of Pre-service SBAE Teachers at OSU during the 2011 to 2012 and 2019 to 2020 Academic Years

Lesson Plan Quality Percentage Scores	2011 to 2012 Cohort		2019 to 2020 Cohort	
	<i>f</i>	%	<i>f</i>	%
0.00 to 59.99	27	30.0	6	5.0
60.00 to 69.99	11	12.2	10	8.3
70.00 to 79.99	18	20.0	24	20.0
80.00 to 89.99	10	11.1	45	37.5
90.00 to 100.00	24	26.7	35	29.2
Total Lessons	90	100.0	120	100.0

Note. ^aLesson plan quality was assessed on a scale of 0 to 20 with 0 indicating nothing and 20 indicating a perfect score; ^bLesson plan quality was assessed on a scale of 0 to 25 with 0 indicating nothing and 20 indicating a perfect score. For consistency and comparability, data were reported as a percentage range.

The second research question aimed to determine the impact of the student teaching format on lesson plan quality. The overall quality of pre-service teachers’ lessons during the 2011 and 2012 school year equated to a mean percentage score of 66.1% ($SD = 5.37$), and the overall quality of pre-service teachers’ lessons during the 2019 to 2020 school year resulted in a mean percentage score of 82.2% ($SD = 3.11$). A one-way ANOVA was conducted using SPSS, with the lesson plan scores as the dependent variable and the student teaching format (12-week versus 15-week) as the independent variable (Table 4). The analysis resulted in a statistically significant difference between the two groups $F(1, 208) = 20.95, p < .01$.

Table 4

Comparative Analysis of Pre-Service Teachers’ Lesson Planning Performance by Group Means

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between Groups	37.40	1	37.40	20.95	.00
Within Groups	371.38	208	1.785		
Total	408.78	209			

Conclusions

Personal characteristics between the non-equivalent control (Fall 2011 and Spring 2012) and the treatment (Fall 2019 and Spring 2020) groups were similar. The majority of pre-service SBAE teachers in both groups were between 21 and 22 years of age, female, and predominately white. These characteristics support the current trends over the past 10 years in the agricultural education department at OSU. The personal characteristics also align with 2018 supply and demand of SBAE teachers (NAAE, 2019), which identified “the majority of new agricultural education majors [as] Caucasian (90%) and female (71%)” (p. 1).

When considering lesson plan quality, the mean percentage scores increased from 66.1% ($SD = 5.37$) for the Fall 2011 and Spring 2012 cohort to 82.2% ($SD = 3.11$) for the Fall 2019 and Spring 2020 cohort. The difference in lesson plan quality scores can be attributed, in part, to two major programmatic changes: 1) the duration of the student teaching experience, which was aligned with the recommendations of Myers and Dyer (2004) to increase the focus on teaching and learning in the agricultural education teacher preparation program, and 2) to the increased credit hours reserved for teaching lesson planning to pre-service teachers. In addition to these two major changes, other modifications also occurred in the teacher preparation program at OSU during the 8-year time span of this study. These included Oklahoma certification requirements, course delivery offerings at OSU, and the instructors who impacted the course offerings and data collection, all of which provide limitations to the study. However, the faculty of this teacher preparation program were willing to make the changes if they might lead to improvements in pre-service teachers’ ability regarding their lesson planning and perceptions about planning (Ball et al., 2007; Clark & Peterson, 1986), as depicted in Figure 1.

The difference in mean percentage scores between the non-equivalent control and treatment groups were statistically significantly different $F(1, 208) = 20.95, p < .01$. This change in lesson plan quality scores supports the need for teacher preparation programs to facilitate pre-service teachers’ development in an efficient means for instructional planning (Baylor & Kitsantas, 2005; Kitsantas & Baylor, 2001; Kress et al., 2008). This need was met by altering the teaching methods course from a 4-week block experience to a 16-week semester-long course prior to student teaching. The change in content delivery between the student teaching formats resulted in positive outcomes within the treatment group (Fall 2019 and Spring 2020 cohort). Providing additional time to think about and plan for teaching ultimately led to the increase in lesson plan quality scores observed in this study, which can ultimately impact what is taught and learned in the SBAE classroom (Ball et al., 2007; Torres & Ulmer, 2007). This positive impact results in increase human capital development (Becker, 1964; Little, 2003; Schultz, 1971; Smith, 2010; Smylie, 1996) within the pre-service SBAE teachers as it relates to teaching.

Recommendations

Based on the study’s findings, it is recommended that teacher preparation programs in agricultural education from across the country evaluate the delivery of their student teaching internship. As this study identified advantages to the increased time spent on learning how to plan for instruction and having additional repetitions, emphasis should be placed on helping pre-service teachers improve their lesson planning abilities in their teacher preparation courses as

well as during their student teaching internship. To help facilitate this advantage, a semester-long teaching methods course is recommended, followed by a 15-week student teaching internship. The increased length of student teaching provides additional opportunities for personal growth. In addition to the increased human capital development (Becker, 1964; Little, 2003; Schultz, 1971; Smith, 2010; Smylie, 1996) within students, the new format has lifted the strain of teaching an intensive 4-week block while also managing a regular course load. Considering the conceptual model developed by Ball et al. (2007), the change is recommended to reduce constraints and provide additional opportunities for lesson planning for a positive impact on planning quality. Further, expectations should be placed on cooperating teachers regarding lesson planning. Despite the school district requirements regarding detailed lesson plans, cooperating teachers need to model quality lesson planning for pre-service teachers. Thus, in-service should be conducted with cooperating teachers to outline lesson plan quality expectations as well as train or refresh cooperating teachers on the components of quality lesson planning.

Considering recommendations for future research, additional studies should be conducted evaluating the perceptions of students enrolled in different student teaching formats to determine their view on the impact. It is recommended a nationwide study be conducted to compare lesson plan quality from various student teaching formats across the country. Such a study would provide an opportunity for agricultural education faculty to evaluate their student teaching format against others and refine their process. Although this study focused on the delivery format as the factor impacting lesson plan quality, additional factors such as course sequence, cooperating teacher expectation, university expectation, early field experiences, and planning format, also likely play a substantial role; therefore, additional research should investigate these potential factors further. In doing so, quality metrics should be developed to evaluate how such factors impact the student teaching experience. Finally, although this study was concerned with the effect of student teaching internship on teaching, SBAE instructors have other responsibilities as teachers (Eck et al., 2019; Roberts & Dyer, 2004). Therefore, what effect does the longer student teaching internship have on pre-service teachers' ability to facilitate a complete SBAE program? Further research should investigate this phenomenon.

Discussion

An integral part of both formats investigated in this study is the development of human capital (Becker, 1964; Little, 2003; Schultz, 1971; Smith, 2010; Smylie, 1996) of aspiring SBAE teachers. The four-week block (2011 to 2012) format provided an intensive, timely experience before students transition to their cooperating center communities and began their 12-week student teaching internship. The immersive four-week experience provides the necessary skills to help improve the student's competence related to their future career (Heckman, 2000) as an SBAE teacher. In comparison, the 15-week student teaching internship (2019 to 2020) provides an extended on-the-job training opportunity, which has been identified as a major area of human capital development (Schultz, 1961). Although this format extends the student teaching internship, the timely training leading up to the internship is reduced to one week.

Finally, it is imperative that teacher preparation faculty consider the unintended consequences of significant programmatic changes, such as the one described in this study. For example, what is given up or lost as a result of such a change? It is possible that pre-service teachers in the non-

equivalent control group had a greater *readiness* to learn, as they were focused for four weeks on student teaching only. Although the sessions were shorter and more intense, anecdotal evidence suggests the four-week block allowed for a greater sense of community cohesiveness and attention from pre-service teachers than did the longer 15-week internship.

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