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What do they need? Determining Differences in the Professional Development Needs of Louisiana Agriculture Teachers by Years of Teaching Experience

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Abstract

An ever-changing world of education has led to growing demand for teachers to remain competent educators. For school districts to enhance teacher effectiveness, professional development workshops must be tailored to the specific needs of educators. To further complicate the issue, in-service needs of teachers are ever growing and changing based on experience. The theoretical foundation of this study was Knowles Theory of Andragogy. Per the theory, adult learners are motivated to learn when they feel intrinsic value or realize the personal gain from the learning activity. The central drive for this study was to determine what Louisiana agriculture teachers desired in terms of classroom- based professional development, thereby giving these adult learners a hand in planning professional development activities. The results from this study indicate that there are dissimilar professional development needs based on years of teaching experience. Per the conclusions, we recommend the results of this study be shared with state agricultural education staff, university faculty, and the Louisiana Agriculture Teachers' Association. Professional development organizers should also consider years of teaching experience when planning professional development seminars.

Keywords: professional development; years of teaching experience; agriculture

Introduction

Since the 1980s, educational research and policy have focused on ways to reform teacher education. These reform efforts have not only been aimed at teacher preparation programs, but have also focused on providing higher quality in-service opportunities and improving overall teacher quality (Borman & Dowling, 2008). Education is a continually changing field; therefore the needs of teachers are ever evolving. Teachers often possess varying backgrounds and experiences that make each of their in-service needs uniquely different from one to another (Birkenholz & Harbstreit, 1987; Borman & Dowling, 2008; Washburn, King, Garton, & Harbstreit, 2001). School systems must find ways to meet the growing demand for teachers to remain relevant and competent (Smith, Lawver, & Foster, 2017). Often teacher in-service training is conducted through

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professional development workshops that are designed to (a) promote and enhance teacher knowledge, (b) provide training in key areas, and (c) increase teaching effectiveness (Borko, 2004). Professional development needs of teachers change over time and, therefore, have often created difficulties in identifying which types of training and professional development should be offered (Birkenholz & Harbstreit, 1987; Washburn et al., 2001). Historically, the United States Department of Education has functioned as a base for identifying relevant professional development topics (Gulamhussein, 2013), but empirical evidence has also been a commonly employed as a tool to determine the topics for professional development (Birkenholz & Harbstreit, 1987; Claycomb & Petty, 1983; Layfield & Dobbins, 2002; Saucier, Tummons, Terry, & Schumacher, 2010; Washburn et al., 2001).

It is not surprising that professional development needs of teachers change over time, especially in career and technical education (CTE; Birkenholz & Harbstreit, 1987; Cannon, Kitchel, & Duncan, 2012; Washburn et al., 2001). CTE teachers play a vital role in the nations' educational system, so it remains important that these teachers are meeting CTE standards (Cannon et al., 2012). Specifically, agricultural educators provide students with foundational knowledge in a wide variety of areas within the agricultural industry (Ramsey & Edwards, 2011). Agriculture teachers are expected to implement a total agricultural education program that includes Supervised Agricultural Experience (SAE) programs and leadership opportunities through a local FFA chapter in addition to delivering content in the classroom and laboratory. Thus, for these teachers to remain current, it is vital they receive quality professional development. During a typical academic year, 90% of teachers will spend two hours per week participating in district-wide professional development seminars (Darling-Hammond, Chung, Andree, Richardson, & Orphanos, 2009). However, these workshops are often short in duration and often provide no visible change in student achievement (Bush, 1984; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007).

In agricultural education, Garton and Chung (1996) reported four primary areas where teachers need professional development: (a) motivating students to learn; (b) preparing FFA degree applications; (c) developing a working Program of Activities; and (d) working with proficiency award applications. Similarly, Dobbins and Camp (2000) indicated there was a need for professional development in the areas of (a) learning styles, (b) curriculum development, (c) teaching methods, (d) teaching techniques, and (e) technical areas. However, Washburn et al. (2001) asserted that professional development needs can vary by geographic location. Further, research has concluded that states in the same geographic region (i.e., share a common border) can have vastly different in-service needs (Birkenholz & Harbstreit, 1987). This could be due to the fact that most agricultural education programs are state driven, which makes professional development needs vary from state to state. More recent research has also suggested that technical agriculture areas, like agriculture mechanics, are an emerging area in need of professional development (Duncan, Ricketts, Peake & Uesseler, 2006; Rasty, Anderson, & Paulsen, 2017). Saucier et al., (2010) surveyed Missouri agriculture teachers and identified (a) laboratory teaching practices, (b) global positioning systems, (c) state agricultural tours, (d) biofuels, and (e) biotechnology as the areas of greatest need for professional development. This is particularly important because Walker, Garton, and Kitchel (2004) reported agriculture teachers in Missouri who left the profession often "did not enjoy agricultural mechanics laboratory instruction" (p. 35).

Several research studies have indicated teacher's in-service needs can vary with years of teaching experience (Layfield & Dobbins, 2002; Roberts & Dyers, 2004; Washburn et al., 2001). Many studies have determined that beginning teachers need professional development in the areas of (a) program planning, (b) lesson planning, (c) managing student behavior, and (d) implementing SAE programs (Layfield & Dobbins, 2002; Mundt, 1991; Shippy, 1981; Talbert, Camp, & Heath-Camp, 1994). Novice teachers lack classroom experiences and may require more intensive

professional development to ensure that they are effective teachers. For these teachers especially, their needs will change depending on their educational and personal experiences (Steffy, Wolff, Pasch, & Enz, 2000). Regarding experienced teachers, Layfield and Dobbins (2002) and Washburn et al. (2001) concluded that teachers with 10 or more years of teaching experience needed the most professional development in the areas of (a) FFA degree applications, (b) proficiency award applications, (c) utilizing computers/multimedia, and (d) teaching record keeping skills. Further, Duncan et al. (2006) studied the in-service needs of Georgia agricultural educators and found these teachers desired in-service opportunities to help prepare FFA proficiency and degree applications. Per the three-circle model, SAEs are often deemed as the most difficult component to include in instruction (Barrick & Estepp, 2011). Rubenstein and Thoron (2016) noted that the agriculture teacher was the single most important influencer of SAE quality in a local school. As such, agriculture teachers should be afforded opportunities to engage in professional development activities related to SAE programs (Rubenstein & Thoron, 2016). However, professional development in all areas of the total agricultural education program is needed by teachers, regardless of tenure in the profession (Barrick, Ladewig, & Hedges, 1983).

Research has indicated that (a) an adequate preservice preparation program, (b) professional development, and (c) support of teachers are very important in improving teacher quality, competency, and retention (Ruhland & Bremer, 2003). Agriculture teachers, regardless of tenure in the profession, still have a continuing desire for professional development to ensure that their knowledge and skills remain current (Barrick et al., 1983). Because professional development trends vary widely across different teacher populations, it is critical that on-going research be conducted to determine how needs change over time and within varying groups of teachers.

Theoretical and Conceptual Framework

The theoretical foundation of this study was Knowles (1980) Theory of Andragogy. The Theory of Andragogy is driven by six principles: (a) the learner's need to know, (b) self-concept of the learner, (c) prior experiences of the learner, (d) readiness to learn, (e) orientation to learning, and (f) motivation to learn (Knowles, Holton III, & Swanson, 2015). Per the theory, adult learners are motivated to learn when they feel intrinsic value or realize the personal gain they will receive from the learning activity (Knowles et al., 2015). Further, motivation to learn is enhanced when adult learners have a hand in planning their learning activities (Knowles, 1980). The central purpose of this study was to determine what Louisiana agriculture teachers desired in terms of classroom-based professional development and to better inform the professional development being developed across the state.

The model of teacher development was the conceptual frame that underpinned this study (Fessler & Christensen, 1992). The model posits that teachers' needs differ based on career stage (see Figure 1). Specifically, Fessler and Christensen (1992) described eight career stages, (a) induction, (b) competency building, (c) enthusiastic and growing, (d) career frustration, (e) career stability, (f) career wind-down, and (g) career exit. The induction stage is described as the first few years of employment where the new teacher assimilates into the culture of the school and begins to gain confidence in his or her abilities as a professional educator (Fessler & Christensen, 1992; Greiman, 2010). With experience, novice teachers begin to see themselves less in the induction or survival career stage and begin to work more toward competency building where he or she strives to improve as an educator; this may include seeking out professional development opportunities or enrolling in graduate coursework (Fessler & Christensen, 1992).

Next, the enthusiastic and growing stage is marked by a high sense of teacher self-efficacy and career satisfaction. Often these teachers are sought out to share their excitement and expertise

(Fessler & Christensen, 1992; Greiman, 2010). Some teachers begin to feel burnt out and unsatisfied in the career frustration stage. This may happen early or late in one's teaching career (Fessler & Christensen, 1992; Greiman, 2010). During the stability stage, teachers are likely performing adequately but are not actively striving to better their teaching skills. Career wind-down begins as the teacher contemplates leaving the profession and is marked by a period of reflection. Finally, career exit is the period of time after the teacher has left the job (Fessler & Christensen, 1992; Greiman, 2010). A teachers' career phase is influenced by several factors, broadly classified as organizational or personal in nature (Fessler & Christensen, 1992; Lynn, 2002)

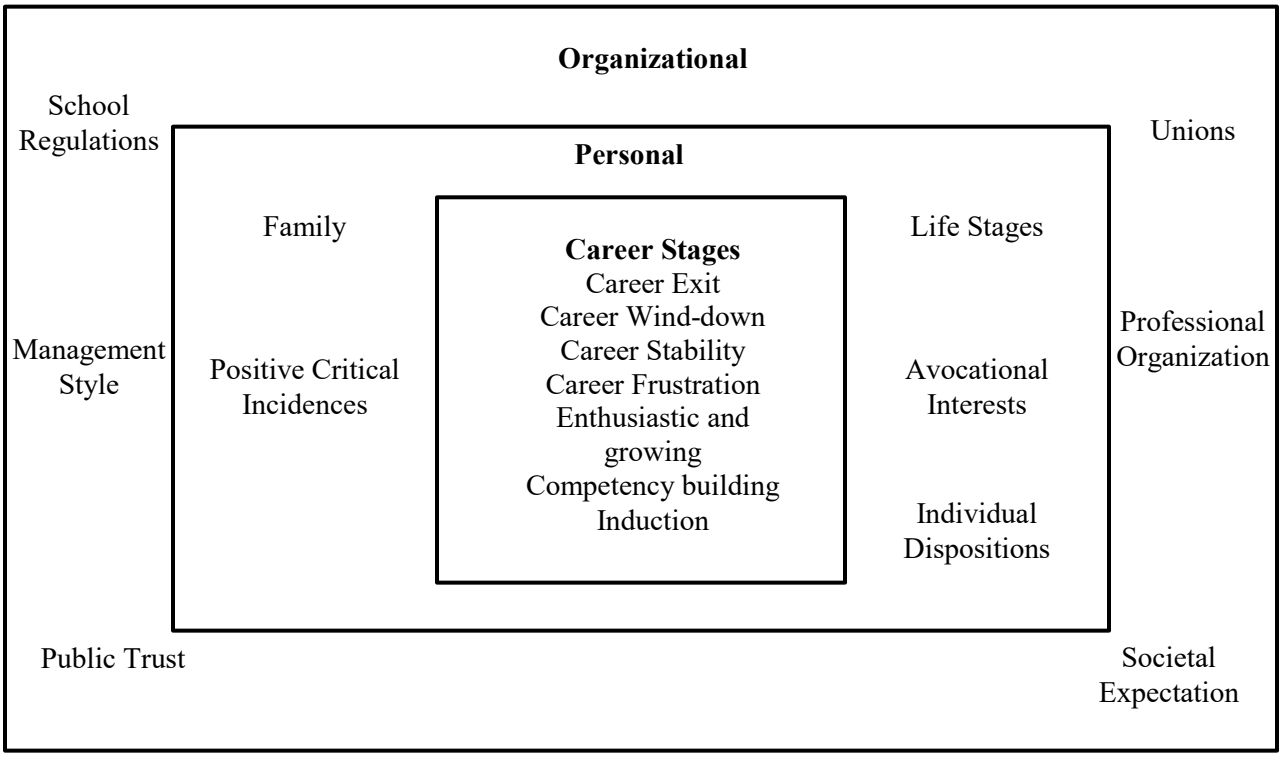

Figure 1. Teacher Career Cycle Model as adapted by Greiman (2010)

A core premise of the model is that teacher development is not a fixed, linear process, but rather ever-changing (Fessler & Christensen, 1992; Greiman, 2010). As such, teachers in various career stages have different needs for professional development (Fessler & Christensen, 1992; Greiman, 2010). Therefore, individuals involved in organizing teacher professional development should recognize this phenomenon and avoid the one size fits all mentality common in teacher professional development, especially since agriculture teacher's professional development needs can vary greatly by state (Birkenholz & Harbstriet, 1987; Washburn et al. 2001), as well as by years in the profession (Layfield & Dobbins, 2002; Roberts & Dyer, 2004; Washburn et al., 2001). Therefore, the principal research question that arose from the review of literature was: how does the classroom-based professional development needs of Louisiana agriculture teachers vary by years of teaching experience?

Purpose and Objectives

The purpose of this study was to identify the classroom-based professional development needs related to agriculture teachers in Louisiana. This research supports the American Association for Agricultural Education's National Research Agenda Research Priority 3: Sufficient Scientific

and Professional Workforce that addresses the challenges of the 21st Century (Stripling & Ricketts, 2016). Specifically, this research aims to address Research Priority Question Two, "What methods, models, and practices are effective in recruiting agricultural leadership, education, and communication practitioners (teachers, extension agents, etc.) and supporting their success at all stages of their careers?" (p. 31). The following objectives guided this study:

1. Identify the instruction and curriculum professional development needs of Louisiana agriculture teachers based on years of experience.
2. Identify the technical agriculture professional development needs of Louisiana agriculture teachers based on years of experience.
3. Identify FFA (e.g., CDE, LDE, program management) related professional development needs of Louisiana agriculture teachers based on years of experience.
4. Identify SAE related professional development needs of Louisiana agriculture teachers based on years of experience.

Methods

The target population of this study was all Louisiana agricultural educators actively working during the 2017–2018 academic year (N = 261). We collected data through a paper instrument delivered at each of the Louisiana Agriscience Teachers' Association meetings held during the Louisiana FFA Leadership Camp sessions in July 2017. Per [State Education Bulletin], all agriculture teachers are supposed to attend FFA camp and engage in professional development. In all, 190 advisors registered for camp and 164 completed the survey, which yielded 86.0% response rate, representing 62.8% of the total agriculture teacher population in Louisiana. No attempt to collect data from those who did not attend a camp session was attempted because an accurate frame (i.e., directory) of agriculture teachers was not available at the time of data collection.

Personal and professional characteristics (i.e., age, gender, highest degree held, and years of teaching experience) of Louisiana agriculture teachers are reported in Table 1. The majority (f = 110; 65.5%) of these teachers were male (see Table 1) and most (n = 99; 58.9) indicated that a bachelor's degree was their highest level of education. Finally, these teachers were categorized by years of teaching experience. Forty-four (26.2 %) had taught 1–5 years, 28 (16.7%) had taught 6–10 years, 29 (17.3%) taught 11–15 years, 21 (12.5%) had taught 16–20 years, 20 (11.9%) had taught 21–25 years, and 21 indicated they had taught 26 or more years.

Table 1

*Personal and Professional Characteristics of Louisiana Agriculture Teachers Who Responded to the Present Study (*n = *164)*

Variable	*f*	%
Gender		
Male	110	65.5
Female	54	32.1
Highest Degree Held		
Bachelor's Degree	99	58.9
Master's Degree	58	34.5

Table 1

*Personal and Professional Characteristics of Louisiana Agriculture Teachers Who Responded to the Present Study (*n = *164) Continued*

Doctoral Degree	1	0.6
Other	5	3.0
Years of Experience Categories		
1–5 years	44	26.2
6–10 years	28	16.7
11–15 years	29	17.3
16–20 years	21	12.5
21–25 years	20	11.9
26 or more years	21	12.5

Note. Percentages may not equal 100 due to missing data

In order to compare respondents to teachers who did not participate in the study, the Louisiana agricultural education annual report data were obtained from the Louisiana FFA office to compare the total agriculture teacher population to the respondents (see Table 2). In all, the data from the Louisiana FFA office represents *n* = 257 agriculture teachers.

Table 2

Personal and Professional Characteristics of Louisiana Agriculture Teachers Obtained from the Louisiana FFA Office (n = *257)*

Variable	*f*	%
Gender		
Male	174	67.7
Female	80	31.1
Non-Disclosed	3	1.2
Highest Degree Held		
Bachelor's Degree	161	62.6
Master's Degree	80	31.1
Doctoral Degree	4	1.6
Other	6	2.4
Years of Experience Categories		
1–5 years	77	30.0
6–10 years	44	17.1
11–15 years	41	16.0
16–25 years	48	18.7
25 or more years	38	14.8

Note. Percentages may not equal 100 due to missing data

Data related to personal and professional characteristics collected as a part of the present study closely match data obtained from the Louisiana FFA Annual Report in terms of gender, education level, and years of experience. Therefore the professional development data collected should represent the agriculture teachers in Louisiana.

The instrument employed in this study was utilized by Roberts and Dyer (2004) and modified by Saucier et al. (2010) to investigate the professional development needs of teachers in their respective states. This instrument was modified further by the deletion of items not relevant to Louisiana and additional items were added to reflect current practice in Louisiana agricultural education. Roberts & Dyer (2004) reported reliabilities ranging from $\alpha = 0.88$ to $\alpha = 0.95$ for the original instrument. Similarly, Saucier et al. (2010) reported reliability estimates ranging from $\alpha = 0.87$ to $\alpha = 0.94$. Due to the high- reliability estimates from these previous studies a pilot test was not conducted.

The instrument was comprised of sections that measured teacher needs in the areas of (a) instruction/curriculum (12 items), (b) technical agriculture [i.e, agribusiness (4 items), animal science (10 items), Environmental/Natural Resources (6 items), plant/soil science (13 items), and agricultural mechanics (12 items), (c) Career/Leadership Development Events (29 items), (d) SAE (5 items), (e) program management (13 items), and (f) teacher characteristics. Respondents indicated professional development needs for each item via a Likert-type scale. The items were anchored on the following scale: 0 = *No Need;* 1 = *Little Need*; 2 = Some *Need*; 3 = Much *Need*; and 4 = *Highest Need*.

Cronbach's alpha was calculated post-hoc to determine internal consistency of the instruction/curriculum ($\alpha = .91$), the technical agriculture ($\alpha = .97$) sections, CDE ($\alpha = .94$), LDE ($\alpha = .89$), program management ($\alpha = .94$), and SAE ($\alpha = .90$) sections. A panel of experts reviewed the instrument for face and content validity. Specifically, the panel included two agricultural education faculty members, a doctoral student who had taught agriculture for 14 years in Louisiana, and three current agriculture teachers. Two items were deleted and several items were reworded to enhance clarity after the instrument was reviewed. Data were analyzed utilizing SPSS version 24 for Macintosh. Descriptive statistics, including mean, standard deviation, frequency, and percentage were utilized to meet the needs of the research objectives.

Findings

Table 3 highlights the perceived instructional needs Louisiana of agriculture teachers based on years of experience. Teachers with 1–5 years of experience reported much need in *teaching in a laboratory* ($M = 2.51$) and *managing instructional facilities* ($M = 2.60$). Teachers with 6–10 years of experience responded with much need in *motivating student learning* ($M = 2.57$) and *developing online teaching resources* ($M = 2.61$). Agriculture teachers with 11–15 years of experience also reported much need in *developing online teaching resources* ($M = 2.61$) and *using instructional technologies* ($M = 2.46$). Teachers with 16 or more years of experience all responded with much need in using *instructional technologies* and *developing online teaching resources*. Teachers with 16–20 years of teaching experience reported little need for professional development in the areas of (a) *teaching in a classroom,* (b) *teaching in a laboratory*, (c) *managing student behavior*, and (d) *teaching decision-making skills.* All other items for all groups were reported to be areas where at least some need for professional development existed, as interpreted by the real limits of the scale.

The second research objective sought to identify the technical agriculture needs of Louisiana agriculture teachers by years of experience (see Table 4). Overall,

environmental/natural resources was the highest rated item for teachers who had 1–5 years of experience ($M = 2.67$; $SD = 1.21$), 6–10 years of experience ($M = 2.57$; $SD = 1.25$), 16–20 years of experience ($M = 2.10$; $SD = 1.00$), 21–25 years of experience ($M = 2.38$; $SD = 1.11$), and 26 or more years of experience ($M = 2.36$; $SD = 0.93$). The highest rated item for those who had taught 11–15 years was *Animal Science* ($M = 1.97$; $SD = 0.99$). All items were reported to be areas of *some need* for professional development as determined by the real limits of the scale.

Objectives three and four sought to identify the FFA and SAE related professional development needs of Louisiana agriculture teachers, respectively, by years of teaching experience (see Table 5). Agriculture teachers with 1–5 years of experience reported the need for some professional development in the areas of *Career Development Events (CDEs; M* = 2.44*)* and *Leadership Development Events* (*LDEs; M* = 2.41). Teachers with 6–25 years of experience reported some professional development needs in *LDEs*, and *program management*. Finally, teachers with 26 or more years of experience responded with some need in *CDEs* ($M = 1.96$), and *program management* ($M = 1.98$).

Table 3

*Perceived Instructional Needs of Louisiana Agriculture Teachers (*n = *164)*

Instructional Item	*Years of Experience*											
	1–5		*6–10*		*11–15*		*16–20*		*21–25*		*26 or more*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Teaching in a Classroom	1.83	1.01	1.68	.98	1.75	1.08	.95	0.69	1.70	1.03	1.57	1.21
Teaching in a Laboratory	2.51	1.12	2.07	1.15	2.29	1.05	1.35	1.09	2.00	1.30	1.81	1.17
Using Instructional Technologies	2.07	1.20	2.29	1.15	2.46	0.88	1.85	1.09	2.80	0.95	2.90	0.79
Integrating science into the agriculture curriculum	1.91	1.09	2.04	0.96	1.96	0.92	1.55	0.83	2.05	0.95	1.90	0.94
Integrating math into the agriculture curriculum	2.05	1.09	1.93	1.05	2.18	0.91	1.70	0.81	2.35	1.14	2.19	1.12
Managing instructional facilities	2.60	1.13	2.26	1.13	2.00	1.15	1.55	1.00	1.95	1.10	1.86	1.23
Managing student behavior	2.21	1.25	2.07	1.09	1.96	1.00	1.20	1.06	1.65	1.18	2.00	1.38
Motivating student learning	2.16	1.25	2.57	0.96	2.39	1.10	1.60	1.05	2.35	1.50	2.29	1.35
Developing online teaching resources	2.47	1.14	2.61	1.16	2.61	1.29	1.90	1.02	2.65	0.81	2.81	0.93
Teaching decision-making skills	2.14	1.00	2.14	1.01	1.93	1.02	1.40	1.10	2.00	1.30	1.81	1.08
Teaching personal finance	2.14	1.28	2.07	1.01	1.89	1.03	1.80	1.15	1.95	1.15	2.14	1.11
Teaching problem solving skills	2.16	1.23	2.32	1.06	2.32	0.98	1.65	1.04	2.35	1.18	2.24	1.18
Instruction Grand Mean	2.19	0.77	2.16	0.72	2.15	0.64	1.54	0.81	2.15	0.81	2.78	0.84

Note. Real limits: No Need = 0 – 0.49; Little Need = 0.50 – 1.49; Some Need = 1.50 – 2.49; Much Need = 2.50 – 3.49; Highest Need = 3.50 – 4.00

Table 4

*Perceived Technical Agriculture In-service Needs of Louisiana Agriculture Teachers (*n *= 164)*

Technical Agriculture Category	*Years of Experience*											
	1–5		*6–10*		*11–15*		*16–20*		*21–25*		*26 or more*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Agribusiness	2.32	1.06	2.32	0.84	1.81	0.78	1.73	0.78	2.09	0.96	1.88	0.88
Animal Science	2.36	0.86	2.34	0.95	1.97	0.99	1.56	0.83	2.26	0.71	1.93	0.80
Environmental/Natural Resources	2.67	1.21	2.57	1.25	1.96	1.07	2.10	1.00	2.38	1.11	2.36	0.93
Plant/Soil Science	2.35	1.01	2.32	0.95	1.87	0.85	1.60	0.84	1.94	0.85	1.94	0.87
Agricultural Mechanics	2.22	0.95	2.22	1.02	1.82	0.85	1.73	0.87	2.07	0.93	2.01	0.79
Technical Agriculture Grand Mean	2.38	0.88	2.41	0.77	1.88	0.78	1.74	0.78	2.14	0.71	2.04	0.78

Note. Real limits: No Need = 0 – 0.49; Little Need = 0.50 – 1.49; Some Need = 1.50 – 2.49; Much Need = 2.50 – 3.49; Highest Need = 3.50 – 4.00

Table 5

*Perceived FFA and SAE Needs of Louisiana Agriculture Teachers (*n *= 164)*

Item	*Years of Experience*											
	1–5		*6–10*		*11–15*		*16–20*		*21–25*		*26 or more*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Career Development Events	2.44	0.92	2.40	0.89	2.03	0.88	1.77	0.94	2.16	0.90	1.96	0.71
Leadership Development Events	2.41	0.97	2.42	0.90	2.16	1.01	1.85	0.86	2.21	1.11	1.90	0.86
Program Management	2.37	0.90	2.70	0.96	2.24	1.14	1.87	0.87	2.19	1.02	1.98	0.84
Supervised Agriculture Experience	2.03	0.84	2.33	0.70	2.02	0.84	1.45	0.92	2.08	0.79	1.49	0.83

Note. Note. Real limits: No Need = 0 – 0.49; Little Need = 0.50 – 1.49; Some Need = 1.50 – 2.49; Much Need = 2.50 – 3.49; Highest Need = 3.50 – 4.00

Conclusions/Implications

The purpose of this study was to identify the professional development needs of agriculture teachers in Louisiana. All teachers reported a professional development need in *developing online teaching resources*. Agriculture teachers with 1–5 years of experience also indicated *teaching in a laboratory* and *managing instructional facilities* as additional areas in which they desired professional development. Teachers with more than six years of experience reported needing professional development in *using instructional technologies.* This aligns with previous research where professional development needs were found in the areas of teaching methods/techniques and technical areas (Dobbins & Camp, 2000). Similarly, Layfield and Dobbins (2002) and Washburn et al. (2001) concluded that teachers with over 10 years of teaching experience needed the most professional development in technology integration.

Objective two examined the perceived technical agriculture in-service needs of Louisiana Agriculture teachers. Teachers with 1–15 years of teaching experience desired professional development in *animal science* and *environmental/natural resources*. Also, teachers with 16 or more years of expressed need for professional development related to *environmental/natural resources*, *agricultural mechanics*, and *agribusiness*.

Since 2006, agriculture teachers in Louisiana have been expected to provide Industry Based Certifications (IBCs) as part of their instructional program. One particular certification program has led to an emphasis in agricultural mechanics coursework and a push for certification in this area by many school administrators. Agricultural mechanics is re-emerging as a major component of agricultural education in many states, which may account for the felt need for professional development. According to previous research, agricultural mechanics, laboratory teaching practices, GPS, and biotechnology were all areas in need of professional development in other agriculture teacher populations (Rasty et al., 2017; Saucier et al., 2010).

Objectives three and four sought to identify FFA and SAE related professional development needs of Louisiana agriculture teachers by years of experience. Teachers with 1–5 years of experience reported that their highest need for professional development was with *CDE's,* and *LDE's*. Teachers within the years of 6 – 25 all reported their highest need for professional development was in *LDE's* and *program management.* Finally, teachers with 26 or more years of experience reported they needed professional development in *CDE's* and *program management.* Similarly, previous research concluded experienced teachers needed professional development in peforming FFA related activities, such as degree applications and award applications (Garton & Chung, 1996; Layfield & Dobbins, 2002; Joerger, 2002; Peiter, Terry & Cartmell, 2005; Duncan et al., 2006). However, previous research has also indicated that novice teachers need the greatest professional development needs in SAE related activities (Layfield & Dobbs, 2002). Amongst all FFA and SAE related professional development needs of Louisiana agriculture teachers, SAE was the lowest area of concern for professional development. Barrick and Estepp (2011) concluded that SAEs were the most difficult piece, per the three-circle model, for teachers to put into practice. It is unclear from this study if teachers ranked this professional development need lower because they believe they did not need additional training, or if it is the result of SAE not being a part of their local programs.

While there were similarities, it was concluded that these teachers expressed differences in professional development needs based on years of teaching experience. Specifically, teachers with 1–5 and 6–10 years of experience felt a greater need for professional development related to *technical agriculture, CDEs, LDEs, program management, and SAEs* than those with more experience. These teachers are likely in the induction or competency building stages and are

focused on honing their teaching abilities and furthering their knowledge of agriculture (Fessler & Christensen, 1992). The teachers with 16–20 years of experiences perceived the lowest need for professional development. These teachers are likely in the career stability stage and are confident in their abilities.

Other factors may exist to explain differences in professional development needs perceived by agriculture teachers. Washburn et al. (2001) determined that geographic differences can be a factor between states, even those that share a common border. Perhaps these differences can exist within a state. For example, teachers in the southern region of Louisiana may have a particular industry that is important to that region that needs to be emphasized in their curriculum, so they may need professional development in that technical area to provide those skills.

Recommendations

Within Louisiana, the results of this study should be shared with state agricultural education staff, university faculty, the Louisiana Agriculture Teachers' Association, and anyone else who offers professional development experiences for agriculture teachers. These groups should work together as a Louisiana Team AgEd to offer relevant professional development experiences based on this research. Per the theory of Andragogy, teachers in Louisiana should be more receptive to professional development opportunities based on this research because they had a role in identifying the topics (Knowles, 1980). Further, professional development organizers should consider years of experience when planning workshops. One size fits all professional development workshops may not be the most effective means of encouraging attendance since the results of this study indicate differences based on years of experience. For example, workshops could be offered specifically for 1–5 year teachers in the areas of instructional facility management and laboratory teaching methods. Further, it is recommended that web-based professional development (i.e., webinars) be explored as a means to offer training in conducive subject areas. Additionally, professional development opportunities related to technical agriculture areas should be created and targeted toward teachers with 10 or fewer years of experiences.

While professional development needs vary from state to state, the fact that years of experience served as a factor for differences in professional development needs is something that should be further explored in other states. Continued assessment of professional development needs of teachers is a critical component of agricultural teacher success. A deeper understanding of how professional development needs across different states allow for national professional development opportunities to develop, and support teachers across their career stages. The National Association of Agricultural Educators (NAAE) has recently implemented a one- year professional development training for mid-career teachers (7–15 years). The overall goals of this program are to develop these teachers into mentors for younger teachers, provide mid-career level professional development, and increase longevity and job satisfaction. Perhaps, implementing programs like this for early career teachers (1–6 years) could improve teacher retention, job satisfaction, and teacher effectiveness. Late career teachers (16 or more years) could be provided with quality professional development in areas of weakness as well as areas of new agricultural technology to improve in overall competency, and perhaps serve as mentors to early career teachers.

Future research should attempt to gather data from all agriculture teachers in Louisiana. As such, Louisiana agricultural education staff and teacher education departments should attempt to create an accurate, up-to-date frame of agriculture teachers. This would allow data to be collected from those who did not participate in the FFA camp sessions and determine if their professional development needs differ. It is speculated that a number of the teachers who do not attend FFA camp may be alternatively certified and may not know they are expected to attend with FFA

members. Further, research should be conducted to determine if the professional development needs of Louisiana agriculture teachers differ based on certification type. Alternatively certified teachers have been hired in Louisiana for many years, previous research has indicated that the needs of these teachers differ from those who completed a traditional teacher education program (Roberts & Dyer, 2004; Swafford & Friedel, 2010).

Finally, further exploration of items within this instrument is warranted. Teachers indicated that SAE's were not an area of concern, perhaps this is because they are not implementing it or because other factors are minimizing the three-circle model in Louisiana? There should also be additional research to break down areas that were indicated as being most critical. Specifically, what topics within the larger subject areas do teachers need the most support? For example, *environmental/natural resources* was a common area teachers reported a need for professional development. Individual items comprising the *environmental/natural resources* section to determine what specific curricular needs are perceived by teachers so that specific programming can be implemented. Continued research at both the state and national levels will allow for a deeper understanding of how professional development needs change across different areas and how professional development can be better organized to reach larger audiences and better support teachers at all stages of their careers.

Practical Results to Date

These data were collected during the first month of employment of a new FFA Executive Director and Executive Secretary. These individuals worked closely with the agricultural education faculty at Louisiana State University to collect data to begin to offer professional development based on empirical evidence. The Executive Director was particularly interested in professional development based on years of experiences because early career turnover is high among agriculture teachers and over 20% of them are currently eligible to retire. We have a desperate need to provide professional development opportunities for teachers at all career stages to attempt to offset attrition. Since the time of data collection, the Louisiana FFA Office and Louisiana State University have partnered to offer professional development targeted toward teachers with varying years of experience. Additionally, CDE based professional development workshops were offered at the 2018 FFA Camp and Louisiana State University began hosting a CDE/LDE clinic for teachers and students in 2017. Lastly, the Executive Director started a *Weekly Curriculum Webinar* 2017 to offer short duration professional development opportunities for teachers. Topics have varied from formatting Prepared Public Speaking manuscripts to forestry diseases and disorders.

Limitations

These findings should not be generalized past the responding Louisiana agriculture teachers, as this was not a randomly selected sample. We were unable to address non-response error in a timely manner and due to the methods used to collect data. In an attempt to improve generalizability to our larger agriculture teacher population we obtained annual report data from the Louisiana FFA Office. While data from our study closely mirrored the larger agriculture teacher population in terms of gender, education level, and years of experience, the annual report data did not include the teacher's certification type. Research has indicated teachers' professional development needs vary by certification type (Roberts & Dyer, 2004; Swafford & Friedel, 2010), however, we are unable to make that determination in our current study. Another limitation of the study was the instrument employed to collect data. While this instrument was robust, it likely did not encompass all activities undertaken by every agriculture teacher in Louisiana, therefore responses are limited to those items identified in prior research by Roberts and Dyer (2004) and Saucier et al. (2010).

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