

Minnesota Agricultural Educators Inservice Needs Related to Program Design, Leadership and SAE Development

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Abstract

High-quality professional development programs are important to all agricultural education teachers, regardless of their stage in the teaching profession. The purpose of this study was to evaluate the perception of Minnesota SBAE teachers in the areas of program design and management, leadership, and Supervised Agricultural Experience (SAE) development. A modified Borich Needs Assessment Model was used to assess the current professional development needs of current SBAE teachers. The primary sources of professional development included agricultural education teachers' association workshops, professional organizational workshops, and graduate coursework. Teachers reported highest perceived ability in developing relationships with administrators and fellow teachers and coordinating activities with local agricultural organizations. The highest priority professional development priorities were identified as repairing and maintaining laboratory equipment, organizing alumni/agricultural booster program, and utilizing advisory committees. To further explore variation by experience level, one-way ANOVAs were conducted by career stage. Results revealed significant differences in needs. Early-career teachers reported great needs in program logistics, while mid-career teachers expressed stronger needs in developing SAE and career readiness opportunities. Late-career teachers consistently reported fewer needs across all areas. These findings support the development of differentiated professional development aligned with teacher career stages to provide targeted support to enhance teacher competence, motivation, and retention within the SBAE profession.

Introduction

School based agricultural education (SBAE) teachers continue to have a need for professional development. Traditionally, in-service education has focused on beginning teachers entering the profession, specifically those within their first three years teaching (Disberger et al., 2022; Disberger et al., 2023; Melnick & Meister, 2008). Beginning teacher professional development has focused on learning the technical knowledge and skills necessary to be successful within their roles (Figland et al., 2019; Nesbitt & Mundt, 1993; Thornton et al., 2020). Research within SBAE education would echo this, suggesting beginning teachers are faced with many challenges that contribute to teachers leaving the profession (Guffey & Young, 2020; Korte & Simonsen, 2018; Myers et al., 2005; Smalley & Smith, 2017; Smith et al., 2023; Touchstone, 2015). Mentoring and induction programs within the SBAE profession or within local school districts are meant to assist and support teachers and reduce attrition.

The majority of the annual SBAE teacher supply are retained teachers, but there is a notable amount of attrition among early-career SBAE teachers. SBAE teachers' professional commitment and retention has been studied, yet additional research is needed. Knowing personal factors that impact professional commitment assists in developing strategies for retaining teachers (Crutchfield et al., 2013; Day, 2008;

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Gorter, 2018). Establishing and enhancing commitment and resilience is crucial for retaining instructors (Sammons et al., 2007). Perceived competence is a key factor that influences an SBAE teachers' decision to remain in the classroom (Igo & Perry, 2019; Rada et al., 2025; Solomonson et al., 2021). In general, SBAE teachers who possess a sense of competence in their work are more inclined to stay in the profession. However, teachers at different points in their careers may need different forms of support to sustain their commitment. Years of SBAE teaching experiences (Crutchfield et al., 2013) and teacher career stages (Solomonson et al., 2021) were correlated with professional commitment.

Teachers within all stages of their professional career face unique needs and challenges which need to be met to be retained and successful within the profession (Figland et al., 2019; Thornton et al., 2020). The Learning Policy Institute suggests that teacher retention could be improved with induction, mentoring, and enhanced work conditions (Sutcher et al., 2016). A need for targeted professional development has been identified by agricultural education leaders, and as suggested by Thornton et al. (2020) and Roberts et al. (2020), these professional development needs are not one-size-fits-all as each stage of career presents unique needs and challenges.

The National Association of Agricultural Educators (NAAE) developed the Ag Teacher's Life Cycle to better explain and understand the needs of SBAE teachers across all career stages. This model identifies key areas for professional development broken down into early-career, mid-career, and late-career teachers (NAAE, 2015; White, 2008). This model includes teacher induction, teacher leadership, work-life balance, building community support, and maintaining professional engagement and enthusiasm. No matter where a teacher is within the Ag Teacher's Life Cycle, their ability to manage a quality SBAE program is key. This is accomplished through providing effective instruction for students in the classroom, the FFA, and through Supervised Agricultural Experience (SAE). Researchers have identified the importance of providing a curriculum that is rigorous and diverse while also providing support of FFA and SAE professional development (Layfield & Dobbins, 2002; Miller & Scheid, 1982).

Professional development experiences have been designed and made available to SBAE teachers. Professional development experiences can be made available for anyone within the profession regardless of stage in the Ag Teacher's Life Cycle (NAAE, 2015) or it can be targeted specifically to a subset or population based on demographic or age. The literature shows that these targeted opportunities can be meaningful and impactful since they provide educators with experiences that meet their current career needs, perspectives, and attitudes (Figland et al., 2019; Roberts et al., 2020; Thornton et al., 2020).

Current Perceived Needs of SBAE teachers

When taking a broad look at educators representing all stages of the NAAE (2015) Ag Teacher's Life Cycle Model, the National FFA (2023) revealed the top five professional development topic areas chosen by advisors. The areas included 1) SAE for All, 2) implementation of FFA as intracurricular, 3) cross-curricular projects, 4) game-based learning, and 5) self-care for teachers. The demands of a career in SBAE are unique and ever changing and lead to a high volume of professional needs for educators. Thoron et al. (2016) identified various aspects of an SBAE program (e.g., managing / advising student leadership organization, classroom/laboratory, or SAE) "require a unique set of skills aside from the typical education factors that are associated with student academic success" (p. 43). Furthermore, a study conducted by Lemons et al. (2015) focused on the attrition factors of SBAE teachers and found the expectations contributed to teacher attrition. No matter if the expectations were real or perceived the demand for successful programs, involvement within the community, test scores, and other responsibilities create higher stakes within the SBAE profession.

A variety of initiatives such as professional development, mentoring, and finding a work-life balance can help with the retention within the profession. These initiatives are critical as in 2022 alone, 839 SBAE teachers chose to leave the profession, with over one-third of these individuals leaving for a position

outside of SBAE (Smith et al., 2023). Burnout and not having basic needs being met is a major challenge faced within the profession; being able to find psychological needs such as autonomy, competence, and relatedness has been found to be a reliable predictor of teachers' attitudes toward the profession (Baard et al., 2004; Collie et al., 2016; Deci et al., 2001; Gagné & Deci, 2005; Lee & Nie, 2014). The psychological needs can have a significant and negative impact on turnover intention with SBAE teachers (Rada et al., 2025). It is crucial to prioritize the assessment of SBAE teacher perceptions of competence to identify strategies for enhancing competence, with the intention of retaining teachers.

Our research contributes to the existing body of knowledge within the area of the professional development needs of SBAE educators and assists in developing experiences that will benefit SBAE educators facilitating meaningful learning experiences in the classroom, in work-based learning (WBL) or SAE, and in leadership development through FFA. As a result, the findings of this research fulfill the AAAE research value of nurturing positive youth development through AFNR systems, as student learning outcomes are more impactful when educators have the content knowledge and a strong disposition for teaching (Yopp et al., 2020). By understanding the needs of in-service SBAE educators, meaningful and targeted professional development experiences can be created to meet the needs of educators within specific stages of the Ag Teacher's Life Cycle (NAAE, 2015) to meet their technical or social-emotional needs (Figland et al., 2019; Roberts et al., 2020; Thornton et al., 2020). Additionally, pre-service teacher educators can use the findings to anticipate the future needs of their teacher candidates and develop meaningful pre-service experiences to better prepare them for their future SBAE programs. While previous research has broadly categorized professional development needs, few studies have conducted a systematic needs assessment grounded in teacher perceptions of competence across career stages. Our research fills that gap and offers actionable data for targeted retention efforts.

Framework

Self-determination theory (SDT) focuses on how motivation and personality are shaped (Deci & Ryan, 1985, 2000). This is done specifically with intrinsic and extrinsic factors. The theory explores how human motivation and personality address three universal psychological needs: competence, autonomy and psychological relatedness. This theory clarifies how people perceive their surroundings and how motivational processes are supported by psychological needs (Deci & Ryan, 2000). With the SDT (Ryan & Deci, 2002), individuals possess a natural propensity towards psychological growth and development. This predisposition can lead to an increased capacity in learning, acquiring skills, and forming interpersonal relationships. The SDT distinguishes between autonomous motivation, which is driven by interest and values, and controlled motivation, which is driven by rewards and pressures. SDT will apply to a variety of domains in life and relationships and if the needs are met, the theory argues people will grow, and SDT examines how social contexts support people's needs and motivations.

The three psychological needs of autonomy, competence, and relatedness are essential to human development and motivation (Ryan & Deci, 2002, 2020). Autonomy refers to the ability to take initiative and is fostered by experiences that a person finds interesting, valuable, and fully supports (Deci & Ryan, 2012; Ryan & Deci, 2020). Competence refers to a sense of mastery and the belief that one can succeed and develop. Relatedness refers to a feeling of "belonging and connection" (Ryan & Deci, 2020, p. 1) which is established via the presence of mutual respect, dependence, and concern with other individuals and collectives. Having an absence of any of these three fundamental needs is perceived to damage motivation and professional commitment.

Researchers have found that the psychological well-being of teachers is crucial for their job satisfaction and dedication to their profession (Lee & Nie, 2014; Mabekoje et al., 2016). The satisfaction of an employee's desire for autonomy, competence, and relatedness at work is directly correlated with their well-being, job satisfaction, positive attitudes towards their work, commitment, performance, and

motivation (Baard et al., 2004; Deci et al., 2001; Gagné & Deci, 2005). The psychological functioning of teachers has a crucial role in determining their job satisfaction and commitment (Lee & Nie, 2014; Mabekoje et al., 2016). An optimal work environment for teachers is one that facilitates the fulfillment of their needs, since it enhances their psychological well-being and fosters dedication (Mabekoje et al., 2016). When examining the environment at school, the perception of competence influences a teacher's confidence in their ability to be successful. Specifically, the satisfaction of a teacher's psychological needs at work is impacted by their perceived competence (Palmer, 2020). Teacher's perceived competence was found to be a predictor of overall well-being (Collie et al., 2016) and of intention to remain in the SBAE profession (Rada et al., 2025). The level of satisfaction of basic psychological needs in the workplace, especially perceived competence has a significant effect on teacher retention.

Perceived competence is a significant predictor of SBAE teacher professional commitment; therefore, it was vital to examine teacher's beliefs about their abilities and identify needs for support to develop strategic retention strategies. SBAE teachers' perceptions of competence have been captured through needs assessments, considering the competencies required to manage the discipline-specific expectations of an SBAE teacher (Clemons et al., 2018; Coleman et al., 2020; Smalley et al., 2019; Smalley & Smith, 2017; Sorensen & McKim, 2014), but these perceptions had not been assessed in Minnesota prior to our research. Teacher expectations that have been discipline-specific in SBAE research include pedagogy, professionalism, professional growth, intra-curricular facilitation, program management and personal qualities (McKim et al., 2017; Roberts & Dyer, 2004). Additional research assessed SBAE teachers' perceived competence regarding specific content, including agricultural mechanics (Byrd et al., 2015; Wells et al., 2021). Competence was a primary predictor of professional commitment for Minnesota SBAE teachers (Rada et al., 2025). Given that competence has been discovered to be a strong predictor of psychological functioning at work (Collie et al., 2016) and professional commitment (Rada et al., 2025), a needs assessment of the perceived competence of Minnesota's SBAE teachers was warranted. The competencies assessed in our research—program design and management, leadership, and SAE development—are inherently tied to teachers' perceptions of competence, a core element of SDT. Ensuring teachers feel capable across these areas through intentional professional development may enhance motivation, reduce burnout, and ultimately improve retention.

Purpose and Objectives

The purpose of our study was to evaluate the professional development needs of Minnesota SBAE teachers by examining their perceived competence in key programmatic areas—program design and management, leadership and FFA program development, and Supervised Agricultural Experience (SAE) development—and how these needs differ by career stage. The following three research objectives served as a guide for this needs assessment study:

1. Determine the background characteristics (i.e., education and training in agricultural education, participation in professional development) of Minnesota SBAE teachers.
2. Determine the perceptions of competence of Minnesota SBAE teachers related to program design and management, leadership, and SAE development.
3. Assess Minnesota SBAE teachers' professional development needs related to program design and management, leadership, and SAE development.
4. Examine differences in Minnesota SBAE teachers' professional development needs across career stages in the areas of program design and management, leadership, and SAE development.

Methods

Population

A census was attempted of all Minnesota SBAE teachers ($N = 326$). Of the 143 teachers who completed the instrument, the majority of SBAE teachers were female ($n = 79, 55.2\%$). The average age of participants was 37.96 ($SD = 12.48$). The majority of SBAE teachers indicated they had obtained a bachelor's degree ($n=136; 95.1\%$), while 68 (47.6%) SBAE teachers completed a master's degree. Of those with a bachelor's degree, 16.8% ($n = 24$) did not have a bachelor's degree in agricultural education.

Instrumentation

A modified Borich Needs Assessment Model was used to assess the current professional development needs of current SBAE teachers in Minnesota. The model was used to quantify the discrepancy between what is and what should be by identifying the “behaviors, skills, and competencies” (Borich, 1980, p. 39). The needs assessment instrument was developed and validated by Smalley et al. (2019) and evaluated the perception of Minnesota SBAE teachers in the areas of program design and management, leadership, and Supervised Agricultural Experience (SAE) development.

The online instrument was organized so each topic was allocated to a distinct page, improving readability (Dillman et al., 2014; Revilla & Ochoa, 2017). The area of program design and management had 11 items, leadership and FFA had 10 items, and SAE development had eight items. Across these areas of the instrument, two different Likert-type scales were utilized. One scale assessed the teachers' perceived importance associated with the different topics (1 = *No Importance*, 2 = *Below Average*, 3 = *Average*, 4 = *Above Average*, 5 = *Essential*). Importance within this statement refers to the perceived importance of all SBAE teachers understanding the topic within their own classrooms and programs. The other scale evaluated their perceived ability to perform the skill within their classroom (1 = *No Ability*, 2 = *Below Average*, 3 = *Average*, 4 = *Above Average*, 5 = *Exceptional*). The instrument also contained items to determine the demographic and personal history of the participants.

Data Collection

The participants of this study included SBAE teachers in Minnesota. Contact information of the SBAE teachers was obtained using the SBAE teacher directory. We personalized emails and included information regarding the study, instructions for participation, and the link to the needs assessment instrument in Qualtrics. Additionally, the message, time, and day of the week varied for each contact (Dillman et al., 2014). Data was collected using a Qualtrics questionnaire, and we securely stored the data on web servers for data analysis. This allowed for the tracking of respondents, ensured the integrity and security of survey data, and prevented duplicated submissions (Dillman et al., 2014).

Data Analysis

We analyzed data from the participants using descriptive statistics in IBM's Statistical Package for Social Sciences (SPSS©) to establish the background characteristics of objective one. Objectives two and three indicated the professional development needs of SBAE teachers in the areas of program design and management, leadership, and Supervised Agricultural Experience (SAE) development culture. We examined data using mean weighted discrepancy scores (MWDS). To address the differences in perceptions by career stage, we conducted a series of one-way analyses of variance (ANOVA). Career stage was categorized as early career (0-6 years), mid-career (7-15 years), and late-careers (16 or more years). We used ANOVAs to determine statistical differences in MWDS and, when found, reported effect sizes and post hoc comparisons to identify which groups differed significantly from one another.

The calculation of discrepancy scores provided valuable information about the perceptions of participants. The Borich model incorporated the assessment of the participant group to mitigate any potential flaws in individual assessment (Borich, 1980). We calculated the MWDS and removed any unusable responses which were missing one of the two scores for each item. First, we calculated the discrepancy score for each competency, representing the gap between the perceived significance and level of accomplishment. Second, we computed a weighted discrepancy score for each participant by multiplying the participant's discrepancy score by the average perceived importance of that ability among all participants (Borich, 1980). We determined the MWDS by adding the weighted discrepancy scores for the competency and dividing by the total number of responses. We compared the MWDS for the perceptions and identified the specific items that call for professional development. A higher MWDS implies the larger disparities between the perceived importance and the level of ability among the participants and suggests a stronger demand for development (Borich, 1980). The competencies identified as having the largest MWDS should be regarded as the highest need for training moving forward. We utilized McKim and Saucier's (2011) Excel-Based Mean Weighted Discrepancy Score Calculator.

The instrument has a good internal consistency, with a Cronbach alpha coefficient reported for importance ($\alpha = .97$) and knowledge ($\alpha = .97$) (Smalley et al., 2019). In this study, we calculated Cronbach's alpha coefficients for the importance ($\alpha = .96$) and ability ($\alpha = .96$) which met the tolerable threshold level (Hair et al., 2014; Johnson & Christensen, 2014). These findings are consistent with the psychometric properties in prior research (Hainline & Smalley, 2023; Smalley et al., 2019). We broke down responses into three balanced categories to improve reliability, validity, and provide meaningful distinctions for analysis (Dillman et al., 2014). With an attempted census conducted, we did not assess the external validity of the findings. Therefore, it is important to use caution when trying to generalize these findings to other populations.

Findings

The first objective sought to determine the background characteristics (e.g., education and professional development in SBAE, completion of CASE certification) of Minnesota SBAE teachers. The participants indicated involvement in state's teacher retention programs. Of the 143 participants, 24 (16.8%) had participated in the state's Future AgriScience Teacher Symposium as a pre-service teacher, 99 (69.2%) had participated in the Teacher Induction Program (TIP) as an early-career teacher, and 34 (23.8%) in the Resources for Professional Learning retention program for teachers with 3-7 years of experience. The primary sources of professional development identified by SBAE teachers were agricultural education teachers' association workshops (88.1%, $n = 126$), school in-service events (76.2%, $n = 109$), university workshops (14.0%, $n = 20$), professional organization workshops (46.2%, $n = 66$), and graduate coursework (22.4%, $n = 32$; see Table 1). Though teachers identified CASE as a professional development source, only 25.9% of participants ($n = 37$) claimed it as a primary professional development source. The SBAE teachers reported a large involvement within state offered professional development opportunities. Teachers found additional professional development within their school districts and from additional professional organizations.

Table 1*Background Characteristics of Minnesota SBAE Teachers Regarding Involvement in Professional Development*

Primary Source(s) of Professional Development (<i>n</i> = 143)	<i>f</i>	%
Agricultural teachers association workshops	126	88.1
School in-service events	109	76.2
University workshops	20	14.0
Professional organization	66	46.2
Graduate coursework	32	22.4
CASE institutes	37	25.9

The second objective was to determine the perceptions of competence of the SBAE teachers related to program design and management, leadership, and SAE development. The perception of ability and importance were necessary in determining the professional development needs of the SBAE teachers. The mean ability and mean importance for each of the competencies related to program design and management are summarized in Table 2. The top three competencies in which teachers had the highest mean ability pertaining to program design and management were: (a) developing relations with administrators, (b) developing relations with fellow teachers, and c) coordinating activities with local agricultural organizations/agencies. The three competencies that teachers had the lowest mean ability were: (a) evaluating the local program with National Quality Program Standards, (b) organizing a local alumni/agricultural booster program, and (c) completing annual FFA report. The top three competencies that teachers perceived as most important related to program design and management were: (a) developing relations with administrators, (b) developing relations with fellow teachers, and (c) repairing and maintaining laboratory equipment. The three competencies in which teachers perceived as least important were: (a) evaluating the local program with National Quality Program Standards, (b) completing annual FFA report, and (c) organizing a local alumni/agricultural booster program.

Table 2*Minnesota SBAE Teachers' Perceived Ability Related to Program Design and Management*

Item	Importance		Ability		<i>f</i>	MWDS		
	\bar{x}	<i>SD</i>	\bar{x}	<i>SD</i>		\bar{x}	<i>SD</i>	Rank
Repairing and maintaining laboratory equipment.	4.15	.82	3.25	1.00	140	3.74	4.65	1
Organizing a local alumni/agricultural booster program.	3.82	.92	2.89	1.03	141	3.52	4.11	2
Utilizing an advisory committee to promote the local agricultural education program.	3.87	.90	3.09	.84	140	3.04	4.57	3
Coordinating activities with local agricultural organizations/agencies.	4.04	.75	3.32	.81	139	2.94	3.83	4
Ability to use the local advisory committee to acquire resources.	3.85	.83	3.17	.92	140	2.61	4.16	5
Developing an effective public relations program.	3.93	.86	3.30	.84	141	2.45	3.53	6
Developing relations with administrators.	4.41	.78	3.86	.86	139	2.41	3.91	7
Establishing a program advisory committee	3.87	.91	3.30	.82	141	2.22	3.99	8
Developing relations with fellow teachers.	4.23	.76	3.84	.81	139	1.64	3.69	9
Completing annual FFA report.	3.34	.96	2.89	.87	141	1.49	3.44	10
Evaluating the local program with National Quality Program Standards.	3.11	.91	2.81	.83	141	0.95	3.35	11

Note. Scale for Perceived Importance: 1 = No Importance, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Essential. Scale for Perceived Ability to Perform the Skill: 1 = No Ability, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Exceptional.

Table 3 summarizes the average proficiency and average significance of each competency associated with leadership and FFA program development. The three competencies in which teachers had the highest mean ability in leadership and FFA program development were: (a) conducting local FFA chapter activities, (b) managing and supervising local leaders/chapter officers, and (c) organizing fund raising activities for the local FFA chapter. The three competencies in which teachers perceived the lowest mean ability were: (a) preparing proficiency award applications, (b) preparing FFA degree applications, and (c) preparing students for Leadership Development Events (LDEs). The three competencies with the highest perceived importance were: (a) conducting local FFA chapter activities, (b) managing and supervising local leaders/chapter officers, and (c) developing leadership development opportunities for all students. The three competencies with the lowest perceived importance were: (a) planning banquets, (b) preparing proficiency award applications, and (c) preparing FFA degree applications.

Table 3

Minnesota SBAE Teachers' Perceptions Related to Leadership Development and FFA Program Development

Item	Importance		Ability		f	MWDS		
	\bar{x}	SD	\bar{x}	SD		\bar{x}	SD	Rank
Preparing students for Leadership Development Events (LDEs).	3.91	.75	3.13	.79	140	3.04	3.08	1
Conducting local FFA chapter activities.	4.37	.69	3.70	.82	139	2.96	3.73	2
Preparing FFA degree applications.	3.79	.82	3.11	1.00	141	2.61	4.08	3
Managing and supervising local leaders/chapter officers.	4.24	.78	3.65	.80	139	2.53	3.45	4
Preparing proficiency award applications.	3.64	.81	2.96	1.02	140	2.47	3.72	5
Developing leadership development opportunities for all students.	4.12	.74	3.52	.69	138	2.45	3.36	6
Preparing students for Career Development Events (CDEs).	4.01	.73	3.41	.80	138	2.44	3.44	7
Organizing fund raising activities for the local FFA chapter.	4.01	.78	3.64	.93	141	1.48	3.96	8
Planning and conducting student overnight trips (e.g., state convention, national convention).	3.96	.82	3.60	.95	141	1.40	3.79	9
Planning banquets.	3.57	.88	3.47	.90	141	0.35	3.20	10

Note. Scale for Perceived Importance: 1 = No Importance, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Essential. Scale for Perceived Ability to Perform the Skill: 1 = No Ability, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Exceptional.

Table 4 provides a summary of the average proficiency and average significance of each competency associated with SAE management. The three competencies in which teachers had the highest mean ability in SAE management were: (a) developing student's knowledge of workplace safety, (b) developing student's skills needed for career and college, and (c) developing career exploration opportunities for all AFNR students. The three competencies in which teachers perceived the lowest mean ability were: (a) supporting students in developing personal financial management plan, (b) developing WBL/SAE opportunities for all students, and (c) supervising students' SAE/WBL programs. The three competencies with the highest perceived importance were: (a) developing student's knowledge of workplace safety, (b) developing student's skills needed for career and college, and (c) developing career exploration opportunities for all AFNR students. The three competencies with the lowest perceived importance were: (a) supporting students in developing personal financial management plan, (b) supervising students' SAE/WBL programs, and (c) teaching record keeping skills.

The third objective was to assess the SBAE teachers' professional development needs related to program design and management, leadership, and SAE development. The MWDS for each program design and management competency and the rank in order of professional development priority are summarized in Table 2. The top three professional development priorities related to program design and management were: (a) repairing and maintaining laboratory equipment, (b) organizing a local alumni/agricultural booster program, and (c) utilizing an advisory committee to promote the local agricultural education program. In comparison, the three competencies with the least need for professional development include: (a) evaluating the local program with National Quality Program Standards, (b) completing annual FFA report, and (c) developing relations with fellow teachers.

The MWDS for each leadership and FFA program development competency and the rank in order of professional development priority are summarized in Table 3. The top three professional development priorities related to leadership development were: (a) preparing students for Leadership Development Events (LDEs), (b) conducting local FFA chapter activities, and (c) preparing FFA degree applications. In comparison, the three competencies with the least need for professional development include: (a) planning banquets, (b) planning and conducting student overnight trips (e.g., state convention, national convention), and (c) organizing fund raising activities for the local FFA chapter.

The MWDS for each SAE management competency and the rank in order of professional development priority are summarized in Table 4. The top three professional development priorities related to SAE management were: (a) developing WBL/SAE opportunities for all students, (b) developing career exploration opportunities for all AFNR students, and (c) teaching record keeping skills. In comparison, the three competencies with the least need for professional development include: (a) supporting students in developing personal financial management plans, (b) developing student's knowledge of workplace safety, and (c) developing student's basic understanding (literacy) of the width and breadth of the agricultural industry.

Table 4

Minnesota SBAE Teachers' Perceived Ability Related to SAE Management

Item	Importance		Ability			MWDS			Rank
	\bar{x}	SD	\bar{x}	SD	f	\bar{x}	SD		
Developing WBL/SAE opportunities for all students.	3.93	.82	3.13	.82	141	3.12	3.95	1	
Developing career exploration opportunities for all AFNR students.	4.12	.71	3.47	.76	141	2.69	3.41	2	
Teaching record keeping skills.	3.86	.78	3.18	.69	139	2.64	3.26	3	
Supervising students' SAE/WBL programs.	3.84	.80	3.17	.80	139	2.60	3.53	4	
Developing student's skills needed for career and college.	4.16	.69	3.55	.66	141	2.54	3.25	5	
Developing student's basic understanding (literacy) of the width and breadth of the agricultural industry.	4.07	.78	3.46	.76	140	2.47	3.48	6	
Developing student's knowledge of workplace safety.	4.18	.80	3.60	.80	141	2.43	3.87	7	
Supporting students in developing personal financial management plan.	3.66	.84	3.08	.74	141	2.13	3.50	8	

Note. Participants Perceived Importance Likert Scale: 1 = No Importance, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Essential. Participants Perceived Ability to Perform the Skill 1 = No Ability, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Exceptional.

Overall, when combining all the competencies, the top six identified needs for programmatic professional development were: (a) repairing and maintaining laboratory equipment (MWDS = 3.74), (b) organizing a local alumni/agricultural booster program (MWDS = 3.52), and (c) developing WBL/SAE

opportunities for all students ($MWDS = 3.12$), (d) utilizing an advisory committee to promote the local agricultural education program ($MWDS = 3.04$), (e) preparing students for Leadership Development Events (LDEs) ($MWDS = 3.04$), and (f) conducting local FFA chapter activities ($MWDS = 2.96$).

Differences in Program Management Needs by Career Stage

We interpreted teacher experience data using an analysis of variance (ANOVA) model ($n = 143$) for each life cycle stage to explore the impact of years of SBAE teaching experience on program design and management professional development needs. To help characterize the career experiences of participants, NAAE's model of the professional life cycle of teachers was used to group participants based on years teaching (early-career: 0-6 years; mid-career: 7-15 years; late-career: 16 or more years).

One-way ANOVA results revealed statistically significant differences across career stages in multiple program design and management competencies. The means reveal a highest professional development need for early-career teachers with late-career having the lowest need. The ANOVA model rendered significant differences ($p < 0.05$) between career stages for eight of the 11 Program Design and Management variables (see Table 5). Since the Levene's Statistic was not significant, the equal variance was assumed. A Tukey HSD post hoc analysis was conducted to determine the differences between career stages on each dependent variable. No significant differences between early- and mid-career teacher professional development needs were detected; however, early-career SBAE teachers consistently reported higher MWDS scores, indicating greater perceived gaps for program management competencies. Mean score for early-career teachers were significantly different from late-career teachers for these professional development needs: (a) establishing a program advisory committee ($\bar{x} = 3.03, p = .011, \eta^2 = .063$); (b) utilizing an advisory committee to promote the local agricultural education program ($\bar{x} = 4.01, p = .001, \eta^2 = .092$); (c) ability to use the local advisory committee to acquire resources ($\bar{x} = 3.92, p = .003, \eta^2 = .081$); (d) evaluating the local program with National Quality Program Standards ($\bar{x} = 1.87, p = .014, \eta^2 = .060$); (e) coordinating activities with local agricultural organizations/agencies ($\bar{x} = 3.60, p = .040, \eta^2 = .046$); (f) repairing and maintaining laboratory equipment ($\bar{x} = 4.68, p = .009, \eta^2 = .067$); (g) organizing a local alumni/agricultural booster program ($\bar{x} = 4.72, p = .004, \eta^2 = .075$); and (h) completing annual FFA report ($\bar{x} = 2.43, p = .015, \eta^2 = .059$). These findings indicate that early-career teachers may feel less confident or prepared in the administrative and technical aspects of program design and management.

Table 5

Post Hoc One-Way ANOVA of Career Stage for Program Design and Management Professional Development Needs

Item	1 – 6 Years (n=56)		7 – 15 Years (n=41)		16 or More Years (n=45)		Test of Homogeneity of Variances		ANOVA		
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	Levene's Statistic	p	F	p	η^2
Establishing a program advisory committee.	3.03	4.39	2.74	3.27	.77	3.75	2.684	.072	4.663	.011*	.063
Utilizing an advisory committee to promote the local agricultural education program.	4.01	4.57	3.96	4.19	1.03	4.32	.038	.962	6.967	.001**	.092
Ability to use the local advisory committee to acquire resources.	3.92	4.39	2.54	3.61	1.11	3.90	1.324	.27	6.000	.003**	.081
Evaluating the local program with National Quality Program Standards.	1.87	3.31	.83	3.55	-.07	2.93	1.223	.297	4.375	.014*	.060
Developing an effective public relations program.	2.14	3.53	3.26	3.61	2.10	3.41	.114	.892	1.520	.222	.080
Developing relations with fellow teachers.	1.84	4.11	1.86	3.91	1.22	2.94	2.134	.122	.431	.651	.044
Developing relations with administrators.	2.37	4.34	2.76	3.96	2.16	3.34	.463	.630	.252	.777	.034
Coordinating activities with local agricultural organizations/agencies	3.60	4.24	3.33	3.16	1.75	3.64	2.449	.090	3.283	.040*	.046
Repairing and maintaining laboratory equipment.	4.68	4.38	4.35	4.64	1.98	4.61	.101	.904	4.880	.009**	.067
Organizing a local alumni/agricultural booster program.	4.72	4.09	3.54	3.66	2.04	4.12	.791	.455	5.631	.004**	.075
Completing annual FFA report.	2.43	3.99	1.38	3.34	.45	.43	5.561	.005	4.331	.015*	.059
Establishing a program advisory committee.	3.03	4.39	2.74	3.27	.77	3.75	2.684	.072	4.663	.011*	.063
Utilizing an advisory committee to promote the local agricultural education program.	4.01	4.57	3.96	4.19	1.03	4.32	.038	.962	6.967	.001**	.092
Ability to use the local advisory committee to acquire resources.	3.92	4.39	2.54	3.61	1.11	3.90	1.324	.27	6.000	.003**	.081

Note. Years teaching groups (Group 1: 0-6 years; Group 2: 7-15 years; Group 3: 16 years or more)

*p < .05. **p < .01

Our final one-way ANOVA results revealed significant differences among career stages for several SAE-related competencies (see Table 7). Mid-career teachers (7-15 years) reported the greatest need for developing WBL/SAE opportunities ($\bar{x} = 4.42$, $p = .002$, $\eta^2 = .088$) and career exploration activities ($\bar{x} = 3.71$, $p = .003$, $\eta^2 = .082$). Conversely, early-career teachers reported higher needs in supporting students' in developing personal financial management plans ($\bar{x} = 2.76$, $p = .006$, $\eta^2 = .071$), supervising SAE/WBL programs ($\bar{x} = 3.20$, $p = .035$, $\eta^2 = .048$), and developing students' knowledge of workplace safety ($\bar{x} = 2.96$, $p = .008$, $\eta^2 = .068$). Late-career teachers reported lower perceived needs across most categories, suggesting confidence with SAE and WBL program implementation.

Overall, the findings of our study demonstrate that SBAE teachers' perceived professional development needs vary by content area and by career stage. Early-career teachers consistently reported greater needs related to procedural details for program management, planning and record keeping, and using specific systems in FFA and SAE programming. Mid-career teachers expressed a growing need for support in expanding career exploration and SAE opportunities for all students. In contrast, late-career teachers reported lower perceived needs in most areas. These differences reinforce the need for differentiated, career-stage-specific professional development to enhance competence, support effectiveness, and reduce attrition.

Conclusions, Implications, and Recommendations

The purpose of this study was to evaluate the perceptions of Minnesota SBAE teachers in the areas of program design and management, leadership, and SAE development. This study builds on other studies such as the findings of Smalley et al. (2019) and Rada and Smalley (2025) as it investigated the whole programmatic approach, investigating not only classroom and instructional needs, but also the perceived professional development needs of educators relating to experiential learning through SAE and WBL, along with leadership development through the National FFA Organizations. Likewise, this study built on other studies such as Clemons et al. (2018), Roberts et al. (2020), and Thornton et al. (2020) because it also examined the modalities in which SBAE teachers tend to engage in professional development, including state and national agricultural education teachers' association conferences, in-school workshops, CASE institutes, and much more.

According to the findings of this research, SBAE teachers used a variety of sources for professional development to enhance their competence as educators. Agricultural education teachers' association workshops and school in-service workshops were the primary source of professional development that the teachers in this study most frequently attended. Most respondents (69.2%) had also participated in the Teacher Induction Program (TIP) as an early-career teacher. The selected professional development methods chosen by this group of participants provide insight into the teachers' self-perceived needs, and the evaluation of their professional growth requirements acknowledges the autonomous disposition of these adult learners. Our study thoroughly examined the professional development activities instructors choose to engage in. However, we did not examine the variables that impacted participation in these events. The relatively low participation in CASE institutes and graduate coursework, despite their alignment with technical and pedagogical skills, may suggest access barriers such as cost, availability, or school support. Addressing potential inequities to ensure all SBAE teachers have access to high-quality, relevant professional development should be considered.

The strong participation of SBAE teachers in professional development suggests they are driven to enhance their expertise or proficiency in a particular subject to satisfy their psychological needs for competence. McKim et al. (2017) and Rada et al. (2025) found that SBAE teachers who believe they are more competent in specific areas of teaching also tend to have a stronger commitment to teaching. This study did not examine the elements affecting professional commitment or retention. However, it is important to take this into account in future investigations. Subsequent investigations should prioritize the examination of variables that affect participation in professional development and its lasting effects.

Table 6

Post Hoc One-Way ANOVA of Career Stage for Leadership and FFA Program Development Professional Development Needs

Item	1 – 6 Years (n=56)		7 – 15 Years (n=41)		16 or More Years (n=45)		Test of Homogeneity of Variances		ANOVA		
	\bar{x}	SD	\bar{x}	SD	\bar{x}	SD	Levene's Statistic	p	F	p	η^2
Developing leadership development opportunities for all students.	2.62	3.58	2.96	3.65	1.78	2.72	1.619	.202	1.399	.250	.020
Conducting local FFA chapter activities.	3.74	4.33	2.95	3.89	1.99	2.40	5.527	.005	2.760	.067	.039
Managing and supervising local leaders/chapter officers.	3.01	3.71	2.86	3.52	1.64	2.92	.841	.433	2.217	.113	.032
Preparing students for Leadership Development Events (LDEs).	3.62	3.09	2.93	3.51	2.43	2.54	2.177	.117	1.920	.151	.027
Preparing students for Career Development Events (CDEs).	3.27	3.49	2.61	3.20	1.28	3.33	.088	.915	4.327	.015*	.060
Organizing fund raising activities for the local FFA chapter.	2.50	4.74	1.60	3.49	.09	2.77	10.699	<.001	4.926	.009**	.067
Planning banquets.	.70	3.75	.27	2.85	.00	2.74	4.504	.013	.617	.541	.009
Planning and conducting student overnight trips (e.g., state convention, national convention).	2.97	4.48	1.09	2.97	-.26	2.59	7.105	.001	10.536	<.001**	.132
Preparing FFA degree applications.	3.73	4.12	2.85	4.27	1.01	3.37	1.287	.279	6.005	.003**	.080
Preparing proficiency award applications.	3.19	3.87	3.01	3.59	1.08	3.29	.226	.798	4.805	.010**	.066

Note. Years teaching groups (Group 1: 0-6 years; Group 2: 7-15 years; Group 3: 16 years or more)

*p < .05. **p < .01

Table 7

Post Hoc One-Way ANOVA of Career Stage for SAE Management Professional Development Needs

Item	1 – 6 Years (n=56)		7 – 15 Years (n=41)		16 or More Years (n=45)		Test of Homogeneity of Variances		ANOVA		
	\bar{x}	<i>SD</i>	\bar{x}	<i>SD</i>	\bar{x}	<i>SD</i>	<i>Levene's Statistic</i>	<i>p</i>	F	<i>p</i>	η^2
Developing WBL/SAE opportunities for all students.	3.50	4.39	4.42	3.58	1.54	3.15	.532	.588	6.627	.002**	.088
Teaching record keeping skills.	2.86	3.37	3.27	2.74	1.85	3.43	1.578	.210	2.252	.109	.032
Supervising students' SAE/WBL programs.	3.20	3.79	3.05	3.43	1.50	3.08	.620	.540	3.447	.035*	.048
Developing career exploration opportunities for all AFNR students.	3.07	3.57	3.71	3.34	1.34	2.89	.836	.436	6.127	.003**	.082
Developing student's skills needed for career and college.	3.18	3.58	2.81	3.70	1.54	2.03	6.794	.002	3.502	.033*	.048
Support students in developing personal financial management plan.	2.79	3.73	2.74	3.49	.80	2.88	1.092	.338	5.241	.006**	.071
Develop student's knowledge of workplace safety.	2.96	4.15	3.34	4.25	1.00	2.67	6.292	.002	5.043	.008**	.068
Develop student's basic understanding (literacy) of the width and breadth of the agricultural industry.	3.03	3.93	3.03	2.91	1.33	3.10	1.064	.348	3.862	.023*	.053

Note. Years teaching groups (Group 1: 0-6 years; Group 2: 7-15 years; Group 3: 16 years or more)

* $p < .05$. ** $p < .01$

The teachers' perceived ability related to program design and management were focused on developing relationships, with the highest mean ability focused on relationship development with administrators, fellow teachers, and coordinating with local agricultural organizations. The areas teachers identified within program development as being of high importance focused on conducting, managing, and organizing events locally. Building off the area of importance within the program design, this set of SBAE teachers value what is occurring at the local level. As Deci and Ryan (2000) highlighted, sources of intrinsic motivations are linked to being autonomous and self-determined. This motivation with teachers to develop relationships may also go deeper with teachers' understanding of the importance of the community and administrative support for resources and support to continue to upgrade technology and stay industry aligned to grow SBAE program opportunities. Our conclusion is supported by the perceived highest need regarding repairing and maintaining laboratory equipment. Balancing what occurs outside of the SBAE classes and having relationships is one of many components of an agricultural education program identified by Thoron et al. (2016), which highlighted as "requiring a unique set of skills aside from the typical education factors that are associated with student success" (p. 43). Our findings emphasized that relationships are an integral piece of overall SBAE program management and the success of the program.

As the Ag Teacher's Life Cycle (NAAE, 2015) highlights in various areas, building community support and maintaining professional engagement and enthusiasm are key areas throughout the model. When considering the needs by career stage, early-career SBAE teachers would benefit from targeted professional development on focusing on managing advisory committees, completing required reports, and maintaining equipment. Later-career teachers may benefit more from leadership, innovation, or mentoring-related professional development to support those entering the profession.

Leadership and FFA program development are often the most visible aspects of an SBAE program outside of the local classroom and provide extrinsic motivation for some teachers. SBAE teachers specifically identified the need for professional development related to preparing students for LDEs, conducting local chapter activities, and preparing students degree applications, which is supported by the findings of Clemons, et al. (2018) and their needs assessment with Alabama SBAE educators. These are areas which could have future professional development opportunities for teachers statewide while ensuring the professional development being offered is intentionally considering nuanced needs based on the Ag Teacher's Life Cycle (NAAE, 2015). Our findings support the idea that professional development related to leadership development needs to evolve throughout their career. While early-career teachers express high needs in specific FFA systems and award programs, they do have confidence in developing leadership skills for all students. However, mid-career professional development should focus beyond individual award programs to support developing leadership skills of all students. While leadership development has been a recent focus of state induction programming, it is recommended that this continue and be expanded to support mid-career teacher development as well. Late-career teachers are recommended to mentor early-career teachers about planning and conducting overnight trips, preparing award and degree applications, and fundraising best practices. By having the professional development focused on beginners versus experienced educators, it will allow teachers to gain the necessary skills from the professional development offered (Figland et al., 2019; Thornton et al., 2020).

A focus on the student was highlighted within the SAE management area by SBAE teachers. The areas identified as the highest need focused on developing student's workplace safety, skills needed for career and college, and developing career exploration opportunities. Research has identified the importance of providing a high-quality curriculum within SBAE programs to meet the needs of students (Layfield & Dobbins, 2002) where students can be safe and gain the skills necessary to be successful in careers and college. The variation in perceived professional development needs across SAE management highlights the clear need for differentiated professional development. Early-career teachers would benefit from induction programming targeting safety, technical skills like record keeping and financial planning, and aligning classroom and career skills. Mid-career teachers would benefit from additional professional development

related to developing career exploration and SAE opportunities for all students and technical record keeping skills. Late-career teachers, showing low perceived needs, may be ideal candidates to lead professional development or mentor other teachers needing support.

As professional development is offered within the state, coordinators within the state department of education, state FFA association, and agricultural education teachers' association need to make sure they consider teacher needs. Differentiating professional development sessions for early career and experienced teachers will allow teachers to select the type of workshop that may fit their needs. Professional development is a continuous process and acquiring the knowledge and skills over time will allow SBAE teachers to be successful in their roles and responsibilities. Providing all teachers with the necessary professional development will assist in reducing teachers' challenges retain high-quality educators. Future research needs to focus on breaking down the needs of teachers by their teacher life cycle stage. In addition, future research needs to occur on the implementation and impact of professional development topics within the teacher's program.

Our study highlights the critical need for differentiated professional development that evolves alongside a teacher's career. By identifying priority areas for SBAE teacher support and showing how these priorities shift by career stage, this research offers actionable guidance for state leaders, teacher educators, and professional organizations. When professional development is aligned with teachers' perceived competence, it not only addresses the skill gaps but also supports their psychological needs. Addressing these needs through targeted and meaningful learning opportunities may enhance competence and job satisfaction, reduce early-career attrition, and sustain teacher engagement throughout their career. Ultimately, supporting SBAE teachers strengthens the entire system and positively impacts student outcomes through improved program quality and continuity.

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