Determining the Professional Development Needs of Iowa School-based Agricultural Education Teachers Related to Program Design, Leadership, and SAE Development

Abstract

School-based agricultural education (SBAE) teachers face challenges and difficulties while working in the agricultural education profession. Burnout, work and family life balance, and time management are just a few of the challenges. The professional development needs of agricultural educators should be addressed. Fessler and Christensen (1992) indicated a teachers' work and personal lives change throughout their career, therefore, professional development differs from the beginning of their profession. Malcolm Knowles' (1980) theory of andragogy was utilized as the conceptual framework for this study. The purpose of this study was to evaluate the professional development needs of SBAE teachers in the state of Iowa. The SBAE teachers are perceived to have some level of professional development needs for topics related to program design and management. Leadership and SAE development were reported to represent areas of need. Professional development focusing on the development and use of advisory councils should be provided for Iowa SBAE teachers at various venues. The Iowa SBAE teachers should use the SAE For All (National Council for Agricultural Education, 2017) guide as a resource for developing and advising students on SAE projects.

Keywords: agricultural education teachers; professional development; School-Based Agricultural Education

Introduction

Within the past few years, reports have continued to show the shortage of school-based agricultural education (SBAE) teachers in the United States (National Teach Ag. Campaign, 2014; Foster et al., 2019). Each year the need for teachers continues to rise, while the number of teachers continues to decline (Sutcher et al., 2016). The National Teach Ag Campaign (2014), and Foster et al. (2019) recognized agricultural education is suffering as well. Long (2016) reported more than 200,000 teachers leave the profession on an annual basis. Early-staged teacher retention has served as a focus for many years. Findings from Ingersoll (2003) indicated teachers are likely to leave the profession within the first five years, which coincides with findings of previous research in agricultural education (Myers et al., 2005).

Regardless of the teaching career stage, each teacher faces challenges and difficulties. Teachers experience burnout, work and family life balance, and in addition to time management. Each one of these factors contributes to teachers leaving the profession (Boone & Boone, 2009; Chenevey et al., 2008; Clark et al., 2012; Murray et al., 2011; Torres et al., 2009). Ingersoll (2002) stated that over 90% of teachers were hired in the United States as replacements for those who left before retirement. Many teachers become drained, due to emerging themselves into their career, therefore experiencing career exhaustion (Hughes, 2001). Retention-focused research continues to be a priority, however understanding why teachers stay in the profession serves value as well (Clark et al., 2014).

Clark et al. (2014) suggested four main themes contributing to the attrition of career teachers. Theme one indicated that career teachers experienced certain thorn pricks, causing a transformative shift in their career, leading the career sustainability. Each teaching in the study conducted left early in

their teaching career. When they returned, they were refreshed and motivated. Theme two stated career teachers experienced an abundance of support from students, parents, administrators, and community members. Each teacher provided personal examples of support in their teaching career, whether that be financial support, administrative guidance, etc. Lastly, themes three and four stated a positive life balance between work and family, and a reduction in workload. Both teachers reported as time progressed in their career, the balancing became easier.

In support of career attrition, the professional development needs of agricultural educators should be addressed. Fessler and Christensen (1992) indicated a teachers' work and personal lives change throughout their career, therefore, professional development differs from the beginning of their profession. Research regarding the needs of teachers dates back more than 30 years, however, the specific needs vary. Findings from Garton and Chung (1996) highlighted the dispersion of desires in professional development requested by educators as compared to state representatives. Providing a curriculum that is challenging and diverse is one of the top needs indicated. In addition, support of FFA and Supervised Agricultural Experience (SAE) have been identified (Layfield & Dobbins, 2002; Miller & Scheid, 1982). Research suggested the needs of teachers in each state should be evaluated, therefore we have sought to bring light to the needs of current SBAE in the state of Iowa.

This sentiment was also expressed in the American Association for Agricultural Education's National Research Agenda, Research Priority Area Five: Efficient and Effective Agricultural Education Programs (Thoron et al., 2016). Thoron et al. (2016) indicated the various facets (e.g., managing / advising student leadership organization, classroom / laboratory facilities management, or SAE) of SBAE programs "require a unique set of skills aside from the typical educational factors that are associated with student academic success" (p. 43). Moreover, the National Research Agenda reported the need for professionals in agricultural education to acquire knowledge and skills, such as basic and advanced program development skills (McClure et al., 2012), to keep pace with the complexity of the current educational environment (Thoron et al., 2016).

Conceptual Framework

Malcom Knowles's (1980) theory of andragogy was utilized as the conceptual framework for this study. Andragogy, "the art and science of helping adults learn" (Knowles, 1980, p. 43), has eight main tenets including 1) as the learner matures their learning is directed, 2) adult learners draw on their own experiences to aid in their learning, 3) they are motivated to learn, 4) they set a cooperative climate for learning, 5) they assess the needs of the learners, 6) development of learning objectives are based on the learners' interests and skills sets, 7) activities are designed in a sequence to achieve the objectives, 8) learning is done collaboratively with other learners, and 9) the quality of the learning experience is evaluated (Knowles, 1980).

Researchers in this study utilized the framework to guide the needs assessment instrument to allow individual in-service teachers to demonstrate their professional development needs in regards to SAE development and program development. Allowing researchers to understand the in-service educators' needs for professional development will aid in the development of new professional development events guided by Knowles' theory of andragogy.

Purpose and Objectives

The purpose of this study was to evaluate the professional development needs of SBAE teachers in the state of Iowa. More specifically, this study sought to determine the program development, leadership, and SAE development needs of Iowa SBAE teachers, which aligned with the

need areas predicated by the Iowa Governor's Council. The following two research objectives guided this inquiry:

1. Determine the professional development needs of Iowa SBAE teachers associated with program design and management.
2. Determine Iowa SBAE teachers' professional development needs regarding leadership and SAE development.

Methods

Population

A census was attempted on Iowa SBAE teachers. The target population for this study was all SBAE (N = 263) teachers which were currently teaching in the state of Iowa. Of the 153 teachers who responded to this instrument, 147 (96.1%) responded to the items regarding demographic characteristics. The average age of the SBAE teachers involved in this study was 37.45 (SD = 12.19) and the teachers reported an average of 13.32 (SD = 11.79) years of teaching experience. The reported biological sex of the respondents (n = 145) was almost an even split between males (n = 66, 45.5%) and females (n = 79, 54.5%). Concerning the teachers' highest educational degree attainment, 92 (62.6%) teachers indicated they had earned a bachelor's degree and 55 (37.4%) reported earning a master's degree. The teachers reported having an average of 94.33 (SD = 59.11) unduplicated students in their SBAE program.

Regarding the SBAE teachers' preferences and previous experience regarding discipline-specific professional development, the majority of teachers reported receiving professional development at Iowa agricultural teachers association workshops (n = 100, 68.03%) and from school-based in-service training (n = 99, 67.35%). Other sources of professional development mentioned by the respondents were university workshops (n = 45, 30.61%), professional organization workshops (n = 37, 25.17%), and graduate coursework (n = 4, 2.72%). Seventy-four percent of the teachers (n = 108) reported having at least one Curriculum for Agricultural Science Education (CASE) certification. Introduction to Agricultural, Food, and Natural Resources (AFNR; n = 95, 65.07%), Principles of Ag Science-Animal (ASA; n = 51, 34.93%), Principles of Ag Science-Plant (ASP; n = 49, 33.56%), and Natural Resources and Ecology (NRE; n = 28, 19.18%) were the CASE institutes which Iowa SBAE teachers reported highest numbers of earned certifications.

Instrumentation

The survey instrument was comprised of 32 items. Twenty-five of the items were needs assessment items which ascertained the SBAE teachers' perceived importance of and knowledge associated with agricultural education topics related to program design and management (12 items) and leadership and SAE development (13 items). A pair of five-Point Likert-type scales were used to operationalize the teachers' perceived importance (1 = *Not Important*, 2 = *Slightly Important*, 3 = *Moderately Important*, 4 = *Important*, 5 = *Very Important*) and knowledge (1 = *I have no knowledge on this issue*, 2 = *Slightly Knowledgeable*, 3 = *Moderately Knowledgeable*, 4 = *Knowledgeable*, 5 = *Very Knowledgeable*) related to each item.

The instrument also contained seven items, which sought to determine the demographic and background characteristics of the Iowa SBAE teachers. The items inquiring about the teachers' biological sex (male or female) and highest degree attainment (bachelor's degree, master's degree, or doctoral degree) were in multiple-choice format. Short answer style items were used to inquire about the teaching experience, age, and the number of students in the SBAE program. The teachers' CASE certifications and primary source of previous professional development were formatted as multiple-choice items.

Data Collection and Analysis

Upon the attainment of IRB approval, the Iowa SBAE teachers were sent a recruitment email asking for their participation in the needs assessment study. Contact information (e.g., name, school affiliation, and email address) of the SBAE teachers were derived from the publicly available teacher directory. The recruitment email contained information about the study and a direct link to the Qualtrics online survey instrument. The instrument distribution schedule was guided by recommendations by Dillman et al. (2009) and Yun and Trumbo (2000). Based on these recommendations, three follow-up emails were sent to non-respondents at five-day increments.

All demographic and background information was analyzed using IBM's Statistical Package for Social Sciences (SPSS©), version 25. The Excel-Based Mean Weighted Discrepancy Score Calculator (McKim & Saucier, 2011) was used to calculate the mean weighted discrepancy scores (MWDS) for the 25 needs assessment items. The MWDS were then ranked overall, and by category (i.e., program design and management category and leadership and SAE development category). Based on the calculated Cronbach's alpha coefficients (Importance $\alpha = .94$; Knowledge $\alpha = .95$) the instrument was determined to have met the tolerable threshold of reliability (Ary et al., 2010). The content and face validity of the needs assessment instrument were established using a panel of content experts. Namely, the panel of experts included two agricultural education faculty members and a graduate student—all members had extensive experience in agricultural education teacher preparation.

Findings

The first research objective sought to determine the professional development needs of Iowa SBAE teachers associated with program design and management. The SBAE teachers perceived to have some level of professional development needs for 11 of the 12 topics related to program design and management. Planning banquets was the only topic belonging to the program design and management category in which teachers did not indicate a need for professional development (see Table 1).

Table 1

Agricultural Education Training Priority Areas for Professional Development Related to program design and management as Perceived by Iowa School-based Agricultural Education Teachers.

			Rank	
Item	*n*	MWDS	Category	(Overall)
Ability to use the local advisory committee to acquire resources.	148	4.24	1	(3)
Evaluating the local program with National Quality Program Standards (NQPS).	152	4.08	2	(5)
Repairing and maintaining laboratory equipment.	152	3.97	3	(6)
Developing an effective public relations program.	151	3.81	4	(8)
Utilizing an advisory committee to promote the local agricultural program.	152	3.78	5	(9)
Organizing a local alumni/agricultural booster program.	151	3.73	6	(10)
Coordinating activities with local agricultural organizations/agencies.	149	3.08	7	(16)
Establishing a program advisory committee.	153	2.59	8	(18)

Table Continued

Item	*n*	MWDS	Category	(Overall)
Developing relations with fellow teachers and administrators.	150	2.32	9	(20)
Organizing fundraising activities for the local FFA chapter.	150	1.98	10	(21)
Completing annual FFA report.	151	1.45	11	(23)
Planning banquets.	151	-0.11	12	(25)

Note. MWDS = Mean Weighted Discrepancy Score. Importance Scale: 1 = *Not Important*, 2 = *Slightly Important*, 3 = *Moderately Important*, 4 = *Important*, 5 = *Very Important*. *Knowledge* Scale: 1 = *I have no knowledge on this issue*, 2 = *Slightly Knowledgeable*, 3 = *Moderately Knowledgeable*, 4 = *Knowledgeable*, 5 = *Very Knowledgeable*.

The top-ranking needs of the Iowa SBAE teachers associated with program design and management were the "ability to use the local advisory committee to acquire resources" (MWDS = 4.24), "evaluating the local program with NQPS" (MWDS = 4.08), and "repairing and maintaining laboratory equipment" (MWDS = 3.97).

The second research objective was to determine Iowa SBAE teachers' professional development needs associated with leadership and SAE development. In contrast to the program design and management category, all items related to leadership and SAE development were reported to represent areas of need (see Table 2).

Table 2

Professional Development Needs as Perceived by Iowa School-based Agricultural Education Teachers Related to Leadership and SAE Development, Using the Borich Needs Assessment Model

			Rank	
Item	*n*	MWDS	Category	(Overall)
Teaching record-keeping skills.	145	4.50	1	(1)
Developing Research SAE opportunities for students.	144	4.30	2	(2)
Developing School-Based Enterprise SAE opportunities for students.	145	4.22	3	(4)
Developing Service-Learning SAE opportunities for students.	145	3.83	4	(7)
Preparing proficiency award applications.	145	3.55	5	(11)
Supervising students' SAE programs.	146	3.48	6	(12)
Developing Ownership/Entrepreneurship SAE opportunities for students.	143	3.40	7	(13)
Preparing students for Career Development Events (CDE).	144	3.23	8	(14)
Developing Placement/Internship SAE opportunities for students.	144	3.09	9	(15)
Preparing students for Leadership Development Events (LDE).	145	2.96	10	(17)
Preparing FFA degree applications.	145	2.43	11	(19)
Conducting local FFA chapter activities.	145	1.79	12	(22)
Planning and conducting student overnight trips (National Convention).	145	0.71	13	(24)

Note. MWDS = Mean Weighted Discrepancy Score. Importance Scale: 1 = *Not Important*, 2 = *Slightly Important*, 3 = *Moderately Important*, 4 = *Important*, 5 = *Very Important. Knowledge* Scale: 1 = *I have no knowledge on this issue*, 2 = *Slightly Knowledgeable*, 3 = *Moderately Knowledgeable*, 4 = *Knowledgeable*, 5 = *Very Knowledgeable*.

The SBAE teachers indicated the highest perceived levels of professional development needs with "Teaching record-keeping skills" (MWDS = 4.50), "Developing Research SAE opportunities for students" (MWDS = 4.30), and "developing School-Based Enterprise SAE opportunities for students" (MWDS = 4.22). The lowest ranking professional development needs associated with leadership and SAE development were "preparing FFA degree applications" (MWDS = 2.43), "conducting local FFA chapter activities" (MWDS = 1.79), and "planning and conducting student overnight trips" (MWDS = 0.71).

Conclusions, Implications, and Recommendations

From an overarching standpoint (comparing the overall perceived level of professional development needs by category), the indication of training needs was fairly consistent amongst the categories (program planning and management and leadership and SAE development). The average MWDS for the program planning and management category was 3.19 and the average MWDS for items in the leadership and SAE development category was 2.91—representing a 0.28 difference in average MWDS. Furthermore, the Iowa SBAE teachers indicated some level of professional development needs for 24 of the 25 needs assessment items presented on the instrument. These results show be viewed with caution as they cannot be generalized to the entire population of teachers.

Teachers felt they needed more training associated with program planning and management. One area of program planning and management in which teachers expressed professional development needs was establishing and working with advisory councils. This is consistent with previous research as it has been found new and beginning teachers struggle with being able to utilize their advisory committee effectively (Myers et al., 2005; Sorensen et al., 2014). This is an important issue for SBAE teachers due to state (State [Code]) and federal (Carl D. Perkins Act, 2006) mandates tied to program funding. Specifically, Iowa Code ([Section], [Title of section], 2016) indicates that school districts with CTE programs, which receive federal or state funds, shall appoint a local advisory council for each CTE program offered in the district. It is important to note that the instrument used in this study failed to inquire about the existence of advisory committees in the SBAE programs. Therefore, the need for professional development on advisory committees was solely implied based on the teachers' perceived needs on this area of focus (e.g., Item: establishing a program advisory committee, MWDS = 2.59). The Iowa SBAE teachers' indication of the need for professional development on advisory councils is not an isolated event. Rather, previous studies have indicated the need for professional development on the establishment and use of advisory councils in Pennsylvania (Foster et al., 2015), South Carolina (Layfield & Dobbins, 2002), Tennessee (Taylor et al., 2017), and Texas (Barbour, 2010).

Professional development focusing on the development and use of advisory councils should be provided for Iowa SBAE teachers at various venues (e.g., summer Iowa Association for Agricultural Educators summer conference, NAAE Region Conference, and ACTE Region Conference). Based on recommendations from Taylor et al. (2017), teacher educators at [University] and other professional development entities should consider developing online webinars to provide distance-based training. Aside from professional development events, Iowa SBAE teachers should use available resources on advisory councils. One such resource is the Iowa Advisory Council Manual (IowaDOE, 2017). This manual will provide teachers with information related to (1) State and Federal guidelines, (2) types of

advisory councils, (3) advisory activities, (4) roles and responsibilities of advisory members, and (5) the appointment process for advisory members. Moreover, this manual contains examples of sample documents (e.g., sample agendas and sample thank you letters for council members) for reference purposes.

The Iowa SBAE teachers indicated a strong need for professional development related to SAE development and supervision, with associated MWDS ranging from 3.09 to 4.30 for these items. Based on the similar findings expressed in previous research (Wilson & Moore, 2007; Wolf, 2011), the Iowa SBAE teachers' perceived needs associated with this area is not an anomaly. Wolf (2011) found that teachers were less efficacious regarding the SAE domain when compared to teachers' self-efficacy associated with the instruction and FFA domains. In line with previous recommendations (Rank & Retallick, 2016; Ricketts et al., 2005; Sorensen et al., 2010; Wilson & Moore, 2007; Wolf, 2011), professional development on SAE development and supervision is a crucial need. Wilson and More (2007) argued that the agricultural education profession "needs to stop spending time and resources trying to convince teachers that SAE is of great value. Teachers already know this" (p. 90). Teacher educators and professional development entities (e.g., Iowa Association of Agricultural Educators or NAAE) should strive to provide professional development, which focuses on SAEs in general, and each specific type of SAE. This effort towards honing SBAE teachers' SAE skills and knowledge should also focus on the planning, implementation, and advisement of SAE projects. The SBAE teachers should also play a role in furthering their understanding of SAE programs. The teachers should use the SAE For All (National Council for Agricultural Education, 2017) guide as a resource for developing and advising students on SAE projects. The guides created are specific to the teacher and student which will aid each individual through their SAE projects (National Council for Agricultural Education, 2017). The guides allow teachers to grasp a quick overview of the process of completing an SAE along with different ideas for SAE options (National Council for Agricultural Education, 2017). Being able to refer to a guide while being fully engaged in the SAE project allows for students to turn to a resource immediately rather than trying to contact their teacher.

Another item, which teachers perceived to be an area of professional development need, was record keeping. Teaching record-keeping skills has been listed as an area of training needs for SBAE teachers (Layfield & Dobbins, 2002; Wilson & Moore, 2007), and students having up-to-date records are a quality indicator of SAE (Jenkins & Kitchel, 2009). This top-ranked area of need (MWDS = 4.50) in the leadership and SAE development category, has implications on items associated with SAE development and supervision. Wilson and Moore (2007) posited that record-keeping was a turn-off associated with SAE projects and indicated record-keeping served as a barrier to SAE implementation.

Agricultural educators also had a strong need for assistance with preparing their students for Career Development Events and Leadership Development Events. This need is consistent with previous research (Ball et al., 2016; King et al., 2013; Washburn et al., 2001). Some agricultural educators are preparing their students for CDEs by using the Internet as a resource, volunteers to assist with coaching, and addressing students' specific learning styles (Ball et al., 2016; Harris 2008). Professional development opportunities regarding Internet resources and how to get volunteers involved would be beneficial to all teachers.

Future research should be conducted on the preparation needs of specific CDE and LDEs. Understanding which event agricultural educators struggle with the most will allow for specific professional development opportunities. Professional development opportunities regarding CDE and LDEs should take place during the State Agriculture Teacher's Conference to impact the most teachers. Future research should be conducted about the benefits of teachers utilizing the SAE guide for all.

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