

# Instructional Practice Needs of Oklahoma Agricultural Educators by Career Phase

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## Abstract

*Increasing career satisfaction is crucial to retaining highly qualified teachers, as perceived self-efficacy is positively correlated with job satisfaction. With this in mind, understanding the needs of career phases is important for professional development. The purpose of the study was to determine the relationship between teaching experience and instructional practice needs among school-based agricultural education (SBAE) teachers in Oklahoma. This study was informed by Bandura's self-efficacy theory, which considers people's beliefs about their capabilities to produce effects. This non-experimental survey research study employed a census approach to reach all Oklahoma SBAE teachers using the ranked discrepancy model to assess current competencies. Participants were provided with 24 instructional areas and asked to rate their self-efficacy and perceived importance for each competency, using a five-point Likert-type scale. Findings indicated Oklahoma SBAE expressed the greatest need for training in modifying instruction for students with special needs, motivating students for classroom learning, and teaching for different learning styles. Developing lesson plans was self-identified among all career phases (early, mid, and late) as the instructional practice with the least need for additional training. To increase teacher retention, professional development opportunities must reflect areas of perceived need. It is recommended the state agricultural education staff, teacher preparation faculty, and the Oklahoma Agricultural Education Teachers Association provide specialized training based on the career phase of teachers.*

## Introduction

A national shortage of qualified school-based agricultural education (SBAE) teachers has been an issue for decades (Kantrovich, 2010). Many teachers leave the profession within the first five years of teaching (Blackburn & Robinson, 2008). A range of factors can lead to teachers exiting the profession, including burnout and a commitment to family and children (Tippens et al., 2013). However, one primary factor is self-efficacy, which will “determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experience” (Bandura, 1977, p. 191). Teachers who leave the profession early tend to exhibit a lower level of self-efficacy (Blackburn & Robinson, 2008).

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On average, universities produce approximately 800 agricultural education graduates nationally each year, but only 50 to 60 percent of these graduates accept a teaching position in their first year (Eck & Edwards, 2019). In addition, 44.6 percent of all teachers leave the profession within their first five years (Ingersoll et al., 2018). In Oklahoma, 166 SBAE teachers left the profession between 2019 and 2022, accounting for approximately one-third of the state's SBAE teaching jobs (Green, 2022). Issues with teacher shortage result in schools lowering the qualifications to fill secondary agricultural teacher openings, which reduces the learning experience for students (Tippens et al., 2013). Increasing career satisfaction among current teachers is crucial for retaining highly qualified teachers, as perceived self-efficacy is positively correlated with job satisfaction (Blackburn & Robinson, 2008) and could thereby increase teacher retention.

Teachers leaving the classroom has a negative impact on students' performance, and it places a financial burden on the school (Darling-Hammond, 2003). "Four major factors strongly influence whether and when teachers leave specific schools or the education profession entirely: salaries, working conditions, preparation, and mentoring support in the early years" (Darling-Hammond, 2003, p. 3). The American Association of Colleges for Teacher Education (1984) posed the question, "How do we continue the process of raising standards for entry and retention in the profession at a time when the short supply of teachers in some areas puts extreme pressure on the system to employ personnel with substandard qualification?" (p. 21). It is recommended that an investment in teacher recruitment and preparation can serve "policy makers interested in simultaneously improving teachers' instructional quality, commitment to underserved settings, and retention" (Ronfeldt et al., 2013, p. 333). Roughly 65% of SBAE teacher preparation programs nationwide provide some form of a teacher induction program for early career teachers (Franklin & Molina, 2012), but what about those who do not or teachers beyond the early career phase?

As teachers progress through various phases of their professional careers, their perceived self-efficacy in different competencies changes (Figland et al., 2019). The number of years teaching impacts teacher self-efficacy and should guide training opportunities (Eck et al., 2021). Solomonson et al. (2018) found early, mid, and late career SBAE teachers each face unique challenges, which are often uncommon in the other professional phases. Surveys of Louisiana (Figland et al., 2019) and Florida (Thornton et al., 2020) SBAE teachers recorded differing instructional practice needs and self-efficacy levels among teachers based on years of teaching experience (early, middle, and late career). Education is constantly evolving, necessitating regular needs assessments to guide professional development (Figland et al., 2019). As a statewide need assessment for Oklahoma SBAE teachers has not been conducted in decades, it is important to evaluate the population's needs and potential differences within career phases.

Henry et al. (2011) evaluated early-career teacher effectiveness and attrition which resulted in three overarching conclusions: (a) early-career teachers could have quicker effectiveness gains if professional development and evaluations were used as purposeful improvement strategies, ultimately leading to increased teacher retention; (b) these increases were substantial in the first couple of years, although there was a lack of effectiveness increase in year three, which needs to be investigated further to increase long-term teacher development; and (c) teachers who leave the profession after three or four years were found to be less effective than those who remained (Henry et al., 2011). Although this type of continual development was found helpful for early-career teachers (Henry et al., 2011), what about those beyond their fifth year? Therefore, professional development organizers should consider teaching experience when planning in-service training for teachers (Thornton et al., 2020). With this in mind, understanding the needs of individual career phases is crucial for planning professional development training and potentially offsetting teacher attrition, especially within career and technical education.

### **Theoretical Framework**

This study was framed within the context of self-efficacy theory (Bandura, 1977). Self-efficacy is defined as people's beliefs about their capabilities to produce effects (Bandura, 1994). The self-efficacy

theory was founded on the premise “that expectations of personal efficacy determine whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experience” (Bandura, 1977, p. 191). While the tenets of the self-efficacy theory can apply to any group of professionals, the current study specifically applies self-efficacy theory to agricultural education teachers to determine the relationship between teaching experience and instructional practice needs among SBAE teachers in Oklahoma. For beginning teachers, self-efficacy is developed through peer teaching and student teaching experiences. However, challenges and failure from early teaching experiences can hinder performance accomplishments (McKim & Velez, 2016). For mid-career teachers, self-efficacy struggles to incorporate innovative approaches and reflect on the value of past work are often observed (Solomonson et al., 2018). Late career teachers typically have a higher self-efficacy in more areas; they often struggle using instructional technologies (Thornton et al., 2020). Finally, some areas of low self-efficacy exist in all career phases. Thornton et al. (2020) found modifying instruction for students with special needs to be a top instructional need among early, mid, and late career teachers.

In measuring the self-efficacy of teachers regarding their mastery of teaching specific content areas, the Borich Need Assessment Model has allowed teachers to evaluate curricular standards based on combining perceived relevance and perceived level of attainment to calculate a mean weighted discrepancy score (Borich, 1980). Educational standards with high perceived relevance and low perceived attainment, also known as low self-efficacy, will provide the highest priority for training in early career teachers. Using this instrument, Garton and Chung (1996) evaluated 50 professional competencies among beginning agricultural education teachers in Missouri. After conducting a Borich needs assessment, the greatest discrepancy between self-efficacy and perceived relevance was completing reports for local/state administration and motivating students to learn. Overall, the study provided 16 competencies for which a greater need exists for in-service training for new teachers.

While the mean ranked discrepancy score from the Borich Needs Assessment has been used as an evaluation tool for decades, Narine & Harder (2021) pointed out several model flaws. First, “the weighted discrepancy score is dependent on the use of item means for importance” (Narine & Harder, 2021, p. 98). Using mean values for ordinal items is controversial in research, as the spacing between each value might be different (Kampen & Swyngedouw, 2000). Second, the mean weighted discrepancy score does not follow a clear, standardized range. While a five-point Likert-type scale will yield Borich scores between -4 and 20, the range would be different in a seven-point scale (Narine & Harder, 2021). Similar assessments of Florida and Louisiana teachers yielded different values, as one study utilized a four-point scale (Figland et al., 2019) while the other used a five-point scale (Coleman et al., 2020). Finally, an individual’s response can skew a group’s mean (Narine & Harder, 2021). With a needs assessment, the extent to which each individual’s discrepancy between self-efficacy and importance is not important, but rather, any discrepancy warrants additional training (Narine & Harder, 2021). To avoid the issues presented by the Borich Model, Narine and Harder (2021) proposed the Ranked Discrepancy Model (RDM) as an alternative which allows for instructional practices to be ranked by need by calculating the discrepancy between efficacy expectations (self-efficacy) and outcome expectations (perceived importance) (Narine & Harder, 2021).

### **Purpose and Research Objectives**

This study aimed to determine the relationship between teaching experience and instructional practice needs among SBAE teachers in Oklahoma, by identifying and comparing their professional development needs. Three research objectives guided this study:

1. Determine the instructional practice needs of Oklahoma SBAE teachers.
2. Describe the perceived instructional practice needs of Oklahoma SBAE teachers based on career phase (i.e., early, mid, and late).

3. Compare and contrast the highest-ranked, instructional practice needs of Oklahoma SBAE teachers across career phases.

### Methods

This study is part of a larger research project. This non-experimental survey research study employed a census approach to reach all Oklahoma SBAE teachers ( $N = 462$ ). To achieve this goal, data was collected in-person at 25 regional FFA degree checks across the state. In Oklahoma, all teachers attend FFA degree checks in their designated region over a two-week period in late January and early February. The research team traveled the state to provide an overview of the needs assessment, distribute the survey instrument, and collect completed hand-written questionnaires. Three-hundred and thirty-eight Oklahoma SBAE teachers returned a survey questionnaire, resulting in an initial response rate of 73.2%.

Although this study resulted in an acceptable response rate, non-response error is still of concern, given the census approach design. Therefore, 55 survey instruments were mailed, along with a cover letter and pre-paid return addressed envelope to Oklahoma SBAE teachers who did not attend the state degree checks. The 55 Oklahoma SBAE teachers who received the questionnaire did not have a chance to complete the instrument at the degree checks due to weather-related cancelations or travel limitations. This effort resulted in five non-respondents completing and returning the survey instrument to the research team. Upon analysis of non-respondents, data was found to be homogeneous to original responses, resulting in a total of 329 completed instruments for data analysis, leading to an overall response rate of 71.21%.

This study evaluated perceived professional development needs among SBAE educators based on years of service. Categories of teaching service will be divided into three categories: early career (five years or fewer), mid-career (between six and 15 years), and late career (16 years or more). A similar model of early, mid, and late career was presented by Thornton et al. (2020). The career phases of the participants were distributed between all three categories, with 37% representing early-career tenure ( $n = 122$ ), 34% representing mid-career tenure ( $n = 114$ ), and 28% representing late-career ( $n = 93$ ) tenure phase. Sixty-nine percent of participants identified as male ( $n = 230$ ), with ninety-two identifying as female (28%) and seven participants preferring not to respond. Program structure differed between single-teacher programs ( $n = 196$ ), representing 59.6% of the population, and multiple-teacher programs, representing 39.2% of the population (see Table 1).

**Table 1**

*Respondents' Characteristics (n=329)*

Participant Characteristic	<i>f</i>	%
Gender		
Male	230	69%
Female	92	28%
Preferred Not to Respond	7	3%
Program Structure		
Single Teacher	196	59.6%
Multiple Teacher	129	39.2%
Preferred Not to Respond	4	1.2%
Career Phase		
Early-Career (5 years or less)	122	37.08%
Mid-Career (6-15 years)	114	34.65 %
Late-Career (16 or more years)	93	28.27%

The questionnaire was developed by Roberts and Dyer (2004) and modified by Saucier et al. (2010), Figland et al. (2019), and Coleman et al. (2020). The instrument was adopted and further modified for this study to fit the needs of Oklahoma SBAE teachers. A panel of experts then reviewed the instrument for face and content validity. This panel included (a) one university faculty member of agricultural education, (b) the state FFA advisor, (c) one regional agricultural education program specialist, and (d) two school superintendents who were previously SBAE teachers. Based on the recommendations from the panel, three items were added: (a) Highlighting technology in agricultural education courses, (b) Highlighting engineering in agricultural courses, and (c) Highlighting connections to workforce in agricultural education courses.

The questionnaire included one section with 24 items addressing instructional practice needs. Each of these items used two 5-point Likert-type scales (i.e., 1 = *low agreement*, 5 = *high agreement*). On the first scale, participants were asked to rate their current knowledge level of the item (perceived ability). On the second scale, participants were asked to rate the degree of relevance the item had to their job (perceived importance). The final section of the questionnaire included space for participants to share their personal characteristics (i.e., years teaching agriculture, region of the state, number of teachers in their department, grade levels taught, path to certification, highest degree, college major[s], sex, ethnicity, etc.).

All data were transcribed from the paper instruments to Microsoft Excel© by a single research assistant prior to data being imported and analyzed using SPSS version 28 and Microsoft Excel©. This study implemented the ranked discrepancy model (RDM) to assess current competencies of SBAE teachers across Oklahoma. This model was selected as an alternative to the Borich (1980) needs assessment model based on the findings of Narine and Harder (2021). Specifically, this method was selected because “instead of positive scores indicating a lack of competence, the RDM provides a negative RDS when training needs are greater (i.e., there are many individuals lacking sufficient ability and few individuals with an abundance of ability), which more clearly conveys that a problem exists that should be corrected” (Narine & Harder, 2021, p. 108). This analysis requires the consideration of positive ranks (PR), negative ranks (NR), and tied ranks (TR) to fully understand the needs of the participants, ranging from those deemed experts to others who are novices, resulting in a ranked discrepancy score (RDS) for each item (Narine & Harder, 2021).

While the Borich Model has been utilized frequently in literature to evaluate teacher self-efficacy (Coleman et al., 2020; Thornton et al., 2020), it does lend to debate regarding the impact of an individual’s response skewing a group mean (Narine & Harder, 2021). Recently, the Ranked Discrepancy Model (RDM) was introduced as an assessment approach that is useful for cross-section data and is considered by some to be consistent with the Borich Model (Choi & Park, 2023). The RDM avoids the issues associated with means instead classifying each response as the number of negative ranks (perceived ability is less than the importance rank), positive ranks (perceived ability is more than the importance rank), and tie ranks (perceived ability is the same as the importance rank) to determine a Ranked Discrepancy Score (Narine & Harder, 2021). As the RDM is a new model, discrepancies exist in the literature regarding the consistencies of analysis between Borich and RDM. While Harder and Narine (2024) cited two examples of similar results between the Borich and RDM scores, Johnson et al. (2024) found only one common competency when using both methods to determine professional development priorities in educators. Johnson et al. (2024) describe several limitations of RDM: (1) the number of tied ranks can skew ranking priorities, and (2) the RDM reduces information from survey responses by not using the overall measurement of importance and ability as a weighting factor, instead scoring all negative discrepancies between perceived importance and ability as -1. These limitations should be considered in the publication of RDM values in the current study.

## Findings

### Research Objective 1: Determine the Instructional Practice Needs of Oklahoma SBAE Teachers

Ranked discrepancy scores (RDS) were calculated for the 24 items associated with instructional practices of SBAE teachers. Table 2 prioritizes each of the instructional practices based on RDS as ranked by all participants ( $n = 329$ ). Overall, 23 of the 24 instructional practices listed resulted in a negative RDS with *developing lesson plans* as the only positive score. Instructional practices with the greatest negative score were *modifying instruction for students with special needs* and *motivating students for classroom learning*, followed by *teaching for different learning styles*.

**Table 2**

*Ranked Discrepancy Scores for Instructional Practices Among Oklahoma Agricultural Educators ( $n = 329$ )*

Instructional Practices	RDS	RDS Ranking
Modifying instruction for students with special needs	-24.316	1
Motivating students for classroom learning	-24.316	1
Teaching for different learning styles	-23.100	3
Determining content to be taught in specific courses	-21.580	4
Highlighting engineering in agriculture courses	-20.668	5
Identifying resources for curricula	-20.060	6
Managing student behavior	-18.844	7
Using experiments in teaching	-16.413	8
Teaching critical thinking skills	-14.893	9
Teaching decision-making skills	-13.373	10
Evaluating curricular resources for use in teaching environments	-13.069	11
Assessing student learning in the classroom	-13.069	11
Assessing student learning in the laboratory	-12.462	13
Highlighting reading strategies in agriculture courses	-10.942	14
Highlighting math in agriculture courses	-8.206	15
Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	-8.206	15
Highlighting connections to workforce in agriculture courses	-7.294	17
Planning for teaching in the time scheduled	-6.990	18
Teaching problem-solving skills	-6.990	18
Highlighting technology in agriculture courses	-5.775	20
Sequencing lessons	-5.167	21
Sequencing units of instruction	-1.823	22
Highlighting science in agriculture courses	-0.911	23
Developing lesson plans	12.462	24

*Note:* Ranked Discrepancy Scores (RDS) are presented on a -100 to 100 scale where negative scores indicate a discrepancy (self-efficacy is less than perceived importance) leading to additional training needs while positive scores indicate no additional training needed.

### Research Objective 2: Calculate the Perceived Instructional Practice Needs of Oklahoma SBAE Teachers Based on Career Phase (i.e., early, mid, and late)

To determine the needs of SBAE teachers in Oklahoma by career phase (i.e., early, mid, and late), RDS were calculated for each of the groups. Early career teachers were those with five years or less of SBAE teaching experience ( $n = 122$ ). Table 3 outlines the RDS for each instructional practice among early career Oklahoma SBAE teachers based on RDS. Instructional practices with the greatest negative RDS among early career teachers included *evaluating curricular resources for use in teaching environments*, *determining content to be taught in specific courses*, and *highlighting engineering in agriculture courses*. All 24 items resulted in a need based on negative RDS (See Table 3).

**Table 3**

*Ranked Discrepancy Scores for Instructional Practices Among Early-Career Oklahoma Agricultural Educators (n = 122)*

Instructional Practices	RDS	RDS Ranking
Evaluating curricular resources for use in teaching environments	-36.065	1
Determining content to be taught in specific courses	-35.245	2
Highlighting engineering in agriculture courses	-34.426	3
Modifying instruction for students with special needs	-29.508	4
Managing student behavior	-29.508	4
Identifying resources for curricula	-28.688	6
Motivating students for classroom learning	-27.049	7
Teaching for different learning styles	-26.229	8
Assessing student learning in the classroom	-23.770	9
Highlighting reading strategies in agriculture courses	-22.131	10
Sequencing lessons	-22.131	11
Teaching critical thinking skills	-21.311	12
Sequencing units of instruction	-21.311	12
Using experiments in teaching	-19.672	14
Planning for teaching in the time scheduled	-19.672	14
Highlighting math in agriculture courses	-18.852	16
Teaching decision-making skills	-18.032	16
Assessing student learning in the laboratory	-17.213	18
Highlighting technology in agriculture courses	-12.295	19
Teaching problem-solving skills	-11.475	20
Highlighting science in agriculture courses	-10.655	21
Highlighting connections to workforce in agriculture courses	-4.918	22
Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	-1.639	23
Developing lesson plans	-0.819	24

*Note:* Ranked Discrepancy Scores (RDS) are presented on a -100 to 100 scale where negative scores indicate a discrepancy (self-efficacy is less than perceived importance) leading to additional training needs while positive scores indicate no additional training needed.

Table 4 provides the RDS for each instructional practice among the 114 mid-career Oklahoma SBAE teachers (i.e., those with six to 15 years of SBAE teaching experience). Seven of the 24 items resulted in a positive RDS, indicating a primary need for the remaining 17 items. *Sequencing units of instruction* and *developing lesson plans* were the least needed items as indicated by mid-career SBAE teachers.

Instructional practices with the greatest negative RDS among mid-career teachers included *motivating students for classroom learning*, *teaching for different learning styles*, *modifying instruction for students with special needs*, and *using experiments in teaching*.

**Table 4**

*Ranked Discrepancy Scores for Instructional Practices Among Mid-Career Oklahoma Agricultural Educators (n = 114)*

Instructional Practices	RDS	RDS Ranking
Motivating students for classroom learning	-27.192	1
Teaching for different learning styles	-26.315	2
Modifying instruction for students with special needs	-22.807	3
Using experiments in teaching	-22.807	3
Identifying resources for curricula	-17.543	5
Managing student behavior	-16.667	6
Highlighting engineering in agriculture courses	-14.912	7
Teaching decision-making skills	-14.912	7
Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	-14.035	9
Teaching critical thinking skills	-13.157	10
Teaching problem-solving skills	-11.403	11
Highlighting connections to workforce in agriculture courses	-10.526	12
Determining content to be taught in specific courses	-10.526	12
Highlighting reading strategies in agriculture courses	-9.649	14
Assessing student learning in the classroom	-7.894	15
Assessing student learning in the laboratory	-7.894	15
Highlighting math in agriculture courses	-2.631	17
Evaluating curricular resources for use in teaching environments	0.877	18
Highlighting technology in agriculture courses	0.877	18
Planning for teaching in the time scheduled	5.263	20
Sequencing lessons	7.017	21
Highlighting science in agriculture courses	7.017	21
Sequencing units of instruction	14.035	23
Developing lesson plans	18.421	24

*Note:* Ranked Discrepancy Scores (RDS) are presented on a -100 to 100 scale where negative scores indicate a discrepancy (self-efficacy is less than perceived importance) leading to additional training needs while positive scores indicate no additional training needed.

The instructional needs of late career SBAE teachers in Oklahoma ( $n = 93$ ) is provided in Table 5. The RDS for instructional practices are ranked based on need (i.e., greater negative number equals greater need). Instructional practices with the greatest negative RDS included *modifying instruction for students with special needs*, *motivating students for classroom learning*, and *determining content to be taught in specific courses*. Six of the 24 items resulted in a positive RDS, and one resulted in a neutral RDS, indicating the primary need across the remaining 17 instructional practice items (see Table 5).

**Table 5**

*Ranked Discrepancy Scores for Instructional Practices Among Late-Career Oklahoma Agricultural Educators (n = 93)*

Instructional Practices	RDS	RDS Ranking
Modifying instruction for students with special needs	-19.354	1
Motivating students for classroom learning	-17.204	2
Determining content to be taught in specific courses	-17.204	2
Teaching for different learning styles	-15.053	4
Assessing student learning in the laboratory	-13.978	5
Identifying resources for curricula	-11.827	6
Highlighting engineering in agriculture courses	-9.677	7
Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	-9.677	7
Teaching critical thinking skills	-8.602	9
Managing student behavior	-7.526	10
Highlighting connections to workforce in agriculture courses	-6.451	11
Assessing student learning in the classroom	-5.763	12
Teaching decision-making skills	-5.376	13
Planning for teaching in the time scheduled	-5.376	13
Using experiments in teaching	-4.301	15
Highlighting technology in agriculture courses	-2.150	16
Highlighting math in agriculture courses	-1.075	17
Evaluating curricular resources for use in teaching environments	0.000	18
Highlighting reading strategies in agriculture courses	2.150	19
Sequencing lessons	2.150	19
Highlighting science in agriculture courses	2.150	19
Sequencing units of instruction	4.301	22
Teaching problem-solving skills	4.301	22
Developing lesson plans	22.580	24

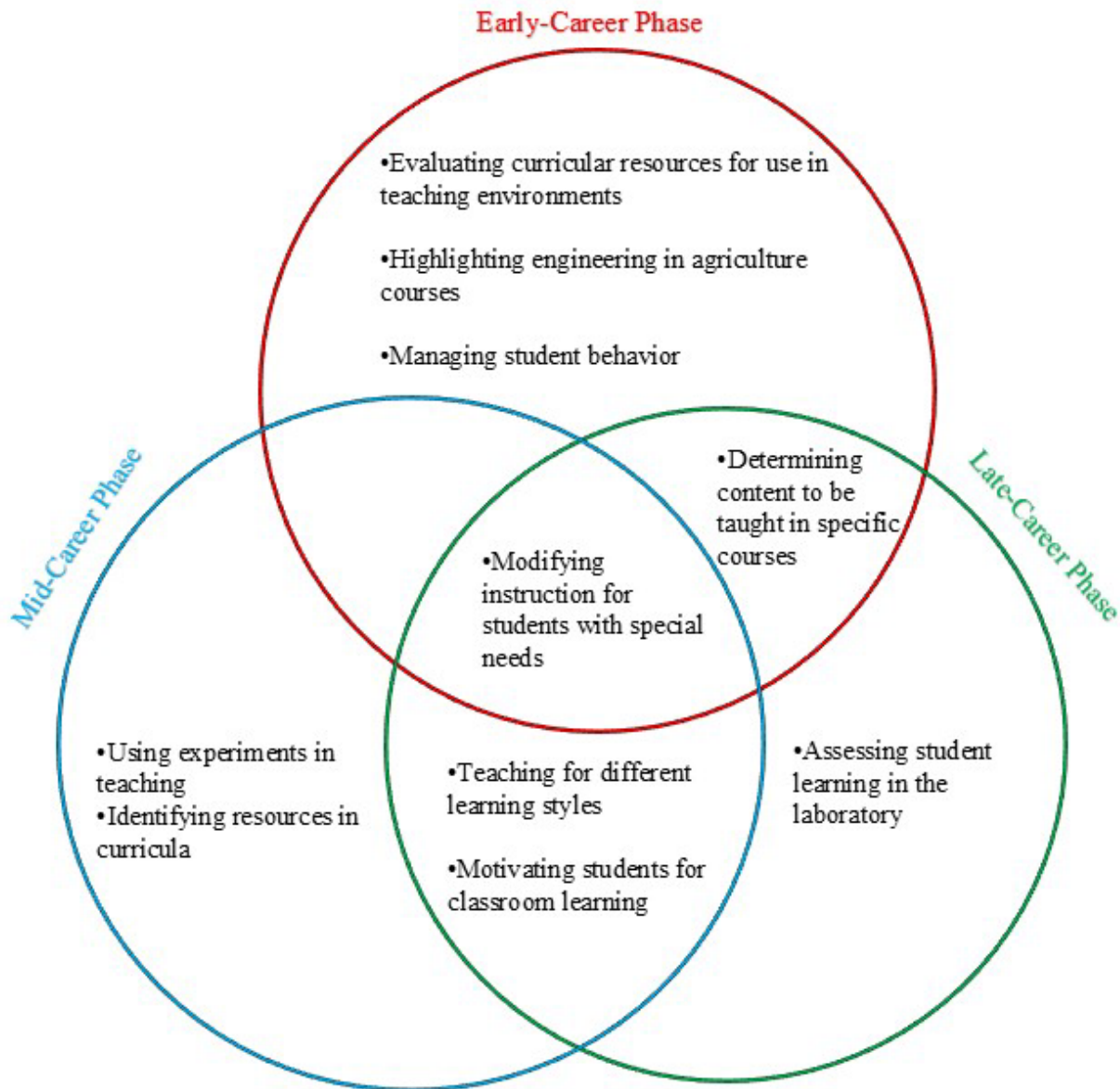
*Note:* Ranked Discrepancy Scores (RDS) are presented on a -100 to 100 scale where negative scores indicate a discrepancy (self-efficacy is less than perceived importance) leading to additional training needs while positive scores indicate no additional training needed.

### **Research Objective 3: Establish the Shared, Highest-Ranked, Instructional Practice Needs of Oklahoma SBAE Teachers Across Career Phases**

To better represent the intersection and overlap of SBAE teachers' identified needs by career phase, Figure 1 was developed. The top five instructional needs identified by the three career phases share *modifying instruction for students with special needs*, ranked as the highest need by late-career teachers and third highest by mid and late career phases (see Figure 1). Two additional needs were shared by mid and late-career SBAE teachers, *motivating students for classroom learning*, ranked as the highest need by mid-career SBAE teachers and second for late-career SBAE teachers, and *teaching for different learning styles*, ranked as the second highest need for mid-career and third highest need identified for late-career SBAE teachers (see Figure 1).

Figure 1

Top 5 Instructional Practice Needs by Career Phase



### Conclusions, Implications, and Recommendations

The purpose of this study was to determine instructional practice needs among Oklahoma SBAE teachers with attention to years of experience, as the needs of teachers are diverse and can depend on their years of experience (Eck et al., 2021). To increase the retention of SBAE teachers in Oklahoma, it is imperative professional development opportunities reflect areas of perceived need for teachers. Demographically, the average years of teaching experience of research participants was 11.12 years with most teachers in the study having taught nine years or less. As years of experience increased, the number of research participants decreased as the early career group made up the largest percentage (37.07%), followed by the mid-career group (34.65%), and the late career group having the lowest percentage of

participants (28.27%). This is a common trend as the same decreasing stairstep trend was recorded in research of Florida (Thornton et al., 2020) and Louisiana (Figland et al., 2019) SBAE teachers.

Objective one sought to identify instructional practice needs across all Oklahoma SBAE teachers. The top five areas of needs across all participants were modifying instruction for students with special needs, motivating students for classroom learning, teaching for different learning styles, determining content to be taught in specific courses, and highlighting engineering in agriculture courses. The most prevalent area of need, *modifying instruction for students with special needs*, was also the only instructional practice need in the top five among early, mid, and late career teachers in the study by Thornton et al. (2020). Coleman et al. (2020) used the same data and found that this area had the highest mean weighted discrepancy score among all Florida agricultural education teachers. With the same RDS (-24.316), *motivating students to learn* followed the findings of Smalley et al. (2019) as the most prevalent area of perceived instructional practice need.

Considering the career phases of SBAE teachers in Oklahoma (i.e., early, mid, and late), one common theme was found in the top five for all three phases, *modifying instruction for students with special needs*, suggesting that this is an essential instructional need of current Oklahoma SBAE teachers. Perhaps it is time to add additional emphasis on the demands of special needs students in both pre-service teacher preparation and in-service SBAE teacher professional development nationwide, considering the recurring theme from studies across the country. For early career teachers, *evaluating curricular resources for use in teaching environments* had the greatest negative RDS (-36.065), while it was not a top five instructional need for mid or late-career teachers. Could it be that it takes five or more years to find appropriate instructional resources and feel confident in what you are using to deliver instruction within an SBAE program?

Mid and late career teachers had more in common as four of the top six instructional needs for both groups were the same: *motivating students for classroom learning*, *teaching for different learning styles*, *modifying instruction for students with special needs*, and *identifying resources for curricula*. Mid-career teachers felt a need to learn more about *using experiments in teaching*. This aligns with the self-efficacy development of mid-career teachers who often struggle to add innovative approaches within their instruction (Solomonson et al., 2018). For all three phases, *developing lesson plans* was seen as the instructional practice with no identified need for professional development. Although primary needs varied, all participants agreed they felt self-efficacy in developing lesson plans, yet components of lesson planning rose to the top of the needs list, such as modifying instruction, instructional resources, and planning for the proper amount of instructional time. “Developing lesson plans” and “planning lessons” present different meanings to educators. Rigid lesson plans are rarely followed during classroom lessons (Garrison & Kanuka, 2004), which could explain the negative connotation of the term “lesson plan.” Instead, the training of SBAE teachers should focus on lesson planning and the implications in real-world settings (Ball et al., 2007).

Self-efficacy (Bandura, 1977) of SBAE teachers is essential to consider on an ongoing basis, as needs can change, especially those related to instructional practice. Self-efficacy development often begins during a teacher preparation program for those traditionally certified, but challenges and failure from early teaching experiences have been found to hinder growth (McKim & Velez, 2016). Late career teachers typically have a higher self-efficacy in more areas (Thornton et al., 2020), which was evident in this study as they had the lowest RDS scores across the 24 instructional practice items. Regardless, some areas of low self-efficacy exist across all career phases, leading to the need for purposeful professional development for SBAE teachers.

The results of the study should be communicated to the state agricultural education staff, pre-service SBAE teacher preparation program faculty, and the Oklahoma Agricultural Education Teachers Association, specifically the committee which provides teacher-led training among SBAE teachers. When planning and presenting professional development training events for teachers, the “one size fits all model” model should be avoided (Thornton et al., 2020). Instead, in-service training programs should consider the teaching experience of the audience present. Based on the data, it is recommended to provide specialized training for early career teachers while combining mid and late career educators due to similar expressed instructional practice needs. Dividing teachers into professional development sessions based on years of experience could occur at large gatherings such as the annual Oklahoma Agricultural Educators Annual Meeting as well as area teacher meetings.

Further recommendations are for all Oklahoma SBAE educators to be provided with training in the top two instructional practices seen across the entire sample, as seen in Table 2. First, *modifying instruction for students with special needs*, should be addressed as no special education courses are offered with a specialization solely for teaching in agricultural settings within SBAE teacher preparation programs in Oklahoma. Stair et al. (2010) conducted a national study of SBAE teachers and found teacher training programs and professional development programs have not prepared educators to work with students with special needs. Training opportunities need to be provided for all Oklahoma SBAE educators as they play a role in serving the approximately 180,000 special education students enrolled nationally in SBAE courses (Teixeria & Edwards, 2020). Second, *motivating students for classroom learning*, was a top two instructional need for mid and late-career Oklahoma SBAE teachers and ranked seventh among early career teachers. This has been identified as a long-standing professional development need across SBAE teachers (Garton & Chung, 1997). Training within this instructional practice area can help educators remain connected to the changing demographics of their students.

Finally, additional questions emerged as to what factors or previous experiences influenced the perceived needs expressed by survey participants. Specifically, what training and personal experiences have Oklahoma SBAE educators had regarding teaching students with special needs? To better understand views from teacher representatives in all three career phases, qualitative data should be collected through conversations regarding teaching students with special needs in agricultural education learning environments. “Without the open and frank comments from teachers, professional development can only be formulated through speculation” (Ferand et al., 2020, p. 170). Lastly, future studies can expand on the research findings by providing the instrument to preservice students in programs training SBAE teachers. Self-efficacy of preservice teachers can play a crucial role in their decision to pursue a career as an SBAE teacher (Stripling et al., 2008). Just as the findings of the current study can help guide in-service training to current Oklahoma SBAE teachers, further research can guide training opportunities provided to preservice SBAE teachers. Specifically, states who have not conducted a statewide needs assessment of SBAE teachers within the last five years are recommended to do so, those who have should continue to reevaluate the needs of teachers every five years as the educational climate is ever-changing. Additional research should evaluate the impact of personal and professional characteristics of SBAE teachers on their instructional practices needs, especially those who are alternatively or emergency certified. Further investigation is warranted to see if these needs exist across CTE or if they are SBAE specific.

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