

PROFESSIONAL DEVELOPMENT NEEDS OF
OKLAHOMA INDUCTION-YEAR SCHOOL-BASED
AGRICULTURAL EDUCATION TEACHERS ACROSS
CERTIFICATION PATHWAYS: A MIXED METHODS
APPROACH

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Abstract: School-based agricultural education (SBAE), like many other subject areas, suffers from a critical teacher shortage. Oklahoma has chosen to combat this shortage by offering temporary emergency teaching certifications with minimal qualifications and no requirements for professional development. Recruitment is only half of the solution to teacher shortages. Retention is needed to stem the flow of novice teachers exiting the profession. Induction support through professional development is a necessary component to teacher retention. Although all SBAE induction-year teachers require support, how do the professional development needs differ across certification pathways? Previous research has approached this question with quantitative, self-report measures. However, one must ask whether these beginning professionals are knowledgeable enough about their abilities to report professional development needs. This study sought to answer those questions using mixed methodologies. Grounded in Bandura's (1997) theory of self-efficacy and using a convergent parallel model, preexisting instruments were used to gather Oklahoma induction-year SBAE teachers' ($N = 29$) sense of self-efficacy in the areas of instruction, FFA, and SAE. Items receiving a rating of low teacher self-efficacy were recorded as self-identified professional development needs. From this population, five case study participants were selected for the qualitative phase. Interview transcripts, observation notes, and artifacts were collected during two site visits to each case study participant. Emergency certified teachers returned more professional development needs from teaching observations but reported fewer areas of low teacher self-efficacy on quantitative instruments in comparison to their traditionally certified counterparts. The areas of professional development needs varied widely between individuals. Personal, environmental, and behavioral factors played a part in determining the professional development needs for each SBAE induction-year teacher. Therefore, it is recommended professional development be tailored to the individual induction-year teacher. Mentoring and online resource banks have the potential to provide the necessary individualized professional development support of SBAE induction-year teachers.

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CHAPTER I

INTRODUCTION

Due to the pervasive nationwide teacher shortage, United States Senator Tina Smith (D-MN) introduced a bill in 2019 to fund teacher recruitment and retainment (Addressing Teacher Shortages Act, 2019). This legislation cited a teacher shortage in all states and educational fields. An estimated 100,000 teaching jobs were left unfilled by highly qualified applicants in the 2017-2018 school year (Gracia & Weiss, 2019). Rural and low-income schools bear a disproportionately large percentage of this teacher shortage (Addressing Teacher Shortages Act, 2019), contributing to an educational disadvantage for their students (Carver-Thomas & Darling-Hammond, 2019). According to Norris (2019), teacher turnover disrupts the relationships built between teachers, their school, and the community. Teacher turnover also strains schools' budgets and contributes to decreased student achievement (Norris, 2019).

School-based agricultural education (SBAE) is no exception to this problem (Smith et al., 2018). In fact, teacher shortages have been a chief concern for SBAE

professionals since the federal inception of vocational agriculture courses in secondary schools over a century ago (Eck & Edwards, 2019). Considering the 557 SBAE teaching positions unfilled by qualified candidates and an average student-to-teacher ratio of 77:1, nearly 50,000 students nationwide were left without a fully certified SBAE teacher in 2018 (National Association of Agricultural Education (NAAE), 2018). The demand for qualified SBAE teachers continues to exceed the supply and is projected to do so for the foreseeable future (Eck & Edwards, 2019; Smith et al., 2019).

To combat this shortage, all 50 states have developed contingency certification pathways to broaden the teacher pool (Ingersoll, 2002; Ludlow, 2011). In addition to fast-tracking individuals to become educators, alternative certification seeks to diversify the teaching population (Evans, 2014) and recruit high achieving individuals (Straubhaar, 2019). Alternative certification, broadly defined, is often considered any and all certification pathways other than obtained through a teacher preparation program offered through a four-year institution of higher education (Bowling & Ball, 2018; Ruhland & Bremer, 2002a). Alternative teacher certification programs, such as Teach for America, recruit individuals from industry and academic institutions to offer abbreviated teacher trainings before new recruits enter the classroom (Darling-Hammond et al., 2005). Some alternative certification programs provide support throughout the school year as well (Darling-Hammond, 2009). Great variations exist between states' qualifications for alternative certification as well as the entrance requirements between various alternative certification programs within each state (Foote et al., 2011). Ruhland and Bremer (2002a) assessed alternative certifications nationwide and identified nine classes of alternative certification, from a highly structured teacher in residence format to minimal temporary

certification with no professional development requirements. This diversity in teacher preparedness and qualifications present difficulties for administrators, researchers, and policy makers in supporting alternatively certified teachers (Darling-Hammond, 2009).

In addition to an alternative certification allowing individuals to teach as they are earning certification through accredited programs, Oklahoma grants emergency teacher certificates (Oklahoma State Department of Education, 2020). These are the least restrictive type of alternative certification (Gunderson & Karge, 1992). As outlined by the Oklahoma State Department of Education (2020), emergency certification requires a bachelor's degree in any field and a clean background check. These teachers are not associated with any teacher preparation program and have no professional development requirements associated with their certification (Oklahoma State Department of Education, 2020). Meant occupy vacant teaching positions when no qualified applicants can be identified, emergency certified teachers are granted licensure for two years while teaching in a local school district, though state legislators have discussed doubling this timespan (Martinez-Keel, 2020). They are required to pass three certification tests during this time (Oklahoma State Department of Education, 2020). The Oklahoma General Education Test (OGET) consists of multiple choice and written response questions in the areas of reading and written communication, mathematics, and information literacy and research (Certification Examinations for Oklahoma Educators, 2021b). The Oklahoma Subject Area Test (OSAT) in agricultural education is meant to ensure teachers have appropriate grasp of agricultural concepts (Certification Examinations for Oklahoma Educators, 2021a). Finally, the Oklahoma Professional Teaching Exam (OPTE) tests teacher candidates on their knowledge of pedagogy of secondary education (Certification

Examinations for Oklahoma Educators, 2021c). These tests may be completed at any point before the two-year certificate expires (Oklahoma State Department of Education, 2020).

The number of teachers with alternative certifications is growing at an exponential rate, accounting for more than 30% of teachers nationwide (García & Weiss, 2019). From 2014 to 2017, the number of induction-year alternatively or emergency certified SBAE teachers increased more than 150% nationwide (Foster et al., 2015; Smith et al., 2018). A similar trend is evident in Oklahoma SBAE induction-year teachers, with emergency certifications for SBAE teacher tripling from 2017 to 2019 (NAAE, 2019).

The SARS-CoV-2, also known as COVID-19, global pandemic placed more strain on the current teacher supply (Smith, 2020). Additional teaching vacancies have resulted from numerous teachers' unwillingness or inability to teach with additional health protocols and distance learning demands ("Standards board provides", 2020). Some Oklahoma teachers are taking early retirement rather than teach in uncertain times (McNutt, 2020). States have reacted by lowering teacher certification requirements to enable more individuals with less qualification to teach in primary and secondary classrooms (Maine Department of Education, 2020). Kevin C. Brown, an official in the Kentucky Department of Education, was quoted by *The Daily Independent* as saying lowering teacher certification requirements was "not where we would want to be in a normal time" (2020, para. 3). In addition to disrupted learning and increased strains on a school system, COVID-19 ushered in a wave of emergency certified teachers (Smith, 2020).

Still, recruitment is only part of the solution to teacher shortages (Guarino et al., 2006). With 50% of teachers leaving the profession within five years, teacher retention must be addressed to staff America's classrooms filled with highly qualified educators (Haj-Broussard et al., 2016). Schools with high teacher turnover tend to employ more novice teachers than those without full certification (Norris, 2019). Teacher effectiveness and student achievement have been shown to be directly correlated with teacher preparation and experience (Darling-Hammond et al., 2005). The revolving door of high teacher turnover has been correlated with lower student test scores (Norris, 2019), a disproportionately negative impact on minority students (Ronfeldt et al., 2012), and greater district organizational challenges (Guin, 2004). Additionally, school districts incur immense financial costs when recruiting new teachers (Synar & Maiden, 2012). Teacher turnover is projected to cost local school districts more than \$7 billion every year (Darling-Hammond, 2010).

To combat these issues, induction programs for novice teachers are a promising solution to bolster teacher retention (Smith & Ingersoll, 2004). Teacher induction programs designed to orientate novice teachers into the profession often include mentoring, workshops, collaboration opportunities, and administrative support (Beam, 2009). Like alternative certification programs, induction programs vary greatly with most programs lasting from one to three years (Smith & Ingersoll, 2004). Robust induction programs, those combining mentoring with collaboration and administrative support, have been shown to decrease induction-year teacher attrition by up to 50% (Smith & Ingersoll, 2004) with more intensive programming resulting in higher retention and teacher performance (Bastian & Marks, 2017). Such programs are common for induction-year

SBAE teachers nationwide (Moore & Swan, 2008) but are absent for those teaching in Oklahoma. Toombs and Ramsey (2020a) recommended Oklahoma SBAE professionals invest, design, and implement induction programming for novice SBAE teachers.

A needs assessment is vital to properly plan and implement professional development opportunities such as induction programs (Beam, 2009; Borich, 1980; Garton & Chung, 1996; Joerger, 2002). Much of this research is conducted through survey procedures reliant on self-report data (Koziol & Burns, 1986). Commonly, SBAE research related to induction-year teachers' needs include researcher designed survey instruments listing multiple topics for professional development which ask participants to rate their perceived need for instruction in that area (Garton & Chung, 1996; Roberts & Dyer, 2004; Sorensen et al., 2014). These self-report data are useful to identify areas of interest but may not report true professional development needs (Koziol & Burns, 1986).

Self-report data are commonly used throughout social science research (Chan, 2009). These types of data can be very useful in obtaining perception, attitudinal, and behavioral constructs (Stone et al., 2009) but may also introduce bias to the data set (Stone & Shiffman, 2002). Some potential areas of concern in self-report data originate in social desirability and self-awareness (McDonald, 2008). Attempting to portray oneself in a more positive light may motivate participants to exclude negative attributes and/or emphasize positive traits (Dodd-McCue & Tartaglia, 2010; Williams et al., 2019). Social desirability bias may also work on the subconscious level (McDonald, 2008), indicating participants are unaware of misrepresenting themselves on survey instruments. John and Robins (1994) suggested participants have an inflated positive self-image and therefore contribute distorted self-report data. McDonald (2008) asked "whether people know

enough about themselves to be able to accurately portray what the self-report is attempting to determine” (p. 79) and warned, “if not, there would be serious repercussions for the methodologies employed” (p. 79). Additionally, according to Roberts and Dyer (2004), neophyte teachers, especially those with an emergency certification, may not possess the necessary knowledge of the teaching profession to communicate self-efficacy or professional development needs. “If one does not know what demand must be fulfilled in a given endeavor, one cannot accurately judge whether one has the requisite abilities to perform the task” (Bandura, 1997, p. 64).

Problem

Can researchers acquire a more accurate understanding of induction-year SBAE teachers’ professional development needs through self-report data? Are these individuals, some with no pedagogical or content background, truly able to report their professional development needs? These questions remain unanswered after exploring the literature on validity of self-report data from induction-year teachers. Validation of self-report instruments are typically carried out in multimodal or mixed-method approaches (McDonald, 2008). The triangulation of data will identify true needs of induction-year SBAE teachers and validate or refute the use of self-report data in this population.

Purpose

This mixed methods study aimed to address the teacher self-efficacy and professional development needs of induction-year SBAE teachers in Oklahoma. A convergent parallel mixed methods design was used to compare self-reported professional development needs and teacher self-efficacy to observations of teaching performance of traditionally and emergency certified SBAE teachers.

Research Questions

1. How did teacher self-efficacy of Oklahoma induction-year SBAE teachers change over the Fall 2020 semester and across certification pathways?
2. How did teacher self-report professional development needs of Oklahoma induction-year SBAE teachers change over the Fall 2020 semester and across certification pathways?
3. What professional challenges did Oklahoma induction-year teachers encounter during the Fall 2020 semester?
4. How did the mixed methods findings of professional development needs of Oklahoma induction-year SBAE teachers compare across certification pathways?

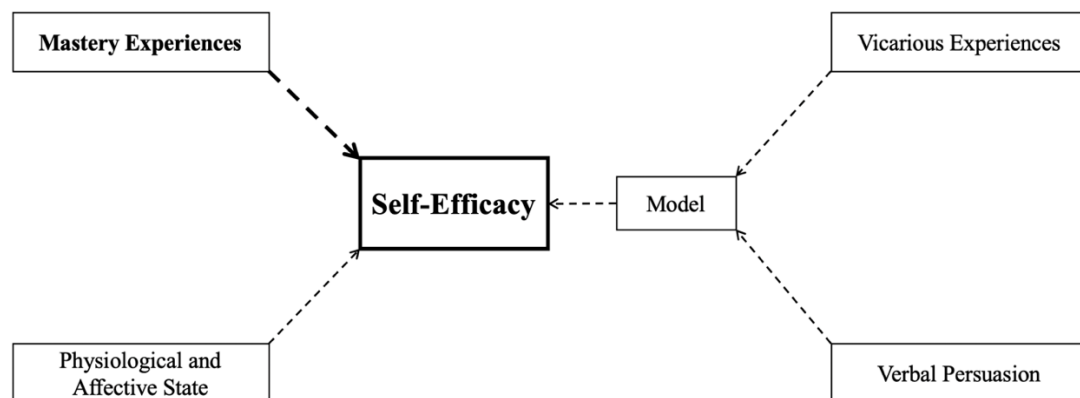
Theoretical Framework

Bandura's theory of self-efficacy served as the theoretical framework for this study. Stemming from social cognitive theory, self-efficacy is a measurement of one's belief in their ability to be successful in a particular task in a given context to achieve a predicted outcome (Bandura, 1977). This belief is a strong predictor of behavior, effort, and persistence (Walumbwa et al., 2011). Those highly self-efficacious in a given context are more likely to set higher goals, display resiliency, and achieve greater outcomes than those lacking in self-efficacy (Bandura, 1997). Motivation is strongly correlated with self-efficacy (Ajzen, 1991). Those who believe they are likely to be successful are more willing to participate in activities while the inverse is also true (Bandura, 1977). To begin nearly any endeavor, a participant needs some assurance in their likelihood to succeed, making self-efficacy a prerequisite to embarking on new ventures (Titrek et al., 2018).

Self-efficacy is formed through various experiences, and it impacts much of human behavior (Bandura, 1997). Forces, both internal and external to an individual, will shape their self-efficacy (Bandura, 1993), as illustrated in Figure 1. Internal sources include mastery experiences and physiological and affective states (Bandura, 1997). External sources of self-efficacy include vicarious experiences and verbal persuasion through a model (Bandura, 1977). A model is another individual one finds commonality with and is able to provide information on the task at hand (Bandura, 1997). This model is vitally important when internalizing self-efficacy beliefs (Bandura, 1993). Sources of self-efficacy work in concert with differing impacts across contexts (Bandura & Adams, 1977).

Figure 1

Sources of Self-Efficacy (Bandura, 1997)



Mastery experiences carry the most lasting impacts on self-efficacy (Bandura, 1997). An individual's self-efficacy tends to improve with successful performances and decline with failures (Wilson et al., 2020). Situations need not be identical for mastery experiences to hold sway over self-efficacy in a new context in that success in similar tasks with transferable skills can offer participants a positive self-efficacy in a new arena

(Bandura, 1997). Perceived task difficulty, effort expended, and contextual factors all play a role in the interaction between mastery experiences and self-efficacy (McKim & Velez, 2016).

Vicarious experiences and verbal persuasion are interpreted in large part by their source (Bandura, 1997). This model influences both the magnitude and direction of relationship with self-efficacy. Perceived competence is the most significant predictor of model effectiveness (Brewer & Wann, 1998). The impact of a model is exponentially increased when individuals identify with and find similarity in the model (Connolly, 2017). Models similar to learners in age, race, gender, current competencies, or past abilities are more likely to have a significant impact on self-efficacy (Bandura, 1997). When these similar models succeed, self-efficacy is increased; likewise, failure leads to decreases in self-efficacy (Bandura & Adams, 1977). A dissimilar model may be negatively correlated with self-efficacy or produce no influence on one's belief of ability (Bandura, 1997). According to Bandura (1997), "significant models in people's lives play a key role in instilling beliefs of their potential and power to influence the direction their lives take" (p. 106).

Models can provide vicarious experiences and verbal persuasion. Others' experiences may impact own self-efficacy if context, tasks, and abilities are perceived as corresponding (McKim & Velez, 2016). Behaviors and thoughts through verbalizations may be modeled for replication in a similar future context (Bandura, 1997). The transferability of modeled skills is dependent upon attention, retention, production, and motivation processes (Bandura, 1997; Brewer & Wann, 1998). Behaviors and thought patterns must be first observed and then retained through complex cognitive processes

(Bandura, 1997). Learned behaviors and thoughts can then be replicated in a similar context to the observation, assuming the individual possess the required skills (Brewer & Wann, 1998). Finally, the behavior will only be replicated if there is sufficient motivation to do so. Success of an equitable model is a significant motivator (Bandura, 1997).

Models may also provide feedback of performance. As with vicarious experiences, the credibility and similarity of the model filters verbal persuasion's influence on self-efficacy (Bandura, 1997). This verbal persuasion can be of great importance when faced with hardships and self-doubt (McKim & Velez, 2016). Conversely, self-efficacy is much more easily torn down than built up by the words of others (Bandura, 1997). Verbal persuasion tends to have fleeting impact on self-efficacy as another person's opinions are quickly confirmed or refuted through personal success or failure (Lamarche et al., 2014). Often verbal persuasion is presented in the form of performance feedback. The timing, word choice, and compliment/critique balance of feedback are contributing factors that impact a person's self-efficacy (Bandura, 1997).

Mental, physical, and emotional states are the fourth source of self-efficacy (Bandura, 1997). Situations that elicit a high stress response are more likely to include a strong effect size in relation to self-efficacy and physiological and affective states (Bandura & Adams, 1977). According to Bandura (1997) for high-achieving individuals, a manageable amount of stress acts as a catalyst in motivation; but for low achievers, the same stress can be a demotivator. Additionally, a higher sense of self-efficacy can act as a buffer toward adverse situations (Bandura, 1997). Further, low self-efficacy individuals, on the other hand, can be more susceptible to negative stress. Commonly, this stress evokes negative anticipatory imaginary scenarios which serve to generate additional

stress in a toxic cycle until individuals create their own self-fulfilling prophecies of failure in areas with low self-efficacy (Bandura, 1997). Emotional mood can also significantly impact self-efficacy. A positive mood is more likely to translate to higher self-efficacy with recollections of past successful mastery experiences while negative moods more often elicit lower self-efficacy and memories of past failures (Bandura, 1997).

Mastery experiences, vicarious experiences, verbal persuasion, and psychological and affective states work together through complicated psychological processes to form self-efficacy and influence behavior (Bandura, 1997). This study used the sources of self-efficacy as described above to qualitatively explain quantitative self-efficacy assessments. Mastery experiences, vicarious experiences, verbal persuasion, and psychological and affect states were explored through interviews, observations, and artifacts.

Though most self-efficacy beliefs are formed in childhood and adolescence, self-efficacy remains pliable throughout the lifespan (Bandura, 1997). The introduction of an equitable model or a formative mastery experience can have great impact on an individual's self-efficacy (Wilson et al., 2020). Bandura (1997) wrote:

Efficacy beliefs are best instilled by presenting the pursuit as relying on acquirable skills, raising performers' beliefs in their abilities to acquire the skills, modeling the requisite skills, structuring activities in masterable steps that ensure a high level of initial success, and providing explicit feedback of continued progress. (p. 105)

Educators commonly employ the theory of self-efficacy in motivating students to learn (Bandura, 1997). Likewise, self-efficacy is a popular foundation for planning and

assessing professional development opportunities for teachers (McKim & Velez, 2016). Research shows increasing a teacher's self-efficacy positively impacts effectiveness, job satisfaction, and retention (Tschannen-Moran & Woolfolk Hoy, 2001). Findings of this study inform opportunities to bolster teacher self-efficacy of traditionally and emergency certified induction-year SBAE teachers. By grounding needs assessments and professional development planning in the theory of self-efficacy, it may be possible to impact induction-year teachers' views of their self-efficacy (Bandura, 1997). This understanding of participants' teacher self-efficacy was then compared to professional performance (Robinson & Edwards, 2012).

Self-efficacy is not always directly indicative of performance (McKim & Velez, 2016). Bandura (1997) identified several areas where self-efficacy may not be predictive of behavior. Among these are invalid measurement of either self-efficacy or performance, a disconnect between tasks included in the self-efficacy assessment and those required for a successful performance, and a "genuine discordance between self-referent thought and action" (p. 61). Self-efficacy is a complex construct, and instruments must be carefully calibrated to produce reliable and valid measures (Tschannen-Moran & Woolfolk Hoy, 2001). Additionally, performance contains many extraneous variables likely to distort self-efficacy signals (Bandura, 1997). Multiple measurements of performance over time produce more reliable data than a single momentary reference (Kozioł & Burns, 1986). To adequately compare self-efficacy and performance, the same tasks under similar contexts must be measured in both constructs (Pajares & Miller, 1997). This study addressed these first two areas of divergence by using preexisting, reliable, and valid measures of teacher self-efficacy, collecting multiple teacher performance observations,

and creating an audit trail of qualitative data. Robust mixed methods data were carefully collected and analyzed. Therefore, any further discrepancies between perceived teacher self-efficacy and performance are likely the result of participants misjudging their own capabilities in a novel area (Bandura, 1997).

Conceptual Framework

The theory of reciprocal determinism provided the conceptual framework of this study. Grounded in social learning theory (Bandura, 1978), reciprocal determinism describes the interconnectedness of personal factors, environment, and behavior (Bandura, 1997). These factors work together in a causal relationship with each influencing the other (Bandura, 1997). Personal characteristics, such as self-efficacy and affective states, are translated into behaviors which again impact personal characteristics (Maher et al., 2019). A person's behavior will influence their chosen environment, be that the physical and/or personnel surroundings (Salvador & Burciaga, 2017). Behaviors can be a result of the environment as people behave differently in various environments (Stewart et al., 1999). Lastly, environments may influence personal characteristics and vice versa (Wu et al., 2020).

Reciprocal determinism has been used to explain the connection between teacher self-efficacy, teacher behaviors, and student outcomes (Hivner et al., 2019). According to Bandura (1997), Efficacious people are quick to take advantage of opportunity structures and figure out ways to circumvent institutional constraints or change them by collective action. Conversely, inefficacious people are less apt to exploit the enabling opportunities

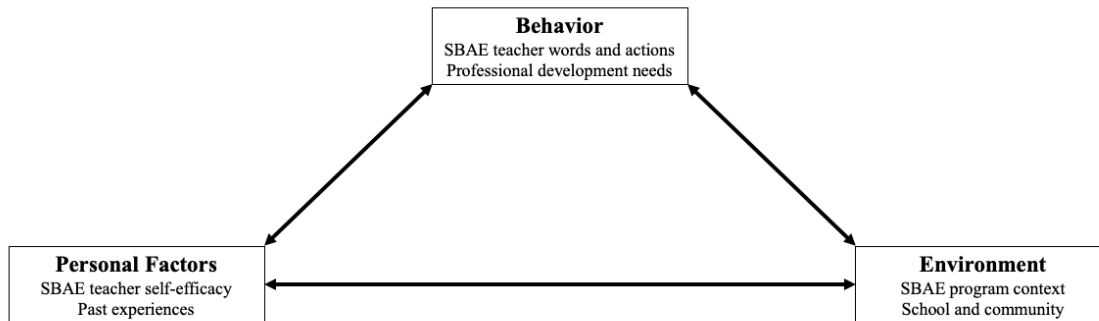
provided by the social system and are easily discouraged by institutional impediments. (p. 6)

Grad (2020) found this theory in practice with teachers who were more technologically literate also had higher rates of technology implementation. Smith (2005) theorized mentors could impact the behavioral and environmental factors of reciprocal determinism to change a preservice teacher's self-efficacy. A student's behavior and learning outcomes can be impacted by the teacher's behavior which is a part of the student's environmental factor (Apter, 2016).

Figure 2 contains a visual representation of the conceptual framework for this study. Behavior was defined as observed SBAE teachers' words and actions as well as their self-identified and observed professional development needs. Personal factors included their teacher self-efficacy gathered through the quantitative instrument and any relevant past experiences they divulged during interviews. Lastly, the environment was considered to be the SBAE program context including facilities, teaching partner(s), and students. The employing school district and community were also included in the environment factor. The interaction of these forces was studied in depth to develop support for induction-year teachers.

Figure 2

Conceptual Framework (Bandura, 1978; 1997)



Limitations

Three limitations are placed on this study and the consumption of this research:

1. The findings cannot be generalized beyond the study’s participants. Data are representative only of these individuals and their experiences in these contexts.
2. The small sample size reduces statistical power. Therefore, no inferential statistics were used but rather the study was restricted to modes of central tendency (i.e., means and standard deviations), and variability (i.e., frequencies and percentages).
3. Data collection was time constrained to the Fall 2020 semester in the midst of the COVID-19 pandemic. The unique circumstances of intervals of distance learning and quarantined teachers and students impacted all participants in the study.

Definition of Terms

Alternative teacher certification- A catch-all term to denote all pathways to teacher certification other than traditional certification. Commonly, though not always, alternatively certified teachers are associated with a teacher training program providing training before and/or after the teacher enters the classroom (Bowling & Ball, 2018; Ruhland & Bremer, 2002a).

Emergency teacher certification- A form of alternative teacher certification, this pathway is the least restrictive entrance into teaching in a primary or secondary classroom. A

bachelor's degree in any field is often the only requirement for such certification.

Typically, no additional courses or professional development is required for full certification (Gunderson & Karge, 1992; Neumann, 1994; Ruhland & Bremer, 2002a).

Induction programing- This includes support, guidance, and orientation provided to beginning teachers in the first one to three years of their career (Joerger, 2003; Moore & Swan, 2008; Smith & Ingersoll, 2004).

Induction-year teachers- These individuals are in their first school year as a SBAE teacher. (Rayfield et al., 2014).

Inservice teachers- Those who currently hold teaching certifications and serve as classroom teachers (Koellner & Greenblatt, 2018).

Mentor- The more experienced individual in the mentor-protégé relationship who is giving support and guidance (Burriss et al., 2006; Peiter et al., 2005).

Preservice teachers- Students enrolled in teacher preparation programs who are working through the traditional certification process (Tummons et al., 2020; Sefton & Sirek, 2020).

Professional development- activities with the purpose of increasing or reinforcing necessary knowledge, skills, and/or attitudes necessary for effective teaching and optimal student learning (Ferand et al., 2020; Thornton et al., 2020).

Professional development needs- Challenges faced by inservice teachers stemming from a deficiency in knowledge, skills, and/or attitudes necessary for effective teaching and optimal student learning (Garton & Chung, 1996; Joerger, 2002).

Protégé- The less experienced individual in the mentor-protégé relationship who is receiving support and guidance (Burriss et al., 2006; Peiter et al., 2005).

School-based agricultural education- Systematic instruction in secondary school systems incorporating instruction, experiential learning, and student leadership in the agriculture, food, and natural resources industry (The Council, 2021).

Teacher self-efficacy- Teacher's thoughts of "his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783).

Teacher certification- Testing, application, and background check procedures required to approved to teach in the K-12 classroom (Oklahoma State Department of Education 2020).

Teacher certification examinations- Standard examinations requiring a passing score to obtain an alternative or traditional teacher certification (Oklahoma State Department of Education 2020).

Traditional teacher certification- Teacher certification gained through a four-year institution including a student teaching internship (Pace, 2010).

CHAPTER II

REVIEW OF LITERATURE

This chapter is a presentation of the existing literature connected to the study's research questions. First, the development of teacher certification in the United States will be described, followed by a description of the current state of traditional and emergency certifications in Oklahoma. Sections on induction-year teachers and teacher self-efficacy make up the remainder of this chapter. Within each section, traditional and emergency certifications are compared and contrasted with findings from literature.

Teacher Certification

Brief History

Society has grappled with teacher certification since the first schools were formed in medieval times (Ford, 1974). These parochial schools appointed clergymen as teachers and focused on teaching scripture and upstanding moral character (LaBue, 1960). Throughout the American colonies and well into the early 1800s, schools continued to be largely funded by local churches with the purpose of providing a rudimentary education

aimed at comprehending religious concepts (Ravitch, 2003). Teacher certification was controlled locally through subjective measures such as oral interviews and written responses to position announcements (LaBue, 1960). As schools diversified and became more complex, so did teacher certification (Ford, 1974).

Teacher certification slowly transitioned from local to state control through the mid and late 1800s (Angus, 2001). The era of the common school, a tuition-free public grammar school, saw the first certification exams required by a departments of education at the state level (Ravitch, 2003). Teacher candidates were required to display a competence in reading, writing, and arithmetic (LaBue, 1960). Educational reformists began pushing for additional requirements for teachers during this time (Angus, 2001). Established institutes of high education formed small pedagogy departments while normal schools were founded as teacher colleges, providing secondary and some post-secondary education to standardize preparation of future teachers (Public Broadcasting System (PBS), 2020). The influence of normal schools precipitated a shift in teacher certification (Ravitch, 2003). Commonly, graduates of these programs were granted teacher certification without additional examination requirements (LaBue, 1960). By 1900, more than 250 public and private normal schools dotted the American landscape (Angus, 2001). Still, teacher preparation programs could not produce enough graduates to fulfill the demand and were accosted by a perceived over-preparation of teachers bound for simple rural schools (LaBue, 1960). To combat teacher shortages, some states began to decrease educational requirements for teacher certification by shortening teacher preparation programs to minimal preservice training with inservice professional development (Angus, 2001).

A shift to a centralized power to certify teachers, expansion of secondary education, and a growing student population contextualized teacher certification in the early 1900s (LaBue, 1960). Certifications began to diversify into grade level and subject area specialties (Angus, 2001). Local vocational education became a priority with the passage of the Smith-Hughes Act in 1917 (Ford, 1974). Preparation of secondary students to be gainfully employed became an important objective of the local schools and, therefore, influenced preparation of vocational education program teachers (Ramp, 1974). As mandated by the Smith-Hughes Act of 1917, federally funded colleges and universities began to provide teacher preparation of vocational educators, including agricultural education (Federal Board for Vocational Education, 1918). A certificate to teach vocational agriculture became one of the first specialty areas to require a four-year degree in addition to relevant experience (Ramp, 1974). These innovations of stricter requirements for teacher certification stemmed from legislative and societal motives to “protect its children from incompetent teachers” (Ford, 1974, p. 1) and provide a quality education for each student (Angus, 2001). The Federal Board for Vocational Education (1918) wrote, “The quality of the teaching is the pivotal fact in any system of schooling. High quality in teaching can be secured only through careful preparation and training” (p. 40). Still, another decade would pass before college education was a national norm for teacher certification (LaBue, 1960). The Great Depression lowered school enrollment, thereby easing teacher shortages across the nation (Angus, 2001). The resulting teacher surplus allowed state legislators and departments of education to raise educational requirements for teacher certification (LaBue, 1960).

World War II caused a sharp decline in the teacher supply, resulting in unprecedented teacher shortages across the nation (LaBue, 1960). The number of emergency teacher certifications issued increased greatly during the 1940s, though requirements for a traditional certification remained steady (Angus, 2001). More than 100,000 emergency certified teachers, approximately 10% of all US teachers, contributed to primary and secondary schools (LaBue, 1960). The latter one-half of the 20th century saw a resurrection of teacher certification examinations (Cohen, 1989). Yet, a passing score on these examinations did not guarantee an individual would be a successful educator (Scarborough, 1973). Court cases in the 1970s and 1980s overturned the use of some teacher certification exams and arbitrary passing scores as discriminatory against teacher candidates of color, with 30% higher failure rates for minorities than white examinees (Cohen, 1989). The inability of teacher preparation program graduates to pass certification exams contributed to teacher shortages continuing to plague all educational fields and geographical regions of the United States (Williamson et al., 1984). Beginning in the 1980s and gaining popularity in the 1990s, states adopted alternative routes to teacher certification offering shortened preparation periods (Blazer, 2012).

So called *alternative teacher certification programs* were introduced as a substitute to emergency certification as a way of stemming the teacher shortage (Williamson et al., 1984). According to Ludlow (2011), “By 2007, every state had variations of an alternative teacher certification route, with 485 distinct programs offered” (p. 446). Variations in admission criteria, length and depth of preparation, and certifications requirements added complexity both within and between states regarding teacher certification (Darling-Hammond et al., 2005). The ambiguous definition of

alternative certification contains at least nine categories of alternative teacher preparation, contributing to confusion within alternative certification research which vary based on entrance requirements, provided preparation prior to entering the classroom, support during the induction-year, and requirements for future teacher certification (Ruhland & Bremer, 2002a).

An estimated one in three teacher candidates are participants in an alternative certification program (Ludlow, 2011). Even with the influx of alternatively certified teachers, a shortage continues to plague American schools (Gracia & Weiss, 2019), with Oklahoma issuing an increasing number emergency certifications each year (Felder, 2018). Traditional and emergency certifications are the pathways of interest in this study. As such, these are discussed in further detail.

Traditional Certification

Traditional certification often refers to programs offered through a bachelor's degree at four-year institutions of higher education (Qu & Becker, 2003). Degree requirements commonly include coursework related to content, pedagogy, and knowledge of students (Darling-Hammond & Bransford, 2005). They also include a teaching internship typically lasting at least 12 weeks under the tutelage of an experienced cooperating teacher and university supervisor (Spooner et al., 2008). Teachers certifying through traditional programs also must pass state-mandated assessments to earn certification (Qu & Becker, 2003).

In Oklahoma, traditional teacher certification in SBAE reflects these national norms. Oklahoma State University, Northwest Oklahoma State University, and Oklahoma Panhandle State University offer agricultural education teacher preparation

programs and have been accredited by the Office of Educational Quality and Accountability (NAAE, 2019). Preservice teachers complete courses in general education, agricultural content, and pedagogy with observational and early field work components, concluding with a student teaching internship (Northwestern Oklahoma State University, 2019; Oklahoma State University, 2020). As outlined by the Oklahoma State Department of Education (2020), traditional certification candidates are required to pay for and pass the Oklahoma General Education Test and Oklahoma Subject Area Test in agricultural education as well as successfully complete the Praxis Performance Assessment for Teachers. Additionally, applicants must pass a background check before certification can be issued (Frankhart, 2020). Certification requirements can cost Oklahoma traditionally certified teachers up to \$1000 (Oklahoma State Department of Education, 2020).

The stringent requirements of traditional teacher certification programs are designed to ensure quality teacher education which produces high quality educators (Darling-Hammond et al., 2005). Proponents of traditional teacher education argue teachers require both content and pedagogical knowledge (Qu & Becker, 2003). Yet, some researchers and policy makers argue traditional teacher certification creates hurdles that narrow the teacher pool without necessarily improving teacher effectiveness or student learning, thereby limiting the teaching profession to those able to earn a four-year college degree (Haj-Broussard et al., 2016).

Emergency Certification

Emergency certification is positioned opposite of traditional certification on the teacher certification requirements continuum. A form of alternative teacher certification,

emergency certification requires minimal prerequisites to teaching in the K-12 classroom (Gunderson & Karge, 1992). States issue emergency certifications as a last resort to fill teaching positions (Goldhaber & Brewer, 2000). With the passing of the No Child Left Behind Act in 2001, standardized testing of students and prospective teachers was intended to promote school district accountability and increase the rigor of instruction (Whitney & Candelaria, 2017). The No Child Left Behind initiative attempted to dissuade states from granting emergency certification by demanding highly qualified teachers to be eligible for federal funding (Nyankori, 2005). In the 2019-2020 school year, at least nine states still granted emergency certification with the requirement of some college coursework and a successful background check to gain a temporary certificate (Frankhart, 2020). Schools hit hardest by the teacher shortage, such as low-income and rural districts, as well as the areas of special education and mathematics, employ more teachers with emergency certifications (Goldhaber & Brewer, 2000). Oklahoma grants two-year emergency teacher certification when no other qualified teacher candidate can be recruited for an open teaching position; however, no system exists to police this stipulation (Oklahoma State Department of Education, 2020). Mobra and Hamlin (2020) found teachers follow the emergency certification through intrinsic and extrinsic motivations. Applicants must have a bachelor's degree from a recognized institution of higher education in any academic program area and pass a background check (Frankhart, 2020). There are no professional development requirements associated with the emergency teacher certification in Oklahoma (Oklahoma State Department of Education (2020).

Emergency certified teachers fill teaching positions that would otherwise remain vacant (Henson & Chambers, 2002). By employing emergency certified teachers, administrators are able to reduce class sizes and distribute workloads over a larger teacher population (Lacko-Kerr, 2002). Some educational professionals attest emergency certified teachers are just as effective as their traditionally certified counterparts assuming they are provided the necessary on-the-job training (Henson & Chambers, 2002). Others, however, claim emergency certified teachers have no place in the classroom (Bowling & Ball, 2018). The differences between traditional and emergency certified teachers is further discussed in terms of induction-year teachers and teacher self-efficacy in the sections below.

Induction-Year Teachers

Induction-year teachers are defined as teachers employed in the first year of their teaching careers (Rayfield et al., 2014). The induction-year is typically classified as the time from signing a contract to teach through the end of the first school year (Katz, 1972). As with any neophyte professional, induction-year teachers face many new situations and challenges (Mundt, 1991). They are expected to perform the same tasks as their more experienced colleagues with comparable effectiveness (Moore & Swan, 2008). However, they lack mastery experiences (Bandura, 1997) and professional knowledge (Darling-Hammond, 2010) that accompany years spent in the profession.

The induction year can be a very stressful time that commonly includes a steady, steep decline in attitude toward teaching during the first semester and a gradual uptick in through the second semester (Moir, 1999). The formative time of the induction-year holds great influence on future career decisions (Mundt, 1991). Those teachers who

struggle during the induction-year are more likely to be less committed to continuing their career in education than those who feel they have been successful in their early teaching endeavors (Franklin & Molina, 2012).

Induction-year teachers account for up to 20% of all teacher attrition (Taie & O’Rear, 2015). Each teacher has individual reasons for not returning to the classroom, but research has discovered trends in forces influencing the exodus of induction-year teachers (Ronfeldt et al., 2012). Solomonson et al. (2019) found a disconnect between the expectations of SBAE induction-year teachers and their reality in the SBAE program, leading to a sense of dissatisfaction and leaving the profession. Issues with parents, work-life balance, and low pay have also been cited as reasons for SBAE teacher attrition (Smith & Ingersoll, 2004; Solomonson et al., 2019; Sorensen et al., 2016; Taie & O’Rear, 2015). This attrition costs school districts an estimated \$7 billion each year (Darling-Hammond, 2010). In addition, student achievement is hampered by a continuous overturning of teaching positions (Ronfeldt et al., 2012). Support through professional development, mentoring, and induction programming may lower the attrition rate of induction-year teachers, and therefore lower the teacher shortage (Smith & Ingersoll, 2004). Katz (1972) called for induction-year teachers to be provided with continuous professional development and support.

Professional Development

Induction-year teachers require the most intensive professional development of any teacher population (Katz, 1972). No matter the depth or intensity of teacher preparation, induction-year teachers require additional training to adequately perform job duties (Moore & Swan, 2008). Across subject areas and grade levels, induction-year

teachers commonly report needs in curriculum, classroom management, and pedagogy (Kennedy & Clinton, 2009). SBAE induction-year teachers have identified additional weaknesses in differentiated instruction (Ruhland & Bremer, 2002b) and agricultural content knowledge (Smalley et al., 2019). As Moore and Swan (2008) pointed out, novice SBAE teachers face these classroom challenges in addition to FFA and SAE program management demands.

The additional demands of SBAE creates a need for professional development to include FFA advisement, SAE supervision, and program management (Sorensen et al., 2014). Career Development Events (Garton & Chung, 1996; Joerger, 2002), alumni support (Joerger, 2002; Myers et al., 2005), and planning chapter events (Myers et al., 2005) represent some of the FFA related professional development needs of induction-year SBAE teachers. SAE areas of concern include record keeping (Sorensen et al., 2014; Toombs & Ramsey, 2020b), student motivation (Smalley et al., 2019), and project development (Joerger, 2002).

The delivery of professional development has a strong influence on its effectiveness (Shaha et al., 2015). Qablan (2019) suggested teacher professional development be grounded in andragogy, the science of teaching adult learners. Additionally, Chaudhuri et al. (2019) found effective professional development can serve as a mastery experience in proper instruction of content. Active learning, standards-based, reflective, and collaborative activities over several regular intervals as part of a coherent program have been shown to produce effective professional learning in teachers (Darling-Hammond et al., 2017; Garet et al., 2001; Smith et al., 2020).

Professional development has traditionally taken the form of in-person seminar trainings (Thomas, 2009). With increasing accessibility to technology and high-speed internet, professional development formats have evolved to take advantage of these opportunities (Shaha & Ellsworth, 2013). These technology-based designs allow participants to diversify their efforts in professional development (Shaha et al., 2015). Programming can be assigned, chosen by participants, or a combination of both leading to a highly personalized professional development offering and can be collaborative or individualistic efforts (Clarke & Hollingsworth, 2002). These resource banks can be accessed as needed and convenient for teachers (Shaha et al., 2015). Thomas (2009) found teachers to prefer online professional development over the traditional classroom-like arrangement. Allowing teachers to access professional development in a just-in-time format has shown to positively impact student learning and be more effective than traditional professional development (Shaha & Ellsworth, 2013; Shaha et al., 2015). Teachers in all career phases need to be life-long learners to stay competent in an ever-changing field, making professional development necessary for all educators (Fischer, 2000).

In addition to formal professional development, mentoring can provide vital informal training (Darling-Hammond, 2010). These professional relationships typically occur between a novice and more experienced member of an organization or profession (Joerger, 2003). Mentoring can consist of assigned pairings or groups or be more organically chosen relationships (Mukeredzi, 2017). Self-chosen mentors may result in stronger personal relationships but can suffer from lower quality mentoring while assigning mentors can result in personality differences (Moore & Swan, 2008). A

structured mentoring program includes required tasks for mentor and protégé to complete (Joerger, 2003). These tasks vary from program to program but often include in-person meetings as well as weekly, or as needed, check-ins (Peiter et al., 2005). Mentoring, as part of an induction program, has been correlated with greater novice teacher retention and effectiveness (Foor & Cano, 2012; Smith & Ingersoll, 2004; Solomonson et al., 2018). Mentors can be equitable, effective models for novice teachers (Jnah et al., 2015). Their vicarious experiences and verbal persuasion have the potential to build novice teachers' self-efficacy (Bandura, 1997). Mentors can provide important reflection and emotional support for novice SBAE teachers (Peiter et al., 2005; Toombs & Ramsey, 2020a).

Differences Across Certification Pathways

Does the additional teacher preparation prepare traditionally certified SBAE teachers better for these challenges, or do induction-year teachers require similar professional development across certification pathways? Although literature has been devoted to this topic, findings are inconsistent among studies (Bowling & Ball, 2018; Darling-Hammond et al., 2005). As the term emergency certification is rare in published research of this context, the search was broadened to include alternatively certified teachers. Additionally, variations in definitions and requirements of alternative certification create challenges in comparing study results of different alternatively certified populations.

Roberts and Dyer (2004) found teachers with traditional certification reported higher self-perceived needs than those with alternative certifications. They proposed alternatively certified teachers may teach a narrower range of courses and “lack sufficient

professional knowledge to accurately indicate their deficiencies” (Roberts & Dyer, 2004, p. 68). Another study found no statistically significant differences between self-reported professional development needs of traditionally and alternatively certified SBAE teachers (Swafford & Friedel, 2010). Stair et al. (2019) found no statistically significant differences between traditionally and alternatively certified teachers in all areas but program management where traditionally certified teachers reported a greater need for training.

Other studies debate the importance of relevant experience in the content areas. Alternatively certified teachers are more likely to have work experience in their content field than recent college graduates with a traditional certification (Evans, 2015). For career and technical education instructors in particular, some educational professionals believe this experience is vital to effective teaching (Evans, 2014). Therefore, traditionally certified SBAE teachers may need professional development in agricultural content areas (Smalley et al., 2019).

Robinson (2010b) and Elliott et al. (2010) recommend a differentiated induction program for traditional and alternative certifications. To support this proposition, Robinson and Edwards (2012) noted a difference in the classroom performance of SBAE induction-year teachers across certification pathways with traditionally certified teachers scoring higher on classroom observation evaluations. “Professional development and credit courses should be offered in an attempt to provide (alternatively certified) teachers with appropriate pedagogical and methodological skills required to assist students’ needs regarding hands-on classroom and laboratory instruction.” (Robinson, 2010a, p. 35).

Kansas State University and Texas Tech University have created college courses specifically for alternatively certified SBAE teachers (Kansas State University, 2020; Starich & Rayfield, 2020). Topics include pedagogy, FFA advisement, SAE supervision, program management, and laboratory safety (Kansas State University, 2020; Starich & Rayfield, 2020). Participants complete coursework while employed as SBAE teachers (Kansas State University, 2020). The degree program concludes with a supervised teaching experience similar to the clinical student teaching internships of traditional teacher certification (Kansas State University, 2020; Starich & Rayfield, 2020). Oklahoma State University has previously offered a shortened version of these programs, but none exist at the time of publication (J. S. Robinson, personal communication, February 22, 2021).

Currently, SBAE state staff from the Oklahoma Department of Career and Technology Education (CareerTech) offer induction programming for SBAE teachers, though this support is not differentiated across certification pathways (Oklahoma CareerTech, 2020). All SBAE induction-year teachers meet five to eight times throughout the year to discuss timely topics such as the Agricultural Experience Tracker (AET), award applications, and curriculum resources (Oklahoma CareerTech, 2020). In the past, all Oklahoma induction-year teachers benefited from a regimented support system of administrators, mentors, and teacher educators (Luckowski, 1983). However, that program has since been defunded and structured mentoring is no longer available to SBAE induction-year teachers (Toombs & Ramsey, 2020a).

Teacher Self-Efficacy

Bandura (1997) wrote of teacher self-efficacy, “The task of creating learning environments conducive to development of cognitive competencies rests heavily on the talents and self-efficacy of teachers” (p. 240). Tschannen-Moran and Woolfolk Hoy (2001) defined teacher self-efficacy as a teacher’s belief in their ability to reach even the most difficult student in their classroom. Teacher self-efficacy carries heavy implications for both teacher behavior and student learning (McKim et al., 2017). Teachers with high self-efficacy beliefs are more likely to report higher job satisfaction, less professional stress, and are more likely to be retained in the profession (Kasalak & Dagyar, 2020), therefore decreasing the teacher shortage (McKim & Velez, 2016). Teacher self-efficacy may influence the choice of instructional methods, with teachers who have greater self-efficacy choosing more student-based teaching methods than those with lower self-efficacy (Avramidis et al., 2019). Yildizli (2019) found teachers with greater teacher self-efficacy set higher goals for both themselves and their students.

Teacher self-efficacy has been shown to impact student motivation and achievement (Engin, 2020). Sabet et al. (2018) reported a positive correlation between teacher self-efficacy and student motivation in English teachers. Likewise, Shahzad and Naureen (2017) found teacher self-efficacy to have a positive, statistically significant relationship with student achievement. However, as Zee and Koomen (2016) pointed out, research produces mixed findings on the direction and strength of the relationship between teacher self-efficacy and student outcomes, potentially due to a number of extraneous variables and measurement variations.

Teacher self-efficacy is a prevalent topic in SBAE research (McKim & Velez, 2016). Much of this research tends to be descriptive with recommendations for practice

rooted in professional development needs (Blackburn & Robinson, 2008; Bunch et al., 2012; Haynes & Stripling, 2014; McKim & Saucier, 2013; McKim & Velez, 2017; Rubenstein et al., 2014; Wolf, 2011) with the assumption that lower levels of teacher self-efficacy equate to additional professional development training (Bray-Clark & Bates, 2003). According to Klassen and Tze (2014), raising a teacher's self-efficacy will imply better performance in the classroom.

Teacher self-efficacy is built through the same factors Bandura (1997) identified: (a) mastery experiences, (b) vicarious experiences, (c) verbal persuasion, and (d) physiological and affective states (Arslan, 2019; McKim & Velez, 2016). McKim and Velez (2016) outlined sources of teacher self-efficacy common for SBAE traditionally certified teachers, including student teaching and preclinical experiences, observations, teacher educator feedback, and task contemplation. In another publication, McKim and Velez (2017) identified student teaching as a pivotal source of novice teacher self-efficacy. The student teaching internship offers many mastery experiences with a pivotal model in the cooperating teacher offering vicarious experiences and verbal persuasion (Plourde, 2002). Korte and Simonsen (2018) found social support in the form of students and community members to be important sources of vicarious experiences, models, and verbal persuasion in forming teacher self-efficacy in novice SBAE teachers. Hasselquist et al. (2017) identified elements of school culture, such as fellow colleagues, were important sources of teacher self-efficacy. Sources of self-efficacy for emergency certified teachers has yet to be discussed in research literature.

Differences Across Certification Pathways

As mastery experiences are the most influential source of self-efficacy (Bandura, 1997), teacher preparation may be assumed to greatly influence teacher self-efficacy in novice teachers (McKim & Velez, 2017). However, literature is conflicted in comparing the teacher self-efficacy of traditionally certified teachers to those with emergency or alternative certifications. The variations in findings could be attributed to the ambiguous definition of alternative certification (Darling-Hammond et al., 2005) with some studies providing very little to no explanation of the certification routes of their sample. In this section of the literature review, traditional certification will be compared with alternative certification as emergency certification is rarely found in the literature base.

SBAE studies have found traditionally certified teachers are more (Duncan & Ricketts, 2008; Robinson & Edwards, 2012), less (Robinson & Edwards, 2012), or equally (Rocca & Washburn, 2006) self-efficacious as alternatively certified teachers. The groups also differ across various teacher self-efficacy constructs. Duncan and Ricketts (2008) found traditionally certified SBAE teachers reported statistically significantly higher self-efficacy than alternatively certified teachers in relation to technical content, FFA/leadership development/SAE, and program management but not in teaching and learning. In a longitudinal study, Robinson and Edwards (2012) described changes in teacher self-efficacy from beginning to end of the induction year for both traditional and alternative certifications. They noted traditionally certified teachers were more self-efficacious at the beginning of the year but were surpassed by alternatively certified teachers in student engagement, instructional practices, and classroom management teacher self-efficacy. Yet another study concluded “traditional and

alternatively certified agriculture teachers were not distinguishable when compared on their perceived teacher efficacy” (Rocca & Washburn, 2006, p. 65).

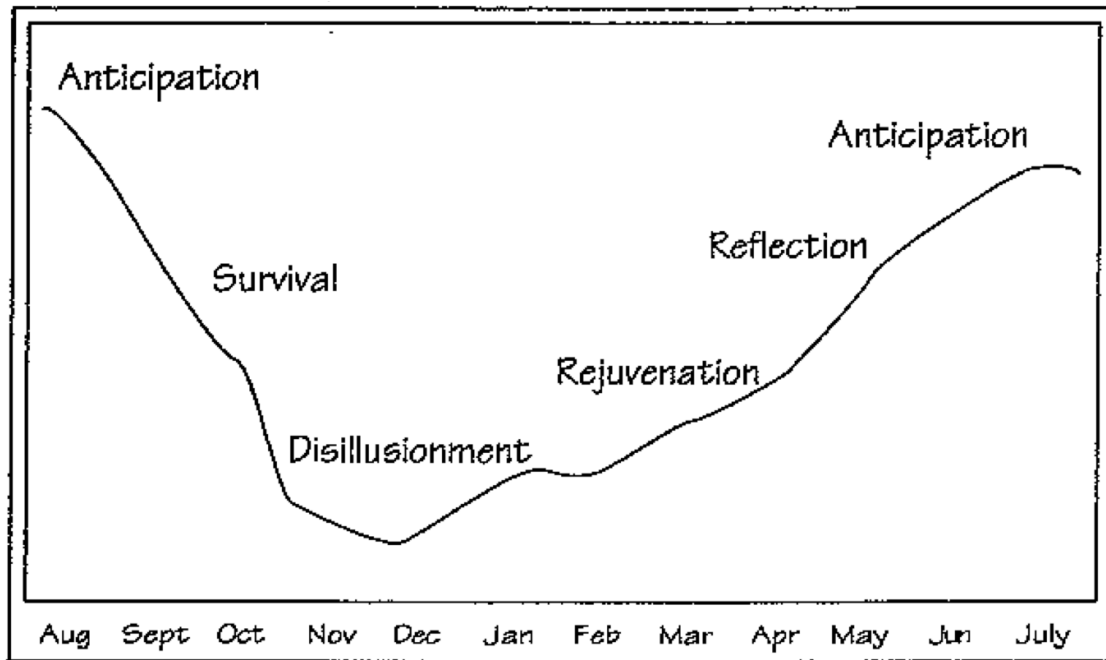
Beyond the scope of SBAE, research in teacher self-efficacy across certification pathways also produced varied results. It seems comparing traditionally and alternatively certified teachers’ self-efficacy is highly dependent on the populations studied and findings are not typically generalizable (Carr, 2013; Shane, 2010). When statistically significant differences were noted, some studies, such as Flores et al. (2004) and Zientek (2006), found traditionally certified teachers reported greater feelings of self-efficacy. Yet others, such as Henson and Chambers (2002), one of the few studies to specifically identify emergency certified teachers, found this group to be more self-efficacious in teaching than traditionally certified teachers. In other instances, no statically significant differences of teacher self-efficacy existed between traditionally and alternatively certified teachers (Carr, 2013; Fox & Peters, 2013; Mueller, 2012; Shane, 2010).

Teacher Self-Efficacy of Induction-Year Teachers

Teacher self-efficacy shows some relationship with teaching experience (McKim & Velez, 2016). Experienced teachers tend to report higher teacher self-efficacy than their novice colleagues (Penrose et al., 2007). Induction-year teachers, in addition to the additional professional development needs, have been found to be the least self-efficacious group of any teacher career stage (Burriss et al., 2010). This special group was also found to experience changes in their teacher self-efficacy throughout the first year of teaching (Swan et al., 2011). Moir (1999) graphed this generalized experience to depict a sharp decline in attitude towards teaching during the first semester with a gradual increase from January to July (Figure 3).

Figure 3

Moir's (1999) Phases of an Induction-Year Teacher's Attitude Toward Teaching



Several personal and environmental factors influence teacher self-efficacy of induction-year teachers (Whittington et al., 2006). Past mastery experiences, such as student teaching (Wolf, 2011) and social support in the form of mentors and administrators (Bacon, 2020; Munshi, 2018), contribute to positive beliefs of one's own teaching ability. Bandura (1997) theorized teacher self-efficacy of early career teachers impacts their retention in the profession, creating a need for positive self-efficacy support and programming for induction-year and novice teachers. Induction programs provide promising evidence of supporting an induction-year teacher's sense of self-efficacy by providing specified training and mentoring to model effective teaching behaviors (Bacon, 2020). Elliott et al. (2010) called for school administrators to provide the necessary differentiated support and professional development for all early career teachers to best retain novice teachers.

Conclusion

This review of literature used the study's research questions to guide inquiry into the literature base. Teacher certification has evolved into a centrally controlled institution with cycles of stringent and lax entry requirements following the highs and lows of teacher supply (Angus, 2001). Traditional certification has come to be associated with teacher preparation programs in institutes of higher education (Qu & Becker, 2003). Graduates must pass additional state mandated certification exams to be granted licensure and certification (Oklahoma State Department of Education, 2020). These arduous requirements have been blamed by some as limiting the teacher supply pool, especially for people of color (Haj-Broussard et al., 2016). Emergency certification is designed as a last resort in response to the teacher shortage (Gunderson & Karge, 1992). Lay people are granted temporary certification to teach with minimalistic certification requirements (Oklahoma State Department of Education, 2020). Although this certification allows administrators to fill teaching positions, emergency certification has long been under scrutiny by teacher educators (Bowling & Ball, 2018).

The induction-year holds immense challenges for novice teachers and may impact early career decisions (Mundt, 1991). The first year requires more professional development than any other stage in a teacher's career (Katz, 1972). Although some studies show little to no difference between the experiences of induction-year teachers across certification pathways (Stair et al., 2019; Swafford & Friedel, 2010), other experts have detected differences and proposed the implementation of a differentiated induction program based on teacher preparation (Elliott et al., 2010; Robinson 2010a; Robinson & Edwards, 2012).

Teacher self-efficacy holds implications for both teachers and their students (Tschannen-Moran & Woolfolk Hoy, 2001). By promoting growth in teacher self-efficacy, administrators and teacher educators may be able to better retain novice teachers and increase student learning (Arslan, 2019). The literature is contradictory in comparing teacher self-efficacy and induction-year professional development needs of traditionally and emergency certified SBAE teachers (McKim & Velez, 2016). Variations in findings may be attributed to the certification pathway or may be a result of confounding methodologies, sample sizes, or self-report measurements. Gaps in literature comparing emergency and traditionally certified SBAE teachers as well as the ambiguous definition of alternative certification creates limitations to comparisons with existing literature and call for greater in-depth studies of the two certification pathways.

CHAPTER III

Methodology

This chapter describes methods and procedures used to collect and analyze data. The population of Oklahoma SBAE induction-year teachers is described. A convergent parallel mixed methods approach was designed into quantitative, qualitative, and data integration phases. Sampling, data collection, data analysis, validity, and reliability are discussed for each phase. Quantitative methods employed survey research with pre-existing instruments. Yin's (2018) multiple case study methodology was conducted to gather qualitative data with the purpose of explaining quantitative results.

Epistemological Assumptions

Researchers' philosophical viewpoints impact their work and should therefore be communicated to readers (Creswell & Plano Clark, 2018). I have long considered myself a pragmatic. This philosophical foundation strives to understand the world through practical means (Tashakkori & Teddlie, 2003). A problem-solving approach is driven by real-world applications of research and employs practical means to accomplish goals

(Creswell & Plano Clark, 2018). Mixed methods studies are often formed with a pragmatic worldview (Tashakkori & Teddlie, 2003). The freedom to incorporate multiple types of data allows researchers to best understand the problem at hand and therefore provide applicable solutions (Creswell & Plano Clark, 2018).

In this study, my pragmatic epistemological framework informed the project from beginning to finish. My career-long association with SBAE allowed my first-hand witness of teacher shortages, issues faced by induction-year teachers, and teacher turnover to lead to an interest in best serving induction-year teachers and their potential differing needs based on certification pathways. My pragmatic tendencies motivated a mixed methods approach to better understand the realities of this population, investigate variables at play, and promote practical solutions to problems.

Reflexivity Statement

I was traditionally certified to teach SBAE and did so for seven years. At the time of this study, I had worked in teacher preparation in a traditional certification program for nearly three years. I had taught courses in classroom instruction, advising FFA chapters, and supervising student SAE projects. In addition, I had guided multiple SBAE student teachers through their clinical teaching experience. These activities have allowed me to build a competence in observing and guiding novice teachers in their professional development. My future plans include educating preservice SBAE teachers through a traditional teacher preparation program. Therefore, my personal background and experiences were carefully bracketed throughout the procedures to avoid potential bias favoring traditionally certified teachers. A balanced approach to the review of literature was taken by including studies with favorable findings towards all pathways to teacher

certification. Data were collected from a representation of both emergency and traditionally certified Oklahoma SBAE teachers. Trustworthiness was addressed in qualitative data analysis by member checking and chain of evidence following Yin's (2018) case study model to best represent participants' experiences and voices.

My background and future plans may seem I favor traditionally certified teachers. However, as a teacher educator I am passionate about assisting novice teachers in becoming effective educators, no matter their certification pathway. I believe this population must be studied closely to provide impactful professional development. I have dedicated much of my research thus far to this area.

Ethical Considerations

Utmost care was taken to conduct this study in an ethical manner. As recommended from The National Academies of Science, Engineering, and Medicine (2016), respect for persons, beneficence, and justice were addressed to ensure ethical research. Prior to conducting the study, the Institutional Review Board (IRB) at Oklahoma State University was contacted and advised of all methods of this study. The IRB application was approved on July 20, 2020 with revisions submitted and approved on September 14, 2020. The IRB approval documentation can be found in Appendices A and B. Potential participants were allowed to refuse participation at any time without repercussions. Individuals were compensated with \$100 for their time in completing the quantitative phase at the conclusion of data collection.

Research Design

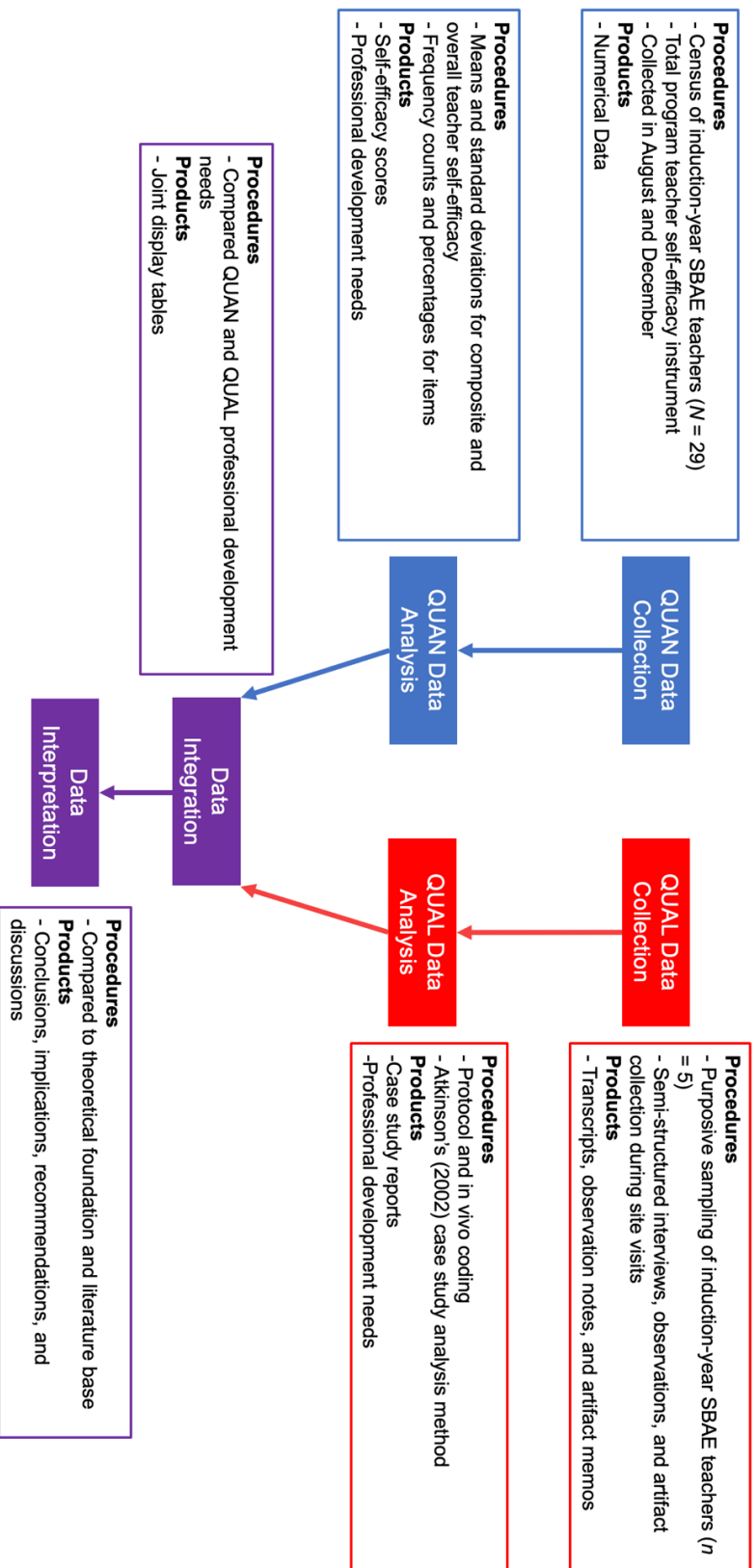
This study followed a convergent parallel mixed methods approach. Mixed methods are employed when a lone methodology is insufficient to study a problem

(Ivankova et al., 2006). Self-report quantitative data may not display true professional development needs of induction-year teachers or provide a complete comparison across certification pathways (Bandura, 1997; McDonald, 2008; Roberts & Dyer, 2004; Robinson & Edwards, 2012). Conversely, qualitative data provides contextual evidence but fails to compare participants to the population (Bowen et al., 2017). By integrating the two forms of data, mixed methods served to provide a more robust and complete analysis of research purpose and questions (Creswell & Plano Clark, 2018) and “help increase confidence in findings” (Bowen et al., 2017, p. 11).

With a convergent parallel approach, a study is conducted in three distinct phases (Creswell & Plano Clark, 2018). In the first two phases, quantitative and qualitative data are collected and analyzed separately (Fetters et al., 2013). After data analysis is complete, the data sets are then integrated to identify areas of convergence and divergence (Creswell & Plano Clark, 2018). As shown in Figure 4, quantitative and qualitative data was collected and analyzed independently in this study. After professional development needs were identified in quantitative and qualitative data sets, these needs were compared both within and between cases.

Figure 4

Research Design Diagram



Population

The population of interest for this study was induction-year SBAE teachers in Oklahoma during the 2020-2021 school year ($N = 29$). These individuals were in their first semester of teaching at the time of data collection. A list of new teachers was obtained from the Agricultural Education Division of the Oklahoma Department of Career and Technology Education (CareerTech). The list was vetted to ensure members had not taught any subject in any state before the 2020-2021 school year. This population frame was then used to make initial contact with all induction-year SBAE teachers. In August 2020, a link to a Qualtrics instrument was provided to each member of the population to obtain preliminary quantitative data and confirm eligibility. Participants were contacted four times to obtain initial quantitative data (Dillman et al., 2014).

The same population frame was used for final quantitative data collection. In December 2020, all induction-year Oklahoma SBAE teachers were contacted with another link to the Qualtrics instrument. The same items were included again to rate teachers' self-efficacy at the end of the fall semester. Participants were reminded three times to complete the final instrument (Dillman et al., 2014).

Quantitative Measures

Quantitative researchers seek objective truth from numerical data (Creswell, 2009). These data provide evidence to describe variables, investigate trends, explain relationships, or test hypotheses (Creswell, 2015). Data can be interpreted through a number of statistical analyses either describing the variables or comparing them to a larger population through inferential statistics (Field, 2009). Survey research was used to

gather quantitative data in the first phase of this study as an efficient and effective manner of collecting information from numerous participants (Ary et al., 2006).

Sampling

A census was used for the quantitative data collected in this study. Census research includes all members of a population (Ary et al., 2006). All induction-year SBAE teachers in Oklahoma were invited to complete the instrument. Due to the manageable size of the population, cost-effective methods, and adequacy of descriptive statistics to address research questions, a census was determined to be appropriate (Creswell, 2009). Initial data collection resulted in 24 complete responses that equated to an 82.76% response rate. Following recommendations from Lindner et al. (2001) to account for non-response bias, the responses were split in half with the first 12 participants to respond representing early responders and the last 12 labeled as late responders. No statistically significant differences, $t(22) = .40, p > .05$, Cohen's $d = 0.16$, were detected between early and late responders on total teacher self-efficacy scores. Therefore, it was determined findings were representative of the population (Johnson & Shoulders, 2017).

Quantitative data in the final survey data collection period in December yielded 21 responses for a 72.41% response rate. Non-response bias was assessed as before with 10 early respondents and 11 late respondents (Lindner et al., 2001). No statistically significant differences, $t(19) = 1.59, p > .05$, Cohen's $d = 0.70$, were found. Therefore, findings for the final quantitative data collection were representative of the population (Johnson & Shoulders, 2017).

Instrument

The instrument utilized in this study was a modification and combination of two preexisting SBAE teacher self-efficacy instruments which are described below. The instrument was converted to an electronic form administered on the Qualtrics platform. Following Dillman et al.'s (2014) Tailored Design Method, items were constructed and organized to reduce survey fatigue and increase response rate. A complete instrument can be found in Appendix C.

Agriculture Teacher Self-Efficacy Scale

Wolf (2011) developed a 57-item instrument to measure teacher self-efficacy in instruction, FFA, and SAE domains of SBAE. Items were inspired from Tschannen-Moran's and Woolfolk Hoy's Teacher Sense of Efficacy Scale as well as SBAE literature (Wolf, 2008; 2011). Participants ranked their level of capability on a nine-point, Likert-type scale with one representing no capability and nine reflecting a great deal of capability (Wolf, 2011). This original instrument returned Cronbach alpha reliability coefficients of .94 for classroom, .94 for FFA, and .96 for SAE (Wolf, 2008). The classroom and FFA domains were used for this study. The 13 items associated with the SAE domain were omitted as another, more recent, instrument was available. The 20 items for measuring the area of instruction were included with minor modifications. Three items were added to the FFA section to reflect the importance of leadership and personal development within the National FFA Organization (FFA, 2020; Horstmeier & Nall, 2007). Wolf (2011) categorized responses of one through three (no to little capability) as low teacher self-efficacy, four through six (some capability) as moderate teacher self-efficacy, and seven through nine (quite a bit to a great deal of capability) as

high teacher self-efficacy. Low teacher self-efficacy items were recorded as professional development needs (Bray-Clark & Bates, 2003; Wolf, 2008).

SAE Teacher Self-Efficacy Scale

Rubenstein et al. (2014) created a 20-item instrument for the purpose of measuring the teacher self-efficacy of preservice teachers in relation to overseeing SAE projects. Published before the current *SAE for All* curriculum was developed, this instrument used SAE competencies identified in a project conducted by the American Association for Agricultural Education (Rubenstein et al., 2014). However, these competencies are reflective of recommendations by The Council for Agricultural Education (2017) for supervising student SAEs. In its original form, this instrument returned a Cronbach's alpha of .95 (Rubenstein et al., 2014). SAE self-efficacy items for this study were taken straight from Rubenstein et al.'s (2014) instrument. The question stem was changed to reflect Wolf's (2008; 2011) wording. The Likert-type scale was expanded to the same nine-point format to add congruency to data analysis.

Procedures

Oklahoma induction-year SBAE teachers were contacted individually through email to obtain their consent and eligibility to participate in the research. Once their status as an induction-year SBAE teacher was confirmed, participants were asked to answer items relating to their perceived teacher self-efficacy in regard to the instruction, FFA, and SAE components of SBAE. Additionally, participants could opt-out of the study at any time (Dillman et al., 2014).

Quantitative data were collected two times throughout the study. Initial data were collected August 17, 2020 and the final round of data were collected December 7, 2020.

An email was sent with the link to the instrument. Following Dillman et al.'s (2014) recommendations, weekly reminder emails were sent to those participants who had not yet responded. Data were downloaded from Qualtrics and analyzed using IBM's Statistical Package for the Social Sciences Version 23.

Data Analysis

As this study was a census of Oklahoma induction-year SBAE teachers, descriptive statistics in the form of frequencies, percentages, means, and standard deviations were calculated. A composite score for instruction, FFA, and SAE teacher self-efficacy was calculated for each participant by averaging responses in each area (Rubenstein et al., 2014; Wolf, 2008; Wolf, 2011). An overall SBAE teacher self-efficacy score was also computed from the average response to all items (Wolf, 2008). These constructs were reported as a Likert scale using means and standard deviations (Boone & Boone, 2012).

Using Wolf's (2008) categories, participants with a perceived self-efficacy of one through three were classified as low, four through six as moderate, and seven through nine as high in teacher self-efficacy for that item. Frequencies and percentages were calculated to report these item specific data points (Boone & Boone, 2012). Items receiving a low teacher self-efficacy rating (i.e., little to no capability) were identified as professional development needs (Bray-Clark & Bates, 2003; Wolf, 2008).

Reliability and Validity

Face and content validity were addressed by a panel of four SBAE experts. These individuals have worked as secondary SBAE teachers as well as teacher educators. Each

had experience in social science and survey instrument development. Together they represented more than 80 years of experience within the SBAE profession.

High Cronbach's α statistics ($> .9$) of the original instruments indicate reliable measures (Nunnally & Bernstein, 1994). Additional post-hoc reliability coefficients were calculated with initial quantitative results following procedures outlined by Warmbrood (2014) who suggested reporting subscale scores when calculating subscale and total scores. Instructional self-efficacy items returned a Cronbach's α score of 0.86, FFA self-efficacy items returned a Cronbach's α score of 0.96, and SAE self-efficacy items returned a Cronbach's α score of 0.96.

Qualitative Measures

Qualitative data were collected between the rounds of quantitative data collection. Qualitative data collected included interviews, observations of teaching, and artifact collection. Collected artifacts included instructional aids, FFA awards, and program facilities, to name a few. These data were based on participants' words, actions, and environments. Qualitative data served to add context and participant voices to "explain or expand on the first-phase quantitative results" (Creswell & Clark, 2018, p. 65). Yin's (2018) multiple-case study methodology was used to gather qualitative data. Case studies use multiple forms of qualitative data to gather contextual and participant perceptions within a bounded case (Yin, 2018). In this study, a case was defined as an Oklahoma induction-year SBAE teacher. Their previous experiences, interaction within the SBAE environment, professional disposition, and teaching behaviors were of particular interest in collecting case study data.

Sampling

Purposive sampling was used to gather data from individuals who may best answer the overarching question (Creswell, 2015). Oklahoma induction-year SBAE teachers were invited to participate in the qualitative measures of this study on the quantitative instrument. From those who volunteered, five were chosen to represent the maximum variation of teacher preparation in the population. Selection criteria included certification pathway, semester of graduation, and proximity to the researcher housed in Stillwater, Oklahoma. Two emergency certified and three traditionally certified SBAE teachers was chosen to provide cross case comparisons (Yin, 2018). According to Yin (2018), five to ten cases are sufficient in comparing two groups using a comparative case methodology.

Traditionally certified SBAE teachers were chosen to represent both Oklahoma State University (OSU) graduates and those graduating from other teacher preparation institutions. OSU prepares the majority of induction-year SBAE teachers in the state each year (NAAE, 2019). Of these participants, one Fall 2019 and one Spring 2020 graduate was chosen for qualitative case analyses. The third traditionally certified participant graduated from another SBAE teacher preparation program in the state. Once participants were grouped into OSU Fall 2019 graduate, OSU Spring 2020 graduate, and non-OSU graduate categories, one from each classification was chosen by their proximity to the researcher in Stillwater, Oklahoma. Emergency certified SBAE teachers were chosen from those who self-identified as emergency certified on the initial quantitative survey instrument. Of these, three individuals participated for the qualitative phase and were included as a case. One emergency certified teacher chose to drop out of the study due to

the strains of teaching and the COVID-19 pandemic, leaving two emergency certified cases with qualitative data.

Data Collection

Multiple sources of data provided opportunities for data triangulation, thus contributing construct validity to the study (Yin, 2018). Data were collected on site twice during the fall semester. A site visit was scheduled at each participant's convenience to coordinate classroom instruction and in-person interview opportunities. At each site visit, interview, observation, and artifact data were collected.

Interviews

Semi-structured interviews were conducted at each site visit. Yin (2018) identified interviews as an integral component of case studies. "Interviews can especially help by suggesting explanations (i.e., the 'hows' and 'whys') of key events, as well as the insights reflecting participants' relativist perspectives" (Yin, 2018. p. 118). Semi-structured interviews utilize an interview protocol while allowing for probing and clarifying questions (Barriball & While, 1994). Interview protocols were established with a base in the qualitative research questions of this study. A panel of experts in SBAE and qualitative research reviewed the protocols for trustworthiness and ethical concerns. The interview protocols can be found in Appendix D. Each interview was audio recorded and transcribed by hand. All interviews, except for one, were conducted in person. Mr. Wilson's final interview was conducted over a Zoom video call.

The initial interview was conducted to gather data associated with participants' backgrounds, decision to teach SBAE, professional experiences thus far, and future career goals. This interview occurred before any classroom observations with the

intention of building rapport between participants and I (Yin, 2018). In subsequent site visits, the interview occurred after observing the participant teach one class period. These interview questions were aimed at discovering participants' lesson planning procedure and self-reflection of teaching performance. Post-observation interviews were conducted the same day as teaching observations to decrease any recall bias.

Self-efficacy was also discussed in interviews during site visits. These interview questions were grounded in the conceptual framework depicted in Figure 2. Sources of self-efficacy as well as extraneous influences on behavior were collected from participants. A total of three interviews were used to collect self-efficacy qualitative data. The first self-efficacy interview was geared to allow participants to reflect on their perceptions of efficacy and describe how they came to form those beliefs. Subsequent self-efficacy interviews asked participants to report any changes to self-efficacy beliefs and describe the cyclical influence of behavior, environment, and personal factors. As interviews are a form of self-report data and liable to social desirability and self-awareness biases (Yin, 2018), additional forms of data were obtained to contribute trustworthiness of qualitative methods.

Observations

According to Farrell and Lim (2005), observations can provide qualitative data concerning teaching behaviors in classroom settings. Observational data are commonly found in case study research and provide social and environmental information (Yin, 2018). Two non-participatory observations were conducted at each site. Teaching behaviors were observed and recorded as participants taught a class period. The same class period was observed for all site visits. This stipulation was intended to track

participants' ability to instruct and manage the same group of students throughout the course of their first semester. According to Yin (2018), researchers are present but separated from events in non-participatory observations. This type of observation was chosen to decrease interference with the classroom atmosphere. Field notes commonly serve to record observational data (Yin, 2018). Detailed, hand-written field notes were recorded throughout the class period. Events during these observations were used as talking points in post-observation interviews.

Strengths and weaknesses of the lesson were recorded in the field notes. Strengths were any component which enhanced student learning. Weaknesses were any component which constricted student learning as identified in literature (Rosenshine & Furst, 1971) and my ten years of experience in SBAE. These weaknesses were noted as professional development needs in data analysis.

Artifacts

Artifacts are used to contribute contextual data and come in many different forms (Yin, 2018). This form of data is very common in qualitative studies and the opportunity to collect artifacts is present in nearly all bounded cases (Creswell & Poth, 2018).

Artifacts contribute trustworthiness to a study by building a chain of evidence easily audited by others (Yin, 2018). In this study, any instructional tool or equipment gathered was considered an artifact. Artifacts included, but were not limited to, classroom and laboratory environments, bulletin boards, instructional posters, visual aids, shop equipment, display of student work, FFA signage, community census data, and yearly school report data. I took photographs of artifacts and recorded with a short caption labeling the case and location of each artifact. To protect participant identity, no faces or

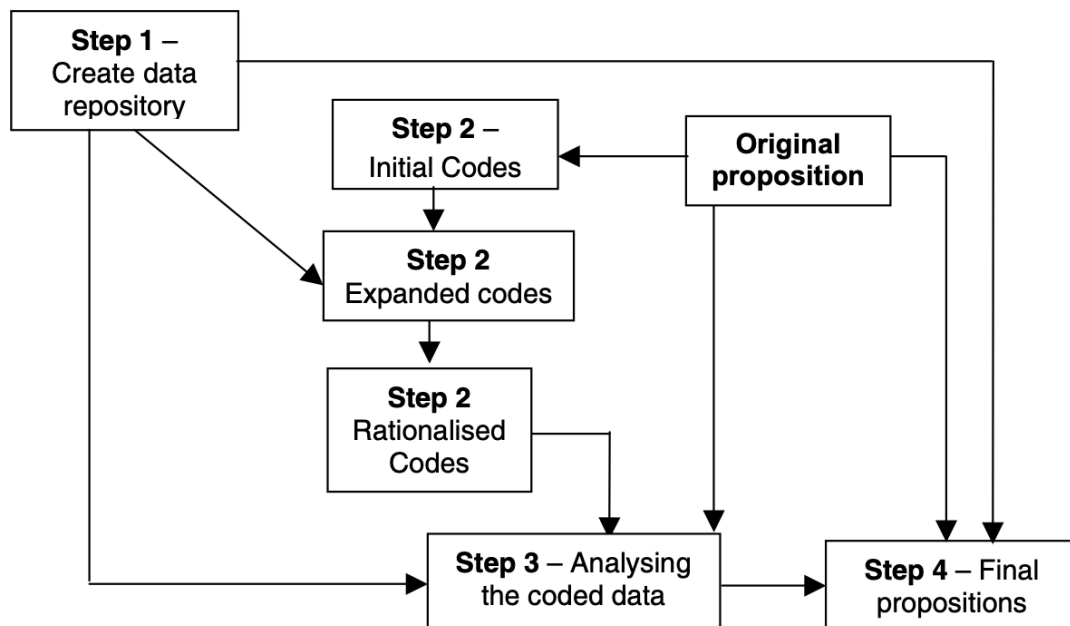
names were included in the photographs. A short memo was later recorded for each artifact.

Data Analysis

Careful data analysis was conducted. Of the five analytic techniques recommended by Yin (2018), explanation building was utilized to explain the formation of self-efficacy and its translation to teaching behaviors within each case. Cases were then compared using a cross-case synthesis. This coding contributed to the integration of quantitative and qualitative data to explain the formation of self-efficacy for each participant and represent the cyclical influence of behavior, environment, and personal factors. To achieve these qualitative outcomes, data were coded according to Atkinson's (2002) recommendations for case study data analysis. Atkinson (2002) identified four steps as shown in Figure 5.

Figure 5

Atkinson's (2002) Four Steps to Analyze Data from a Case Study Method



A data repository is organized to allow data to be easily manipulated (Atkinson, 2002). Interview transcripts, observation field notes, and artifact memos were grouped based on individual case and uploaded to ATLAS.ti qualitative data software. This tool was used to assist in managing data, organizing codes, and forming themes. Output from the software provided the audit trail.

I used a three-phase approach to coding the data. Initial codes “can be made by taking into consideration research questions, hypotheses, problem areas, and/or key variables” (Atkinson, 2002, p. 5). For this study, initial codes originated in the theoretical and conceptual frameworks and quantitative instrument items. Interview transcripts, observation fieldnotes, and artifact memos were coded for mastery experiences, psychological and affective states, vicarious experiences, verbal persuasion, model, environment, behavior, and various professional components included on the quantitative instrument. These served as the protocol codes for initial coding (Saldaña, 2016). Rarely will these codes cover all data points in a case study (Atkinson, 2002). Therefore, codes must be expanded to include data points throughout the case (Atkinson, 2002). In vivo coding was used to create generated codes. According to Saldaña (2016), in vivo coding can be used in nearly all qualitative research by using participants’ words to create codes. Codes are then rationalized by creating a frequency chart of codes across cases (Atkinson, 2002). Once reviewed, codes were deleted or merged if necessary.

According to Atkinson (2003), once data are coded, they can be analyzed and grouped by similar characteristics. The analysis provides researchers the ability to compare codes both within and between cases (Atkinson, 2002). To aid in the integration of quantitative and qualitative data, these codes were compared to the items included in

the quantitative self-efficacy instrument. Professional development needs emerged as the themes. A cross case comparison was then conducted between traditionally and emergency certified teachers. In the final step, Atkinson (2002) outlined the importance of connecting final codes to the theoretical framework and literature base of the study. Theoretical foundations or gaps in literature were identified for each code to build trustworthiness and transferability.

Trustworthiness

Yin (2018) outlined several suggestions for building quality into a case study. Though qualitative researchers use the terms trustworthiness and transferability to refer to the quantitative term of validity, Yin (2018) employed three types of validity as well as reliability to increase consistency with other social science research. The goal of qualitative validity (trustworthiness) is not to generalize findings, but to build credibility of a study (Creswell & Poth, 2018).

Construct Validity

Construct validity ensures proper procedures were utilized to accurately answer research questions and obtain the study's purpose (Yin, 2018). Careful definitions were necessary to operationalize variables of interest so that appropriate measures could be identified. It is imperative researchers are truly studying what is reported. Yin (2018) suggested triangulation of data, a chain of evidence, and member checking to build construct validity in a case study.

Three forms of qualitative data provided multiple sources to triangulate the study's findings. A chain of evidence was maintained in the raw interview transcripts, observation field notes, and artifact memos to accompany outputs of ATLAS.ti that

provided data points organized by case and code. Each participant received their case study report to review and provide feedback as to the representation of their voice and context in the research. No requests for corrections or omissions were made by any of the case study participants.

Internal Validity

Internal validity is a special concern for explanatory research such as this study (Yin, 2018). Extraneous influences must be carefully sought after and identified. The outcome from explanatory research is not to claim causation, but rather to identify a relationship (Creswell & Plano Clark, 2018). To build internal validity, Yin (2018) identified an analytic technique he terms explanation building. “Case studies of greater interest are those whose explanations reflect some theoretically significant propositions” (Yin, 2018, p. 179). Bandura’s self-efficacy theory served as that base for this study. Yin (2018) also pointed to multiple cases which are first analyzed separately then compared as a way to build internal validity in explanatory case study research. This is accomplished by identifying theoretical proposition, comparing case study data to theory, and revising theoretical proposition if necessary. This process is repeated as needed to build an explanation with a firm foundation in previous work, therefore building internal validity (Yin, 2018).

External Validity

Yin’s (2018) external validity is closely related to other qualitative researchers’ transferability and is a term borrowed from quantitative research. It depicts a case study’s ability to be generalized to other settings. Yin (2018) suggested external validity is constructed in the foundations of a case study, namely the theoretical base and research

questions. Self-efficacy theory, a popular grand theory (Bandura, 1997), served as the theoretical base for this study. Research questions were based on *how* induction-year SBAE teachers experience professional demands. Yin (2018) proposed *how* questions point researchers to external validity measures by implying opportunities to describe relevant contextual information so that readers can determine applicability of findings in new situations.

Reliability

In case studies, reliability refers to efforts aimed at diminishing researcher bias and error (Yin, 2018). “To follow this procedure in case study research means studying the same case over again, not just replicating the results of the original case study by studying another case” (Yin, 2018, p. 46). Yin (2018) recommended a case study protocol, database, and a chain of evidence as procedures to ensure reliability. The case study protocol included the methods outlined in this section. The database was stored in ATLAS.ti, which also produced a chain of evidence. The case reports were reviewed by this SBAE expert to ensure reliability of findings.

Data Integration

Procedures

Quantitative and qualitative data in mixed methods studies must be examined both separately and integrated together to achieve the full potential of mixed methodologies (Creswell & Plano Clark, 2018). As this study utilized the convergent parallel design, data integration occurred after the independent data analysis of quantitative survey results and qualitative case study interviews, observations, and artifacts. Although each mixed methods study may approach data integration according to

its unique context, Creswell and Plano Clark (2018) recommended a joint display to array quantitative and qualitative findings. Qualitatively identified professional development needs were compared to those found in the quantitative instrument for the joint displays in this study.

Legitimation

Validity is to quantitative methods as trustworthiness is to qualitative methods as legitimation is to mixed methods (Onwuegbuzie & Johnson, 2006). Before mixed methods results can be legitimated, quantitative results must be found valid and trustworthiness built into qualitative findings. Validity and trustworthiness were addressed using the procedures previously mentioned in this section. Onwuegbuzie and Johnson (2006) outlined several types of legitimation for mixed methods studies. This study utilized inside-outside legitimation, weakness minimization legitimation, and multiple validities legitimation. Inside-outside legitimation considers viewpoints of both those inside the research phenomenon and outsiders to the research area (Tashakkori & Teddlie, 2003). This type of legitimation can be achieved by member checking by participants and audits from peer reviewers (Onwuegbuzie & Johnson, 2006). Both procedures were utilized in this study. Weakness minimization uses quantitative research to accommodate for pitfalls common to qualitative research and vice versa (Onwuegbuzie & Johnson, 2006). Qualitative data added participant voice and gave power to emergency certified teachers who may have been overlooked (Bowling & Ball, 2018) while quantitative data contributed empirical evidence to interviews, observations, and artifacts, thus validating contextual evidence. Lastly, multiple validities legitimation “is pertinent in virtually every mixed research study” (Onwuegbuzie & Johnson, 2006, p. 59). In short,

if the pieces of a mixed methods study are valid/reliable/trustworthy, then the whole will be legitimate. Careful procedures were taken to ensure appropriate data collection and analysis as described above, resulting in findings and conclusions based on reputable data.

Summary

The reputation of a study lives and dies on methodology employed and communicated to readers (Yin, 2018). As a pragmatic, this study was designed to provide practical implications and recommendations through realistic measures (Tashakkori & Teddlie, 2003). An internet survey instrument was used to collect teacher self-efficacy three times throughout the first semester of participants' teaching careers. Teacher self-efficacy associated with instruction, FFA, and SAE were further explained by interview questions, teaching observations, and artifact collections to describe the origin of perceived self-efficacy. Additionally, qualitative data were used to study the connection between perceived self-efficacy and behavior. The theoretical foundation in self-efficacy is apparent from the research questions, survey instrument items, interview questions, and display of joint findings. Confidence in the study was built through quantitative validity and reliability, quantitative trustworthiness, and mixed methods legitimation (Yin, 2018).

CHAPTER IV

FINDINGS

This chapter presents findings of this study and is organized by research question. Quantitative findings are described using descriptive statistics in table and narrative formats. Qualitative findings are provided through participant quotes and rich, thick descriptions of observations. Finally, data are integrated for a description of mixed methods findings.

Research Question 1

The first research question of this study sought to describe the self-efficacy of Oklahoma induction-year teachers in the Fall 2020 semester across certification pathways. These induction-year teachers felt self-efficacious with a moderate average (four to six) self-efficacy in instruction and FFA self-efficacy and a high average (seven to nine) SAE and total self-efficacy during the initial data collection in August. Final data collected in December showed virtually no change in teacher self-efficacy over the Fall 2020 semester (Table 1).

Table 1*Teacher Self-Efficacy of Oklahoma Induction-Year SBAE Teachers*

	Initial (<i>n</i> = 24)		Final (<i>n</i> = 21)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	6.75	0.75	6.73	0.92
FFA Teacher Self-Efficacy	6.94	1.21	6.98	1.29
SAE Teacher Self-Efficacy	7.31	0.88	7.36	1.00
Total Teacher Self-Efficacy	7.00	0.82	6.96	1.01

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

On the whole, emergency certified SBAE teachers indicated they were very self-efficacious in instruction, FFA, and SAE. From the time of initial data collection at the beginning of the fall semester, emergency certified SBAE teachers reported a moderate level of self-efficacy in the area of instruction and a high level of self-efficacy in the areas of FFA, SAE, and total teacher self-efficacy. By the end of the fall semester, the mean teacher self-efficacy for each of these areas was in the high range. For both data collection points, standard deviations were less than 1.00 with the exception of the score for teacher self-efficacy composite in the area of FFA.

Initial scores for total teacher self-efficacy of traditionally certified teachers were in the moderate, bordering on high, range. Teacher self-efficacy composite scores for the areas of instruction and FFA were slightly lower compared to the score for SAE, which was the only composite score in the high range. Final data collected in December found similar teacher self-efficacy means as the initial responses collected in August. The comparison of mean teacher self-efficacy scores between initial and final data collection is shown in Table 2.

Table 2

Teacher Self-Efficacy of Emergency and Traditionally Certified Induction-Year SBAE Teachers Over the Fall 2020 Semester

Teacher Self-Efficacy Construct	Initial Data Collection			
	Emergency Certified (<i>n</i> = 4)		Traditionally Certified (<i>n</i> = 20)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	6.63	0.75	6.78	0.76
FFA Teacher Self-Efficacy	7.71	1.22	6.79	1.22
SAE Teacher Self-Efficacy	7.16	0.85	7.34	0.90
Total Teacher Self-Efficacy	7.16	0.79	6.97	0.85

Teacher Self-Efficacy Construct	Final Data Collection			
	Emergency Certified (<i>n</i> = 2)		Traditionally Certified (<i>n</i> = 19)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	7.23	0.88	6.67	0.94
FFA Teacher Self-Efficacy	7.65	1.20	6.91	1.31
SAE Teacher Self-Efficacy	7.40	0.71	7.36	1.05
Total Teacher Self-Efficacy	7.43	0.93	6.91	1.03

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

As displayed in Table 2, emergency certified and traditionally certified SBAE teachers had similar teacher self-efficacy scores. Both groups were stable in their perceptions of ability from beginning to the end of the fall semester. Between the August and December data collection points, teacher self-efficacy scores in all categories varied by less than one point between pathways. At the August data collection point, FFA composite scores for emergency certified teachers was 0.92 points higher than scores for their traditionally certified colleagues. Other initial teacher self-efficacy scores varied from 0.15 to 0.19 between the groups. With a difference of 0.74 or less, teachers' self-efficacy scores were even more homogenous in at the December data collection point.

The individual case participants showed somewhat more variability than the overall groups. All five participants reported lower overall teacher self-efficacy scores in December compared to August. Both emergency certified case study participants held

steady with -0.02- to -0.08-point change in overall teacher self-efficacy between initial and final data collection. Traditionally certified teachers exhibited more changes in teacher self-efficacy over the course of the fall semester. Ms. Carter’s teacher self-efficacy decreased by 0.82 points, Mr. Wilson’s score fell 0.62 points while Mr. Barton reported the greatest loss in total teacher self-efficacy with a -2.23-point difference between initial and final data collection points.

Two emergency certified SBAE teachers volunteered for and completed the qualitative phase. Table 3 lists Ms. Potts’ teacher self-efficacy scores across initial and final data collection. Her scores landed in the high range for each composite score. Table 4 shows Mr. Parker’s teacher self-efficacy scores stayed in the moderate range throughout the fall semester.

Table 3

Ms. Potts’ Teacher Self-Efficacy Scores

	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	7.40	0.60	7.86	0.81
FFA Teacher Self-Efficacy	8.80	0.41	8.50	0.76
SAE Teacher Self-Efficacy	8.10	0.45	7.90	0.55
Total Teacher Self-Efficacy	8.10	0.75	8.08	0.77

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

Table 4

Mr. Parker’s Teacher Self-Efficacy Scores

	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	6.85	0.49	6.60	0.68
FFA Teacher Self-Efficacy	6.75	1.02	6.80	0.77
SAE Teacher Self-Efficacy	6.95	0.22	6.90	0.72
Total Teacher Self-Efficacy	6.85	0.66	6.77	0.72

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

Three traditionally certified SBAE teachers served as case studies due to their alma matter and student teaching semester as well as their proximity to the researcher. Ms. Carter’s teacher self-efficacy scores were in the high range for both August and December data collections, though scores were slightly lower at the end of the semester (Table 5). Mr. Wilson’s teacher self-efficacy scores were in the moderate range for both August and December data collections, though each score was slightly lower at the end of the semester (Table 6). Mr. Barton’s teacher self-efficacy scores were in the high range for August quantitative data collections and fell into the moderate range by the final data collection (Table 7).

Table 5

Ms. Carter’s Teacher Self-Efficacy Scores

	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	7.90	1.07	7.05	1.28
FFA Teacher Self-Efficacy	8.85	0.36	8.55	0.89
SAE Teacher Self-Efficacy	8.50	0.51	7.20	0.70
Total Teacher Self-Efficacy	8.42	0.81	7.60	1.18

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

Table 6

Mr. Wilson’s Teacher Self-Efficacy Scores

	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	6.75	1.25	6.50	1.43
FFA Teacher Self-Efficacy	6.15	1.14	5.75	1.41
SAE Teacher Self-Efficacy	6.95	0.89	6.35	0.88
Total Teacher Self-Efficacy	6.62	1.14	6.20	1.29

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

Table 7

Mr. Barton’s Teacher Self-Efficacy Scores

	Initial		Final	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Instruction Teacher Self-Efficacy	7.55	1.82	6.25	1.02
FFA Teacher Self-Efficacy	7.75	1.71	5.45	1.57
SAE Teacher Self-Efficacy	9.00	0.00	5.93	1.27
Total Teacher Self-Efficacy	8.10	1.56	5.87	1.33

Note. Likert-type scale of 1 (no capability) to 9 (great deal of capability)

Research Question 2

Research Question 2 analyzed the perceived professional development needs of induction-year SBAE teachers in Oklahoma across certification pathways in Fall 2020. Frequencies of responses were analyzed. Using Wolf's (2008) study as a guide, teacher self-efficacy scores were categorized as low (1 to 3), moderate (4 to 6), and high (7 to 9). Bray-Clark and Bates (2003) stated professional development is needed in those areas with low scores of teacher self-efficacy.

Though not apparent when comparing means and composite scores of teacher self-efficacy, there was a greater difference between certification pathways when studying frequency of response ratings. Granted, the sample of subjects included in this study was skewed toward induction-year teachers with a traditional certification. Even with few participants, however, the emergency certified teachers exhibited less variance than traditionally certified teachers. Throughout the initial and final quantitative data collection points, emergency certified teachers identified only one professional development need, that of *Manage a horticulture laboratory/greenhouse*. In contrast, traditionally certified induction-year SBAE teachers noted several more professional development needs. During both August and December data collections, 29 professional development needs were identified by at least one traditionally certified teacher, 11 of

which were associated with instruction, 14 associated with advising the FFA chapter, and four were related to supervising SAEs. These needs are displayed in Table 8.

Table 8

Self-Reported Professional Development Needs of Oklahoma Induction-Year SBAE

Teachers in Fall 2020

Professional Development Need	Emergency Certified	Traditionally Certified	
		August	December
Instruction			
Integrate a curriculum in agriculture			X
Evaluate student learning		X	
Create lesson plans for instruction		X	X
Use a variety of assessment strategies			X
Craft good questions for students			X
Effectively conduct field trips		X	X
Teach students to think critically			X
Teach students with special needs		X	
Manage an agricultural mechanics laboratory/shop		X	
Manage a horticulture laboratory/greenhouse	X	X	X
Adjust lessons to the proper level for individual students		X	
FFA			
Assist FFA members planning banquets		X	X
Assist FFA members facilitating fundraising activities		X	X
Supervise FFA members during trips and activities			X
Advise FFA meetings		X	X
Assist FFA members planning chapter events		X	
Assist FFA members developing community service projects			X
Train a chapter officer team		X	
Assist FFA members in recruiting new members		X	
Assist FFA members in preparing degree applications		X	X
Assist FFA members in preparing proficiency applications		X	X

Utilize a program advisory board	X	X
Utilize the FFA Alumni and Supporters	X	X
Recognize FFA members' leadership potential		X
Identify various leadership opportunities for FFA members		X
SAE		
Build positive relationships with administrators		X
Inform administrators about the benefits of SAE projects		X
Encourage students to complete a record book for their SAE project		X
Assist students completing a record of the financial transactions in their SAE project		X

One emergency certified SBAE teacher self-identified a need for professional development during initial data collection in August. That need was to improve their ability to *Manage a horticulture laboratory/greenhouse*. By December, no professional development needs were identified in this group. Tables 9 through 14 display frequencies of low, moderate, and high teacher self-efficacy for each item on the instrument grouped by the sections of the agricultural education model for both initial and final data collection points.

Table 9

Initial Instructional Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE

Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Use a variety of teaching techniques	0	0.0	1	25.0	3	75.0
Provide alternative explanations when students are confused	0	0.0	1	25.0	3	75.0
Respond to difficult questions from students	0	0.0	2	50.0	2	50.0
Utilize technology in teaching	0	0.0	2	50.0	2	50.0
Integrate a curriculum in agriculture	0	0.0	1	25.0	3	75.0
Evaluate student learning	0	0.0	0	0.0	4	100.0
Motivate students to learn	0	0.0	1	25.0	3	75.0

Utilize multimedia in teaching	0	0.0	2	50.0	2	50.0
Create lesson plans for instruction	0	0.0	1	25.0	3	75.0
Use a variety of assessment strategies	0	0.0	1	25.0	3	75.0
Craft good questions for students	0	0.0	1	25.0	3	75.0
Effectively conduct field trips	0	0.0	2	50.0	2	50.0
Implement student-centered teaching strategies	0	0.0	0	0.0	4	100.0
Teach students to think critically	0	0.0	2	50.0	2	50.0
Manage student behavior	0	0.0	1	25.0	3	75.0
Teach students with special needs	0	0.0	0	0.0	4	100.0
Provide appropriate challenges for very capable students	0	0.0	1	25.0	3	75.0
Manage an agricultural mechanics laboratory/shop	0	0.0	1	25.0	3	75.0
Manage a horticulture laboratory/greenhouse*	1	25.0	0	0.0	3	75.0
Adjust lessons to the proper level for individual students	0	0.0	2	50.0	2	50.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

*Self-identified professional development needs

Table 10

Final Instructional Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE

Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Use a variety of teaching techniques	0	0.0	0	0.0	2	100.0
Provide alternative explanations when students are confused	0	0.0	0	0.0	2	100.0
Respond to difficult questions from students	0	0.0	1	50.0	1	50.0
Utilize technology in teaching	0	0.0	0	0.0	2	100.0
Integrate a curriculum in agriculture	0	0.0	1	50.0	1	50.0
Evaluate student learning	0	0.0	1	50.0	1	50.0
Motivate students to learn	0	0.0	1	50.0	1	50.0
Utilize multimedia in teaching	0	0.0	0	0.0	2	100.0
Create lesson plans for instruction	0	0.0	1	50.0	1	50.0
Use a variety of assessment strategies	0	0.0	1	50.0	1	50.0
Craft good questions for students	0	0.0	0	0.0	2	100.0
Effectively conduct field trips	0	0.0	0	0.0	2	100.0
Implement student-centered teaching strategies	0	0.0	1	50.0	1	50.0
Teach students to think critically	0	0.0	0	0.0	2	100.0
Manage student behavior	0	0.0	0	0.0	2	100.0
Teach students with special needs	0	0.0	2	100.0	0	0.0

Provide appropriate challenges for very capable students	0	0.0	0	0.0	2	100.0
Manage an agricultural mechanics laboratory/shop	0	0.0	0	0.0	2	100.0
Manage a horticulture laboratory/greenhouse	0	0.0	0	0.0	2	100.0
Adjust lessons to the proper level for individual students	0	0.0	0	0.0	2	100.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

Table 11

Initial FFA Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Assist FFA members planning banquets	0	0.0	0	0.0	4	100.0
Assist FFA members facilitating fundraising activities	0	0.0	0	0.0	4	100.0
Supervise FFA members during trips and activities	0	0.0	0	0.0	4	100.0
Advise FFA meetings	0	0.0	0	0.0	4	100.0
Assist FFA members planning chapter events	0	0.0	0	0.0	4	100.0
Assist FFA members developing community service projects	0	0.0	0	0.0	4	100.0
Recruit new FFA members	0	0.0	1	25.0	3	75.0
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	0	0.0	0	0.0	4	100.0
Train a chapter officer team	0	0.0	1	25.0	3	75.0
Assist FFA members in recruiting new members	0	0.0	2	50.0	2	50.0
Assist FFA members developing an effective public relations program for the FFA chapter	0	0.0	2	50.0	2	50.0
Assist FFA members in preparing a Program of Activities	0	0.0	0	0.0	4	100.0
Coach Career Development Events (Livestock Evaluation, Land Judging, etc.)	0	0.0	1	25.0	3	75.0
Assist FFA members in preparing degree applications	0	0.0	1	25.0	3	75.0
Assist FFA members in preparing proficiency applications	0	0.0	1	25.0	3	75.0
Utilize a program advisory board	0	0.0	2	50.0	2	50.0
Utilize the FFA Alumni and Supporters	0	0.0	2	50.0	2	50.0
Recognize FFA members' leadership potential	0	0.0	0	0.0	4	100.0
Identify various leadership opportunities for FFA members	0	0.0	0	0.0	4	100.0

Cultivate FFA members' personal growth	0	0.0	0	0.0	4	100.0
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Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

Table 12

Final FFA Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Assist FFA members planning banquets	0	0.0	0	0.0	2	100.0
Assist FFA members facilitating fundraising activities	0	0.0	0	0.0	2	100.0
Supervise FFA members during trips and activities	0	0.0	0	0.0	2	100.0
Advise FFA meetings	0	0.0	0	0.0	2	100.0
Assist FFA members planning chapter events	0	0.0	0	0.0	2	100.0
Assist FFA members developing community service projects	0	0.0	0	0.0	2	100.0
Recruit new FFA members	0	0.0	0	0.0	2	100.0
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	0	0.0	1	50.0	1	50.0
Train a chapter officer team	0	0.0	1	50.0	1	50.0
Assist FFA members in recruiting new members	0	0.0	0	0.0	2	100.0
Assist FFA members developing an effective public relations program for the FFA chapter	0	0.0	1	50.0	1	50.0
Assist FFA members in preparing a Program of Activities	0	0.0	0	0.0	2	100.0
Coach Career Development Events (Livestock Evaluation, Land Judging, etc.)	0	0.0	0	0.0	2	100.0
Assist FFA members in preparing degree applications	0	0.0	1	50.0	1	50.0
Assist FFA members in preparing proficiency applications	0	0.0	1	50.0	1	50.0
Utilize a program advisory board	0	0.0	1	50.0	1	50.0
Utilize the FFA Alumni and Supporters	0	0.0	0	0.0	2	100.0
Recognize FFA members' leadership potential	0	0.0	0	0.0	2	100.0
Identify various leadership opportunities for FFA members	0	0.0	1	50.0	1	50.0
Cultivate FFA members' personal growth	0	0.0	1	50.0	1	50.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

Table 13

Initial SAE Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Identify SAE projects in a community	0	0.0	1	25.0	3	75.0
Identify SAE projects that connect to agriculture curriculum	0	0.0	1	25.0	3	75.0
Identify SAE projects that are beneficial to individual students	0	0.0	0	0.0	4	100.0
Build positive relationships with administrators	0	0.0	0	0.0	4	100.0
Inform administrators about the benefits of SAE projects	0	0.0	0	0.0	4	100.0
Instruct students how to complete SAE projects	0	0.0	1	25.0	3	75.0
Clearly communicate the purpose of SAE projects with others	0	0.0	1	25.0	3	75.0
Clearly communicate the procedures of SAE projects with parents and employers	0	0.0	1	25.0	3	75.0
Assist students selecting SAE projects that meet their individual abilities	0	0.0	1	25.0	3	75.0
Assist students developing SAE projects that meet their growing capabilities	0	0.0	0	0.0	4	100.0
Assist students acquiring necessary resources to complete an SAE project	0	0.0	1	25.0	3	75.0
Assist students planning an agriculturally based SAE project that meets their needs	0	0.0	2	50.0	2	50.0
Provide students meaningful supervision during their SAE project	0	0.0	0	0.0	4	100.0
Coordinate communication between a student, parent, employer, and myself	0	0.0	1	25.0	3	75.0
Provide individualized instruction related to student SAE projects	0	0.0	1	25.0	3	75.0
Evaluate SAE projects	0	0.0	0	0.0	4	100.0
Encourage students to improve their SAE programs	0	0.0	0	0.0	4	100.0
Encourage students to complete a record book for their SAE project	0	0.0	0	0.0	4	100.0
Assist students completing a record of the financial transactions in their SAE project	0	0.0	1	25.0	3	75.0
Evaluate student knowledge and skill development through their SAE project	0	0.0	1	25.0	3	75.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

Table 14

Final SAE Teacher Self-Efficacy of Emergency Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>
Identify SAE projects in a community	0	0.0	0	0.0	2	100.0
Identify SAE projects that connect to agriculture curriculum	0	0.0	0	0.0	2	100.0
Identify SAE projects that are beneficial to individual students	0	0.0	1	50.0	1	50.0
Build positive relationships with administrators	0	0.0	0	0.0	2	100.0
Inform administrators about the benefits of SAE projects	0	0.0	0	0.0	2	100.0
Instruct students how to complete SAE projects	0	0.0	0	0.0	2	100.0
Clearly communicate the purpose of SAE projects with others	0	0.0	0	0.0	2	100.0
Clearly communicate the procedures of SAE projects with parents and employers	0	0.0	1	50.0	1	50.0
Assist students selecting SAE projects that meet their individual abilities	0	0.0	0	0.0	2	100.0
Assist students developing SAE projects that meet their growing capabilities	0	0.0	0	0.0	2	100.0
Assist students acquiring necessary resources to complete an SAE project	0	0.0	1	50.0	1	50.0
Assist students planning an agriculturally based SAE project that meets their needs	0	0.0	1	50.0	1	50.0
Provide students meaningful supervision during their SAE project	0	0.0	1	50.0	1	50.0
Coordinate communication between a student, parent, employer, and myself	0	0.0	1	50.0	1	50.0
Provide individualized instruction related to student SAE projects	0	0.0	0	0.0	2	100.0
Evaluate SAE projects	0	0.0	0	0.0	2	100.0
Encourage students to improve their SAE programs	0	0.0	0	0.0	2	100.0
Encourage students to complete a record book for their SAE project	0	0.0	0	0.0	2	100.0
Assist students completing a record of the financial transactions in their SAE project	0	0.0	0	0.0	2	100.0
Evaluate student knowledge and skill development through their SAE project	0	0.0	0	0.0	2	100.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

At the beginning of the semester, traditionally certified induction-year SBAE teachers identified seven professional development needs related to the area of

instruction. As shown in Table 15, the most frequently cited need focused on *Managing a horticulture laboratory/greenhouse* with three teachers indicating they had low teacher self-efficacy. *Teach students with special needs* and *Manage an agricultural mechanics laboratory/shop* each received a ranking of low teacher self-efficacy from two teachers. *Evaluate student learning*, *Create lesson plans for instruction*, *Effectively conduct field trips*, and *Adjust lessons to the proper level for individual students* each received a ranking of low teacher self-efficacy from one teacher.

Table 15

Initial Instructional Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Use a variety of teaching techniques	0	0.0	4	20.0	16	80.0
Provide alternative explanations when students are confused	0	0.0	10	50.0	10	50.0
Respond to difficult questions from students	0	0.0	12	60.0	8	40.0
Utilize technology in teaching	0	0.0	5	25.0	15	75.0
Integrate a curriculum in agriculture	0	0.0	5	25.0	15	75.0
Evaluate student learning*	1	5.0	5	25.0	14	70.0
Motivate students to learn	0	0.0	2	10.0	18	90.0
Utilize multimedia in teaching	0	0.0	9	45.0	11	55.0
Create lesson plans for instruction*	1	5.0	6	35.0	13	65.0
Use a variety of assessment strategies	0	0.0	6	30.0	14	70.0
Craft good questions for students	0	0.0	5	25.0	15	75.0
Effectively conduct field trips*	1	5.0	5	25.0	14	70.0
Implement student-centered teaching strategies	0	0.0	9	45.0	11	55.0
Teach students to think critically	0	0.0	7	35.0	13	65.0
Manage student behavior	0	0.0	9	45.0	11	55.0
Teach students with special needs*	2	10.0	10	50.0	9	40.0
Provide appropriate challenges for very capable students	0	0.0	7	35.0	13	65.0
Manage an agricultural mechanics laboratory/shop*	2	10.0	5	25.0	13	65.0
Manage a horticulture laboratory/greenhouse*	3	15.0	7	35.0	10	50.0
Adjust lessons to the proper level for individual students*	1	5.0	7	35.0	12	60.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9
 *Self-identified professional development needs

Professional development needs identified by traditionally certified induction-year SBAE teachers in this study fluctuated over the course of their first semester as a teacher. In December, these teachers identified seven instructional professional development needs, but four of those needs were different than those identified in August (Table 16). In this round of data collection, three teachers rated their self-efficacy for *Effectively conducting field trips* as low. *Create lesson plans for instruction*, *Teach students to think critically*, and *Manage a horticulture laboratory/greenhouse* were identified by two participants as instructional professional development needs. *Use a variety of assessment strategies*, *Craft good questions for students*, and *Integrate a curriculum in agriculture* were each rated as low teacher self-efficacy by one teacher. Since the beginning of the semester, items of *Evaluate student learning*, *Teach students with special needs*, and *Manage an agricultural mechanics laboratory/shop* were no longer identified as instructional professional development needs. *Teach students to think clearly*, *Use a variety of assessments*, *Craft good questions for students*, and *Integrate a curriculum in agriculture* were not rated low in August, but were in December.

Table 16

Final Instructional Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Use a variety of teaching techniques	0	0.0	5	26.3	14	73.7
Provide alternative explanations when students are confused	0	0.0	8	42.1	10	55.6
Respond to difficult questions from students	0	0.0	9	47.4	10	52.6
Utilize technology in teaching	0	0.0	6	31.6	13	68.4

Integrate a curriculum in agriculture*	1	5.3	4	21.1	14	73.7
Evaluate student learning	0	0.0	5	26.3	14	73.7
Motivate students to learn	0	0.0	8	42.1	11	57.9
Utilize multimedia in teaching	0	0.0	6	31.6	13	68.4
Create lesson plans for instruction*	2	10.5	6	31.6	11	57.9
Use a variety of assessment strategies*	1	5.3	8	42.1	10	52.6
Craft good questions for students*	1	5.3	5	26.3	13	68.4
Effectively conduct field trips*	3	15.8	4	21.1	12	63.2
Implement student-centered teaching strategies	0	0.0	6	31.6	13	68.4
Teach students to think critically*	2	10.5	3	15.8	14	73.7
Manage student behavior	0	0.0	3	15.8	15	78.9
Teach students with special needs	0	0.0	12	63.2	6	31.6
Provide appropriate challenges for very capable students	0	0.0	7	36.8	11	57.9
Manage an agricultural mechanics laboratory/shop	0	0.0	6	31.6	12	63.2
Manage a horticulture laboratory/greenhouse*	2	10.5	4	21.1	12	63.2
Adjust lessons to the proper level for individual students	0	0.0	7	36.8	11	57.9

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

*Self-identified professional development needs

Initial data collection in August revealed 10 self-reported professional development needs of traditionally certified SBAE teachers related to advising an FFA chapter. These data are displayed in Table 17. *Assist FFA members in preparing proficiency applications* was rated in the low self-efficacy category by four teachers. Three participants rated their self-efficacy as low for *Utilize a program advisory board*. *Assist FFA members planning banquets* and *Assist FFA members in preparing degree applications* was rated as low self-efficacy by two teachers. Each of the following items were rated in the low self-efficacy category by one teacher: *Assist FFA members facilitating fundraising activities*, *Advise FFA meetings*, *Assist FFA members planning chapter events*, *Train a chapter officer team*, *Assist FFA members in recruiting new members*, and *Utilize the FFA Alumni and Supporters*.

Table 17

Initial FFA Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE

Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Assist FFA members planning banquets*	2	10.0	2	10.0	16	80.0
Assist FFA members facilitating fundraising activities*	1	5.0	2	10.0	17	85.0
Supervise FFA members during trips and activities	0	0.0	2	10.0	18	90.0
Advise FFA meetings*	1	5.0	2	10.0	17	85.0
Assist FFA members planning chapter events*	1	5.0	2	10.0	17	85.0
Assist FFA members developing community service projects	0	0.0	4	20.0	16	80.0
Recruit new FFA members	0	0.0	7	35.0	13	65.0
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	0	0.0	8	40.0	12	60.0
Train a chapter officer team*	1	5.0	7	35.0	12	60.0
Assist FFA members in recruiting new members*	1	5.0	5	25.0	14	70.0
Assist FFA members developing an effective public relations program for the FFA chapter	0	0.0	7	35.0	13	65.0
Assist FFA members in preparing a Program of Activities	0	0.0	6	30.0	14	70.0
Coach Career Development Events (Livestock Evaluation, Land Judging, etc.)	0	0.0	4	20.0	16	80.0
Assist FFA members in preparing degree applications*	2	10.0	8	40.0	10	50.0
Assist FFA members in preparing proficiency applications*	4	20.0	8	40.0	8	40.0
Utilize a program advisory board*	3	15.0	13	65.0	4	20.0
Utilize the FFA Alumni and Supporters*	1	5.0	11	55.0	8	40.0
Recognize FFA members' leadership potential	0	0.0	4	20.0	16	80.0
Identify various leadership opportunities for FFA members	0	0.0	4	20.0	16	80.0
Cultivate FFA members' personal growth	0	0.0	6	30.0	14	70.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

*Self-identified professional development needs

In December, traditionally certified induction-year SBAE teachers identified 11 areas associated with being an FFA advisor as professional development needs. Table 18 lists the frequencies of responses to the FFA items for December quantitative data

collection. Seven of these 11 were repeated from August data with four new FFA professional development needs at the end of the semester. As was the case in August, *Assist FFA members in preparing proficiency applications* and *Utilize a program advisory board* had the highest frequency of low teacher self-efficacy ratings. Four teachers rated each are in the low category. Two traditionally certified participants indicated a FFA professional development need for *Assist FFA members planning banquets*, *Assist FFA members in preparing degree applications*, and *Utilize the FFA Alumni and supporters*. The items of *Assist FFA members facilitating fundraising activities*, *Supervise FFA members during trips and activities*, *Advise FFA meetings*, *Assist FFA members developing community service projects*, *Recognize FFA members' leadership potential*, and *Identify various leadership opportunities for FFA members* were identified as low teacher self-efficacy. *Assist FFA members planning chapter events*, *Train a chapter officer team*, and *Assist FFA members in recruiting new members* were rated low teacher self-efficacy by traditionally certified teachers in August, but were absent from low self-efficacy responses to the final data collection. Items present in December data collection as low teacher self-efficacy in the area of FFA but not identified in August included *Supervise FFA members during trips and activities*, *Assist FFA members developing community service projects*, *Recognize FFA members' leadership potential*, and *Identify various leadership opportunities for FFA members*.

Table 18

Final FFA Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%

Assist FFA members planning banquets*	2	10.5	4	21.1	12	63.2
Assist FFA members facilitating fundraising activities*	1	5.3	3	15.8	14	73.7
Supervise FFA members during trips and activities*	1	5.3	0	0.0	17	89.5
Advise FFA meetings*	1	5.3	3	15.8	14	73.7
Assist FFA members planning chapter events	0	0.0	3	15.8	15	78.9
Assist FFA members developing community service projects*	1	5.3	4	21.1	13	68.4
Recruit new FFA members	0	0.0	4	21.1	14	73.7
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	0	0.0	7	36.8	11	57.9
Train a chapter officer team	0	0.0	8	42.1	10	52.6
Assist FFA members in recruiting new members	0	0.0	5	26.3	13	68.4
Assist FFA members developing an effective public relations program for the FFA chapter	0	0.0	5	26.3	13	68.4
Assist FFA members in preparing a Program of Activities	0	0.0	7	36.8	11	57.9
Coach Career Development Events (Livestock Evaluation, Land Judging, etc.)	0	0.0	5	26.3	13	68.4
Assist FFA members in preparing degree applications*	2	10.5	4	21.1	12	63.2
Assist FFA members in preparing proficiency applications*	4	21.1	7	36.8	7	36.8
Utilize a program advisory board*	4	21.1	9	47.4	5	26.3
Utilize the FFA Alumni and Supporters*	2	10.5	7	36.8	9	47.4
Recognize FFA members' leadership potential*	1	5.3	4	21.1	13	68.4
Identify various leadership opportunities for FFA members*	1	5.3	6	31.6	11	57.9
Cultivate FFA members' personal growth	0	0.0	4	21.1	14	73.7

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

*Self-identified professional development needs

No professional development needs in the area of SAE supervision were identified by traditionally certified SBAE teachers during the initial data collection in August (Table 19). In December, four areas were self-reported as low teacher self-efficacy in the area of SAE supervision by one participant rating their teacher self-efficacy in the low range. Table 20 lists the following professional development needs associated with supervising SAEs: professional development needs as *Build positive*

relationships with administrators, Inform administrators about the benefits of SAE projects, Encourage students to complete a record book for their SAE project, and Assist students completing a record of the financial transactions in their SAE project.

Table 19

Initial SAE Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE

Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Identify SAE projects in a community	0	0.0	5	25.0	15	75.0
Identify SAE projects that connect to agriculture curriculum	0	0.0	4	20.0	16	80.0
Identify SAE projects that are beneficial to individual students	0	0.0	6	30.0	14	70.0
Build positive relationships with administrators	0	0.0	0	0.0	20	100.0
Inform administrators about the benefits of SAE projects	0	0.0	4	20.0	16	80.0
Instruct students how to complete SAE projects	0	0.0	4	20.0	16	80.0
Clearly communicate the purpose of SAE projects with others	0	0.0	4	20.0	16	80.0
Clearly communicate the procedures of SAE projects with parents and employers	0	0.0	4	20.0	16	80.0
Assist students selecting SAE projects that meet their individual abilities	0	0.0	3	15.0	17	85.0
Assist students developing SAE projects that meet their growing capabilities	0	0.0	5	25.0	15	75.0
Assist students acquiring necessary resources to complete an SAE project	0	0.0	5	25.0	15	75.0
Assist students planning an agriculturally based SAE project that meets their needs	0	0.0	4	20.0	16	80.0
Provide students meaningful supervision during their SAE project	0	0.0	2	10.0	18	90.0
Coordinate communication between a student, parent, employer, and myself	0	0.0	3	15.0	17	85.0
Provide individualized instruction related to student SAE projects	0	0.0	5	25.0	13	65.0
Evaluate SAE projects	0	0.0	2	10.0	16	80.0
Encourage students to improve their SAE programs	0	0.0	2	10.0	16	80.0
Encourage students to complete a record book for their SAE project	0	0.0	4	20.0	14	70.0

Assist students completing a record of the financial transactions in their SAE project	0	0.0	9	45.0	9	45.0
Evaluate student knowledge and skill development through their SAE project	0	0.0	4	20.0	14	70.0

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

Table 20

Final SAE Teacher Self-Efficacy of Traditionally Certified Induction-Year SBAE

Teachers

What is your level of capacity to...	Low		Moderate		High	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Identify SAE projects in a community	0	0.0	5	26.3	13	68.4
Identify SAE projects that connect to agriculture curriculum	0	0.0	7	36.8	11	57.9
Identify SAE projects that are beneficial to individual students	0	0.0	5	26.3	13	68.4
Build positive relationships with administrators*	1	5.3	2	10.5	15	78.9
Inform administrators about the benefits of SAE projects*	1	5.3	3	15.8	14	73.7
Instruct students how to complete SAE projects	0	0.0	5	26.3	13	68.4
Clearly communicate the purpose of SAE projects with others	0	0.0	2	10.5	15	78.9
Clearly communicate the procedures of SAE projects with parents and employers	0	0.0	5	26.3	11	57.9
Assist students selecting SAE projects that meet their individual abilities	0	0.0	3	15.8	13	68.4
Assist students developing SAE projects that meet their growing capabilities	0	0.0	4	21.1	12	63.2
Assist students acquiring necessary resources to complete an SAE project	0	0.0	2	10.5	14	73.7
Assist students planning an agriculturally based SAE project that meets their needs	0	0.0	5	26.3	11	57.9
Provide students meaningful supervision during their SAE project	0	0.0	4	21.1	12	63.2
Coordinate communication between a student, parent, employer, and myself	0	0.0	4	21.1	12	63.2
Provide individualized instruction related to student SAE projects	0	0.0	3	15.8	12	63.2
Evaluate SAE projects	0	0.0	3	15.8	12	63.2
Encourage students to improve their SAE programs	0	0.0	3	15.8	12	63.2

Encourage students to complete a record book for their SAE project*	1	5.3	5	26.3	9	47.4
Assist students completing a record of the financial transactions in their SAE project*	1	5.3	3	15.8	11	57.9
Evaluate student knowledge and skill development through their SAE project	0	0.0	1	5.3	14	73.7

Note. Low = 1 to 3, Moderate = 4 to 6, High = 7 to 9

*Self-identified professional development needs

Qualitative Case Study Reports

This section is organized first by case reports to provide a detailed and rich description of each qualitative participant. Each participant was assigned a pseudonym. Cases were first analyzed separately with their own codes. Codes were then compared across cases for comparative case analysis to address the three qualitative research questions.

Case 1 – Ms. Potts, Emergency Certified

Ms. Potts taught in the same community she has called home for nearly two decades. The town with a population of less than 500 people in Northwest Oklahoma is more than 90% white according to US Census records. The town experienced a slight growth in population between 2000 and 2010, much of which reflected a growing Hispanic or Latino population. The school district included surrounding areas and was the largest single employer in town. Other industries included oil and gas businesses and agricultural operations.

The State Department of Education reported fewer than 75 students enrolled in this small high school during the 2020-2021 school year. Regarding ethnicity of the student population, 80% were White and 20% Hispanic. More than 40% of students were reported as economically disadvantaged. Approximately 37% of high school students required special education services. Ms. Potts' school performed on par with state

averages in math and science testing but fell short in English language arts assessments according to state school report cards.

Before teaching, Ms. Potts earned a degree in agribusiness and worked several years for an agribusiness. After her position was dissolved, she sought other opportunities in the community. Her child's involvement in the local SBAE program and 4-H club prompted Ms. Potts' interest in the open teaching position. "I had been interested in teaching for awhile and (the principal) told me I could get an emergency license for now. So, I thought, 'Why not?'" (Interview 1, Line 43). She went on to say, "I've definitely got more invested in this program than anybody else... I live right here. My kids go to school here. I'm not going anywhere" (Interview 1, Lines 575-576). Ms. Potts' SBAE facilities include a classroom with up-to-date visual displays and student computer technologies. The agricultural mechanics facility is adequately sized for the program and houses a variety of equipment including welders, oxygen-acetylene torches, a plasma cam table, and other handheld tools. A school farm just outside of town houses livestock projects for some students. During the second site visit, Ms. Potts was supervising goat, swine, horse, and sheep projects in the show barn at the school farm.

The community is very supportive of Ms. Potts' program. As a longtime member of the community, Ms. Potts brought her community connections to her role as the SBAE teacher. Materials for chapter events have been donated from local businesses and individuals. Ms. Potts described incorporating the community in chapter events and officer team selection. Ms. Potts also noted her administration and SBAE teachers of neighboring chapters have "all been a very big resource" (Interview 2, Line 307). At the time of data collection, Ms. Potts was taking a graduate education course to qualify for an

alternative teaching license and said she “could see myself teaching for several more years, at least” (Interview 2, Line 497). I observed her midmorning freshmen class of 8 students, three boys and five girls, was observed. Some diversity in ethnic background and ability was apparent in the students (Observation Notes 1).

Thirteen 13 professional development needs were identified through observations and interviews. The majority of these needs, 7 in total, reflect the area of instruction. When asked about her lesson sequence, Ms. Potts described a somewhat haphazard organization to class topics. In reference to her eighth graders she said, “Last week we completed our ruminant digestive system posters, and yesterday I had them in the shop naming tools. Tomorrow, I think we’ll talk about sheep breeds” (Interview 1, Line 80). Ms. Potts had access to materials developed by the Curriculum and Instructional Materials Center (CIMC), but she did not seem to follow a coherent order to the lessons presented. These data points were included in the theme of a professional development need in *Integrating a curriculum into agriculture*. The theme of *Evaluating student learning* emerged from interviews and observations with Ms. Potts. All assessments Ms. Potts described were of a low cognitive level. The aforementioned ruminant digestive system posters were graded “by how close they were to the example I made” (Interview 1, Line 104). Similar themes of *Teach students to think critically* and *Craft good questions for students* also emerged from site visits with Ms. Potts. In a distance learning assignment, Ms. Potts asked students to view a video on soil health and then turn in five facts from the material without asking students to delve any deeper into the topic. While teaching, Ms. Potts was observed asking students very few questions. When she did engage students in this way, her questions were very surface level and relied on basic

recall knowledge (Observation Notes 1 and 2). A professional development need theme of *Adjust lesson to the proper level for individual students* emerged from observing Ms. Potts interact with her students. During the second observation of a class with differing student knowledge and backgrounds, Ms. Potts catered to the students with personal experiences in the subject matter while other students seemed confused.

In speaking to her freshmen class, Ms. Potts said, “(Special education student) was the only one to not get a 100 on paragraph 3 (of the FFA Creed)” (Observation Notes 2). She later shared no accommodations or modifications were made for this student and “I don’t really know what’s on his IEP” (Interview 2, Line 60). Ms. Potts shared one of her English language learners had transferred out of her class early in the semester due to his inability to comprehend the Agricultural Experience Tracker (AET) used to manage SAE records and data. These two examples helped to build the professional development need theme of *Teach students with special needs*. On numerous occasions, Ms. Potts expressed frustration regarding unmotivated students in the classroom and FFA chapter. “I just don’t understand why students wouldn’t want to work” (Interview 1, Line 409). “I have the kids who want to show [exhibit livestock] and they want to work and be active... and the others, man, they’re just not doing anything” (Interview 2, Lines 246 & 248). Her reaction to unmotivated students seems to be an acceptance they will never show an interest in activities. In class, Ms. Potts split her time unevenly between the students she deemed to be motivated and unmotivated. In the second site visit, Ms. Potts failed to address or engage the unmotivated student who sat in the back corner of the classroom (Observation Notes 2). These quotes and observation memos built the professional development theme of *Motivate students to learn*.

Ms. Potts' five observed professional development need themes in the area of FFA advisement included *Coach leadership development events*, *Assist FFA members in preparing degree applications*, *Recognize FFA members' leadership potential*, *Identify various leadership opportunities for FFA members*, and *Cultivate FFA members' personal growth*. Ms. Potts' students competed in Opening Ceremonies and Public Speaking leadership development events (LDE) in the fall semester. She reflected, "We did a few activities this fall, what was offered anyway... They did alright. I thought they could do better" (Interview 2, Line 266-267). Additionally, Ms. Potts was preparing her students to complete state degree and proficiency applications at the time of the second site visit. She said, "We're just getting into these (applications). I've got some stuff from (agricultural education state staff), but we're just learning as we go" (Interview 2, Line 275).

Ms. Potts takes on many of the duties typically assigned to a chapter officer, such as soliciting donations for chapter events from local businesses and leading a chapter meeting. She complained of the extra workload these tasks entail. By not allowing students to perform these tasks, the professional development need themes of *Cultivate FFA members' personal growth* and *Identify various leadership opportunities for FFA members* emerged. The students receiving the most attention from Ms. Potts were also the most active FFA members. This led to a professional development need theme of *Recognize FFA members' leadership potential*.

One professional development need in the area of SAE supervision was identified through qualitative measures. *Assist students completing a record of the financial transactions in their SAE project* was observed as Ms. Potts worked with a student on his

AET records. He had some questions Ms. Potts was unable to answer at the time (Observation Notes 1). Through interviews, Ms. Potts noted she had learned some AET through her child's SAE project and received assistance from fellow SBAE teachers and agricultural education state staff.

Case 2 – Mr. Parker, Emergency Certified

Mr. Parker was a recent graduate with a degree in animal science. He was recruited to his small school by contacts within the livestock industry. The town was home to fewer than 200 people with a nearly equal percentage of White and Hispanic or Latino residents and about 8% American Indian residents. The agricultural industry formed the economic background of the region.

The high school enrolled fewer than 75 students during the 2020-2021 school year. According to the State Department of Education, more than half of the high school students were reported as being White with 30% being Hispanic or Latino, and 15% as being of two or more races. Given the relatively low median income, it was no surprise nearly 85% of students were enrolled in the free or reduced lunch program. Nearly one-quarter of high school students were served by special education services. The school district and high school consistently scored below state averages in English language arts, math, and science state assessments on state school report cards.

Mr. Parker led a small, well established SBAE program. He had access to common SBAE facilities found in Oklahoma, including a classroom, office, agricultural mechanics shop, greenhouse, and school farm with livestock barns. His students used individual laptops in class. Mr. Parker's previous experience and knowledge with livestock shows have allowed him to share his expertise with students in their livestock

SAE projects. Mr. Parker was active in SBAE and FFA as a high school student, participating on show and Career Development Event teams. Of his job, Mr. Parker commented, “I really like working with the kids... but I don’t really see this as a long-term career” (Interview 1, Line 104). His freshman agriscience class was observed for data collection. Eight students were enrolled in the class, seven girls and one boy (Observation Notes 1).

Based on observations and interviews with Mr. Parker, 13 professional development needs were noted. Six of these needs related to instruction. Mr. Parker’s lessons tended to be mostly independent or group application of learning and assessments with little to no direct instruction. “I don’t like to lecture. Students hate it. I hate it. They just do better if I give them a worksheet and the book” (Interview 1, Line 196). These coding examples led to a professional development theme of *Create lesson plans for instruction* emerging from Mr. Parker’s site visits. Likewise, the ability to *Integrate a curriculum into agriculture* also emerged. He used the student worksheets and assessment found in CIMC curricula and creative educational videos (iCEV), but he engaged little in presenting material to students. Mr. Parker was sometimes unable to *Provide alternative explanations when students are confused*. This was observed during both site visits. The first instance occurred when Mr. Parker assigned some mock AET entries. One student made a duplicate entry and Mr. Parker was unable to describe how to correct her records (Observation Notes 1). During the second site visit, two students were struggling with identifying the difference between two similar aromas on the Food Science Career Development Event (CDE). Mr. Parker attempted to explain how to

differentiate between the two, yet students continued to fail to correctly identify these aromas (Observation Notes 2).

In addition to lesson planning, Mr. Parker was observed exhibiting professional development needs in relation to *Evaluating student learning* and *Teach student to think critically*. To assess student learning, Mr. Parker described, “I take up their worksheets and give points if they answered all the questions” (Interview 1, Line 84). He later added, “Sometimes I give the, uh, chapter test. But I let students use the book” (Interview 2, Line 43). Site visit two found Mr. Parker quizzing the Entomology CDE team on the dozen insects they had been independently studying for one week. He used the same pictures in the same order provided in students’ study materials. Student scores ranged from 58% to 83% (Observation Notes 2). This low level of cognitive demand indicated Mr. Parker struggled with *Teaching students to think critically*. Instruction observed was a simple regurgitation of premade curriculum and assessments followed a similar pattern of basic recall knowledge.

Mr. Parker identified his content strengths as animal science and agricultural mechanics. However, he admitted feeling lost in the greenhouse. Students in his horticulture class were the most difficult class to manage. “I don’t really know what to have them do,” he said (Interview 2, Line 143). The small greenhouse was in disrepair when Mr. Parker arrived. Few improvements had been made over the first semester (Observation Notes 2). These data led to the *Managing a greenhouse* theme for a professional development need in Mr. Parker’s case.

Three professional development needs relating to advising an FFA chapter emerged during site visits and interviews with Mr. Parker. *Assist FFA members*

facilitating fundraising activities was a struggle for Mr. Parker early in the semester as students were turning in money collected from fundraising sales (Observation Notes 1). “It’s a bit of mess. I know we’re missing \$108, but I don’t know who’s it from” (Interview 1, Line 24).

Mr. Parker’s SBAE program had “about 40 kids” (Interview 1, Line 14). Of these “about 10 are in FFA, or active in FFA at least” (Interview 1, Line 16). Mr. Parker felt a need to *Recruit new FFA members* early in the semester, but efforts were met with little success. “I’d like to see more students become involved. We’re a small school, but there’s lots of room to grow” (Interview 2, Line 96). “It’s been tough to do much. With distance learning and events canceled cause of the Rona” (Interview 2, 180). Even with the small number of active members, Mr. Parker was interested in pursuing FFA opportunities, including degree applications. “The past teacher left students’ records in a mess. I’ve got students with three years to input” (Interview 2, Line 176). Mr. Parker’s need for guidance as he attempted to *Assist FFA members in preparing degree applications* led to an observed professional development need in this area. Mr. Parker was unable to answer a question from a senior on her state degree application but promised to “ask (experienced SBAE teacher) and find out” (Observation Notes 2).

Four professional developments needs themes emerged in the area of SAE supervision. As previously described, Mr. Parker requires additional training and experience with the AET system. These observation points developed the professional development need theme of *Assist students completing a record of the financial transactions in their SAE project*. All SAE projects described in interviews and observations were directly related to show animals. The area surrounding Mr. Parker’s

school had a variety of agricultural operations. The singular focus on livestock animals developed into the professional development need theme of *Identify SAE projects in a community* would allow students to participate in a greater diversity of SAE projects.

Mr. Parker described an issue with communication between a student and her parents concerning the purchase of a particular show lamb (Observation Notes 1). This miscommunication set up a rocky relationship between Mr. Parker and this student's parents when the student wasn't able to purchase her chosen animal. In a follow up interview, Mr. Parker again mentioned this instance, "I got her another lamb...She's happy with it. But her dad, everything is compared that first lamb" (Interview 2, Line 301). This situation and Mr. Parker's continued discussion of it prompted the themes of *Clearly communicate the procedures of SAE projects with parents* and *Coordinate communication between a student, parent, and SBAE teacher*.

Case 3 – Ms. Carter, Traditionally Certified

Ms. Carter was active in SBAE as a high schooler and a recent graduate from Oklahoma State University in agricultural education. She taught in Northeast Oklahoma in a community with approximately 800 people. Mostly a bedroom community for nearby larger cities, US Census data reported 75% of residents were white with another 15% as American Indian and Hispanic or Latino and two or more races representing a small percentage of the population. Census data also showed healthcare, agriculture, fabrication, and gambling were the main industries represented in the town.

The school district in which Ms. Carter was employed covered a large geographical area, mainly agricultural land. With just more than 200 students in the high school during the 2020-2021 school year, the Oklahoma State Department of Education

listed the school below state averages in academic state assessments. White students composed about 40% of the student body, American Indian representing 35%, and 20% of the students being two or more races. Hispanic and Latino students completed the remaining 5% of the student population. Slightly more than one-half of all students were on free or reduced lunch. Special education services were used by 20% of the high school students.

Ms. Carter was one of two SBAE teachers in her district. Her teaching partner was well established in the community. The program had two classrooms, woodworking shop, large agricultural mechanics shop, greenhouse, and school farm facilities. A cart of Chromebooks was available for students to use during class. Ms. Carter's classroom included a television in place of a projector and included several whiteboards and bulletin boards. Ms. Carter perceived herself as "teaching here for a long time. I love it here" (Interview 2, Line 155). Her agricultural communication class of junior and senior girls served as the context for the observations. Ms. Carter exhibited competence in lesson planning and presentation. "I don't like wasted class time... So generally we work bell to bell" (Interview 1, Line 40). She based her lessons on curriculum resources and followed unit plans and course sequences (Observation Notes 1 & 2).

During observations and interviews, seven professional development needs emerged. Three of these directly related to instruction, *Implement student-centered teaching strategies*, *Manage student behavior*, and *Manage a greenhouse*. The lessons observed were taught from a teacher-centered perspective. Ms. Carter used modified lecture to present information to students. Though students were well behaved, some were not engaged in the material. Undirected questions and whole class activities

provided less opportunities for all students to be fully engaged in the learning (Observation Notes 1 & 2).

Ms. Carter self-identified struggles associated with the students in her greenhouse class. “I was a deer in headlights. I didn’t necessarily know what to do with them” (Interview 1, Lines 136-137). She attributed part of her issues in the class to the students’ lack of interest in the subject. “They’re ‘shop boys’... hands-on learners” she commented (Interview 1, Line 139). By the second site visit, Ms. Carter was still struggling with this class. “They’re my most difficult students by far... most days with them are a struggle from the word go” (Interview 2, Lines 104 & 106).

Ms. Carter recognized a smaller calendar of FFA events attributed to the COVID-19 pandemic. “We couldn’t do anything for almost two months with school being out and officers quarantined” (Interview 2, Line 64). She felt this inactivity had hampered her development of skills related to advising an FFA chapter. Ms. Carter noted fewer students are in class and FFA than in previous years. She recognized assistance with *Recruiting new FFA members* would have been beneficial to her chapter. Ms. Carter described a supportive group of parents and community members. In the early weeks of her new career, Ms. Carter heavily relied on her teaching partner for introductions to this group. Yet, she perceived a difference in the way the community interacted with her male teaching partner and herself. “I’m a female. I’m new and I think those are all things that are just different here... new factors that really contributed to maybe my acceptance here” (Interview 1, Lines 109-111). This pointed to a professional development need theme of *Utilize the FFA Alumni and Supporters*.

In the area of SAE supervision, Ms. Carter had some experience with raising and grooming livestock for exhibition. With other SAE projects, “I don’t feel nearly as comfortable with” (Interview 1, Line 43). She relied on her teaching partner to fill in the gaps to her own ability to supervise student projects outside her areas of expertise. These interview data points constructed the professional development themes of *Providing students meaningful supervision during their SAE project* and *Identify SAE projects that connect to the agriculture curriculum*.

Case 4 – Mr. Wilson, Traditionally Certified

Mr. Wilson was a recent graduate in agricultural education from Oklahoma State University. He was an active FFA member and chapter officer while in high school. He taught in a town of about 800 people in Central Oklahoma. The population of the town was about 85% White, 10% American Indian, and 5% Black. The local school district was the largest employer in town with other industries of construction and agriculture serving as the economic backbone according to US Census data.

The high school where Mr. Wilson taught enrolled between 150 and 200 students during the 2020-2021 school year. The school consistently scored above state averages in English language arts, math, and science assessments according to the State Department of Education. Like the town, the high school student body was mainly White (80%) and American Indian (17%). About one-half of high school students were deemed as economically disadvantaged. One tenth of students had documented disabilities.

Mr. Wilson taught with a female teaching partner. Each had their own classroom and office space. The SBAE program also included an agricultural mechanics laboratory and a school farm with show barn facilities. Mr. Wilson’s midday freshman Introduction

to Agriscience class was observed during virtual site visits. After the first few minutes, students appeared to ignore the Swivl technology used to videorecord the lesson (Observation Notes 1). Mr. Wilson had a diverse background in livestock and agricultural mechanics. He used personal experience to bolster content knowledge and student engagement in lessons. He exhibited good rapport and relationship with students (Observation Notes 1 & 2).

Five professional development needs emerged through Mr. Wilson's interview transcripts and observation notes. Instruction needs included *Use a variety of assessment strategies* and *Implement student-centered teaching strategies*. Mr. Wilson used weekly summative assessment to track student learning, but he offered few if any formative assessments during lessons. During a lesson on veterinary tools, students had forgotten the first few tools by the end of the lesson. A formative assessment would have allowed students to track their learning as the lesson progressed. Mr. Wilson's lessons also tended to be teacher-centered modified lecture formats. By including more student-centered methods such as inquiry-based learning, Mr. Wilson could create more student engagement in lesson and increase the cognitive level of lessons.

Mr. Wilson and his teaching partner lead a very active FFA chapter in a diverse set of events; however, they divulged little use volunteers or a *Program advisory board* or *FFA Alumni and Supporters*. This led to Mr. Wilson taking on many roles that could have been delegated to volunteers or supporters. The extra hours "have changed me in a lot of ways... It wears on you," Mr. Wilson commented (Interview 2, Line 436). This lack of support from the community was acutely felt when Mr. Wilson and his teaching partner came under fire from a disgruntled school board member who had a child in the

program. Through a set of circumstances stemming from decisions to engage in certain FFA events and not others, the SBAE teachers felt attacked through text messages, emails, and verbal communications. “It’s bad, real bad. I have anxiety now. Never did before, but this place has caused me to have anxiety,” Mr. Wilson said (Interview 2, Line 596). The situation had impacted Mr. Wilson so much he described it as, “I was so excited to teach. Now I’ll never teach again” (Interview 2, Line 658). “I don’t think I’ll come back after Christmas. Heck, I may not make it to Christmas” he commented in early November (Interview 2, Line 643). Mr. Wilson had not formed an advisory board during his time, “No, we don’t have any kind of (advisory board)” (Interview 1, Line 202).

A professional development need theme in SAE supervision was identified in interviews with Mr. Wilson. *Build positive relationships with administrators* somewhat stemmed from the previously described comments made by a school board member. “(Principal) just goes along with (Superintendent) and (School Board Member)... (Administrators) haven’t been any help really” (Interview 2, Lines 550, 552). “We just get told what we’re doing wrong, not ‘Good job for this’ or ‘Thanks for that’” (Interview 2, Line 554).

Case 5 – Mr. Barton, Traditionally Certified

Mr. Barton graduated with a degree in agricultural education and earned his teaching certification. He worked in fabrication before transitioning to a teaching career. Mr. Barton taught in a town of 1,200 people in North-Central Oklahoma. This economically depressed town had experienced a steadily decreasing population in recent decades. US Census records reported residents were 60% White, 30% American Indian,

and 10% two or more races. A regional healthcare center was the largest employer with the school system and construction industry representing the occupations of over one-third of all residents.

The high school in which Mr. Barton was employed had slightly more than 100 students in the 2020-2021 school year. The majority (52%) of students were reported to be American Indian while 43% were White and 5% were of two or more races. The Oklahoma State Department of Education reported 70% of high school students were economically disadvantaged and 20% have a documented disability. The school's test scores were on par with state averages.

Mr. Barton's content strengths were in agricultural mechanics. "I'm a shop guy," he said (Interview 1, Line 25). He was able to use his professional experience to provide real-world experiences for his students in the shop (Observation Notes 1). His single teacher SBAE program has a small classroom and office space. The agricultural mechanics laboratory was adequately sized for his needs with welding booths, cutting tables, and a wide variety of tools and equipment. The shop and greenhouse were in need of maintenance when Mr. Barton began on the job in the summer. He worked with school personnel to make drastic improvements to both instructional environments over his first semester. The agricultural mechanics class of three sophomore boys served as observations during site visits.

Eight professional development needs emerged through Mr. Barton's observations and interviews. Of Mr. Barton's five classes, four were being taught in the agricultural mechanics shop by the second site visit, including his agricultural communications class (Observation Notes 2). "I don't like to lecture. They want to be out

here and so do I,” Mr. Barton explained (Interview 2, Line 219). Although agricultural mechanics can be valuable skills for students, so can agricultural communications. The classroom contained CIMC books on all of Mr. Barton’s classes, though they are rarely used. These observation and quotes led to the professional development theme of *Use a variety of teaching techniques* and *Integrate a curriculum into agriculture*.

Mr. Barton attributed a very light FFA calendar due to the COVID-19 pandemic. “We just aren’t allowed to do much,” (Interview 1, Line 145). The FFA officers were elected before Mr. Barton had arrived in the community. “They’re not the team I would have picked,” he commented (Interview 1, Lines 163-164). His comments constructed the professional development need theme of *Train an officer team*. This group had not prepared a Program of Activities and Mr. Barton lacked the knowledge or motivation needed to *Assist FFA members in preparing a Program of Activities*. Beyond working each home football game, “I don’t have much planned for the semester” (Interview 1, Line 136). He went on, “There just hasn’t been enough time between teaching and all the other stuff going on” (Interview 1, Line 163), leading to the professional development theme of *Identify various leadership opportunities for FFA members*. Though they had permission to attend the Opening Ceremonies FFA contest, Mr. Barton chose not to compete. He said, “We didn’t get ready in time” (Interview 2, Line 45), leading to the theme of a professional development need in *Coaching LDEs*

Two professional development needs in the area of SAE supervision emerged during site visits to Mr. Barton and his SBAE program. In his low-income area, many of Mr. Barton’s students “don’t have much... for them, show animals are not an option” (Interview 1, Lines 103 & 107). For these students, Mr. Barton allowed them to use

agricultural mechanics shop projects for their SAE. Students not able to conduct a SAE project with their own funding were restricted to agricultural mechanics projects (Observation Notes 2). These data contributed to the professional development theme needs of *Assisting students acquiring necessary resources to complete an SAE project* and *Identifying SAE projects in a community*.

Research Question 3

Research Question 3 sought to describe the qualitatively identified professional development needs Oklahoma induction-year SBAE teachers encountered during the Fall 2020 semester. The above case reports described the professional development needs observed during site visits and interviews. Each emergency certified case found 13 professional development needs. Some were shared between Ms. Potts and Mr. Parker while others were unique to one case. Both emergency certified teachers needed assistance with *Integrate a curriculum into agriculture*, *Evaluate student learning*, *Teach students to think critically*, *Assist FFA members in preparing degree applications*, and *Assist student completing a record of the financial transactions in their SAE project*. Interviews and observations with Ms. Potts noted a deficit in *Motivate students to learn*, *Craft good questions for students*, *Teach students with special needs*, *Adjust lessons to the proper level for individual students*, *Coach LDEs*, *Recognize FFA members' leadership potential*, *Identify various leadership opportunities for FFA members*, and *Cultivate FFA members' personal growth* that were not apparent in Mr. Parker's case. On the other hand, Mr. Parker exhibited the professional development needs of *Provide alternative explanations when students are confused*, *Create lesson plans for instruction*, *Manage a horticulture laboratory/greenhouse*, *Assist FFA members facilitating*

fundraising activities, Recruit new FFA members, Identify SAE projects in a community, Clearly communicate the procedures of SAE projects with parents and employers, and Coordinate communication between a student, parent, and SBAE teacher that Ms. Potts did not.

Ms. Potts and Mr. Parker self-reported some of these needs during interviews but seemed oblivious to others. Both emergency certified teachers noted other teachers and administrators had been their greatest support system. Over the course of the semester, Mr. Potts took steps to build relationships with neighboring SBAE teachers. She also knew other teachers in her school through her child and reported a strong relationship with the high school principal. Mr. Parker had become good friends with another induction-year SBAE teacher. These professional relationships proved valuable when Ms. Potts and Mr. Parker experienced difficulties. Both participated in the new teacher meetings hosted by the agricultural education staff of Oklahoma CareerTech. Ms. Potts reflected on these meetings, “It’s helpful. Some of what they talk about is hard to absorb. It’s just so much coming at you so fast” (Interview 2, Line 503-504).

The case reports for traditionally certified teachers, Ms. Carter, Mr. Wilson, and Mr. Barton, are described in the previous three sections. A total of 18 different professional development needs were identified between the three traditionally certified teachers. Ms. Carter and Mr. Wilson shared two common professional development needs, *Implement student-centered teaching strategies* and *Utilize the FFA Alumni and Supporters*. The remaining 16 professional development needs were unique to one traditionally certified teacher.

For Ms. Carter and Mr. Wilson, the two cases who taught with a teaching partner, each relied on their teaching partner as their first source of assistance. “He’s been a great resource,” Ms. Carter commented on her teaching partner (Interview 1, Line 79). Similarly, Mr. Wilson said, “I’d be lost without (teaching partner)” (Interview 1, Line 176). Although Mr. Barton did not have a teaching partner, he sought advice and support from local retired and current SBAE teachers in the local area. “(Retired SBAE teacher) came up just after I was hired and was helpful in starting to get the shop put back together,” Mr. Barton said (Interview 1, Line 183-184).

The traditionally certified participants reflected on some of their professional development needs in the interviews while others were observed in the teaching performances. Of special note in this group was the presence of Ms. Carter and Mr. Wilson’s teaching partners who may have been able to mediate some of the professional development needs for these induction-year teachers. For example, Ms. Carter noted her teaching partner took the lead in activities unfamiliar to her, such as shooting sports and beef cattle grading. Without a teaching partner, as in Mr. Barton’s situation, these events may have prompted greater professional development needs. Ms. Carter and Mr. Wilson reported good working relationships with their perspective teaching partners.

A total of 33 professional development needs were identified between the five cases. Table 21 lists the professional development needs emerging from each case. Of these, six were shared between at least one emergency certified and one traditionally certified case participant, including *Integrate a curriculum into agriculture*, *Manage a horticulture laboratory/greenhouse*, *Recruit new FFA members*, *Coach leadership*

development events, Identify various leadership opportunities for FFA members, and Identify SAE projects in a community.

Table 21

Emerging Professional Development Need by Case

Professional Development Need	Emergency Certified		Traditionally Certified		
	Ms. Potts	Mr. Parker	Ms. Carter	Mr. Wilson	Mr. Barton
	Instruction				
Use a variety of teaching techniques	-	-	-	-	I & O
Provide alternative explanations when students are confused	-	O	-	-	-
Integrate a curriculum into agriculture	O	O	-	-	O
Evaluate student learning	O	O	-	-	-
Motivate students to learn	I & O	-	-	-	-
Create lesson plans for instruction	-	O	-	-	-
Teach students to think critically	O	O	-	-	-
Use a variety of assessment strategies	-	-	-	O	-
Craft good questions for students	O	-	-	-	-
Implement student-centered teaching strategies	-	-	O	O	-
Manage student behavior	-	-	I	-	-
Teach students with special needs	O	-	-	-	-
Manage a horticulture laboratory/greenhouse	-	I	I	-	-
Adjust lessons to the proper level for individual students	O	-	-	-	-
	FFA				
Assist FFA members facilitating fundraising activities	-	O	-	-	-
Recruit new FFA members	-	I	I	-	-
Coach Leadership Development Events	I	-	-	-	I
Train a chapter officer team	-	-	-	-	I
Assist FFA members in preparing a Program of Activities	-	-	-	-	O
Assist FFA members in preparing degree applications	I	O	-	-	-
Recognize FFA members' leadership potential	O	-	-	-	-

Identify various leadership opportunities for FFA members	O	-	-	-	O
Utilize a program advisory board	-	-	-	I	-
Utilize the FFA Alumni and Supporters	-	-	I	I	-
Cultivate FFA members' personal growth	O	-	-	-	-
	SAE				
Identify SAE projects in a community	-	O	-	-	O
Identify SAE projects that connect to agriculture curriculum	-	-	I	-	-
Build positive relationships with administrators	-	-	-	I	-
Clearly communicate the procedures of SAE projects with parents and employers	-	I & O	-	-	-
Assist students acquiring necessary resources to complete an SAE project	-	-	-	-	I & O
Provide students meaningful supervision during their SAE project	-	-	I	-	-
Coordinate communication between a student, parent, employer, and myself	-	I & O	-	-	-
Assist students completing a record of the financial transactions in their SAE project	I & O	O	-	-	-

Note. I = Professional development need identified in interviews, O = Professional development need identified in observations

Emergency certified induction-year teachers attributed the greatest number of professional development needs with 15 in total. In the area of instruction, professional development needs included *Provide alternative explanations when students are confused, Evaluate student learning, Motivate students to learn, Create lesson plans for instruction, Teach students to think critically, Craft good questions for students, Teach students with special needs, and Adjust lessons to the proper level for individual students.* Professional development needs in advising an FFA chapter represented by emergency certified teachers included *Assist FFA member facilitating fundraising activities, Assist*

FFA members in preparing degree applications, Recognize FFA members' leadership potential, and Cultivate FFA members' personal growth. In the area of SAE supervision, *Clearly communicate the procedures of SAE projects with parents, Coordinate communication between a student, parent, and SBAE teacher, and Assist students completing a record of the financial transactions in their SAE project* emerged in at least one emergency certified participant, but not in a traditionally certified participant.

Traditionally certified SBAE teachers exhibited 12 professional development needs that did not emerge in the emergency certified teachers. These 12 were evenly dispersed between the areas of instruction, FFA, and SAE. *Use a variety of teaching techniques, Use a variety of assessment strategies, Implement student-centered teaching strategies, and Manage student behavior* were included in the professional development needs for instruction in observation notes and/or interview transcripts with at least one traditionally certified teacher. FFA professional development needs included *Train a chapter officer team, Assist FFA members in preparing a Program of Activities, Utilize a program advisory board, and Utilize the FFA Alumni and supporters.* SAE needs unique to at least one traditionally certified SBAE teacher included *Identify SAE projects that connect to the agriculture curriculum, Build positive relationships with administrators, Assist students acquiring necessary resources to complete an SAE project, and Provide students meaningful supervision during their SAE project.*

Professional development needs varied greatly between and within certification pathways. Both groups mentioned some needs in interviews, others were identified while observing the teachers interact with and instruct students. Each participant listed several fellow SBAE teachers they relied on for support. Administrators provided necessary

sources of information for all but Mr. Wilson. Ms. Potts and Ms. Carter found the mandatory new teacher meetings put on by state agricultural education staff as informative and useful while the others viewed these meetings as more of a “waste of time,” as Mr. Wilson commented (Interview 2, Line 104).

Research Question 4

The fourth research question of the study sought to find similarities and dissimilarities between the quantitative and qualitative data for induction-year SBAE teachers in Oklahoma. In short, the data sets varied greatly. Ms. Potts reported no areas of low teacher self-efficacy. In both August and December, Ms. Potts’ lowest self-ranking of her teacher self-efficacy was on the item *Teach students with special needs*, also the only item to be included in the moderate range. This was observed as a professional development need in her teaching and student interaction as well. All other items Ms. Potts rated in the high teacher self-efficacy range, although 12 additional professional development needs emerged from observation notes and interview transcripts (Table 22).

Table 22

Joint Display of Ms. Potts’ Self-reported and Observed Professional Development Needs

Professional Development Need	Quantitative		Qualitative
	Initial	Final	
Integrate a curriculum in agriculture	High	High	O
Evaluate student learning	High	High	O
Motivate students to learn	High	High	I & O
Teach students to think critically	High	High	O
Craft good questions for students	High	High	O
Teach students with special needs	Mod.	Mod.	O
Adjust lessons to the proper level for individual students	High	High	O
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	High	High	I
Assist FFA members in preparing degree applications	High	High	I
Recognize FFA members’ leadership potential	High	High	O

Identify various leadership opportunities for FFA members	High	High	O
Cultivate FFA members' personal growth	High	High	O
Assist students completing a record of the financial transactions in their SAE project	High	High	I & O

Note. High = Teacher self-efficacy score of 7 to 9, Mod = Teacher self-efficacy score of 4 to 6, I = Professional development need identified in interviews, O = Professional development need identified in observations

Mr. Parker rated all teacher self-efficacy items as moderate or high in August and December data collections which failed to flag any item as a self-perceived professional development need. However, 13 needs emerged during the qualitative data collection (Table 23). Mr. Parker identified two of these needs solely through the verbal reflection during an interview, yet he still marked *Manage a horticulture laboratory/greenhouse* and *Recruit new FFA members* as high teacher self-efficacy in August and December.

Table 23

Joint Display of Mr. Parker's Self-reported and Observed Professional Development Needs

Professional Development Need	Quantitative		Qualitative
	Initial	Final	
Provide alternative explanations when students are confused	High	High	O
Integrate a curriculum into agriculture	High	Mod.	O
Evaluate student learning	High	Mod.	O
Create lesson plans for instruction	High	Mod.	O
Teach students to think critically	High	High	O
Manage a horticulture laboratory/greenhouse	High	High	I
Assist FFA members facilitation fundraising activities	High	High	O
Recruit new FFA members	High	High	I
Assist FFA members in preparing degree applications	Mod.	Mod.	O
Identify SAE projects in a community	High	High	O
Clearly communicate the procedures of SAE projects with parents and employers	High	Mod.	I & O
Coordinate communication between a student, parent, employer, and myself	High	Mod.	I & O
Assist students completing a record of the financial transactions in their SAE project	High	High	O

Note. High = Teacher self-efficacy score of 7 to 9, Mod = Teacher self-efficacy score of 4 to 6, I = Professional development need identified in interviews, O = Professional development need identified in observations

Ms. Carter rated her teacher self-efficacy as high or moderate for each item.

Seven professional development needs emerged during qualitative data collection and analysis. Six of these were gathered from Ms. Carter’s comments during interviews.

Professional development needs identified in Ms. Carter’s case are listed in Table 24.

Table 24

Joint Display of Ms. Carter’s Self-reported and Observed Professional Development Needs

Professional Development Need	Quantitative		Qualitative
	Initial	Final	
Implement student-centered teaching strategies	High	High	O
Manage student behavior	High	High	I
Manage a horticulture laboratory/greenhouse	High	High	I
Recruit new FFA members	High	High	I
Utilize the FFA Alumni and Supporters	High	Mod.	I
Identify SAE projects that connect to agriculture curriculum	High	High	I
Provide students meaningful supervision during their SAE project	High	High	I

Note. High = Teacher self-efficacy score of 7 to 9, Mod = Teacher self-efficacy score of 4 to 6, I = Professional development need identified in interviews, O = Professional development need identified in observations

Mr. Wilson’s teacher self-efficacy ratings were categorized in the moderate or high range for all but two items. *Manage a horticulture laboratory/greenhouse* and *Assist FFA members in preparing proficiency applications* were rated as low teacher self-efficacy in the area of FFA during data collection in December but did not emerge as a professional development need from observations or interviews. Mr. Wilson’s teaching partner is responsible for teaching the horticulture class. Mr. Wilson made no mention of proficiency applications or struggles associated with them in interviews. Five other

professional development needs emerged during qualitative data collection and analysis.

Three of these were gathered from Mr. Wilson’s comments during interviews.

Professional development needs identified in Mr. Wilson’s case are listed in Table 25.

Table 25

Joint Display of Mr. Wilson’s Self-reported and Observed Professional Development Needs

Professional Development Need	Quantitative		Qualitative
	Initial	Final	
Use a variety of assessment strategies	High	Mod.	O
Implement student-centered teaching strategies	High	High	O
Manage a horticulture laboratory/greenhouse	Mod.	Low	-
Assist FFA members in preparing proficiency applications	Mod.	Low	-
Utilize a program advisory board	Mod.	Mod.	I
Utilize the FFA Alumni and Supporters	Mod.	Mod.	I
Build positive relationships with administrators	High	Mod.	I

Note. High = Teacher self-efficacy score of 7 to 9, Mod = Teacher self-efficacy score of 4 to 6, Low = Teacher self-efficacy score of 1 to 3, I = Professional development need identified in interviews, O = Professional development need identified in observations

Mr. Barton rated his teacher self-efficacy as low for three items across the initial and final quantitative data collections. *Evaluate student learning* was identified as a professional development need in August but had risen to the moderate teacher self-efficacy range by December. *Utilize a program advisory board* and *Utilize the FFA Alumni and Supporters* were identified as areas of low teacher self-efficacy for Mr. Barton in December. Neither were mentioned as areas of concern during the second site visit two weeks prior to data collection in December. Eight professional development needs emerged during qualitative data collection and analysis. Two of these were gathered from Mr. Barton’s comments during interviews. Professional development needs identified in Mr. Barton’s case are listed in Table 26.

Table 26*Joint Display of Mr. Barton's Self-reported and Observed Professional Development**Needs*

Professional Development Need	Quantitative		Qualitative
	Initial	Final	
Use a variety of teaching techniques	Mod.	Mod.	I & O
Integrate a curriculum into agriculture	High	Mod.	O
Evaluate student learning	Low	Mod.	-
Coach Leadership Development Events	Mod.	Mod.	I
Train a chapter officer team	High	Mod.	I
Assist FFA members in preparing a Program of Activities	High	Mod.	O
Utilize a program advisory board	Mod.	Low	-
Utilize the FFA Alumni and Supporters	Mod.	Low	-
Identify various leadership opportunities for FFA members	High	Mod.	O
Identify SAE projects in a community	High	Mod.	O
Assist students acquiring necessary resources to complete an SAE project	High	High	I & O

Note. High = Teacher self-efficacy score of 7 to 9, Mod = Teacher self-efficacy score of 4 to 6, Low = Teacher self-efficacy score of 1 to 3, I = Professional development need identified in interviews, O = Professional development need identified in observations

Across certification pathways, cases varied among and between themselves in the professional development needs identified in quantitative and qualitative phases. Neither emergency certified teacher self-identified a professional development need on the self-efficacy instrument. However, interview transcripts revealed Ms. Potts felt she struggled with *Motivating students to learn*, *Coaching LDEs*, *Assisting FFA members in preparing degree applications*, and *Assisting students completing a record of financial transactions in their SAE project*. Likewise, Mr. Parker self-identified professional development needs in *Manage a horticulture laboratory/greenhouse*, *Recruit new FFA members*, *Clearly communicate the procedures of SAE projects with parents*, and *Coordinate*

communications between a student, parent and SBAE teacher. Both rated these areas with a high or moderate sense of teacher self-efficacy.

Between the two emergency certified participants, 18 professional development needs were identified through classroom observations. Interview transcripts did not contain references to these professional development needs. Additionally, Ms. Potts and Mr. Parker rated their sense of teacher self-efficacy as high or moderate on these items.

Quantitative and qualitative data also varied within and between the traditionally certified cases. The three cases produced five professional development needs identified through low teacher self-efficacy scores on the quantitative instrument, though none of which emerged in classroom observations or interviews. Interviews produced another 13 self-identified professional development needs that were not apparent on the quantitative instrument.

Classroom observations of traditionally certified teachers revealed another seven professional development needs. Traditionally certified participants did not identify these needs through quantitative or interview data. They marked a self-efficacy score between moderate and high for each area.

Emergency certified teachers self-identified eight professional development needs through interviews, less than the 18 identified by traditionally certified. Conversely, observations of emergency certified teachers revealed 22 professional development needs, more than the 9 observed during site visits to traditionally certified teachers. Emergency certified teachers mentioned four of the observed professional development needs during interviews. Traditionally certified teachers mentioned two of the observed professional development needs during interviews. Emergency certified teachers were

less able to self-identify their professional development needs than their traditionally certified colleagues.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

This final chapter describes conclusions gleaned from data analysis. Implications to practice and research are reported as well. Recommendations for future research and practice are also included. The following sections are organized by research question with corresponding conclusions, implications, and recommendations. The chapter cumulated in a discussion of induction programing to support the retention and effectiveness of induction-year SBAE teachers.

Conclusions, Implications, and Recommendations Associated with Research

Question 1

Research Question 1 described the self-efficacy of Oklahoma induction-year SBAE instructors in the Fall 2020 semester across certification pathways. Induction-year SBAE teachers, both emergency and traditionally certified, are self-efficacious. These teachers were largely consistent in beliefs of their ability over the first semester. It would seem mastery experiences and input from models in instruction, FFA, and SAE cemented

induction-year teachers' previously held beliefs in their ability to be successful in these tasks.

Emergency certified induction-year SBAE teachers are more self-efficacious than their traditionally certified cohort members. Emergency certified teachers reported slightly higher teacher self-efficacy scores in all areas during December data collection. Aziz and Quraishi (2017) provided a possible explanation in their observance of teachers with higher degrees reporting lower self-efficacy than those with a bachelor's degree. "Teachers with a higher education degree may be less idealistic about their professional competencies" (Aziz & Quraishi, 2017, p. 241). Could the specialization of a traditional teacher certification impact an induction-year teachers' self-efficacy beliefs? Findings of this study align with those of Robinson and Edwards (2012) who found traditionally certified SBAE teachers report lower teacher self-efficacy scores. Conversely, Duncan and Ricketts (2008) found traditionally certified SBAE teachers were more self-efficacious while Rocca and Washburn (2006) described similar teacher self-efficacy scores between traditionally and alternatively certified SBAE teachers.

Teacher self-efficacy scores across certification pathways remained in the moderate and high ranges throughout data collection. It is likely these induction-year teachers faced numerous new challenges throughout their first semester (Mundt, 1991). McDonald (2008) questioned the reliability of these neophyte teachers assessing their own abilities as they may have a very limited knowledge of their untested capabilities. Scales et al. (2009) found novice and experienced SBAE teachers overstated their ability to teach science concepts. Is it possible the induction-year SBAE teachers in this study, both emergency and traditionally certified, overestimated their teaching ability? What are

the implications for the reliability of studies reliant on self-report data from induction-year teachers? Additional research is needed to answer these lines of inquiry.

Emergency certified teachers commonly bring no to little teaching experience into the classroom (Darling-Hammond et al., 2005). The daily mastery experiences encountered by emergency certified SBAE teachers as they worked to instruct students may have influenced this growth in self-perceived ability (Bandura, 1997). Rayfield et al. (2014) found a similar positive and stable attitude toward teaching in SBAE induction-year teachers from three states, including Oklahoma. This finding is in contrast to Moir's (1999) curve which predicts a sharp decline in induction-year teachers' attitudes toward teaching during the first semester.

Bandura (1997) wrote "beliefs of personal efficacy play a key role in career development and pursuits" (p. 423). The high sense of teacher self-efficacy for emergency certified SBAE teachers may have provided motivation to enter the teaching profession (Azjen, 1991). Kasalak and Dagyar (2020) predicted teachers with a high sense of self-efficacy are more likely to be retained in the profession, indicating the four emergency certified teachers participating in this study may continue teaching for a long-term career. However, Robinson and Edwards (2012) found 83% of alternatively certified SBAE teachers in their study left the profession within three years. Teacher self-efficacy of emergency certified SBAE teachers should continue to be monitored throughout their probationary period to track correlations between retention and attrition.

Traditionally certified teachers are less self-efficacious induction-year teachers, especially as the fall semester progresses. Although emergency certified teachers' self-efficacy increased slightly, traditionally certified teachers' self-efficacy decreased

slightly in the Fall 2020 semester. This statistic for traditionally certified SBAE teachers may be concerning, especially if the trend continues, due to the direct relationship between teacher self-efficacy and student outcomes (Engin, 2020; Sabet et al., 2018; Shahzad & Naureen, 2017; Zee et al., 2018). Swan et al (2011) found SBAE teacher self-efficacy decreased during the induction-year to be slowly regained during the next two years. Still, this slight decrease is much less than the predicted change from anticipation to disillusionment phases outlined by Moir (1999). Rayfield et al. (2014) also found induction-year SBAE teachers did not follow Moir's (1999) curve. Can this trend be extrapolated to populations beyond those investigated in these two studies? Additional research would determine if there is a difference between induction-year SBAE teachers and those studied by Moir (1999). Teacher educators, administrators, SBAE state staff, and others responsible for novice teacher development should continue to study the important factor of teacher self-efficacy in induction-year teachers.

Conclusions, Implications, and Recommendations Associated with Research

Question 2

Research Question 2 described the quantitative self-reported professional development needs of emergency and traditionally certified SBAE induction-year teachers during the Fall 2020 semester. Traditionally certified induction-year teachers more readily recognize their need for professional development than their emergency certified teacher counterparts. Traditionally certified SBAE teachers reported a greater number of professional development needs than their emergency certified colleagues. At two data collection points, six responses from emergency certified teachers generated one professional development need. Traditionally certified teachers provided 39 responses

with a total of 39 professional development needs. After controlling for unequal sample sizes, emergency certified teachers reported .17 needs per capita while traditionally certified teachers reported one need per capita. Each pathway identified a need for professional development in *managing a horticulture laboratory/greenhouse* in August, but only traditionally certified teachers still recognized the need in December. A continuation of this study into the spring semester would further track self-reported professional development need changes over the induction-year.

Research comparing self-reported professional development needs of emergency (or alternatively) certified and traditionally certified SBAE teachers yields conflicting conclusions. Roberts and Dyer (2004) found traditionally certified teachers reported more professional development needs than alternatively certified teachers. Conversely, Swafford and Friedel (2010) and Stair et al. (2019) noted no statistically significant differences in professional development needs between traditionally and alternatively certified SBAE teachers.

Katz (1972) named the induction-year as the survival phase of novice teacher development characterized by a focus on the challenges associated with daily tasks, which may change from day to day and class to class. She went on to suggest an “on-site trainer” who can provide “instruction in specific skills” (Katz, 1972, p. 4). An assigned mentor could contribute consistent, individualized advice to induction-year teachers and provide a valuable support system for these beginning teachers (Moore & Swan, 2008; Smith & Ingersoll, 2004). Oklahoma SBAE has not had a structured mentoring program for induction-year teachers since 2004 (Toombs & Ramsey, 2020a). The funding and

implementation of such a program may result in greater retention (Darling-Hammond, 2010) of more effective novice SBAE teachers (Young, 2018) across the state.

Emergency certified teachers self-identified only one professional development need, that of *managing a horticulture laboratory/greenhouse*, in August. Otherwise, quantitative data revealed no self-identified professional development needs for emergency certified teachers. Katz (1972) attributed the greatest need for professional development to a teacher's induction-year. These professional development needs include areas related to instruction (Kennedy & Clinton, 2009; Ruhland & Bremer, 2002b; Smalley et al., 2019) as well as advising FFA chapters and supervising students' SAE projects (Moore & Swan, 2008; Sorensen et al., 2014). However, these emergency certified teachers did not indicate they required assistance in any topic related to FFA or SAE. Even with a small sample, no quantitative item was rated as less than *some capacity* (5 on a 9-point Likert-type scale) at the conclusion of the fall semester. Being a minority group in agricultural education (Bowling & Ball, 2018), are emergency certified SBAE teachers underreporting their perceived professional development needs in an effort to be accepted in the SBAE teacher cohort (Clafin et al., 2021)?

With the high teacher self-efficacy mean and low standard deviation for emergency certified SBAE teachers, it is no surprise the frequency of items revealed moderate to high rankings. Stair et al. (2019) also found alternatively certified teachers reported few professional development needs, though their study included novice and experienced SBAE teachers. Foote et al. (2011) theorized new teachers lacking a pedagogical background require intensive on the job training. This perspective did not seem to be shared by these emergency certified teachers. Due to the susceptibility for

self-report bias, caution should be taken before designing professional development from these quantitative results alone. Rather, additional qualitative data in the form of teaching observations should also be incorporated into professional development need analyses.

Although specific professional development needs varied at different points of the semester, it can be concluded traditionally certified induction-year SBAE teachers recognize their need for professional development in a variety of areas. Table 27 displays the changes in professional development needs. A total of 29 unique professional development needs were identified. Most of these professional development needs fluctuated between August and December, although one-third were identified at both data collection points. In August, traditionally certified teachers self-reported 7 instruction and 10 FFA professional development needs. By December, professional development needs numbered 22 representing 7 instruction, 11 FFA, and 4 SAE related items. It would seem different mastery experiences, vicarious experience, verbal persuasion, and physiological and affective states over the first semester have influenced traditionally certified SBAE teachers' sense of self-efficacy and promoted different professional development needs (Bandura, 1997). Additional longitudinal research at regular intervals would serve to further describe changing professional development needs.

Table 27

Changes in Traditionally Certified SBAE Teachers' Professional Development Needs over the Fall Semester

Professional Development Need	August	December
Integrate a curriculum in agriculture		X
Evaluate student learning	X	
Create lesson plans for instruction	X	X
Use a variety of assessment strategies		X
Craft good questions for students		X

Effectively conduct field trips	X	X
Teach students to think critically		X
Teach students with special needs	X	
Manage an agricultural mechanics laboratory/shop	X	
Manage a horticulture laboratory/greenhouse	X	X
Adjust lessons to the proper level for individual students	X	
Assist FFA members planning banquets	X	X
Assist FFA members facilitating fundraising activities	X	X
Supervise FFA members during trips and activities		X
Advise FFA meetings	X	X
Assist FFA members planning chapter events	X	
Assist FFA members developing community service projects		X
Train a chapter officer team	X	
Assist FFA members in recruiting new members	X	
Assist FFA members in preparing degree applications	X	X
Assist FFA members in preparing proficiency applications	X	X
Utilize a program advisory board	X	X
Utilize the FFA Alumni and Supporters	X	X
Recognize FFA members' leadership potential		X
Identify various leadership opportunities for FFA members		X
Build positive relationships with administrators		X
Inform administrators about the benefits of SAE projects		X
Encourage students to complete a record book for their SAE project		X
Assist students completing a record of the financial transactions in their SAE project		X

The diverse professional development needs identified by these traditionally certified teachers mirror the findings of Sorensen et al. (2014). In addition to their classroom instruction responsibilities, induction-year SBAE teachers are required to manage the total SBAE program including FFA advisement and SAE supervision (DiBenedetto, et al., 2018). Also, the variation of needs identified in August and December may indicate the timing of professional development is important to maximize training impact (Hamel et al., 2012). Therefore, professional development offerings should represent all areas of the three-circle agricultural education model and occur at

regular intervals with topics arranged to meet the demands of teachers' schedules and topics of interest. As discussed above, neophyte teachers may be limited in their ability to communicate their professional development needs (Koziol & Burns, 2001). So, these findings should be interpreted and implemented with caution.

Conclusions, Implications, and Recommendations Associated with Research

Question 3

Research Question 3 used qualitative approaches to identify professional challenges encountered by emergency and traditionally certified induction-year SBAE teachers. Professional development needs are highly individualistic for induction-year teachers as a result of their personal experiences and contexts. Areas of convergence and divergence emerged both between and within teacher certification pathways. Emergency certified teachers shared five professional development needs while 16 other needs emerged for either Ms. Potts or Mr. Parker. Ms. Carter and Mr. Wilson, who were traditionally certified teachers, shared two professional development needs. Traditionally certified teachers displayed 16 professional development needs unique to Ms. Carter, Mr. Wilson, or Mr. Barton. Of the 33 professional development needs identified in the qualitative data, 6 were shared between the emergency and traditionally certified induction-year SBAE teachers. These professional development needs were highly individualized across certification pathways. Katz (1972) also found professional development needs to vary between novice teachers. Bandura's (1978) theory of reciprocal determinism may help explain the differences found within certification pathways. In his model, Bandura (1978) proposed environment both influences and is influenced by personal characteristics and behaviors. The differing environments (SBAE

programs) and personal characteristics (teacher self-efficacy) influenced the various professional development needs emerging from each case participant (Greiman et al., 2005; Katz, 1972; Smith & Ingersoll, 2004).

Due to the individualized nature of their needs, a differentiated professional development program is needed for induction-year SBAE teachers. A mentor-protégé relationship has potential to provide the personal professional development needed by these SBAE induction-year teachers (Katz, 1972; Toombs & Ramsey 2020a). Four of the five case study participants identified a mentor. For the emergency certified participants, both Ms. Potts and Mr. Parker relied on other school and SBAE personnel as their preferred resource for assistance in various professional challenges. Ms. Potts described a strong relationship with her principal and neighboring experienced SBAE teachers as well as state agricultural education staff. Mr. Parker described a friendship with another induction-year SBAE teacher who became his primary source of information for state degrees and other FFA activities. Mr. Parker did not describe any instances of seeking help from school administrators or other teachers in his building. Even though Oklahoma SBAE did not assign a mentor to these emergency certified teachers, they have identified and constructed relationships with other SBAE teachers in the state.

The greatest resource for the three traditionally certified induction-year teachers were other SBAE teachers. For Ms. Carter and Mr. Wilson, a fellow SBAE teacher at their respective schools provided needed guidance. These mentors were in close geographic proximity and knowledgeable about the unique circumstances of the SBAE program, making them an equitable model with a strong influence in the induction-year teachers' self-efficacy (Bandura, 1997). Additionally, Mr. Barton, as the only SBAE

teacher in his district, was more isolated than the other qualitative participants in this study. He described interactions with a retired SBAE teacher in the district, but also mentioned a lack of connection with other current SBAE teachers. The location of the school in which he taught contributed to his isolation from family and friends. Mr. Barton was not assigned a mentor and had failed to identify one in the first six months of employment. He did not have a strong model to bolster his self-efficacy in completing tasks and Mr. Barton did not have a comparable mastery experience (Bandura, 1997).

These relationships seem to be driven by the needs identified by the induction-year teachers. Without a mentor, Mr. Barton was left without a primary contact in the profession. Also, Mr. Parker relied mostly on another induction-year teacher who may not have the needed experience to be a useful resource. The profession should invest in its future by supporting a structured mentor program for induction-year SBAE teachers (Moore & Swan, 2008; Toombs & Ramsey 2020a). SBAE teacher leaders, state staff, and teacher educators should work collaboratively to match induction-year teachers with a competent, experienced SBAE teacher.

Ms. Potts and Mr. Parker were both induction-year emergency certified SBAE teachers, but they differed in life phases with alternate visions of their future. Ms. Potts was a second career teacher who saw herself in the classroom for the perceivable future while Mr. Parker was a recent college graduate in his early twenties and viewed teaching as a stopover job in his career trajectory. Mobra and Hamlin (2020) found other emergency certified Oklahoma teachers were motivated to pursue the emergency certification to fulfill a needed role in their local school like Ms. Potts and to produce needed income such as in Mr. Parker's case. These personal characteristics may have

influenced their teacher self-efficacy (Bandura, 1997) and motivation to participate in professional development and continue their teaching career (Azjen, 1991).

Ms. Potts and Mr. Parker expressed some of the same professional development needs, but also differed in many areas. Both emergency certified SBAE teachers were observed as requiring professional development in *Integrating a curriculum into agriculture*. Although each emergency certified teacher had access to CIMC and other curriculum, neither seemed skilled in implementing the material into daily lessons, perhaps due to a lack of formal training in lesson development and delivery. Mr. Parker fit the description outlined by Rocca and Washburn (2006) who found alternatively certified SBAE teachers were commonly content experts in one area of agriculture but lacked knowledge and experience in others. For Mr. Parker, this reluctance to engage in direct instruction outside of animal science seemed to also inhibit his understanding of the material. In addition, emergency certified participants struggled to *Evaluate student learning* and *Teach students to think critically* in meaningful ways. Application and assessment of learning was composed of simple memorization of teacher-provided content. Both teachers taught and assessed students on the lower rungs of Bloom's taxonomy (Krathwohl, 2002). By integrating a structured curriculum and increasing lesson rigor, these teachers would be more able to instill critical thinking skills related to agriculture (Bridgestock et al., 2019; Culver et al., 2019). A lack of experience for both emergency certified participants precipitated a need for professional development in *Assisting FFA members in preparing degree applications* and *Assist students completing a record of the financial transactions in their SAE project*. These vital skills have also

been identified as a needed topic of professional development for preservice teachers completing their clinical teaching internship (Toombs & Ramsey, 2020b).

SBAE program context led to individualized professional development needs identified through qualitative methods. The town in which Ms. Potts teaches has a substantial Hispanic population, and the school serves several English language learner (ELL) students. Yet she described struggling with instructing ELL students and providing accommodations for special education students. The majority of Ms. Potts' professional development needs centered on instruction, particularly with special needs and unmotivated students. Training in differentiating instruction in order to *Teach students with special needs* and *Motivate students to learn* would improve the learning of both normally abled and special education students in Ms. Potts' classroom (Anderson, 2006).

In addition to the instruction professional development needs shared with Ms. Potts and described above, Mr. Parker and his SBAE program would benefit from professional development in *Recruiting FFA members* and *Identify SAE projects in a community*. The low socioeconomic status of Mr. Parker's students requires certain adjustments for his students to participate in FFA and SAE related activities. Mr. Parker's description of SAE projects was restricted to cattle, sheep, and swine show animals kept at the school farm. Local agribusinesses, agricultural mechanics shops, and greenhouses offer other potential SAE projects not used by Mr. Parker's students. Mr. Parker had taken steps to purchase a set of FFA jackets for the chapter, but still expressed concerns about students being unmotivated in FFA due to financial strains. Mr. Parker needed to remove this barrier for students to be fully engaged in the FFA chapter.

Ms. Carter, Mr. Wilson, and Mr. Barton graduated from SBAE teacher preparation programs after completing a clinical teaching internship. Though they had similar educational backgrounds and each exhibited unique professional development needs during site visits as a result of their unique environments of their respective SBAE programs. Ms. Carter revealed most of her professional development needs through interview statements. She was competent in the classroom during the observed agricultural communications class, which was also Ms. Carter's content specialty. However, Ms. Carter described struggling with *Managing a horticulture laboratory/greenhouse*. Ms. Carter had not been able to incorporate the hands-on learning in the horticultural laboratory that may better engage these upperclassmen boys. The context of content can impact a teacher's self-efficacy, with higher teacher self-efficacy related to more training in the content area (Kola & Sunday, 2015). The wide variety of content taught in agricultural education classes (The Council, 2015) may complicate SBAE teacher self-efficacy and performance between content areas (Snider, 2019). Also, Ms. Carter taught with an experienced, effective teaching partner who she was able to share responsibilities with and rely upon to bolster her areas of weakness. Although this tag-team approach can be beneficial in multi-teacher SBAE programs, Ms. Carter should engage in professional development related to *Providing students meaningful supervision during their SAE project* to further her knowledge of various sectors of agriculture. *Identifying SAE projects that connect to the agriculture curriculum* would allow Ms. Carter to recognize potential SAE projects beyond livestock exhibition projects.

Mr. Wilson faced environmental situations that hindered his motivation to continue teaching. The inability to *Build positive relationships with administrators* compounded issues with parents and other stakeholders. The lack of a strong *Utilization of program advisory board* or a *FFA Alumni and Supporters* group left Mr. Wilson without a strong model to bolster his self-efficacy during challenges in the induction-year. If he had this resource, he could have appealed to other parents and community members to help him resist the defamatory comments made by the school board member.

Strong relationships with students and his teaching partner were not enough for Mr. Wilson to persevere through the negative psychological and affective state elicited from interactions with a select few community members. Despite his training and previous experiences in SBAE, Mr. Wilson chose to pursue other career options. Fry (2007) also identified a lack of adequate administration support for induction-year teachers, leading many to a premature exit from the profession. Support from school administration has shown a strong correlation with the retention of career and technical education teachers (Fry, 2007) and SBAE teachers (Hasselquist et al., 2017). Aslanargun (2015) found teachers desire a level of understanding and confidence from their administration, two traits Mr. Wilson did not perceive from his principal, superintendent, and school board. The lack of support from administrators seemed to have added to the feeling of isolation Mr. Wilson shared with his teaching partner.

Mr. Barton was confident in his skills in the agricultural mechanics laboratory, but less so in the classroom. He chose to spend a majority of class time in the agricultural mechanics laboratory, even in courses not traditionally including agricultural mechanics learning outcomes. Mr. Barton's students would benefit from a wider *Use of a variety of*

teaching techniques. Mr. Barton seemed to focus on tasks in which he felt a high level of self-efficacy, relying on past mastery experiences to dictate his choice of instruction, FFA, and SAE activities. The narrow experiences common to novice SBAE teachers (Roberts et al., 2020) limited Mr. Barton and his students. Further *Integration of a curriculum into agriculture* would assist Mr. Barton in his lesson planning and bolster areas of weakness in content knowledge.

Conclusions, Implications, and Recommendations Associated with Research

Question 4

Research Question 4 compared the mixed methods findings between emergency and traditionally certified induction-year SBAE teachers in Oklahoma. There is a disparity in induction-year teachers' belief in their ability and their performance in the classroom. Divergence in the data was found in the individual cases, within teacher certification pathways, and between emergency and traditionally teacher certification groups. Quantitative data revealed moderate to high teacher self-efficacy means and reported few professional development needs across the entire sample. However, 33 professional development needs emerged from qualitative data in the five case study participants. Of these, eight emerged from interviews with emergency certified SBAE teachers and 12 emerged from interviews with traditionally certified SBAE teachers. Observation notes from site visits to the two emergency certified teachers gathered 18 professional development needs not shown in quantitative or interview data. Observation notes from site visits to the three traditionally certified SBAE teachers gathered seven professional development needs not shown in quantitative or interview data.

Emergency certified SBAE teachers are less able to articulate their professional development needs than traditionally certified SBAE teachers. Emergency certified teachers self-reported fewer professional development needs and yet observation notes produced more professional development needs than their traditionally certified induction-year colleagues. This finding is consistent with other studies in SBAE from Roberts and Dyer (2004), Robinson and Edwards (2012), and Stair et al. (2019). It may be these teachers lacked the professional knowledge to communicate their own professional development needs (McDonald, 2008; Roberts & Dyer, 2004). Therefore, it is recommended Oklahoma policy makers and school administrators require additional professional support in the form of mentoring and induction programming for these teachers. In doing so, Oklahoma students will benefit from more effective teachers likely to be retained in the profession (Darling-Hammond & Bransford, 2005). On the other hand, Swafford and Friedel (2010) found no difference in professional development needs between certification pathways.

The two emergency certified participants identified zero professional development needs on the quantitative instrument. Rather, these induction-year SBAE teachers self-identified professional development needs through oral responses. Their qualitative interview quotations diverged from quantitative survey responses. Ms. Potts reported a high teacher self-efficacy in *Motivating students to learn* on the quantitative instrument but was observed as struggling to inspire some students and revealed a frustration with these students in her interviews. Likewise, Mr. Parker rated his teacher self-efficacy as high in relation to *Managing a horticulture laboratory/greenhouse* yet admitted to feeling lost in relation to his greenhouse class. Moeller et al. (2015) also

found a dissonance between survey and interview data, which they attributed to environmental influences. This divergence between data points may “engender new perspectives and understandings” (Greene, 2008, p. 24). Katz (1972) found induction-year teachers are in survival mode with a focus the challenges of today. Could the timing of quantitative and qualitative data collections influence the professional development needs identified or does the data collection mechanism influence induction-year teachers’ responses? Additional convergent parallel mixed methods studies are required to address this question.

Emergency certified participants are not able or unwilling to self-identify their professional development needs. Most professional development needs, 18 in total, were observed during site visits, but not self-reported by emergency certified participants. Both struggled to *Integrate a curriculum in agriculture* and *Evaluate student learning*. When queried about their lesson and assessment plans, emergency certified teachers seemed unaware of the potential for improvement in their instruction. According to Roberts and Dyer (2004), “one explanation may be that alternatively certified teachers lack sufficient professional knowledge to accurately indicate their deficiencies” (p. 68). Therefore, professional development organizers are cautioned against designing programing based solely on emergency certified induction-year teachers’ self-identified needs.

As with emergency certified teachers, traditionally certified SBAE teachers’ self-reported needs diverged between quantitative survey responses and qualitative interview responses. Ms. Carter described six professional development needs in her interviews but marked these areas as moderate or high teacher self-efficacy. For example, Ms. Carter complained about the unruliness of her upperclassmen boys in a greenhouse class yet

reported a high teacher self-efficacy in *Managing student behavior* on both initial and final data collections. Mr. Wilson did not have a program advisory board or a FFA Alumni and Supporters to assist him in the managing of the SBAE program. Still, he marked both of these areas in the moderate teacher self-efficacy range for August and December data collections. Mr. Barton, the least self-efficacious case participant, reported frustration with his FFA officer team during the second interview but marked this area in the high and moderate teacher self-efficacy during August and December data collections, respectively.

Mr. Wilson and Mr. Barton rated areas of low teacher self-efficacy on the quantitative instrument that did not emerge from qualitative data. Mr. Wilson felt low teacher self-efficacy on *Managing a horticulture laboratory/greenhouse* in the final quantitative data collection, but Mr. Wilson was not responsible for the horticulture class or greenhouse. Those tasks fell to his teaching partner. Mr. Barton marked *Evaluate student learning* as low teacher self-efficacy on the initial data collection. By December his teacher self-efficacy on this item had increased into the moderate range. Mr. Barton never mentioned this struggle when asked about challenges he faced in his job. As self-efficacy is very context specific (Bandura, 1997) and induction-year teachers tend to focus on present challenges (Katz, 1972), the timing of quantitative and qualitative data collections may attribute to the divergence between survey and interview data. Therefore, quantitative data could be collected during site visits in future mixed methods professional development need analysis.

Observations of all three traditionally certified SBAE teachers revealed professional development needs which were not addressed in the participants' interviews.

Ms. Carter and Mr. Wilson were observed in both site visits utilizing teacher-centered teaching methods while student attention waned, indicating a need for *Implementing student-centered teaching strategies* that was not apparently noticed by the induction-year teachers. Mr. Barton spent a substantial portion of his time completing tasks which could be delegated to leaders in the FFA chapter. He complained about the workload without an ability to *Identify various leadership opportunities for FFA members*. As these teachers are limited in their experience in the SBAE teaching profession, they may not be able to provide a clear assessment of their abilities (McDonald, 2008).

Divergence in mixed methods data does not necessarily indicated a failed study, but rather provides opportunity to explore more relationships between data points (Bazeley, 2018). “Perhaps the aim is not to produce a tidy picture, but to allow for the messiness and tensions that exist in social reality” (Bazeley, 2018, p. 266). Greene (2008) suggested mixed methods divergence can be explained using multiple viewpoints. Two possible explanations exist for the divergence in the study’s quantitative, interview, and observation data. First, self-report data, in survey response and interview forms, is susceptible to various threats, including social desirability bias, recency effect, and recall problem (Dodd-McCue & Tartaglia, 2010; John & Robbins, 1994; Koziol & Burns, 2001; McDonald, 2008; Pajares, 1992; Rogers, 2003; Stone & Shiffman, 2002; Williams et al., 2019). Second, data collection occurred at various times over the fall semester. Teacher self-efficacy is malleable, especially for early career teachers (Bandura, 1997; Hasselquist et al., 2017; McKim & Velez, 2017; Swan et al., 2011). Induction-year teachers are commonly consumed with the challenges immediately in sight (Fry, 2007; Katz, 1972). Therefore, the time of data collection may be snapshots of teacher self-

efficacy and professional development needs present in the moment. Additional convergent parallel mixed methods research with same-day data collection would provide insight on the source of the divergence in this study.

Discussion

The findings of this study indicate induction-year SBAE teachers in Oklahoma require professional development, regardless of their awareness of their needs. The focus of those needs varied greatly between individuals. Therefore, it is imperative induction-year teachers are provided personalized, easily accessible professional development resources. Traditional professional development, unfortunately, is commonly neither personalized nor easily accessible when needed (Clarke & Hollingsworth, 2002). The typical workshop-type offerings are often expensive and ineffective (Shaha et al., 2015). The current state of Oklahoma SBAE's induction programming is based on this traditional professional development model with statewide meetings of SBAE induction-year teachers to cover various topics throughout the year (Oklahoma CareerTech, 2020). One case study participant praised the program offerings while the other four expressed frustrations with the content and pacing of the workshops.

Oklahoma SBAE induction-year teachers need additional support. This study recommends implementation of an induction program based on mentoring and on-demand resources. A mentor can provide personalized reflection and feedback and positively impact student outcomes (Smith & Ingersoll, 2004). Mentoring can take various forms, from organic relationships between SBAE teachers to structured programs with assigned mentor-protégés groupings (Hudson & Hudson, 2018). The spontaneous mentoring relationships built between induction-year and experienced teachers can be

very fruitful for both parties (Mukeredzi, 2017) and was identified by four of the five case study participants. However, these relationships are sometimes limited by the appropriateness of mentor choice (Toombs & Ramsey, 2020a). Assigned mentors are more able to ensure quality advice (Peiter et al., 2005) but are highly influenced by the relationship between mentor and protégé (Hudson & Hudson, 2018). Mukeredzi (2017) suggested mentoring cohorts with two to three induction-year teachers grouped with one or two experienced teachers to mitigate interpersonal issues that can plague assigned mentoring relationships. As a previous Oklahoma state-wide mandated induction mentoring program was defunded by the state budget cuts (McKean, 2013), financial support for a new mentoring program should come from more stable resources, including Oklahoma CareerTech, Oklahoma SBAE teacher education programs, Oklahoma FFA Association, and Oklahoma SBAE teacher associations.

In addition to an assigned mentor, Oklahoma induction-year SBAE teachers need easily accessible information resources. An on-demand professional development model in the form of online resource banks have been effective in recent years (Shaha et al., 2015). Shaha and Ellsworth (2013) studied this just-in-time technique of delivering professional development and found a positive correlation between teacher engagement in the professional development and student outcomes. A free, searchable, comprehensive, and engaging platform to serve as an online research bank for SBAE teachers does not yet exist. Its creation would serve as a valuable tool for both novice and experienced SBAE teachers. This database would require continuous updating as new resources become available (Shohel & Banks, 2012). Additionally, items must be vetted to ensure quality and usability of the resources (Ferman, 2002). Oklahoma teacher

certification programs would be in a position to serve these roles. To promote use of the resource bank by novice and experienced SBAE teachers, professional certificates could be issued for a set number of modules or hours completed. Induction-year teachers should have mandated use of the bank with certain modules required and a set number of elective modules to be set by Oklahoma teacher educators and CareerTech staff. The investment in Oklahoma's induction-year SBAE teachers, both emergency and traditionally certified, by the state department of education, Oklahoma CareerTech, SBAE teacher educators, inservice SBAE teachers, and the Oklahoma FFA Association will pay dividend in teacher retention and student learning for years to come.

REFERENCES

- Addressing Teacher Shortages Act of 2019, S.2367, 116th Cong. (2019).
<https://www.congress.gov/bill/116th-congress/senate-bill/2367/text>
- Anderson, D. W. (2006). Inclusion and interdependence: Students with special needs in the regular classroom. *Journal of Education & Christian Belief*, 10(1), 43-59.
<https://doi.org/10.1177/205699710601000105>
- Angus, D. L. (2001). *Professionalism and the public good: A brief history of teacher certification*. <https://eric.ed.gov/?id=ED449149>
- Apter, B. (2016). *A large-scale quantitative investigation of teacher-feedback and students' on-task behaviour as associated indicators of the socio-emotional climate for learning in academic lessons in UK secondary schools using a systematic observation method: 'MICRO'* [Master's thesis, University of Cardiff].
E-theses Online Service.
<https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.709597>
- Arslan, A. (2019). The mediating role of prospective teachers' teaching self-efficacy between self-efficacy sources and attitude towards teaching profession.

International Journal of Educational Methodology, 5(1), 87-96.

<https://files.eric.ed.gov/fulltext/EJ1206482.pdf>

Ary, D., Jacobs, L. C., Razavieh, A., & Sorensen, C. (2006). *Introduction to research in education* (7th ed.). Thomson Wadsworth.

Aslanargun, E. (2015). Teachers' expectations and school administration: Keys of better communication in schools. *Eurasian Journal of Educational Research*, 60, 17-34.

<https://doi.org/10.14689/ejer.2015.60.2>

Atkinson, J. (2002). Four steps to analyse data from a case study method. *Association for Information Systems*.

<https://researchoutput.csu.edu.au/ws/portalfiles/portal/9635523>

Avramidis, E., Toulia, A., Tsihouridis, C., & Strogilos, V. (2019). Teachers' attitudes towards inclusion and their self-efficacy for inclusive practices as predictors of willingness to implement peer tutoring. *Journal of Research in Special Educational Needs*, 19(1), 49-59. <https://doi.org/10.1111/1471-3802.12477>

Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Process*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)

Bacon, W. J. (2020). New teacher induction: Improving teacher self-efficacy [Doctoral dissertation, University of Kentucky]. UKnowledge.

https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1044&context=edl_etds

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change.

Psychological Review, 84(2), 191-225. [https://doi.org/10.1037/0033-](https://doi.org/10.1037/0033-295X.84.2.191)

[295X.84.2.191](https://doi.org/10.1037/0033-295X.84.2.191)

- Bandura, A. (1978). The self-system in reciprocal determinism. *American Psychologist*, 80(1), 1-28. <https://psycnet.apa.org/doi/10.1037/h0092976>
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117-148. https://doi.org/10.1207/s15326985ep2802_3
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman and Company.
- Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research*, 1(4), 287-310. <https://link.springer.com/content/pdf/10.1007/BF01663995.pdf>
- Barriball, K. L., & While, A. (1994). Collecting data using a semi-structured interview: A discussion paper. *Journal of Advanced Nursing*, 19, 328-335. shorturl.at/fhFQ0
- Bastian, K. C., & Marks, J. T. (2017). Connecting teacher preparation to teacher induction: Outcomes for beginning teachers in a university-based support program in low performing schools. *American Educational Research Journal*, 54(2), 360-394. <https://doi.org/10.3102/0002831217690517>
- Bazeley, P. (2018). *Integrating analyses in mixed methods research*. Sage.
- Beam, P. C. (2009). *Investigation of needs/concerns of teachers within an induction year program* [Doctoral dissertation, Ohio University]. OhioLINK. https://etd.ohiolink.edu/pg_10?0::NO:10:P10_ACCESSION_NUM:ohiou1236949276#abstract-files
- Blackburn, J. J., & Robinson, J. S. (2008). Assessing teacher self-efficacy and job satisfaction of early career agriculture teachers in Kentucky. *Journal of Agricultural Education*, 49(3), 1-11. <https://doi.org/10.5032/jae.2008.03001>

- Blazier, C. (2012). *What the research says about alternative teacher certification programs*. Office of Assessment, Research and Data Analysis.
<https://files.eric.ed.gov/fulltext/ED536506.pdf>
- Boone, H. N., Jr., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*, 50(2). https://archives.joe.org/joe/2012april/pdf/JOE_v50_2tt2.pdf
- Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*, 31, 39-42.
<https://journals.sagepub.com/doi/abs/10.1177/002248718003100310>
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed methods theory and practice: Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5(2), 10-27. <http://www.eajournals.org/wp-content/uploads/Mixed-Methods-Theory-and-Practice.-Sequential-Explanatory-Approach.pdf>
- Bowling, A. M., & Ball, A. L. (2018). Alternative certification. A solution or an alternative problem?. *Journal of Agricultural Education*, 59(2), 109-122.
<https://doi.org/10.5032/jae.2018.02109>
- Bray-Clark, N., & Bates, R. (2003). Self-efficacy beliefs and teacher effectiveness: Implications for professional development. *The Professional Educator*, 26(1), 13-22. <https://files.eric.ed.gov/fulltext/EJ842387.pdf>
- Brewer, K. R., & Wann, D. L. (1998). Observational learning effectiveness as a function of model characteristics: Investigating the importance of social power. *Social Behavior and Personality*, 26(1), 1-10. <https://doi.org/10.2224/sbp.1998.26.1.1>

- Bridgestock, R., Grant-Iramu, M., & McAlpine, A. (2019). Integrating career development learning into the curriculum: Collaboration with the career service for employability. *Journal of Teaching and Learning for Graduate Employability*, 10(1), 56-72. <https://files-eric-ed.gov.argo.library.okstate.edu/fulltext/EJ1235633.pdf>
- Bunch, J. C., Robinson, J. S., & Edwards, M. C. (2012). Measuring the relationship between agriculture teachers' self-efficacy, outcome expectation, interest, and their use of interactive whiteboards. *Journal of Agricultural Education*, 53(1), 67-80. <https://doi.org/10.5032/jae.2012.01067>
- Burris, S., Kitchel, R., Greiman, B. C., & Torres, R. M. (2006). Beginning and mentor agriculture teachers' perceptions of psychosocial assistance, similarities, and satisfaction. *Journal of Agricultural Education*, 47(4), 64-75. <https://doi.org/10.5032/jae.2006.04064>
- Burris, S., McLaughlin, E. K, McCulloch, A, Brashears, R., & Frazee, S. (2010). A comparison of first and fifth year agricultural teachers on personal teaching efficacy, general teaching efficacy and content efficacy. *Journal of Agricultural Education*, 51(1), 22-31. <https://doi.org/10.5032/jae.2010.01022>
- Carr, D. (2013). *The effects of teacher preparation programs on novice teachers regarding classroom management, academic preparation, time management and self-efficacy* [Doctoral dissertation, Liberty University]. <https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=1818&context=doctoral>

Carver-Thomas, D., & Darling-Hammond, T. (2019). The trouble with teacher turnover: How teacher attrition affects students and schools. *Education Policy Analysis Archives*, 27(36), 1-32. <https://files.eric.ed.gov/fulltext/EJ1213629.pdf>

Certification Examinations for Oklahoma Educators. (2021a). *Agricultural Education (042)*.

http://www.ceoe.nesinc.com/TestView.aspx?f=HTML_FRAG/OK042_TestPage.html

Certification Examinations for Oklahoma Educators. (2021b). *Oklahoma general education test (OGET)*.

https://www.ceoe.nesinc.com/TestView.aspx?f=HTML_FRAG/OK174_TestPage.html

Certification Examinations for Oklahoma Educators. (2021c). *OPTE: 6-12 (076)*.

https://www.ceoe.nesinc.com/TestView.aspx?f=HTML_FRAG/OK076_TestPage.html

Chan, D. (2009). So why ask me? Are self-report data really that bad? In C. E. Lance and R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends* (pp. 309-336). Routledge.

Chaudhuri, A. R., McCormick, B. D., & Lewis, R. Jr. (2019). Standards-based science institutes: Effective professional development that meets teacher and district

needs. *Science Educator*, 27(1), 15-23. <https://eric-ed.gov/argo.library.okstate.edu/?id=EJ1267766>

Claflin, K., Stewart, J., & Traini, H. Q. (2021, February 8-10). *A phenomenological exploration of how alternatively certified agriculture teachers acquire the*

practices of agriculture teachers [Paper presentation]. 2021 Southern Region AAAE Conference, Virtual Conference.

http://www.aaeonline.org/resources/Documents/Southern%20Region/2021SouthernConference/ProceedingsWithDiscussantRemarks_SR_AAAE_2021.pdf

Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education, 18*(8), 947-967. [https://www-sciencedirect-](https://www-sciencedirect-com.library.okstate.edu/science/article/pii/S0742051X02000537)

[com.library.okstate.edu/science/article/pii/S0742051X02000537](https://www-sciencedirect-com.library.okstate.edu/science/article/pii/S0742051X02000537)

Cohen, J. H. (1989). Legal challenges to testing for teacher certification: History, impact and future trends. *Journal of Law and Education, 18*(2), 229-265. [https://illiads-](https://illiads.library.okstate.edu/illiad/illiad.dll?Action=10&Form=75&Value=1344563)

[s.library.okstate.edu/illiad/illiad.dll?Action=10&Form=75&Value=1344563](https://illiads.library.okstate.edu/illiad/illiad.dll?Action=10&Form=75&Value=1344563)

Connolly, G. J. (2017). Applying social cognitive theory in coaching athletes: The power of positive role models. *Strategies, 30*(3), 23-29.

<https://doi.org/10.1080/08924562.2017.1297750>

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage.

Creswell, J. W. (2015). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (5th ed.). Pearson.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

- Culver, K. C., Braxton, J., & Pascarella, E. (2019). Does teaching rigorously really enhance undergraduates' intellectual development? The relationship of academic rigor with critical thinking skills and lifelong learning motivations. *Higher Education*, 78, 611-627. <https://doi.org/10.1007/s10734-019-00361-z>
- Darling-Hammond, L. (2009). Educational opportunity and alternative certification: New evidence and new questions. *Stanford Center for Opportunity Policy in Education*, 1, 1-12. <https://eric.ed.gov/?id=ED533005>
- Darling-Hammond, L. (2010). Recruiting and retaining teachers: Turning around the race to the bottom in high-need schools. *Journal of Curriculum and Instruction*, 4(1), 16-32. <https://doi.org/10.3776/joci.2010.v4n1p16-32>
- Darling-Hammond, L., & Bransford, J. D. (Eds.). (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. Jossey-Bass.
- Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. *Education Policy Analysis Archives*, 13(42), 1-51. https://www.researchgate.net/publication/49610276_Does_Teacher_Preparation_Matter_Evidence_about_Teacher_Certification_Teach_for_America_and_Teacher_Effectiveness
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute. <https://learningpolicyinstitute.org/licenses/by-nc/4.0/>

- DiBenedetto, C. A., Willis, V. C., & Barrick, R. K. (2018). Needs assessments for school-based agricultural education teachers: A review of literature. *Journal of Agricultural Education*, 59(4), 52-71. <https://doi.org/10.5032/jae.2018.04052>
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method*. Wiley.
- Dodd-McCue, D., & Tartaglia, A. (2010). Self-report response bias: Learning how to live with its diagnosis in chaplaincy research. *Chaplaincy Today*, 26(1), 2-8. http://www.professionalchaplains.org/files/publications/chaplaincy_today_online/volume_26/number_1/26_1doddmccue.pdf
- Duncan, D. W., & Ricketts, J. C. (2008). Total program efficacy: A comparison of traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education*, 49(2), 38-46. <https://doi.org/10.5032/jae.2008.04038>
- Eck, C. J., & Edwards, M. C. (2019). Teacher shortage in school-based, agricultural education (SBAE): A historical review. *Journal of Agricultural Education*, 60(4), 223-239. <https://doi.org/10.5032/jae.2019.04223>
- Elliott, E. M., Isaacs, M. L., & Chugani, C. D. (2010). Promoting self-efficacy in early career teachers: A principal's guide for differentiated mentoring and supervision. *Florida Journal of Educational Administration & Policy*, 4(1), 131-146. <https://pdfs.semanticscholar.org/32d7/0a761b20559804f88f80d760ef2cc7f9b6fe.pdf>
- Engin, G. (2020). An examination of primary school students' academic achievements and motivation in terms of parents' attitudes, teacher motivation, teacher self-

- efficacy and leadership approach. *International Journal of Progressive Education*, 16(1), 257-276. <https://eric.ed.gov/?id=EJ1244883>
- Evans, B. R. (2014). Editor's perspective article: Perspectives on teaching from alternative certification teachers from diverse backgrounds. *Journal of the National Association for Alternative Certification*, 9(1), 32-36. <https://files.eric.ed.gov/fulltext/EJ1083946.pdf>
- Evans, B. R. (2015). Editor's perspective article: Alternative certification teachers: Strategies for the transition to a new career. *Journal of the National Association for Alternative Certification*, 10(2), 32-36. <https://files.eric.ed.gov/fulltext/EJ1083946.pdf>
- Farrell, T. S. C., & Lim, P. C. P. (2005). Conceptions of grammar teaching: A case study of teachers' beliefs and classroom practices. *Teaching English as a Second or Foreign Language Journal*, 9(2), 1-13. <https://eric.ed.gov/?id=EJ1065837>
- Federal Board for Vocational Education. (1918). *Second annual report of the federal board for vocational education*. <https://www.va.gov/vetdata/docs/FBVEFY1918.pdf>
- Felder, B. (2018, July 27). State's use of emergency certified teachers continues to grow. *The Oklahoman*. <https://oklahoman.com/article/5602734/states-use-of-emergency-certified-teachers-continues-to-grow>
- Ferland, N. K., DiBenedetto, C. A., Thoron, A. C., & Myers, B. E. (2020). Agriscience teacher professional development focused on teaching STEM principles in the floriculture curriculum. *Journal of Agricultural Education*, 61(4), 189-202. <https://doi.org/10.5032/jae.2020.04189>

- Ferman, T. (2002). Academic professional development practice: What lectures find valuable. *The International Journal for Academic Development*, 7(2), 146-158. <https://doi.org/10.1080/136014432000071305>
- Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs: Principles and practices. *Health Services Research*, 48(6), 2134-2156. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4097839/>
- FFA. (2020). *FFA vision, mission and motto*. <https://www.ffa.org/about/who-we-are/mission-motto/>
- Field, A. (2009). *Discovering statistics using SPSS (and sex and drugs and rock 'n' roll)* (3rd ed.). Sage.
- Fischer, G. (2000). Lifelong learning – More than training. *Journal of Interactive Learning Research*, 11(3), 265-294. <https://www.learntechlib.org/p/8380/>
- Flores, B. B., Desjean-Perrotta, B., & Steinmetz, L. E. (2004). Teacher efficacy: A comparative study of university certified and alternatively certified teachers. *Action in Teacher Education*, 26(2), 37-46. <https://doi.org/10.1080/01626620.2004.10463322>
- Foor, R. M., & Cano, J. (2012). Mentoring abilities and beliefs of Ohio secondary agricultural education mentor teachers. *Journal of Agricultural Education*, 53(1), 162-175. <https://doi.org/10.5032/jae.2012.01162>
- Foote, M. Q., Brantlinger, A., Haydar, H. N., Smith, B., & Gonzalez, L. (2011). Are we supporting teacher success: Insights from an alternative route mathematics teacher certification program for urban public schools. *Education and Urban Society*, 43(3), 396-425. <https://doi.org/10.1177/0013124510380420>

- Ford, J. A. (1974). History of vocational teacher certification in the United States. In S. T. Branter (Ed.), *Certification of Vocational-Technical Educators* (pp. 1-10). Pennsylvania State Department of Education.
- Foster, D. D., Lawver, R. G., & Smith, A. R. (2015). *National Agricultural Education Supply and Demand Study, 2014 Executive Summary*.
<https://www.naae.org/teachag/NSD%20ES%20Final%20March%202015%20.pdf>
- Fox, A. G., & Peters, M. L. (2013). First year teachers: certification program and assigned subject on their self-efficacy. *Current Issues in Education, 16*(1), 1-15.
https://www.researchgate.net/publication/279924984_First_Year_Teachers_Certification_Program_and_Assigned_Subject_on_Their_Self-Efficacy
- Frankhart, C. M. (Ed.). (2020). *Requirements for certification of teachers, counselors, librarians, administrators for elementary and secondary schools* (84th ed.). The University of Chicago Press.
- Franklin, E. A., & Molina, Q. F. (2012). Teacher induction programs in agricultural education: Description of the role of AAAE higher education teacher preparation programs. *Journal of Agricultural Education, 53*(1), 123-135.
<https://doi.org/10.5032/jae.2012.01123>
- Fry, S. W. (2007). First-year teachers and induction support: Ups, downs, and in-betweens. *The Qualitative Report, 12*(2), 216-237.
<https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1635&context=tqr>
- García, E., & Weiss, E. (2019). The teacher shortage is real, large and growing, and worse than we thought. *Economic Policy Institute*.
<https://www.epi.org/publication/the-teacher-shortage-is-real-large-and-growing->

[and-worse-than-we-thought-the-first-report-in-the-perfect-storm-in-the-teacher-labor-market-series/](#)

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Suk Yoon, K. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945.

<https://journals.sagepub.com/doi/pdf/10.3102/00028312038004915>

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

<https://doi.org/10.5032/jae.1996.03052>

Goldhaber, D. D., & Brewer, D. J. (2020). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129-145. <https://www.jstor.org/stable/1164392>

Grad, K. M. (2020). *An examination of how principals in rural K-12 schools foster technological literacy among teachers: A multi-site case study* [Doctoral dissertation, Liberty University]. Liberty University ScholarsCrossing.

<https://digitalcommons.liberty.edu/doctoral/2550/>

Greene, J. C. (2007). *Mixed methods in social inquiry*. Jossey-Bass.

Grieman, B. C., Walker, W. D., & Birkenholz, R. J. (2005). Influence of the organizational environment on the induction stage of teaching. *Journal of Agricultural Education*, 46(3), 95-106. <https://doi.org/10.5032/jae.2005.03095>

- Guarino, C. M., Santibañez, L., & Daley, G. A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of Educational Research, 76*(2), 173-208. <https://doi.org/10.3102/00346543076002173>
- Guin, K. (2004). Chronic teacher turnover in urban elementary schools. *Educational Policy Analysis Archives, 12*(42), 1-25. <https://epaa.asu.edu/epaa/v12n42/>
- Gunderson, K. L., & Karge, B. D. (1992). Easing the special education teacher shortage: Are emergency permits the answer? *Teacher Education Quarterly, 19*(3), 79-90. https://www.jstor.org/stable/23475655?seq=1#metadata_info_tab_contents
- Haj-Broussard, M., Hall, T., Allen, S., Stephens, C. Person, V., & Johnson, T. (2016). Alternative certification teacher and candidate retention: Measures of educator preparation, certification, and school staffing effectiveness. *Journal of the National Association for Alternative Certification, 11*(2), 4-13. <https://eric.ed.gov/?id=EJ1122591>
- Hamel, C., Allaire, S., & Turcotte, S. (2012). Just-in-time online professional development activities for an innovation in small rural schools. *Canadian Journal of Learning and Technology, 38*(3). <https://files-eric-ed.gov.argo.library.okstate.edu/fulltext/EJ999219.pdf>
- Hasselquist, L., Herndon, K., & Kitchel, T. (2017). School culture's influence on beginning agriculture teachers' job satisfaction and teacher self-efficacy. *Journal of Agricultural Education, 58*(1), 267-279. <https://doi.org/10.5032/jae.2017.01267>
- Haynes, J. C., & Stripling, C. T. (2014). Mathematic efficacy and professional development needs of Wyoming agricultural education teachers. *Journal of Agricultural Education, 55*(5), 48-64. <https://doi.org/10.5032/jae.2014.05048>

- Henson, R. K., & Chambers, S. M. (2002, February 16). *Personality type as a predictor of teaching efficacy and classroom control beliefs in emergency certification teachers* [Paper presentation]. Southwest Educational Research Association, Austin, TX.
- Hivner, E. A., Hoke, A. M., Francis, E. B., Lehman, E. B., Hwang, G. W., & Kraschnewski, J. L. (2019). Training teachers to implement physical activity: Applying social cognitive theory. *Health Education Journal*, 78(4), 464-475.
<https://doi.org/10.1177/0017896918820558>
- Horstmeier, R. P., & Nall, M. A. (2007). Rural FFA leadership: Understanding members' role and the context of chapter activities. *Journal of Leadership Education*, 6(1), 127-140. https://journalofleadershiped.org/wp-content/uploads/2019/02/6_1_Horstmeier_Nall_1.pdf
- Hudson, P., & Hudson, S. (2018). Mentoring preservice teachers: Identifying tensions and possible resolutions. *Teacher Development*, 22(1), 16-30.
<https://doi.org/10.1080/13664530.2017.1298535>
- Ingersoll, R. M. (2002). The teacher shortage: A case of wrong diagnosis and wrong prescription. *NASSP Bulletin*, 86(631), 16-30.
<https://journals.sagepub.com/doi/pdf/10.1177/019263650208663103>
- Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods*, 18(1), 3-20.
<https://doi.org/10.1177/1525822X05282260>

- Jnah, A. J., Robinson, C. B., & Dowling, D. (2015). Mentoring and self-efficacy. *Advances in Neonatal Care, 15*(5), E3-E11.
<https://doi.org/10.1097/ANC.0000000000000227>
- Joerger, R. M. (2002). A comparison of the inservice education needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of Agricultural Education, 43*(3), 11-24. <https://doi.org/10.5032/jae.2002.03011>
- Joerger, R. (2003). A comparison of the occurrence and impact of selected forms of assistance as provided by school personnel to three cohorts of beginning agricultural education teachers. *Journal of Career and Technical Education, 20*(1), 7-22. <https://doi.org/10.21061/JCTE.V20I1.620>
- John, O. P., & Robins, R. W. (1994). Accuracy and bias in self-perception: Individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology, 66*(1), 206-219. <https://doi.org/10.1037/0022-3514.66.1.206>
- Johnson, D. M., & Shoulders, C. W. (2017). Power of statistical tests used to address nonresponse error in the Journal of Agricultural Education. *Journal of Agricultural Education, 58*(1). 300-312. <https://doi.org/10.5032/jae.2017.01300>
- Kansas State University. (2021). *Master of arts in teaching (secondary education)*.
<https://online.k-state.edu/programs/master-arts-in-teaching-secondary/>
- Kasalak, G., & Dagyar, M. (2020). The relationship between teacher self-efficacy and teacher job satisfaction: A meta-analysis of the teaching and learning international survey (TALIS). *Educational Sciences: Theory & Practice, 20*(3), 16-33.
<https://doi.org/10.12738/jestp.2020.3.002>

- Katz, L. G. (1972). Developmental stages of preschool teachers. (OEC-0-70-2623).
Washington, DC: National Center for Educational Communication. (ERIC
Document Reproduction Service No. ED057922).
- Kennedy, A., & Clinton, C. (2009). Identifying the professional development needs of
early career teachers in Scotland using nominal group technique. *Teacher
Development*, 13(1), 29-41. <https://doi.org/10.1080/13664530902858485>
- Klassen, R. M., & Tze, V. M. C. (2014). Teachers' self-efficacy, personality, and
teaching effectiveness: A meta-analysis. *Educational Research Review*, 12, 59-76.
<https://doi.org/10.1016/j.edurev.2014.06001>
- Koellner, K., & Greenblatt, D. (2018). Inservice teacher education. *Oxford
Bibliographies*. <https://doi.org/10.1093/OBO/9780199756810-0916>
- Kola, A. J., & Sunday, O. S. (2015). A review of teacher self-efficacy, pedagogical
content knowledge (PCK) and out-of-field teaching: Focusing on Nigerian
teachers. *International Journal of Elementary Education*, 4(3), 80-85.
<https://doi.org/10.11648/j.ijeeedu.20150403.15>
- Korte, D. S., & Simonsen, J. C. (2018). Influence of social support on teacher self-
efficacy in novice agricultural education teachers. *Journal of Agricultural
Education*, 59(3), 100-123. <https://doi.org/10.5032/jae.2018.03100>
- Koziol, S. M., & Burns, P. (1986). Teachers' accuracy in self-reporting about
instructional practices using a focused self-report inventory. *The Journal of
Educational Research*, 79(4), 205-209.
<https://doi.org/10.1080/00220671.1986.10885678>

- Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. *Theory into Practice, 41*(4), 212-218. https://doi.org/10.1207/s15430421tip4104_2
- LaBue, A. C. (1960). Teacher certification in the United States: A brief history. *The Journal of Teacher Education, 11*(2), 147-172.
<https://journals.sagepub.com/doi/pdf/10.1177/002248716001100203>
- Laczko-Kerr, I. I. (2002). *Teacher certification does matter: The effects of certification status on student achievement* (Publication No. 3045652) [Doctoral dissertation, Arizona State University]. ProQuest Dissertations and Theses Global.
<https://search.proquest.com/docview/304808189/3831CBA7567640CDPQ/1?accountid=4117>
- Lamarche, L., Gionfriddo, A. M., Cline, L. E., Gammage, K. L., & Adkin, A. L. (2014). What would you do? The effect of verbal persuasion on task choice. *Gait & Posture, 39*, 583-587. <https://doi.org/10.1016/j.gaitpost.2013.09.013>
- Linder, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-53.
<https://doi.org/10.5032/jae.2001.04043>
- Luckowski, J. A. (1983). *Oklahoma house bill 1706: A case study of conservative educational reform* [Doctoral dissertation, Oklahoma State University].
<https://shareok.org/bitstream/handle/11244/19383/Thesis-1983D-L941o.pdf>
- Ludlow, C. (2011). Alternative certification pathways: Filling a gap? *Education and Urban Society, 45*(4), 440-458. <https://doi.org/10.1177/0013124511413916>
- Maher, J. P., Dzibur, E., Nordgren, R., Huh, J., Chou, C. P, Hedeker, D., & Dunton, G. F. (2019). Do fluctuations in positive affective and physical feelings states predict

- physical activity and sedentary time? *Psychology of Sport & Exercise*, 41, 153-161. <https://doi.org/10.1016/j.psychsport.2018.01.011>
- Maine Department of Education (2020, September 2). Priority notice: New certification options through executive order #7. *Author*.
https://www.einnews.com/pr_news/525383485/priority-notice-new-certification-options-through-executive-order-7
- Martinez-Keel, N. (2020, February 26). Bill lengthening emergency teacher certification passes committee. *The Oklahoman*. <https://oklahoman.com/article/5655918/bill-lengthening-emergency-teacher-certifications-passes-committee>
- McDonald, J. D. (2008). Measuring personality constructs: The advantages and disadvantages of self-reports, informant reports and behavioral assessments. *Enquire*, 1(1), 75-94.
<https://pdfs.semanticscholar.org/82c2/aed17ce5d671e323b2f7f6bdce70f22b0490.pdf>
- McKean, K. (2013). *Educational reform in Oklahoma: A review of major legislation and educational performance since 1980*. Oklahoma Technical Assistance Center.
https://okpolicy.org/wp-content/uploads/2013/03/EdReform_OTAC_execsum.pdf
- McKim, B. R., & Saucier, P. R. (2013). A 20-year comparison of teachers' agricultural mechanics laboratory management competency. *Journal of Agricultural Education*, 54(1), 153-166. <https://doi.org/10.5032/jae.2013.01153>
- McKim, A. J., Sorensen, T. J., Velez, J. J., & Henderson, T. M. (2017). Analyzing the relationship between four teacher competence areas and commitment to teaching.

Journal of Agricultural Education, 58(4), 1-14.

<https://doi.org/10.5032/jae.2017.04001>

McKim, A. J., & Velez, J. J. (2016). An evaluation of the 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 preservice coursework, student teaching, and professional development experiences. *Journal of Agricultural Experiences*, 58(1), 172-185.

<https://doi.org/10.5032/jae.2017.01172>

McNutt, K. (2020, September 8). Oklahoma watch: Veteran teachers choosing retirement over COVID-19 risk in classrooms. *Tulsa World*.

https://tulsa-world.com/news/local/education/oklahoma-watch-veteran-teachers-choosing-retirement-over-covid-19-risk-in-classrooms/article_a3b30cea-eebd-11ea-b872-97be558e349b.html

Mobra, T., & Hamlin, D. (2020). Emergency certified teachers' motivation for entering the teaching profession: Evidence from Oklahoma. *Education Policy Analysis Archives*, 28(109). <https://doi.org/10.14507/epaa.28.5295>

Moeller, R. M., Walton, R., & Price, R. (2015). Participant agency and mixed methods: Viewing divergent data through the lens of genre field analysis. *Present Tense*, 5(1). <http://www.presenttensejournal.org/volume-5/participant-agency-and-mixed-methods-viewing-divergent-data-through-the-lens-of-genre-field-analysis/>

- Moir, E. (1999). The stages of a teacher's first year. In M. Scherer (Ed.), *A better beginning: Supporting and mentoring new teachers*, 19-23. Association for Supervision and Curriculum Development.
- Moore, L. L., & Swan, B. G. (2008). Developing best practices of teacher induction. *Journal of Agricultural Education*, 49(4), 60-71.
<https://doi.org/10.5032/jae.2008.04060>
- Mueller, C. M. (2012). *The impact of teacher certification programs on teacher efficacy, job satisfaction, and teacher performance: A comparison of traditional and alternative certification* [Doctoral dissertation, Western Kentucky University]. TopSCHOLAR.
<https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1027&context=diss>
- Mukeredzi, T. G. (2017). Mentoring in a cohort model of practicum: Mentors and preservice teachers' experiences in a rural South African school. *SAGE Open*, 7(2), 1-15. <https://doi.org/10.1177/2158244017709863>
- Mundt, J. (1991). The induction year – A naturalistic study of beginning secondary teachers of agriculture in Idaho. *Journal of Agricultural Education*, 32(1), 18-23.
<https://doi.org/10.5032/jae.1991.01018>
- Munshi, A. (2018). *Induction programs, teacher efficacy, and inquiry practices in novice teachers* [Doctoral dissertation, San Jose State University]. SJSU ScholarWorks.
https://scholarworks.sjsu.edu/cgi/viewcontent.cgi?article=1016&context=etd_dissertations

- Myers, B. E., Dyer, J. E., & Washburn, S. G. (2005). Problems facing beginning agriculture teachers. *Journal of Agricultural Education*, 46(3), 47-55.
<https://doi.org/10.5032/jae.2005.04047>
- National Academies of Science, Engineering, and Medicine. (2016). *Optimizing the nation's investment in academic research: A new regulatory framework for the 21st century*. The National Academies Press. <https://doi.org/10.17226/21824>
- National Association of Agricultural Educators (NAAE). (2018). *2018 national Teach Ag campaign*. Author.
https://www.naae.org/teachag/news/2018_TeachAgOverview.pdf
- National Association of Agricultural Educators (NAAE) (2019). *Oklahoma Agriculture Teacher Supply and Demand Profile*.
<https://www.naae.org/teachag/2019%20Oklahoma%20.pdf>
- Neumann, R. D. (1994). Reconsidering emergency teaching certificates and alternative certification programs as responses to teacher shortages. *Urban Education*, 29(1), 89-108. <https://eric.ed.gov/?id=EJ482656>
- Norris, W. D. (2019). *An examination of the impact of teacher turnover on the schools and students in the Columbus County School District: A best practice model to promote teacher retention* (Publication No. 27629336) [Doctoral dissertation, East Carolina University]. ProQuest.
- Northwestern Oklahoma State University. (2019). *Undergraduate catalog 2019-2020*.
<https://www.nwosu.edu/uploads//academics/catalog/catalog19-20.pdf>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). Pearson.

Nyankori, R. J. (2005). *Does certification of elementary school teachers matter? The effects of certification status on instructional practices and on the mathematics and reading achievement of first grade public school students* (Publication No. 3201983) [Doctoral dissertation, University of Maryland, College Park]. Proquest Dissertations and Theses Global.

Oklahoma CareerTech (2020). *2020-2021 New teacher workshop series*.

<https://www.okcareertech.org/educators/agricultural-education/new-teacher-info>

Oklahoma State Department of Education (2020). *Teacher certification paths*.

<https://sde.ok.gov/teacher-certification-paths>

Oklahoma State University. (2020). *Agricultural education: Multidisciplinary, BSAG*.

https://registrar.okstate.edu/site-files/documents/ag-education_multidisciplinary-bsag_2020-2021.pdf

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed methods research. *Research in the Schools*, 13(1), 48-63.

https://www.researchgate.net/profile/R_Johnson3/publication/228340166_The_V alidity_Issue_in_Mixed_Research/links/53d69ace0cf220632f3dba1f/The-Validity-Issues-in-Mixed-Research.pdf?origin=publication_detail

Pace, C. L. (2010). *The experiences of alternatively certified teachers with teacher mentoring, teacher effectiveness, and student achievement* [Doctoral dissertation, Walden University]. Walden University ScholarWorks.

<https://www.semanticscholar.org/paper/The-experiences-of-alternately-certified-teachers-Pace/54183f80be372e03f7de18ac00142a71456b2047>

- Pajares, F., & Miller, M. D. (1997). Mathematics self-efficacy and mathematical problem solving: Implications of using different forms of assessment. *The Journal of Experimental Education*, 65(3), 213-288. <http://www.jstor.com/stable/20152522>
- Peiter, R. L., Terry, R. Jr., & Cartmell, D. D. II. (2005). Mentoring first year agricultural educators: Examining a state-mandated induction program. *Journal of Agricultural Education*, 46(1), 11-19. <https://doi.org/10.5032/jae.2005.01011>
- Penrose, A., Perry, C., & Ball, I. (2007). Emotional intelligence and teacher self-efficacy: The contribution of teacher status and length of experience. *Issues in Educational Research*, 17. <http://www.iier.org.au/iier17/penrose.html>
- Plourde, L. A. (2002). The influence of student teaching on preservice elementary teachers' science self-efficacy and outcome expectancy beliefs. *Journal of Instructional Psychology*, 29(4), 245-253. <https://search.proquest.com/openview/6234bc8dcf6c8bbdcd695cba5d205f6e/1?pq-origsite=gscholar&cbl=2029838>
- Public Broadcasting System (PBS) (2020). *Only a teacher: Teaching timeline*. <http://www.pbs.org/onlyateacher/timeline.html>
- Qablan, A. M. (2019). Effective professional development and change in practice: The case of Queen Rania Teacher Academy Science Network. *EURASIA Journal of Mathematics, Science, and Technology Education*, 15(12). <https://doi.org/10.29333/ejmste/109016>
- Qu, Y., & Becker, B. J. (2003, April 21-25). Does traditional teacher certification imply quality? A meta-analysis [Paper presentation]. Annual Meeting of the American

Educational Research Association, Chicago, IL.

<https://eric.ed.gov/?id=ED477460>

Ramp, W. S. (1974). Vocational certification: A national overview. In S. T. Branter (Ed.), *Certification of Vocational-Technical Educators* (pp. 11-21). Pennsylvania State Department of Education.

Ravitch, D. (2003). *A brief history of teacher professionalism*. U.S. Department of Education.

<https://www2.ed.gov/admins/tchrqual/learn/preparingteachersconference/ravitch.html>

Rayfield, J., McKim, B. R., Smith, K. L., & Lawrence S. G. (2014). Analyzing Moir's curve: A quantitative look at attitudinal changes in induction-year agricultural educators. *Journal of Agricultural Education*, 55(3), 147-161.

<https://doi.org/10.5032/jae.2014.03147>

Roberts, R., Wittie, B. M., Stair, K. S., Blackburn, J. J., & Smith, H. E. (2020). The dimensions of professional development needs for secondary agricultural education teachers across career stages: A multiple case study comparison. *Journal of Agricultural Education*, 61(3), 128-143.

<https://doi.org/10.5032/jae.2020.03128>

Roberts, T. G., & Dyer, J. E. (2004). Inservice needs of traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education*, 45(4), 57-70.

<https://doi.org/10.5032/jae.2004.04057>

Robinson, J. S. (2010a). A qualitative analysis of alternatively certified agricultural education teachers on their first year of employment in the teaching profession.

Journal of Southern Agricultural Education Research, 60(1), 25-39.

<http://jsaer.org/wp-content/uploads/2020/06/Volume-60-Full-Issue.pdf>

Robinson, J. S. (2010b, May/June). Learning to do, doing to learn: The need for professional development with an emphasis on alternatively certified agriculture teachers. *The Agricultural Education Magazine*, 82(6), 11-13.

https://www.naae.org/profdevelopment/magazine/archive_issues/Volume82/2010_05-06.pdf

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

<https://doi.org/10.5032/jae.2012.01150>

Rocca, S. J., & Washburn, S. G. (2006). Comparison of teacher efficacy among traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education*, 47(3), 58-69. <https://doi.org/10.5032/jae.2006.03058>

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

Ronfeldt, M., Loeb, S., & Wyckoff, J. (2013). How teacher turnover harms student achievement. *American Educational Research Journal*, 50(1), 4-36.

<https://doi.org/10.3102/0002831212463813>

Rosenshine, B., & Furst, N. (1971). Research on teacher performance criteria. In B. O. Smith (Ed.). *Research in Teacher Education: A Symposium* (pp. 37-72). Prentice-Hall, Inc.

- Rubenstein, E. D., Thoron, A. C., & Estepp, C. M. (2014). Perceived self-efficacy of preservice agriculture teachers toward specific SAE competencies. *Journal of Agricultural Education*, 55(4), 72-84. <https://doi.org/10.5032/jae.2014.04072>
- Ruhland, S. K., & Bremer, C. D. (2002a). *Alternative teacher certification procedures and professional development opportunities for career and technical education teachers*. Office of Vocational and Adult Education. <https://files.eric.ed.gov/fulltext/ED472438.pdf>
- Ruhland, S. K., & Bremer, C. D. (2002b). Professional development needs of novice career and technical education teachers. *Journal of Career and Technical Education*, 19(1), 18-31. <https://eric.ed.gov/?id=EJ660464>
- Sabet, M. K., Dehghannezhad, S., & Tahriri, A. (2018). The relationship between Iranian EFL teachers' self-efficacy, their personality and students' motivation. *International Journal of Education & Literacy Studies*, 6(4), 7-15. <http://dx.doi.org/10.7575/aiac.ijels.v.6n.4p.7>
- Salaña, J. (2016). *The coding manual for qualitative research* (3rd ed.). Sage.
- Salvador, R. O., & Burciaga, A. (2017). Organizational environmental orientation and employee environmental in-role behaviors: A cross-level study. *Business Ethics: A European Review*, 29(1), 98-113. <https://doi.org/10.1111/beer.12241>
- Scales, J., Terry, R. Jr., & Torres, R. M. (2009). Are teachers ready to integrate science concepts into secondary agriculture programs? *Journal of Agricultural Education*, 50(2), 100-111. <https://doi.org/10.5032/jae.2009.02100>

- Scarborough, C. (1973). Issues in teacher education in the 70's. *Journal of the American Association of Teacher Educators in Agriculture*, 14(3), 4-11.
<https://doi.org/10.5032/jaatea.1973.03004>
- Sefton, T. G., & Sirek, D. (2020). Musical self-portraits and representations of non/conformity: In the music classroom with preservice generalist teachers. *International Journal of Education & the Arts*, 21(32).
<http://www.ijea.org/v21n32/>
- Shaha, S. H., & Ellsworth, H. (2013). Predictors of success for professional development: Linking student achievement to school and educator successes through on-demand, online professional learning. *Journal of Instructional Psychology*, 40(1), 19-26.
<http://argo.library.okstate.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=slh&AN=97169748&site=ehost-live>
- Shaha, S. H., Glassett, K., Copas, A., & Ellsworth, H. (2015). Title I schools: The student-based impact of online, on-demand professional development on educators. *Contemporary Issues in Education Research*, 8(4), 227-234.
<http://argo.library.okstate.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1077337&site=ehost-live>
- Shahzad, K., & Naureen, S. (2017). Impact of teacher self-efficacy on secondary school students' academic achievement. *Journal of Education and Educational Development*, 4(1), 48-72. <https://files.eric.ed.gov/fulltext/EJ1161518.pdf>
- Shane, J. (2010). *The efficacy of effort: Differences in teachers' sense of efficacy based on type of teacher training and number of years of experience* [Doctoral

dissertation, University of Central Florida]. STARS.

<https://stars.library.ucf.edu/etd/4245>

Shohel, M. M., & Banks, F. (2012). School-based teachers' professional development through technology-enhanced learning in Bangladesh. *Teacher Development, 16*(1), 25-41. <https://doi.org/10.1080/13664520.2012.668103>

Smalley, S., Hainline, M. S., & Sands, K. (2019). School-based agricultural education teachers' perceived professional development needs associated with teaching, classroom management, and technical agriculture. *Journal of Agricultural Education, 60*(2), 85-98. <https://doi.org/10.5032/jae.2019.02085>

Smith, A. R., Lawver, R. G., & Foster, D. D. (2018). *National Agricultural Education Supply and Demand Study, 2017 Executive Summary*.

<https://www.naae.org/teachag/NSD2017Summary.pdf>

Smith, A. R., Lawver, R. G., & Foster, D. D. (2019). *National Agricultural Education Supply and Demand Study, 2018 Executive Summary*.

[http://aaaeonline.org/resources/Documents/NSD2018%20Summary%20\(1\).pdf](http://aaaeonline.org/resources/Documents/NSD2018%20Summary%20(1).pdf)

Smith, C. (2020, September 13). Teacher departures leave school scrambling for substitutes. *Star Tribune*. [https://www.startribune.com/teacher-departures-leave-](https://www.startribune.com/teacher-departures-leave-schools-scrambling-for-substitutes/572399082/)

[schools-scrambling-for-substitutes/572399082/](https://www.startribune.com/teacher-departures-leave-schools-scrambling-for-substitutes/572399082/)

Smith, J. D. N. (2005). Understanding the beliefs, concerns and priorities of trainee teachers: A multi-disciplinary approach. *Mentoring & Tutoring: Partnership in Learning, 13*(2), 205-219. <https://doi.org/10.1080/13611260500105659>

Smith R., Ralston, N. C., Naegele, Z., & Waggoner, J. (2020). Team teaching and learning: A model of effective professional development for teachers. *The*

Professional Educator, 43(1), 80-90.

<http://argo.library.okstate.edu/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=tfh&AN=147144255&site=ehost-live>

Smith, T. M., & Ingersoll, R. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681-714. <https://doi.org/10.3102/00028312041003681>

Snider, C. S. (2019). *Perceived competence of agricultural education student teachers to teach across the national agriculture, food, and natural resources career pathways: A needs assessment at Oklahoma State University* [Master's thesis, Oklahoma State University]. ProQuest.

<https://search.proquest.com/docview/2304962702/98BB434B9A9B4A99PQ/3?acountid=4117>

Solomonson, J. K., Korte, D. S., Thieman, E. B., Retallick, M. S., & Keating, K. H. (2018). Factors contributing to Illinois school-based agriculture teachers' final decision to leave the classroom. *Journal of Agricultural Education*, 59(2), 321-342. <https://doi.org/10.5032/jae.2018.02321>

Solomonson, J. K., Thieman, E. B., & Korte, D. S., & Retallick, M. S. (2019). Why do they leave and where do they go? A qualitative study of Illinois school-based agriculture teachers who left the profession. *Journal of Agricultural Education*, 60(4), 115-131. <https://doi.org/10.5032/jae.2019.04115>

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

- Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). Why agricultural teacher leave: A national examination of turnover intentions and work-family conflict. *Journal of Agricultural Education*, 57(4), 186-201. <https://doi.org/10.5032/jae.2016.04186>
- Spooner, M., Flowers, C., Lambert, R., & Algozzine, B. (2008). Is more really better? Examining perceived benefits of an extended student teaching experience. *The Clearing House*, 81(6), 263-269. <https://doi.org/10.3200/TCHS.81.6.263-270>
- Stair, K., Figland, W., Blackburn, J., & Smith, E. (2019). Describing the differences in the professional development needs of traditionally and alternatively certified agriculture teachers in Louisiana. *Journal of Agricultural Education*, 60(3), 262-276. <https://doi.org/10.5032/jae.2019.03262>
- Standards board provides virus flexibility to schools (2020, September 3), *The Daily Independent*. https://www.dailyindependent.com/news/standards-board-provides-virus-flexibility-to-schools/article_4294517c-ee2b-11ea-ad1a-eb1760534cf0.html
- Starich, E., & Rayfield, J. (2020, September 21-23). *ACTT today, teach tomorrow! Alternative certification in agricultural education* [Poster presentation]. Western Region American Association for Agricultural Education (AAAE) Research Conference, Virtual Conference. http://aaaeonline.org/resources/Documents/Western%20Region/2020_W-AAAE_Poster_Proceedings_FINAL10292020.pdf
- Stewart, N. J., Hiscock, M., Morgan, D. G., Murphy, P. B., & Yamamoto, M. (1999). Development and psychometric evaluation of the environment-behavior interaction code (EBIC). *Nursing Research*, 48(5), 260-268. <https://oce.ovid.com/article/00006199-199909000-00006/HTML>

- Stone, A. A., & Shiffman, S. (2002). Capturing momentary, self-report data: A proposal for reporting guidelines. *The Society of Behavioral Medicine*, 24(3), 236-243.
https://link.springer.com/content/pdf/10.1207%2FS15324796ABM2403_09.pdf
- Stone, A. A., Turkkan, J. S., Bachrach, C. A., Jobe, J. B. Kurtzman, H. S., & Cain, V. S. (Eds.). (2009). *The science of self-report: Implications for research and practice*. Taylor & Francis.
- Straubhaar, R. (2019). Teaching for America across two hemispheres: Comparing the ideological appeal for the teach for all teacher education model in the United States and Brazil. *Journal of Teacher Education*, 71(3), 307-318.
<https://doi.org/10.1177/0022487119845635>
- Swafford, M., & Friedel, C. (2010). A comparison of the inservice needs of traditionally and alternatively certified beginning agriscience teachers in Louisiana. *Journal of Southern Agricultural Education Research*, 60(1), 90-103.
<http://www.jsaer.org/pdf/vol60Whole.pdf>
- Swan, B. G., Wolf, K. J., & Cano, J. (2011). Changes in teacher self-efficacy from the student teaching experience through the third year of teaching. *Journal of Agricultural Education*, 52(2), 128-139. <https://doi.org/10.5032/jae.2011.02128>
- Synar, E., & Maiden, J. (2012). A comprehensive model for estimating the financial impact of teacher turnover. *Journal of Education Finance*, 38(2), 130-144.
<https://www.jstor.org/stable/23353969>
- Taie, L. G. S., & O'Rear, I. (2015). *Public school teacher attrition and mobility in the first five years: Results from the first through fifth waves of the 2007-08 beginning*

teacher longitudinal study. U.S. Department of Education.

<https://nces.ed.gov/pubs2015/2015337.pdf>

Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social & behavioral research*. Sage.

The National Council for Agricultural Education (The Council). (2015). *National AFNR content standards, revised 2015*. <https://thecouncil.ffa.org/afnr/>

The National Council for Agricultural Education (The Council). (2017). *SAE for all: Teacher edition*. <https://ffa.app.box.com/s/exollg1x7q2Intun3su2mdufw07wiklf>

The National Council for Agricultural Education (The Council). (2021). *Agricultural Education*. <https://thecouncil.ffa.org/ageducation/>

Thomas, T. S. (2009). *Online vs face-to-face: Educator opinions on professional development delivery methods* [Doctoral dissertation, University of Alabama]. https://ir.ua.edu/bitstream/handle/123456789/795/file_1.pdf?sequence=1&isAllowed=y

Thornton, K. M., Coleman, B. M., Bunch, J. C., & Roberts, T. G. (2020). Professional life phases: Identifying professional development needs for Florida agriscience teachers. *Journal of Agricultural Education*, 61(4), 283-295.

<https://doi.org/10.5032/jae.2020.04283>

Titrek, O., Çetin, C., Kaymak, E., & Kaşıkçı, M. M. (2018). Academic motivation and academic self-efficacy of prospective teachers. *Journal of Education and Training Studies*, 6(11a), 77-87. [https://files-eric-ed-](https://files-eric-ed.gov.argo.library.okstate.edu/fulltext/EJ1208391.pdf)

[gov.argo.library.okstate.edu/fulltext/EJ1208391.pdf](https://files-eric-ed.gov.argo.library.okstate.edu/fulltext/EJ1208391.pdf)

- Toombs, J. M., & Ramsey, J. R. (2020a). Potential mentoring impacts on Oklahoma induction-year school-based agricultural education teachers: A modified-Delphi study. *Journal of Research in Technical Careers*, 4(2), 39-54.
<https://digitalscholarship.unlv.edu/jrtc/vol4/iss2/4/>
- Toombs, J. M., & Ramsey, J. W. (2020b, May 19-21b). SBAE student teachers' sense of importance and competence per selected national quality program standard indicators: A then-now Borich needs assessment [Paper presentation]. American Association for Agricultural Education Volume 47, Virtual Conference.
http://aaaeonline.org/resources/Documents/National/2020Meeting/2020AAAEpa_perProceedings.pdf
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805.
<https://www.sciencedirect.com/science/article/pii/S0742051X01000361>
- Tummons, J. D., Hasselquist, L., & Smalley, S. W. (2020). Exploring content, pedagogy, and literacy strategies among preservice teachers in CASE institutes. *Journal of Agricultural Education*, 61(2), 289-306. <https://doi.org/10.5032/jae.2020.02289>
- Walumbwa, F. O., Mayer, D. M., Wang, P., Wang, H., Workman, K., & Christensen, A. L. (2011). Linking ethical leadership to employee performance: The roles of leader-member exchange, self-efficacy, and organizational identification. *Organizational Behavior and Human Decision Processes*, 115(2), 204-213.
<https://doi.org/10.1016/j.obhdp.2010.11.002>

- Warmbrod, J. R. (2014). Reporting and interpreting scores derived from Likert-type scales. *Journal of Agricultural Education, 55*(5), 30-47.
<http://doi.org/10.5032/jae.2014.05030>
- Whitney, C. R., & Candelaria, C. A. (2017). The effects of No Child Left Behind on children's socioemotional outcomes. *American Educational Research Association Open, 3*(2), 1-21. <https://doi.org/10.1177/2332858417726324>
- Whittington, M. S., McConnell, E., & Knobloch, N. A. (2006). Teacher efficacy of novice teachers in agricultural education in Ohio at the end of the school year. *Journal of Agricultural Education, 47*(4), 26-38.
<https://doi.org/10.5032/jae.2006.04027>
- Williams, M. M., Rogers, R., Sharf, A. J., & Ross, C. A. (2019). Faking good: An investigation of social desirability and defensiveness in an inpatient sample with personality disorder traits. *Journal of Personality Assessment, 101*(3), 253-263.
<https://doi.org/10.1080/00223891.2018.1455691>
- Williamson, J. L., Backman, C., Guy, M., Kay, P., & Turley, J. (1984). *Emergency teacher certification*. American Association of Colleges for Teacher Education
- Wilson, C., Woolfson, L. M., & Durkin, K. (2020). School environment and mastery experiences as predictors of teachers' self-efficacy beliefs towards inclusive teaching. *International Journal of Inclusive Education, 24*(2), 218-234.
<https://doi.org/10.1080.13603116.2018.1455901>
- Wolf, K. J. (2008). *Agricultural education teacher self-efficacy: A descriptive study of beginning agricultural education teachers in Ohio* [Doctoral dissertation, The

Ohio State University]. OhioLINK.

http://rave.ohiolink.edu/etdc/view?acc_num=osu1216999467

Wolf, K. J. (2011). Agricultural education perceived teacher self-efficacy: A descriptive study of beginning agricultural education teachers. *Journal of Agricultural Education*, 52(2), 163-176. <https://doi.org/10.5032/jae.2011.02163>

Wu, M. Y., Shen, C.Y., Wang, E. T., & Chen, A. L. P. (2020). A deep architecture for depression detection using posting, behavior, and living environment data. *Journal of Intelligent Information Systems*, 54(2), 225-244.

<https://doi.org/10.1007/s10844-018-0533-4>

Yildizli, H. (2019). Structural relationships among teachers' goal orientations for teaching, self-efficacy, burnout, and attitudes towards teaching. *Journal on Efficiency and Responsibility in Education and Science*, 12(4), 111-125.

<https://files.eric.ed.gov/fulltext/EJ1238305.pdf>

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Young, S. (2018). Teacher retention and student achievement: How to hire and retain effective teachers. *International Journal for Professional Educators*, 84(3), 16-21.

[https://search.proquest.com/docview/2068463617?pq-](https://search.proquest.com/docview/2068463617?pq-origsite=gscholar&fromopenview=true)

[origsite=gscholar&fromopenview=true](https://search.proquest.com/docview/2068463617?pq-origsite=gscholar&fromopenview=true)

Zee, M., & Koomen, H. M. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research*, 86(4), 981-1015.

<https://doi.org/10.3102/0034654315626801>

Zientek, L. R. (2006). Do teachers differ by certification route? Novice teachers' sense of self-efficacy, commitment to teaching, and preparedness to teach. *Social Science and Mathematics*, 106(8), 326-327. <https://eric.ed.gov/?id=EJ754834>

APPENDICES

Appendix A – IRB Approval Letter



Oklahoma State University Institutional Review Board

Date: 07/21/2020
Application Number: IRB-20-331
Proposal Title: A Mixed Methods Approach to Teacher Self-Efficacy and Professional Development in Oklahoma Traditional and Emergency Certified Induction-Year School-Based Agricultural Education Teachers

Principal Investigator: Jessica Toombs
Co-Investigator(s):
Faculty Adviser: ROB Terry
Project Coordinator:
Research Assistant(s):

Processed as: Exempt
Exempt Category:

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

Appendix B – IRB Revision Approval Letter



Oklahoma State University Institutional Review Board

Application Number: IRB-20-331
Proposal Title: A Mixed Methods Approach to Teacher Self-Efficacy and Professional Development in Oklahoma Traditional and Emergency Certified Induction-Year School-Based Agricultural Education Teachers

Principal Investigator: Jessica Toombs
Co-Investigator(s):
Faculty Adviser: ROB Terry
Project Coordinator:
Research Assistant(s):

Status Recommended by Reviewer(s): Approved

Study Review Level: Exempt
Modification Approval Date: 09/14/2020

The modification of the IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46. The original expiration date of the protocol has not changed.

Modifications Approved:

Modifications Approved: Due to Covid-19 protocols in schools across the state, some classroom observations will be conducted using video technology. Classes will be videoed using Swivl technology. The video will record teacher behavior and audio as this is the variable of interest in this study. Students will only occasionally occur in the video frame but will not be identifiable. Only the PI will have access to the password protected Swivl video. There are no additional time commitment for the participant. All equipment and software will be provided to the participant free of charge.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved.
2. Submit a status report to the IRB when requested
3. Promptly report to the IRB any harm experienced by a participant that is both unanticipated and related per IRB policy.
4. Maintain accurate and complete study records for evaluation by the OSU IRB and, if applicable, inspection by regulatory agencies and/or the study sponsor.
5. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Sincerely,

Oklahoma State University IRB
223 Scott Hall, Stillwater, OK 74078
Website: <https://irb.okstate.edu/>
Ph: 405-744-3377 | Fax: 405-744-4335 | irb@okstate.edu

Induction-Year SBAE Teacher Self-Efficacy

Start of Block: Consent

You are invited to participate in a research study focused on self-efficacy of Oklahoma SBAE first-year teachers. Your participation in this research is completely voluntary. There is no penalty for refusal to participate and you are free to withdraw your consent at any time. This instrument will take approximately 10 minutes to complete.

Do you agree to participate in this research?

Yes

No

Are you a first year teacher?

Yes

No

End of Block: Consent

Start of Block: Instruction

What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Use a variety of teaching techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide alternative explanations when students are confused	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respond to difficult questions from students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilize technology in teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrate a curriculum in agriculture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate student learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Motivate students to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Utilize multimedia in teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Create lesson plans for instruction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use a variety of assessment strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Craft good questions for students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Effectively conduct field trips	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implement student-centered teaching strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach students to think critically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Manage student behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teach students with special needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide appropriate challenges for very capable students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manage an agricultural mechanics laboratory/shop	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manage a horticulture laboratory/greenhouse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adjust lessons to the proper level for individual students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Instruction

Start of Block: FFA

What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Assist FFA members planning banquets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members facilitating fundraising activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supervise FFA members during trips and activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advise FFA meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members planning chapter activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members developing community service projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recruit new FFA members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your level of capability to:	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	Quite a Bit of Capability	A Great Deal of Capability
Coach Leadership Development Events (speaking, parliamentary procedure, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Train a chapter officer team	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members recruiting new members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members developing an effective public relations program for the FFA chapter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist FFA members in preparing a Program of Activities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coach Career Development Events (Livestock Evaluation, Land Judging, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Assist FFA
members in
preparing
degree
applications



What is your level of capability to:

	No Capab ility	Very Little Capab ility	Some Capab ility	Quite a Bit of Capab ility	A Great Deal of Capab ility
Assist FFA members preparing proficiency applications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilize a program advisory board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Utilize the FFA Alumni and Supporters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognize FFA members' leadership potential	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify various leadership opportunities for FFA members	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultivate FFA members' personal growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: FFA

Start of Block: SAE

What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Identify SAE projects in a community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify SAE projects that connect to agriculture curriculum	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Identify SAE projects that are beneficial to individual students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Build positive relationships with administrators	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Inform administrators about the benefits of SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instruct students how to complete SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clearly communicate the purpose of SAE projects with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your level of capability to:	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Clearly communicate the procedures of SAE projects with parents and employers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist students selecting SAE projects that meet their individual abilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist students developing SAE projects that meet their growing capabilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist students acquiring necessary resources to complete an SAE project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist students planning an agriculturally based SAE project that meets their needs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide students meaningful supervision during their SAE project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Coordinate communication between a student, parent, employer, and myself



What is your level of capability to:

	No Capability	Very Little Capability	Some Capability	Quite a Bit of Capability	A Great Deal of Capability
Provide individualized instruction related to student SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourage students to improve their SAE programs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encourage students to complete a record book for their SAE project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Assist students completing a record of the financial transactions in their SAE project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evaluate student knowledge and skill development through their SAE project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: SAE

Start of Block: Demographics

Please identify your teacher certification pathway.

- Traditional Certification Pathway - I majored in Agricultural Education at a four-year institution and completed a student teaching internship
 - Alternative Certification Pathway - I have a full teaching certification but did not earn a degree in Agricultural Education
 - Emergency Certification Pathway - I have a temporary teaching certification and have yet to complete the requirements for full licensure
-

If you would like the opportunity to participate in further phases of this study, and earn a \$100 gift card, please complete the following information. If you would rather remain anonymous, you may leave these areas blank.

- First Name _____
- Last Name _____
- School District _____
- Phone Number _____

End of Block: Demographics

Appendix D

Interview Protocol

Pre-observation Interview

(Interview Participant), I'd like to take some time to learn about your background and experience as a first-year ag teacher to better understand others in your situation. There are no right or wrong answers to anything we discuss here. Your responses will not be connected with your name or any other identifying information. Is it ok if I audio record our interview? It is simply for transcription purposes so that I won't miss anything you have to say. I will jot down a few notes as well for my reflection purposes. We won't take any more than 30 minutes.

1. To start us off, would you please tell me about your background.
 - a. Additional probing questions as needed to gather information on
 - i. Agricultural experience
 - ii. SBAE, FFA, SAE experience
 - iii. Education
 - Degree(s) completed
 - Relevant coursework
2. Why did you choose ag teaching as a career?
 - a. How did you come to apply for the ag teaching position at (school district)?
3. Tell me about your first week on the job this summer.
 - a. As a follow-up, tell me about the first week of school after the students returned.
 - b. Describe this last week.
 - i. How have your experiences changed since beginning your job?
 - ii. Beginning of the school year?
4. What would you identify as your greatest success so far?
 - a. What has been your greatest struggle?

Thank you, (Interview participant). We'll stop there for now. I'm excited to see your class.

Post-observation Interview

(Interview Participant), thank you for sitting down with me again. I really enjoyed watching you teach. It's always enjoyable for me to get out of the office and back into the high school ag classroom. I'd like to use this time, about 30 minutes, to talk about how

you plan and deliver instruction. Just like last time, there are no right or wrong answers. I'll take notes and audio record again, if that's ok with you.

1. Why did you decide to teach a lesson on (topic)?
2. Tell me about how you planned for this lesson.
 - a. Additional probing questions as needed to gather information on
 - i. Curriculum used
 - ii. Material preparation
3. What was the main learning goal or goals you wanted students to take away from today's lesson?
 - a. Do you think students accomplished this?
 - b. How do you know?
4. I'm sure there is a lot going on in your mind while you're teaching. What are some of the things that require your attention during a class period?
5. In your opinion, what went really well in your lesson?
 - a. Can you expound on the circumstances that might have caused (positive detail from the lesson)?
6. In your opinion, what will you change the next time you teach this lesson?
 - a. Can you expound on the circumstances that might have caused (negative detail from the lesson)?
7. What are your long-term career goals?
8. What is your teacher certification classification?
 - a. Do you plan to gain full certification? Why or why not?
 - i. If needed: what are your plans to meet the requirements for certification?

I can't thank you enough for your time, (Interview Participant). Would it be ok to email you if I have questions while I am going through our interview? If you have any questions, please let me know. Thank you again and have a wonderful rest of your day.

First Self-Efficacy Interview

(Interview Participant), thank you for sitting down with me again. I'd like to use this time, about 30 minutes, to talk about how you view your ability as an ag teacher. Just like last time, there are no right or wrong answers. I'll take notes and audio record again, if that's ok with you.

1. What does a "good" ag teacher look like to you?

- a. How will you know if you've become a "good" ag teacher?
2. What motivates you put forth the effort needed to be a "good" ag teacher?
3. Is there anything holding you back from being a "good" ag teacher?
 - a. If so, what would need to change so that you could be more successful?
4. How might you change your environment to make your job easier?
5. Who's your role model(s) in agricultural education?
 - a. What makes you look up to that person?
 - b. How has that person shaped your professional life?
6. Teaching can be an emotional career. What emotions have you experienced thus far?
 - a. How have you managed those emotions?
7. What are your goals for this school year?
 - a. What about in (*classroom, FFA, and SAE*)?

I can't thank you enough for your time, (Interview Participant). Would it be ok to email you if I have questions while I am going through our interview? If you have any questions, please let me know. Thank you again and have a wonderful rest of your day.

Second Self-Efficacy Interview

(Interview Participant), thank you for sitting down with me again. I'd like to use this time, about 30 minutes, to talk about how you view your ability as an ag teacher. Just like last time, there are no right or wrong answers. I'll take notes and audio record again, if that's ok with you.

1. Previously we discussed (*brief synopsis of previous self-efficacy interview*). Have any of your thoughts changed since we last spoke on these topics?
2. In the last few weeks, what has been a big win for you?
 - a. What has been a struggle recently?
3. You're gaining experience every day. What has been a big lesson you've learned so far?
 - a. How has that experience informed future decisions?
 - b. What about in (*classroom, FFA, and SAE*)?
4. How have you been feeling recently?
 - a. How have you been managing those emotions?

I can't thank you enough for your time, (Interview Participant). Would it be ok to email you if I have questions while I am going through our interview? If you have any questions, please let me know. Thank you again and have a wonderful rest of your day.

VITA

Jessica M. Toombs

Candidate for the Degree of

Doctor of Philosophy

Thesis: PROFESSIONAL DEVELOPMENT NEEDS OF OKLAHOMA INDUCTION-
YEAR SCHOOL-BASED AGRICULTURAL EDUCATION TEACHERS ACROSS
CERTIFICATION PATHWAYS: A MIXED METHODS APPROACH

Major Field: Agricultural Education

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Agricultural Education at Oklahoma State University, Stillwater, Oklahoma in May, 2021.

Completed the requirements for the Master of Science in Agricultural Education at Oklahoma State University, Stillwater, Oklahoma in August, 2018.

Completed the requirements for the Bachelor of Science in Agricultural Education at University of Missouri, Columbia, Missouri in May, 2010.

Experience:

Graduate Teaching Associate, Department of Agricultural Education, Communication, and Leadership, Oklahoma State University, 2018-2021

Agricultural Science Instructor, Sikeston Career and Technology Center, Sikeston Public Schools, 2011-2018

Professional Memberships:

The American Association of Agricultural Education

Association for Career and Technical Education Research