

The Dimensions of Professional Development Needs for Secondary Agricultural Education Teachers Across Career Stages: A Multiple Case Study Comparison

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Abstract

This study sought to understand the professional development needs articulated by secondary agricultural education teachers across three career stages. To accomplish this, we collected data from secondary agricultural educators (N = 66) in Louisiana. Then, we performed a cross-case analysis to compare and contrast themes and axial codes. Through our analysis, three themes emerged in each case: (1) presage variables, (2) context variables, and (3) process variables. The themes represented the various dimensions of professional development that teachers expressed they desired to facilitate student success better. In particular, the Early Career Teachers' non-traditional backgrounds often limited their exposure to opportunities; therefore, they desired more knowledge and skills in technical agricultural concepts. Meanwhile, Mid-Career Teachers were more stable and confident in their roles as secondary agricultural education teachers; nevertheless, they were frustrated because of various contextual forces that complicated their job duties. Finally, Career Teachers were experiencing career wind-down and had unique professional development requests to help them cope better with contextual changes influencing their responsibilities. Findings from this study, therefore, suggested that although areas of commonality exist across career stages, it is critical to differentiate professional development across programmatic dimensions of agricultural education.

Keywords: career stages; professional development; secondary agricultural education teachers

Introduction

Education has evolved dramatically throughout history due to an array of social, cultural, and policy-based forces that have driven or restrained the beliefs and practices of key decision-makers (Fraser, 2014; Urban & Wagoner, 2014). Despite such changes, however, the variable that has been most consistently reported to moderate student achievement is teacher effectiveness (Marzano, 2012; Stronge et al., 2011). However, teachers' success in delivering quality instruction is affected by a number of presage, context, and process variables (Dunkin & Biddle, 1974). As a consequence, a plethora of research has been dedicated to distinguishing the key characteristics of effective teachers.

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However, defining such factors has proven to be complicated since the construct is primarily *context* and *academic discipline* specific (Fessler & Christensen, 1992; Larsen, 1992; Luft & Thompson, 1995; Miller et al., 1989). In response, Roberts and Dyer (2004) advanced 40 characteristics of effective agricultural educators that gained consensus through the use of a panel of experts. Of these characteristics, seven emerged with the highest level of agreement: (1) cares for students, (2) effectively plans for instruction, (3) effectively evaluates student achievement, (4) is honest, moral, and ethical, (5) has sound knowledge of FFA, (6) communicates well with others, and (7) effectively manages, maintains, and improves laboratories (Roberts & Dyer, 2004). The identification of such features provided a basis for the design and delivery of quality professional development for secondary agricultural educators across several states (DiBenedetto et al., 2018; Figland et al., 2019; Smalley et al., 2019). Professional development has been defined as the learning activities and experiences that educators engage in, from preservice education to retirement, to increase their career-related performance (Fullan & Steigelbauer, 1991; Rhodes et al., 2004; Ruhland & Bremer, 2002). Researchers have argued that professional development is a critical element of educational reform (Borko & Putnam, 1995; Desimone, 2009; Gusky, 2000). However, the literature has demonstrated that all professional development efforts are not created equal. For example, the preparation and experiences of secondary agricultural educators can vary greatly (Torres et al., 2010). As a result, understanding the diverse needs of teachers has been a dominant theme in the literature.

For example, almost one-fourth of teachers in the U.S. reported their primary motivation to engage in professional development was to improve their content knowledge (Darling-Hammond et al., 2009). However, secondary agricultural educators' duties extend beyond traditional classroom teaching as they are also responsible for facilitating students' Supervised Agricultural Experiences (SAE) and leadership development through the National FFA Organization (Croom, 2008; Phipps et al., 2008). Further, they are also responsible for navigating complex local, state, and federal policy as well as diverse community norms and traditions (Phipps et al., 2008). Because of such complexities, Easterly and Myers (2018) called for the discipline to examine ways to help secondary agricultural educators to mature in critical dimensions of personal resilience as a way to improve their engagement in professional development and ultimately enhance their students' learning. As such, professional development needs in agricultural education continue to diversify and become more complex.

To this point, Grieman (2010) called for additional research to better assess the quality and impact of professional development in agricultural education as teacher needs continue to grow and evolve. So far, the literature on professional development has illuminated several critical areas of need for secondary agricultural educators across multiple states. In particular, Smith and Smalley (2018) reported secondary agricultural educators who participated in the National Association for Agricultural Education's eXcellence in Leadership for Retention (XLR8) conference ranked *program planning and evaluation* as well as knowledge about facilitating *experiential learning* as their primary need areas for professional development. Meanwhile, Smalley et al. (2019) found that secondary agricultural educators in Iowa expressed a variety of needs in regard to teaching, classroom management, and technical skills.

It is important to note that multiple investigations have also examined the professional development needs of secondary agricultural educators from the perspective of their years of teaching experience (DiBenedetto et al., 2018; Figland et al., 2019; Layfield & Dobbins, 2002; Washburn et al., 2001). As a result of such work, we now understand that early career teachers warrant additional support because of crucial personal and educational differences, and as a result, their needs span areas such as: (a) behavior management, (b) content knowledge, (c) lesson planning, (d) FFA programming, and (e) SAE management (Layfield & Dobbins, 2002; Mundt, 1991; Shippy, 1981; Talbert et al., 1994).

Meanwhile, secondary agricultural educators with 10 or more years of experience perceive their needs are more programmatic and technology-based (Layfield & Dobbins, 2002; Washburn et al., 2001). For instance, career teachers reported that they would prefer professional development on topics that included: (a) computer-based programming assistance, (b) FFA award and degree applications, and (c) recording keeping (Layfield & Dobbins, 2002; Washburn et al., 2001). As such, secondary agricultural educators' conceptualizations of their needs remain varied, complex, and evolving until they establish a stable professional identity (Roberts et al., 2016; Roberts & Montgomery, 2017; Shoulders & Myers, 2011). However, Easterly and Myers (2019) and Figland et al. (2019) cautioned that many professional development efforts have failed to differentiate activities based on the needs and experiences of teachers across career stages. Therefore, a need existed to understand better how secondary agricultural educators' discourse about their needs regarding teaching and learning converged and diverged across career stages.

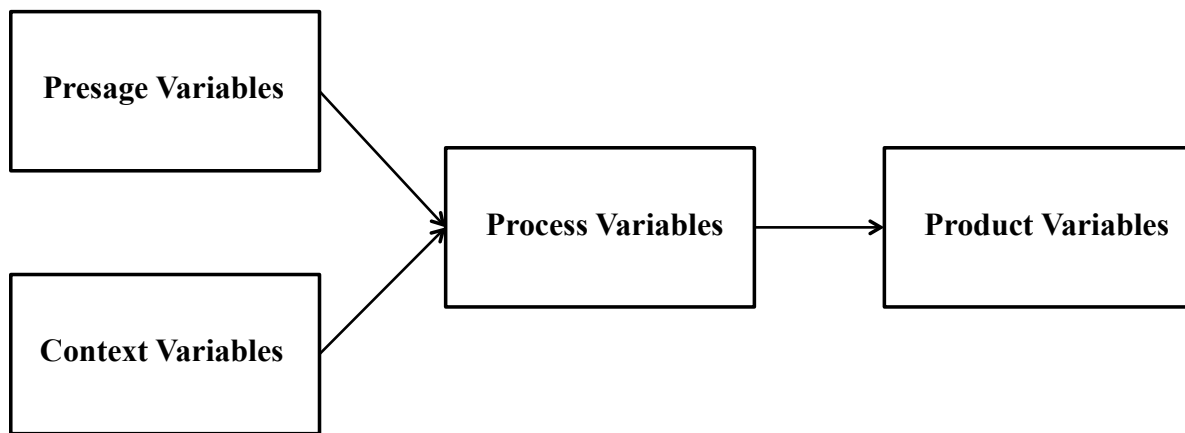
Conceptual and Theoretical Framework

Fessler's and Christensen's (1992) teacher career cycle model served as our conceptual lens in the development of this investigation. The model suggested that professional development needs must be understood as an interdependent system that involves a complex interaction between teachers' career stages, personal attributes, and the institutional context (Fessler & Christensen, 1992). In particular, Fessler and Christensen (1992) argued that teachers advance through a series of eight non-linear stages throughout their career: (1) preservice, (2) induction, (3) competency building, (4) enthusiastic and growing, (5) career frustration, (6) career stability, (7) career wind-down, and (8) career exit. Meanwhile, personal dimensions that influence teachers' career stages include variables such as: (a) family support, (b) critical incidents such as marriage, birth of children, or religious experiences, (c) life crises such as illness, death, financial loss, or legal problems (d) teachers' unique traits, aspirations, and values, (e) avocational outlets including hobbies and travel, and (f) life stages (Greiman et al., 2005). In addition to myriad personal variables, teachers must also navigate distinct institutional contexts (Fessler & Christensen, 1992) in the form of school regulations, administrative management styles, public trust, and societal expectations. In this study, therefore, we used Fessler and Christensen's (1992) model to conceptualize how secondary agricultural educators in Louisiana's needs may be similar as well as distinct across career stages.

In our analysis of such factors, we then employed Dunkin' and Biddle's (1974) model of teaching and learning (see Figure 1) as an a posteriori lens to interpret our emergent findings. The model refined constructs first proposed by Mitzel (1960) to offer four variables that influence teaching and learning: (a) presage, (b) context, (c) process, and (d) product. The first variable, presage, refers to the personal characteristics that influence the teaching and learning process such as certification type, teacher preparation, and other unique individual needs and experiences. Context variables reflect the unique factors and conditions that influence the teaching and learning environment such as educational policy, school climate, and any specialized expectations that affect how teachers approach their career. The third variable, process, is defined as the specific activities that affect achievement such as methods of instruction, classroom management, and student motivation strategies. Dunkin and Biddle (1974) theorized the combination of the aforementioned variables influence the final *product, i.e., student success*. Our lenses, therefore, helped interpret the dimensions of professional development needs for teachers, across career stages, in regard to the factors – presage, context, and process – that most profoundly influence student success in agricultural education.

Figure 1

Adapted from Dunkin's and Biddle's (1974) Model of Teaching and Learning.



Statement of Purpose and Research Question

The purpose of this study was to compare and contrast the professional development needs articulated by Louisiana secondary agricultural education teachers across three career stages: (1) early career, (2) mid-career, and (3) career teachers. Because this study was positioned to build the capacity of the agricultural education profession, it addressed the American Association for Agricultural Education's Research Priority Area 3: *Sufficient Scientific and Professional Workforce that Address the Challenges of the 21st Century* (Stripling & Ricketts, 2016). One research question framed the investigation: In what ways did secondary agricultural education teachers experience similar, but diverse professional development needs across career stages?

Reflexivity

In addressing this study's purpose, it is important to reveal how our experiences and biases influenced this investigation. First, we want to acknowledge that each investigator is a former secondary agricultural education teacher. Therefore, our beliefs about teaching and learning and priorities regarding professional development for inservice teachers were distinct biases that although we attempted to minimize, could have impacted the design and interpretation of data. We also believe it is essential to recognize that we have strong professional relationships with many secondary agricultural educators in Louisiana. For example, several of the participants in this study were our former students. We also have close professional bonds with many of the other participants through our previous service and outreach efforts. Although such relationships provided some advantages, such as participant recruitment, they also introduced susceptibilities. In our methodology section, therefore, we explain how we imbued rigor and trustworthiness throughout this investigation to provide quality conclusions.

Methodology

In framing this study, we situated our assumptions and investments through the epistemological position of constructionism (Crotty, 1998). Using this worldview, we pursued our *quintain* (Stake, 2006), or central issue, in regard to how professional development needs could foment, interact, or clash when examined as a social construct. It was through this lens that we also grounded the study, methodologically, in Stake's (2006) multiple case study design. Such an approach is appropriate when

attempting to construct an understanding of a phenomenon from diverse perspectives to obtain a more complete understanding (Stake, 2006). To accomplish this, we collected data from secondary agricultural educators ($N = 66$) in Louisiana to develop a profile of each case. Then, we performed a cross-case analysis to compare and contrast themes and axial codes across cases to better understand their collective dimensions (Stake, 2006).

Description of Cases, Participant Recruitment, and Data Collection

To study teacher professional development needs across career stages, we bounded cases by location and years of teaching experience. For example, all participants were secondary agricultural educators in Louisiana. We also categorized participants into distinct cases based on their years of experience: Case #1 – *Early Career Teachers* – zero to five years of teaching experience; Case #2 – *Mid-Career Teachers* – six to 15 years of teaching experience; and Case #3 – *Career Teachers* – 16 or more years of teaching experience. We then purposefully recruited participants who (a) met the bounds of each case, and (b) were attending one of three Louisiana FFA Leadership Camp sessions. Based on Louisiana's Education Bulletin all agricultural educators in Louisiana are required to attend one camp session and engage in professional development facilitated by the Louisiana Agricultural Teachers' Association. Therefore, the camp served as an optimal site to facilitate data collection.

After Internal Review Board (IRB) approval, we then conducted focus groups, ranging from 65 to 85 minutes in length, for cases at each session of camp, i.e., a total of nine interviews. Of note, three research team members facilitated each of the nine focus group interviews using the same semi-structured interview protocol. We also collected the following forms of data from participants to triangulate findings: (a) demographic questionnaires, (b) quantitative instruments assessing participants' professional development needs on Likert-type scales (see Figland et al., 2019), and (c) other supporting documents. In total, 11 females and 12 males ($n = 23$) represented the *Early Career Teachers* and had an average of 2.5 years of teaching experience. The *Mid-Career Teachers* were comprised of 26 participants (11 female; 15 male) who reported a mean of 12.3 years of teaching experience. Finally, six females and 11 males ($n = 17$), who had 22.7 years of average teaching experience, represented the *Career Teachers*. We next provide our techniques to analyze data (Stake, 2006).

Data Analysis

After data collection, we transcribed interviews verbatim. Then, data were uploaded to NVivo® qualitative analysis software to facilitate analysis and understand the data's complexities. In particular, our analysis procedures were facilitated using Corbin's and Strauss' (2015) constant comparative method through three phases of coding: (1) open, (2) axial, and (3) selective. For example, in the open coding phase, we labeled data into distinct units using participants' words (Corbin & Strauss, 2015). During this process, we also created memos to capture our thoughts and assertions (Corbin & Strauss, 2015).

Thereafter, we engaged in axial coding in which we scrutinized relationships of our open codes through concept mapping, code weaving, and data displays to reduce the data into categories and create evidentiary warrants for each case (Corbin & Strauss, 2015; Saldaña, 2012). Example axial codes from our analysis included: (a) advocating for agricultural education, (b) building a culture for agricultural education, (c) facility restoration and management, (d) industry-based credentials, and (e) teaching diverse students. During this phase, we were also able to explore discrepancies in our data and consider rival explanations. The evidentiary warrants were then mobilized using horizontal analysis techniques to construct an analytic storyline for each case, i.e., our *case reports* (Stake, 2006). In the third phase of analysis, we employed selective coding to our case reports and axial codes to *think with theory*

(Corbin & Strauss, 2015). Through this inductive process, three themes emerged in each case by interpreting our preliminary findings a posteriori through Dunkin's and Biddle's (1974) model of teaching and learning. Then, to describe the dimensions of the professional development needs across career stages, we performed a cross-case analysis of the study's themes and axial codes. Before offering our interpretation of this investigation's findings, however, it is critical to examine how quality was built into each phase of this investigation.

Building Quality into the Study

In this investigation, we used Lincoln and Guba (1985) four standards of trustworthiness to build quality in our design and procedures: (1) credibility, (2) transferability, (3) dependability, and (4) confirmability. The first standard, credibility, refers to whether findings and conclusions ring true within the context in which data were collected and when compared against existing evidence and theory. To achieve credibility, we explored uncertainties, provided context-rich descriptions, triangulated findings across sources, and compared our conclusions to relevant research. Transferability, the second standard, indicates the utility of the investigation's findings for other contexts. To ensure that our findings were transferable we: (a) accurately described our participants and setting, (b) provided diverse perspectives on the phenomenon, and (c) explained how participants were selected and recruited. The third standard, dependability, refers to whether the investigation was conducted in a consistent way over time. As such, we developed a clear statement of purpose, illuminated our role in the study, and maintained a thorough audit trail. The final standard, confirmability, reflects researchers' explicitness about their decisions, biases, and other influences that could have affected the investigation. We upheld confirmability by: (a) offering a researcher reflexivity, (b) provided a full description of our procedures, and (c) only provided conclusions that were clearly linked to data. Next, we provide a discussion of our emergent themes.

Findings

Through our analysis, three themes emerged in each case: (1) presage variables, (2) context variables, and (3) process variables (Dunkin & Biddle, 1974). The themes represented the various dimensions of professional development that secondary agricultural education teachers expressed they desired to better facilitate student success, i.e., *product variables* (Dunkin & Biddle, 1974). Through case comparison and contrasts, we weaved salient axial codes and the voices of within case participants into a rich description of each theme. At the conclusion of the report, we then provided meta-inferences using cross-case analysis procedures.

Case #1: Early Career Teachers

The *Early Careers Teachers* were largely focused on building their competencies (Dunkin & Biddle, 1974) to better prepare them for a career as a secondary agricultural education teacher. For example, because many of the teachers in this career phase came from non-traditional backgrounds, they desired more training in content agriculture and knowledge of pedagogical strategies to enhance student learning. Next, we offer the dimensions of the *Early Career Teachers'* needs as interpreted through the lens of Dunkin's and Biddle's (1974) model of teaching and learning: (1) presage variables, (2) context variables, and (3) process variables.

Theme #1: Presage Variables

During focus group interviews, the *Early Career Teachers* articulated how their unique backgrounds, i.e., *presage variables*, influenced their professional development needs. For example, ten of the 23 participants interviewed in this case revealed they were alternatively certified. To this

point, Participant #1 added, "I'm guessing some of you went through teacher education programs where they taught you how to utilize your student leadership. But I came to teaching ag straight from 20 something years in the air force. So it's been a challenge." Participant #8 also explained that her non-traditional background limited her ability to keep students engaged, "I graduated in animal science. I've relied on PowerPoints and things like that. And kids don't respond as well." Another pattern that emerged from our analysis of *Early Career Teachers'* interviews was that a majority expressed a need for additional content knowledge. Participant #16 explained, "I was raised on a dairy so I had a lot of the animals, had some plants, but the problem [is] like with food safety and agricultural mechanics...I don't have that background." Participant #14 added, "Like for me, I came from a different state. I didn't have my education necessarily from here. I'm learning something completely different and all my kids complain because they hated [my class] because it was so much bookwork." The *Early Career Teachers* also articulated that their backgrounds and training complicated their ability to navigate work-life balance. Participant #2 explained, "my husband and I have just had to stop talking about work. I guess I just don't know what's best." Participant #9 added, "in my education classes, we just never really talked about how to turn it off [being a teacher] after the bell rings."

Theme #2: Contextual Variables

The *Early Career Teachers* also described how unique *contextual influences* affected their ability to fulfill aspects of their career. A salient axial code from our analysis, for example, were needs regarding how-to fulfill community and administration expectations while also building a culture supportive of agricultural education. Participant #15 explained, "I need help communicating with my community and administration, I can't get [everyone] on the same page." As a result of such challenges, 16 *Early Career Teachers* voiced the need for additional "networking" or "mentorship" opportunities in the future. The early career teachers also spoke to how their school districts served students with diverse needs. Therefore, they needed more guidance on how to support such students. Participant #19 explained, "I have lots of kids with different needs." And, Participant #23 added, "I had one kid that could not talk. I wanted to help him all I could, but it just made things so difficult. That's the hardest thing." Another contextual factor that affected the *Early Career Teachers* interviewed was the importance placed on Industry-based Credentials (IBCs) in their school districts. Participant #19 explained, "I did not realize how big of a deal IBCs were, so, I really need some help understanding how to certify my students in different areas." Finally, several of the *Early Career Teachers* also described the need to learn how to "restore" (Participant's #2, #9, #13, #16, & #20) and "manage" (Participant's #4, #6, #7, #13, & #21) their facilities and laboratories because of a lack of resources in their school systems.

Theme #3: Process Variables

The final theme, *process variables*, that emerged for the *Early Career Teachers* case reflected their need for professional development to ensure student success (Dunkin & Biddle, 1974). For example, participants, in this case, expressed an interest in learning more pedagogical skills that would allow them to "keep students engaged" (Participant #8). To accomplish this, they also emphasized the need for more "behavior management techniques" (Participant's #2, #6, #7, #9, #10, #11, #17, & #22), strategies for "motivating students" (Participant #1, #3, #5, #7, #15, #16, & #20), and facilitating "Supervised Agricultural Experiences (SAEs)" (Participant's #1, #2, #4, #7, #13, #15, #16, & #20). Further, 14 of the participants expressed the desire for more professional development in regard to FFA competitions and award applications.

Case #2: Mid-Career Teachers

The *Mid-Career Teachers* appeared more confident in their abilities (Fessler & Christensen, 1992). However, they also expressed frustrations in the career. Therefore, they desired professional development to gain more stability and proficiency in performing their job duties. We next offer an interpretation of the *Mid-Career Teachers*' professional development needs through the lens of Dunkin's and Biddle's (1974) model of teaching and learning.

Theme 1: Presage Variables

The *Mid-Career Teachers* expressed more stability and were eager to acquire knowledge to support their students. However, their life situations, i.e., *presage variables*, appeared to influence particular aspects of their work. For example, 18 of the *Mid-Career Teachers* spoke about their struggle to maintain "work-life balance." As an illustration, Participant #27 explained: "I get frustrated because I'm in a one teacher department and it's a large school. How am I supposed to take care of everything and still have time for family?" This issue of work-life balance also appeared to influence other aspects of *Mid-Career Teachers*' family life negatively. According to Participant #40: "You start looking at ag teachers as a whole and I'm willing to bet in most schools you start seeing a lot of teachers that are becoming single. Apparently, it's a trend." As a result, the *Mid-Career Teachers* desired more professional development in this area. However, they also voiced a need to learn more strategies to overcome personal struggles such as coping with "stress" (Participant's #26, #27, #32, #36, #39, #41, & #49).

Theme 2: Context Variables

The second theme, *context variables*, illuminated the situational elements in which *Mid-Career Teachers* desired to develop more professionally. For example, a hurdle faced by nearly all of *Mid-Career Teachers* was their school district's emphasis on IBCs. As Participant #49 claimed: "The problem [at my school] is all they care about is that students get a credential at the end. Our guidance counselors, they just want to find the quickest way to get a kid graduated and out of here." Because of increasingly complex contextual factors, the *Mid-Career Teachers* also saw value in professional development that focused on "teaching diverse students" (Participant's #24, #27, #31, #34, #37, & #46), "advocating for agricultural education" (Participant #32, #35, & #38), securing additional "funding support" (Participant's #33, #39, #42, & #47) and "grant writing" (Participant's #24, #26, & #29). Also, because of the lack of resources in most school districts, the *Mid-Career Teachers* desired more professional development about facility restoration and management. For example, Participant #50 revealed, "We just do not have a lot of money in my [school], our facilities are run down and getting old. So, maybe just some ideas and strategies to help keep them up would help me."

Theme 3: Process Variables

The final theme for the *Mid-Career Teachers*, process variables, represented their professional development needs concerning facilitating student success. For example, the *Mid-Career Teachers* voiced a need for more opportunities to acquire knowledge and skills in regard to using "educational technology" (Participant's #29, #37, #38, #40, & #44) and improving "student motivation" (Participant's #25, #29, #28, #37, & #41). As Participant #29 explained, "we have access to a lot of technology. I just do not know how to use it." In addition to technology, 16 of the participants spoke about the need for advanced training to facilitate "SAE projects" as well as "FFA competitions and applications."

Case #3: Career Teachers

Overall, the *Career Teachers* articulated they were *winding down* in their career and beginning to make plans for retirement (Fessler & Christensen, 1992). Throughout their career, they explained how they had witnessed an evolution concerning the priorities of education as well as the types of students in their programs. They also voiced a desire for more opportunities to promote camaraderie, networking, and fellowship to improve the culture of secondary agricultural education. As a result, their professional development needs were unique when interpreted through Dunkin's and Biddle's (1974) model of teaching and learning.

Theme 1: Presage Variables

During interviews, the *Career Teachers* provided anecdotes of how they overcame many challenges throughout their work lives. However, they were also experiencing new personal challenges, i.e., *presage variables*, that affected how they approached work. For example, several of the *Career Teachers* mentioned how their health and other *personal struggles* affected the way they approached their career. As a consequence, Participant #65 suggested the need for professional development on maintaining a "healthy lifestyle." However, the *Career Teachers* also spoke about more support on how-to balance "family and relationships" (Participant #46, #48, #51, #54, #55, #61, #64, & #65) while maintaining a successful program.

Theme 2: Contextual Variables

A prominent concept that emerged in our analysis of *Career Teachers* was their struggle to cope with shifting *contextual* forces that influenced their work. In response, nearly all of the *Career Teachers* called for more professional development opportunities to build relationships and network so that secondary agriculture teachers in Louisiana could traverse such issues as a united front. The *Career Teachers* also articulated problems facilitating quality instruction for the diverse needs of their students. Participant #62 explained, "there have been a lot of societal changes, which means there is a big difference in the kids that we're getting in today. It's been a struggle. They need this and that, I just have trouble keeping up." Another contextual shift the *Career Teachers* mentioned they had witnessed was the emphasis on "industry-based credentials." As a result, 16 of the *Career Teachers* wanted more programming on strategies to certify students in various IBCs in the future. After witnessing multiple economic downturns and budget cuts during their tenure, the *Career Teachers* also noted they required more training on how to effectively "advocate for agricultural education" to decision-makers (Participant's #45, #46, #59, #60, & #61). They also saw value in learning more ways to acquire "grants" and other "financial support" (Participant's #41, #49, #52, & #58).

Theme 3: Process Variables

The last theme, *process variables*, reflected the procedural aspects that *Career Teachers* perceived restricted them in achieving student success. As an illustration, one of the greatest frustrations expressed by *Career Teachers* was their lack of knowledge concerning technology. Participant #59 explained, "I think we need to have [professional development] on the electronics and how to use them. The SmartBoards and online learning... it is intimidating, especially for someone who's been around before computers were in the classroom." In addition, the *Career Teachers* also noted they struggled with how to motivate today's students. Participant #65 revealed, "for me the last 15 years, student motivation has been on the decline as far as students wanting to do things, and be involved. I need some help on understanding what makes them tick." Finally, nearly all *Career Teachers* interviewed maintained they needed more assistance learning how to "engage students" and facilitate "SAEs."

Conclusions

The purpose of this study was to compare and contrast the professional development needs voiced by Louisiana secondary agricultural education teachers across three career stages: (1) early career, (2) mid-career, and (3) career teachers. As a result, findings from this investigation suggested that secondary agricultural education teachers' professional development needs in Louisiana were *n nuanced* and *varied*. For example, when interpreted through Dunkin's and Biddle's (1974) model of teaching and learning, presage, context, and process variables emerged in each career stage. However, the dimensions of each variable were diverse.

In particular, the *Early Career Teachers'* non-traditional background often limited their exposure to opportunities available through agricultural education; therefore, they desired more knowledge and skills in technical agricultural concepts. Meanwhile, *Mid-Career Teachers* were more stable and confident in their roles as secondary agricultural education teachers; nevertheless, they were frustrated because of various contextual forces that complicated their job duties. The final case, *Career Teachers*, were experiencing career wind-down and, therefore, reflected on the many changes they had witnessed to agricultural education. As a consequence, they had unique professional development needs to help them cope better with personal, contextual, and process changes that were affecting their career. As a consequence, findings from this investigation not only align with the literature on professional development, but also add new developments regarding the relevance of understanding teachers' needs across career stages to ensure student success in agricultural education (Dunkin & Biddle, 1974; Fessler & Christensen, 1992).

For example, our cross-case analysis (Stake, 2006) of this investigation's themes and axial codes revealed key converges and divergences. Such differences helped define and describe the professional development needs through and between cases. However, it is essential to recognize that across cases, four axial codes regarding professional development needs were constant: (1) industry-based credentials, (2) teaching diverse students, (3) SAEs, and (4) student motivation strategies. Such factors have been previously identified by research in the agricultural education literature (Figland et al., 2019; Layfield & Dobbins, 2002; Washburn et al., 2001).

However, data from this study provided new insights into ways that work-life balance and personal struggles may manifest in the various career stages of secondary agricultural educators. Further, our findings also illuminated how career experience may uniquely frame the ways in which secondary agricultural education teachers interpret and react to various contextual forces – such as resources, support, expectations, and changing student profiles – and as a result require additional support in understanding how to navigate such changes. Finally, key differences regarding process needs (Dunkin & Biddle, 1974) speak to the need for differentiated professional development in each programmatic dimension of agricultural education's comprehensive three-circle model: (a) classroom and laboratory, (b) FFA, and (c) SAE, a finding supported by previous literature (Easterly & Myers, 2019; Figland et al., 2019). Table 1 provides an overview of the cross-case comparison of the study's themes and axial codes.

Table 1
Cross-Case Comparison of Professional Development Needs by Themes and Axial Codes

Themes and Axial Codes	Early Career Teachers	Mid-Career Teachers	Career Teachers
Presage Variables			
Content knowledge	✓	×	×
Expectations for alternatively certified teachers	✓	×	×
Personal struggles	×	✓	✓
Work-life balance	✓	✓	×
Contextual Variables			
Advocating for agricultural education	×	✓	✓
Building a culture for agricultural education	✓	×	×
Community and administration expectations	✓	×	×
Facility restoration and management	✓	✓	×
Grants and financial support	×	✓	✓
Industry-based Credentials	✓	✓	✓
Networking	✓	×	✓
Teaching diverse students	✓	✓	✓
Process Variables			
Behavior management	✓	×	×
Facilitating SAEs	✓	✓	✓
FFA competitions and applications	✓	✓	×
Pedagogy	✓	✓	×
Student motivation	✓	✓	✓
Technology	×	✓	✓

Note. Not present = ×; Present = ✓.

Recommendations, Implications, and Discussion

In this investigation, we provided an amplified view of the professional development needs of secondary agricultural education teachers in Louisiana across career stages. As a consequence, our findings appear to illuminate new implications for future research, theory, and practice. We recommend, therefore, that the results from this study be shared with Louisiana Agriculture Teachers' Association. By providing insight into teachers' discourse, perhaps professional development opportunities can be tailored to target their needs better as they transition into various phases of their career (Easterly & Myers, 2019; Figland et al., 2019). And, because teachers were provided opportunities to voice their concerns if state leaders respond by delivering their desired programming needs, perhaps greater teacher buy-in can be achieved (Fessler & Christensen, 1992; Knowles, 1980; Roberts et al., 2020; Roberts & Ramsey, 2017). In agricultural education, Greiman (2010) described professional development as a *one size fits all* approach. In accord, the findings of this investigation illuminated some areas of commonality in regard to secondary agricultural education teachers' professional development needs. For instance, professional development on industry-based credentials, teaching diverse students, SAEs, and student motivation strategies would be appropriate programming

for secondary agriculture education teachers in all career phases in Louisiana. We recommend that such professional development sessions be featured at the annual meeting of the Louisiana Agriculture Teachers' Association in the future. Perhaps such changes could also promote greater recruitment and retention efforts for teacher preparation programs in colleges of agriculture (Alston et al., 2019; Alston et al., 2020).

However, our findings also provided evidence that the *one size fits all* approach (Greiman, 2010) will not work in all areas of professional development. For instance, *Early Career Teachers* warrant additional support in content knowledge, understanding expectations for alternatively certified teachers, building a culture for agricultural education, meeting community and administration expectations, pedagogy, behavior management, among others factors. Therefore, we recommend that an *Early Career Teacher* induction series be created in Louisiana by which novice teachers engage in regular professional development to better support their growth and development. Meanwhile, *Mid-Career Teachers* and *Career Teachers* voiced they would prefer additional support regarding how-to navigate personal issues and work-life balance as well as contextual influences and technology (Layfield & Dobbins, 2002; Washburn et al., 2001). To accomplish this, perhaps state leaders could embed opportunities to address these topics during statewide events such as Louisiana FFA Convention or FFA Leadership Camp.

Although we recognize that the professional development needs of secondary agricultural education teacher vary from state to state, this study's findings point to additional areas for future research. As an illustration, the emergence of the need for advocacy training, teaching diverse students, and support in grant seeking could serve a basis for professional development exploration for *Mid-Career* and *Career Teachers* in other regions of the United States. Further, although previous research has reported that differences exist between traditional and alternatively certified teachers (Roberts & Dyer, 2004; Swafford & Friedel, 2010), our findings provided voice to how such differences may stimulate unique frustrations and result in alternatively certified teachers leaving the profession more frequently than their traditionally certified peers. And finally, because Dunkin's and Biddle's (1974) model for teaching and learning served as a productive lens in this study, we recommend that future theory-building efforts be dedicated to distilling the dimensions of professional development needs for secondary agricultural education teachers across the U.S. regarding the factors – presage, context, and process – that most profoundly influence student success in secondary agricultural education.

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