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Professional Life Phases: Identifying Professional Development Needs for Florida Agriscience Teachers

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Abstract

For learners to be better prepared to solve current and future complex problems, teachers must continue to strengthen and refine their teaching and learning practices throughout their career. One known modality to assist teachers in refining their pedagogical skills is teacher participation in professional development opportunities. The purpose of this study was to identify the self-perceived professional development needs of agriscience teachers in Florida based on their professional life phase. All three career phases shared modifying instruction for students with special needs as one of their top identified instructional practice needs. It is recommended that agricultural education professional development organizers consider years of experience when planning workshops and opportunities. The "cookie cutter" method or "one size fits all" themes for professional development may not be the most effective way to continue offering these workshops since the findings of this study and others indicate differing needs of agriscience teachers based on professional life phase and years of experience.

Keywords: teacher needs; instructional practice; teacher career phases; professional life phases; professional development

Introduction

For learners to be better prepared to solve current and future complex problems, teachers must continue to strengthen and refine their teaching and learning practices throughout their career (Darling-Hammond & Bransford, 2005; Darling-Hammond et al., 2017; Mizell, 2010; Wash et al., 2000). One known modality to assist teachers in refining their pedagogical skills is teacher participation in professional development opportunities. Quality professional development focused on educational programming allows educators to build on their knowledge and skills to apply the best educational practices to impact learners' knowledge and skill acquisition (Darling-Hammond & Richardson, 2009; Mizell, 2010; Wenglinsky & Silverstein, 2006). However, identifying which professional development opportunities to offer teachers can often be difficult (Washburn et al., 2001). Teachers from every career phase, beginning to end, are met by professional challenges that can influence their retainment in the profession (Sutcher et al., 2016). Cannon et al. (2012) found teachers' needs can change over time due to their diverse backgrounds and experiences. Thus, conducting periodic teacher needs assessments can be beneficial to identifying teacher needs (Borich, 1980; Darling-Hammond et al., 2017).

Figland et al. (2019) reported findings for classroom-based professional development needs of agriculture teachers based on years of teaching experience. According to the responses for perceived instructional needs, teachers with one to five years of experience identified need in teaching in a

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laboratory and managing instructional facilities. Teachers with six to 10 years of experience reported perceived instructional need in motivating student learning and developing online teacher resources. Those with 11 to 15 years of teaching experience, identified needs in developing online teaching resources and using instructional technologies. Teachers with 21 or more years of teaching experience identified their highest need as using instructional technologies.

Sorensen et al. (2014) examined agriscience teachers' professional development needs by career phase and identified the top five-ranked in-service needs among teachers in the induction phase (one to five years), as being (a) writing grant proposals for external funding, (b) utilizing a local advisory committee, (c) utilizing the AET record book system, (d) training CDE teams, and (e) balancing priorities to make time for career and family/personal life. Agriscience teacher needs pertaining to managing inclusive classrooms were reported by Hoerst and Whittington (2009). Developing educational goals and behavioral objectives and providing assistive technology for students with special needs are skillsets needed by agriscience teachers (Hoerst & Whittington, 2009).

In a study conducted by Smalley and Smith (2017), 35 participants, representing all regions of the National Association of Agricultural Educators (NAAE), responded to the question, "What are the biggest obstacles that prevent mid-career agriculture educators from becoming the teachers they wish to be?" Nineteen participants identified time management as their biggest obstacle. Another five participants acknowledged work/life balance concerns, which the researchers related back to the issue of time management. The second most identified theme was course planning, particularly regarding (a) content knowledge, (b) locating curriculum, (c) classroom resources, and (d) developing lesson plans (Smalley & Smith, 2017).

There is a considerable need for new data that can assist in guiding the professional development of Florida agriscience teachers. The last needs assessment of this population was administered over 10 years ago (Roberts & Dyer, 2004). With increasing nationwide teacher shortages ever looming, providing professional learning opportunities is one important method in which to battle teacher attrition (Darling-Hammond et al., 2017; Sutcher et al., 2016). However, *effective* professional development is driven using data from regularly conducted needs assessments (Darling-Hammond et al., 2017). Further, teacher professional development should be informed by the professional needs of teachers and their developmental stage (Antoniou & Kyriakides, 2013). Lastly, this research directly aligns with Research Priority 5: Efficient and Effective Agricultural Education Programs of the *American Association for Agricultural Education National Research Agenda* (Thoron et al., 2016).

Conceptual Framework

Day and Gu (2014) outlined six professional life phases centered around years of experience in teaching: zero to three, four to seven, eight to 15, 16 to 23, 24 to 30, and 31 years or more. During professional life phase one (zero to three years), teachers were said to have a high level of commitment. Within this phase, two subgroups of teachers exist, those with a developing sense of efficacy and those with a reduced sense of efficacy. The level of support, recognition of their work, and school culture are key factors that play a role in the professional life trajectories for teachers during this phase (Day & Gu, 2014).

For professional life phase two (four to seven years), promotion and additional responsibilities begin to play a significant role in the identities, motivation, and sense of effectiveness for teachers. Day and Gu (2014) indicated the second phase had three sub-groups. The first sub-group of teachers maintained a strong sense of identity. The second sub-group had been observed as merely coping and managing their identity, efficacy, and effectiveness. The third sub-group was shown to be declining or vulnerable with their identity, efficacy, and effectiveness as teachers and at risk of leaving the profession.

The third professional life phase (eight to 15 years) focuses on managing changes in role and identity, including tensions and transitions in the workplace. Two sub-groups were observed in this phase, teachers who sustained engagement and those who were affected by detachment or a loss of motivation. Hargreaves and Fullan (2012) described this professional life phase as being the most overlooked group in the entire teaching profession. Even though the teachers in this professional phase were most likely to be confident and well established, they were starting to face difficulties managing both their professional and personal lives (Day & Gu, 2014).

Day and Gu describe the fourth professional life phase (16 to 23 years) to include work-life tensions, challenges to motivation, and commitment. Teachers were observed and categorized into three sub-groups based on their level of work challenge management and life/home experiences. Teachers reported to have seen their motivation and commitment increase as a result of career advancement and/or good pupil relationships in sub-group one. Sub-group two teachers simply maintained their motivation, commitment, and effectiveness and would likely continue to cope with work life tensions in their next professional phase. Teachers in the third sub-group noted a decrease in career motivation and commitment attributed to heavy workload, management of competing tensions, and career stagnation.

Based on challenges to sustaining motivation, two sub-groups were also identified for the fifth professional life phase (24 to 30 years of teaching experience). They included those who continued to maintain a strong sense of motivation and commitment and those who were losing motivation which likely leads to an early retirement. Classroom knowledge updates and more general professional/personal development needs were observed to be important to teachers in this professional life phase (Day & Gu, 2014).

The sixth and final professional life phase included teachers with 31 or more years of teaching experience. These teachers were described by Day and Gu as having sustaining/declining motivation, the ability to cope with change, or looking to retire. Teachers in this phase were categorized either as teachers whose motivation and commitment remained high despite of, or because of changing personal, professional, and organization contexts, and teachers whose motivation had declined and whose expected trajectories were increased fatigue, disillusionment, and exit. Supportive school cultures not only played a crucial role in teachers' continued engagement in the profession during this professional life phase, but in the teachers' sense of effectives across all six professional life phases (Day & Gu, 2014).

The National Association of Agricultural Educators (NAAE; 2015) has adapted previously known career life cycle information and created a three-phase model depicting an agriscience teacher's life cycle. The first phase, *early-career*, consists of three sub-phases: *pre-service/early*, *middle*, and *late*. The primary concern for the teacher differs among each sub-phase. The second phase, *mid-career,* is also comprised of three sub-phases, representing *stabilization, experimentation*, and *taking stock*. The final phase of the agriscience teacher's life cycle is *late-career* and includes the sub-phase of *serenity*. There are several outside factors that can influence the teacher's concerns and needs as they progress through their teaching career life cycle (NAAE, 2015). The NAAE (2015) model was selected to include within this conceptual framework since this study's population consisted of agriscience teachers.

This study sought to identify the needs of Florida agriscience teachers based on professional life phases. The researchers combined the six-career phase outline presented by Day and Gu (2014) with NAAE (2015) three-phase life cycle model. This naturally created a conceptual framework that consisted of only three phases, but with linear progression due to years of teaching experience. This combination allowed the important components presented by Day and Gu (2014) to be combined with the phases outlined by the national professional association for agriscience teachers (NAAE). Furthermore, the authors chose to condense this framework into three life phases for the practicality of

offering tailored professional development opportunities by career-phase as a result of this research. The professional life phases used in this study were (a) early-career (zero to seven years), (b) mid-career (eight to 23 years), and (c) late-career (24 years and up) and are outlined in Figure 1.

Figure 1

A Combination of Models for Teacher Professional Life Phases

Day & Gu (2014)	Phase 1: *1-3 years*	Phase 2: *4-7 years*	Phase 3: *8-15 years*	Phase 4: *16-23 years*	Phase 5: *24-30 years*	Phase 6: *31+ years*
NAAE (2015)	Early-Career: *Years not specified*		Mid-Career: *Years not specified*		Late-Career: *Years not specified*	
Combined	Early-Career: *1-7 years*		Mid-Career: *8-23 years*		Late-Career: *24+ years*	

Purpose and Objectives

The purpose of this study was to identify the self-perceived professional development needs of agriscience teachers in Florida based on their professional life phase. For this purpose, instructional practices are competencies related to teaching methodologies, planning lessons and units, and student assessment. Four objectives guided this study:

1. Identify the self-perceived instructional practice needs for agriscience teachers in the *early-career* phase.
2. Identify the self-perceived instructional practice needs for agriscience teachers in the *mid-career* phase.
3. Identify the self-perceived instructional practice needs for agriscience teachers in the *late-career* phase.
4. Identify the shared, highest-ranked, self-perceived professional development needs between the three professional life phases of agriscience teachers based on mean weighted discrepancy scores (MWDS).

Methods

Population and Sampling

The target population for this study was all Florida agriscience teachers who registered for FFA Chapter Officer Leadership Training (COLT) Conferences (N = 366). Each of the six areas in Florida hosted a COLT conference and data were collected at each location and point in time through a hardcopy questionnaire administered during the teacher professional development sessions. Ultimately, 269 teachers completed and submitted the instrument for a 73% response rate. Collection of data from non-respondents or agriscience teachers who did not attend the conference was not attempted by the researchers. Non-response data was not collected because 58% of the total Florida agriscience teacher population (N = 465) completed the instrument and the researchers considered the sample representative of the population. Furthermore, this population of agriscience teachers is well-known by the researchers, and no egregious sampling abnormalities were present. Congruent with judgement sampling practices (Israel, 1992; O'Leary & Israel, 2013), non-response data was not collected because a majority of the total Florida teacher agriscience population responded. However, this study does not aim to generalize to the entire population of Florida agriscience teachers, and results should not be generalized to populations outside of the respondents (Israel, 1992; O'Leary & Israel, 2013). For the purposes of this study, the professional life phase timeline proposed by Day and Gu (2014) was combined with the teacher life cycle model created by NAAE (2015) to describe professional life phases of Florida agriscience teachers. Early-career teachers were those who have taught zero to seven years in the classroom. Mid-career teachers have been teaching for eight to 23 years. The late-career life phase includes those who have been teaching for 24 years or more. The teacher respondents in this

study were majority female (*f* = 177; 65.8%), White (*f* = 243; 90.3%), and held a bachelor's degree (*f* = 198; 73.6%). A plurality of participants indicated they were traditionally certified in agriculture (*f* = 102; 37.9%), and the remainder of teachers indicated they were either initially certified in *another* subject area *outside* of agriculture (*f* = 69; 25.7%) or did not complete a traditional university-based teacher education program (*f* = 96; 35.7%). Two respondents (<1%) did not respond to the certification type question. A majority of teachers taught in a single teacher program (*f* = 149; 55.4%) and at the high school level (*f* = 147; 54.6%). Regarding teacher professional life phases, 163 (60.6%) were early-career, 82 (30.5%) were mid-career, and 24 (8.9%) were late-career, with the majority of participants having taught an average of 8.8 years (*SD* = 9.0; Min. = 1.0; Max. 42.0). According to [Blinded, personal communication, date] of the Florida Department of Education, the above-mentioned demographics are representative of the agriscience teacher population in Florida with the exception of those traditionally certified in agriculture (*f* = 102; 37.9%) which is slightly lower than the population percentage.

Instrumentation

The study utilized an instrument originally created by Roberts and Dyer (2004) and later revised by Saucier et al. (2010), and Figland et al. (2019). It was modified further to fit the needs of this study. The questionnaire instrument aimed to identify the professional development needs of agriscience teachers in their corresponding states. A panel of experts comprised of five agricultural education faculty members and six doctoral students, five of which were former agriscience teachers, established face and content validity. Three items were deleted, and numerous items were rephrased to make items relevant for Florida agriscience teachers as a result of the instrument review. The instrument consisted of seven sections that measured agriscience teacher needs. For the purpose of this study, sections (a) instructional practices and (g) teacher demographics, were analyzed. Two Likert-type scales (1 = *Low*; 5 = *High*) intended to measure teacher perceived current knowledge and perceived job relevance were used in section (a).

Data Analysis

The data were examined for the distribution of missingness (Schafer & Graham, 2002) in order to address missing data. It was determined that data were missing at random, and single imputation was used (Schafer & Graham, 2002). The data were analyzed using SPSS version 26 for PC. Descriptive statistics, including means, standard deviations, frequencies, and percentages were used to describe the population of agriscience teachers who attended the COLT conferences. For the purpose of objectives one through four, mean weighted discrepancy scores (MWDS) were used. Discrepancy scores are well-suited for ranking or prioritizing competencies of needs assessments (Borich, 1980). In accordance with Borich's (1980) model, the MWDS was determined by subtracting the perceived content knowledge score from the perceived job relevance score to find the difference. That difference was then multiplied by the mean job relevance score which equaled the individual discrepancy score. Individual discrepancy score means were then calculated to obtain the MWDS for each competency. These calculations were conducted using a Microsoft Excel template (McKim & Saucier, 2011).

Study Limitations

Data were collected only from the agriscience teachers that were able to attend the COLT conference. A non-response follow-up was not conducted since a majority (58%) of all agriscience teachers in Florida were in attendance and responded to the questionnaire. An argument could be made that the professional development needs of those teachers who did not attend the conference could differ from those who did.

Findings

Objective 1: Identify the Instructional Practice Needs for Florida Agriscience Teachers in the *Early-Career* Phase

Based on MWDS, the five competencies identified in the area of instructional practice with the greatest need by teachers in the early-career phase included *determining content to be taught in specific courses* (MWDS = 4.68), *sequencing lessons and units of instruction* (MWDS = 4.37), *assessing student learning in the classroom and lab* (MWDS = 4.12), *modifying instruction for students with special needs* (MWDS = 4.09), and *identifying resources for curricula* (MWDS = 3.88). The three competencies identified as the lowest priority need areas were *using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)* (MWDS = 1.46), *highlighting science in agriculture courses* (MWDS = 1.40), and *planning for teaching in a block schedule* (MWDS = -0.61). The instructional practice needs of early-career phase agriscience teachers by ranked MWDS are outlined in Table 1.

Table 1

Instructional Practice Needs of Florida Early-Career Phase Agriscience Teachers (n = 163)

Rank	Competency	MWDS	Mean Knowledge Level	*SD*	Mean Relevance Level	*SD*
1	Determining content to be taught in specific courses	4.68	3.61	1.03	4.63	0.70
2	Sequencing lessons and units of instruction	4.37	3.50	0.98	4.48	0.74
3	Assessing student learning in the classroom and lab	4.12	3.63	0.85	4.54	0.68
4	Modifying instruction for students with special needs	4.09	3.25	1.07	4.22	0.96
5	Identifying resources for curricula	3.88	3.30	0.98	4.22	0.90
6	Developing lesson plans	3.79	3.58	1.01	4.44	0.92
7	Using experiments in teaching	3.64	3.34	0.99	4.21	0.84
8	Managing student behavior	3.54	3.93	0.85	4.69	0.64
9	Teaching for different learning styles	3.50	3.56	0.88	4.36	0.77
10	Motivating students	3.25	3.90	0.83	4.60	0.65
11	Teaching problem solving skills	3.12	3.34	0.99	4.21	0.84
12	Evaluating teaching resources	3.02	3.33	1.03	4.07	1.01
13	Teaching critical thinking skills	2.98	3.56	0.89	4.26	0.90
14	Teaching decision making skills	2.54	3.72	0.86	4.31	0.84
15	Highlighting reading strategies in agriculture courses	2.25	3.52	0.93	4.07	0.82
16	Highlighting math in agriculture courses	2.23	3.15	1.00	3.75	1.03
17	Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	1.46	3.73	1.02	4.09	1.11
18	Highlighting science in agriculture courses	1.40	4.17	0.84	4.48	0.68
19	Planning for teaching in a block schedule	-0.61	2.75	1.37	2.50	1.61

Objective 2: Identify The Instructional Practice Needs for Florida Agriscience Teachers in the *Mid-Career* Phase

Based on MWDS, the five competencies identified in the area of instructional practice with the greatest need by teachers in the mid-career phase included *modifying instruction for students with special needs* (MWDS = 3.82), *using experiments in teaching* (MWDS = 3.16), *assessing student learning in the classroom and lab* (MWDS = 3.15), *identifying resources for curricula* (MWDS 2.83), and *motivating students* (MWDS = 2.77). The three competencies identified as the lowest priority need areas were *highlighting science in agriculture courses* (MWDS = 1.70), *developing lesson plans* (MWDS = 1.44) and *planning for teaching in a block schedule* (MWDS = -1.56). The instructional practice needs of mid-career phase agriscience teachers by ranked MWDS are outlined in Table 2.

Table 2

Instructional Practice Needs of Florida Mid-Career Phase Agriscience Teachers (n = 82)

Rank	Competency	MWDS	Mean Knowledge Level	*SD*	Mean Relevance Level	*SD*
1	Modifying instruction for students with special needs	3.82	3.48	1.00	4.35	0.79
2	Using experiments in teaching	3.16	3.43	0.92	4.18	0.80
3	Assessing student learning in the classroom and lab	3.15	3.93	0.89	4.61	0.64
4	Identifying resources for curricula	2.83	3.63	0.95	4.29	0.82
5	Motivating students	2.77	3.93	0.90	4.54	0.72
6	Teaching critical thinking skills	2.75	3.71	0.91	4.34	0.71
7	Teaching for different learning styles	2.75	3.71	0.90	4.34	0.77
8	Determining content to be taught in specific courses	2.72	4.06	0.84	4.65	0.57
9	Teaching problem solving skills	2.72	3.85	0.86	4.46	0.65
10	Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	2.41	3.73	1.13	4.29	0.82
11	Teaching decision making skills	2.34	3.94	0.91	4.46	0.60
12	Evaluating teaching resources	2.01	3.65	0.91	4.13	0.87
13	Highlighting math in agriculture courses	1.94	3.60	0.91	4.07	0.80
14	Managing student behavior	1.93	4.24	0.87	4.66	0.63
15	Sequencing lessons and units of instruction	1.88	3.98	0.94	4.40	0.83
16	Highlighting reading strategies in agriculture courses	1.79	3.63	1.00	4.07	0.91
17	Highlighting science in agriculture courses	1.70	4.12	0.87	4.50	0.71
18	Developing lesson plans	1.44	3.88	0.93	4.22	1.11
19	Planning for teaching in a block schedule	-1.56	3.29	1.47	2.72	1.74

Objective 3: Identify the Instructional Practice Needs for Florida Agriscience Teachers in the *Late-Career* Phase

Based on MWDS, the five competencies identified in the area of instructional practice with the greatest need by teachers in the mid-career phase included *modifying instruction for students with special needs* (MWDS = 2.71), *using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)* (MWDS = 2.30), *motivating students* (MWDS = 2.08), *highlighting reading strategies in agriculture courses* (MWDS = 1.93), *teaching for different learning styles* (MWDS = 1.75). The three competencies identified as the lowest priority need areas were *assessing student learning in the classroom and lab* (MWDS = -0.18), *identifying resources for curricula* (MWDS = -1.03), and *planning for teaching in a block schedule* (MWDS = -2.36). The instructional practice needs of late-career phase agriscience teachers by ranked MWDS are outlined in Table 3.

Table 3

Instructional Practice Needs of Florida Late-Career Phase Agriscience Teachers (n = 24)

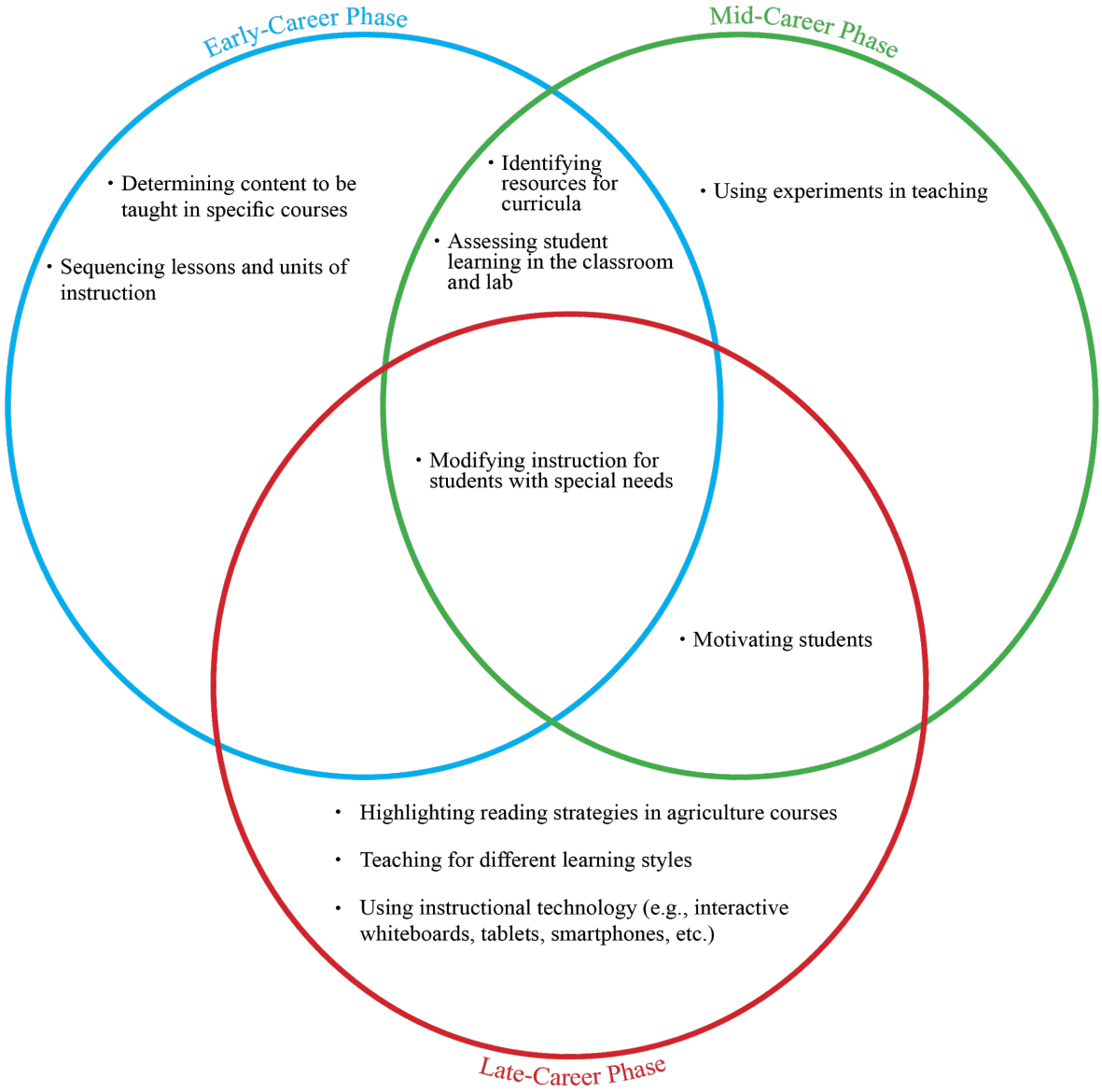
Rank	Competency	MWDS	Mean Knowledge Level	*SD*	Mean Relevance Level	*SD*
1	Modifying instruction for students with special needs	2.71	3.71	0.78	4.67	0.64
2	Using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.)	2.30	3.71	1.00	4.25	1.07
3	Motivating students	2.08	4.08	0.88	4.54	0.72
4	Highlighting reading strategies in agriculture courses	1.93	3.75	1.22	4.21	0.83
5	Teaching for different learning styles	1.75	3.79	0.83	4.21	0.93
6	Teaching decision making skills	1.12	4.21	0.78	4.46	0.66
7	Determining content to be taught in specific courses	1.01	4.63	0.65	4.83	0.38
8	Using experiments in teaching	0.97	3.63	0.97	3.88	1.03
9	Teaching problem solving skills	0.94	4.29	0.75	4.50	0.66
10	Managing student behavior	0.78	4.50	0.78	4.67	0.64
11	Highlighting science in agriculture courses	0.74	4.29	0.86	4.46	0.66
12	Teaching critical thinking skills	0.70	4.04	0.62	4.21	0.88
13	Highlighting math in agriculture courses	0.65	3.75	1.03	3.92	0.93
14	Evaluating teaching resources	0.18	4.17	0.82	4.21	0.83
15	Sequencing lessons and units of instruction	0.00	4.42	0.83	4.42	0.72
16	Developing lesson plans	-0.17	4.21	1.02	4.17	0.96
17	Assessing student learning in the classroom and lab	-0.18	4.46	0.66	4.42	0.72
18	Identifying resources for curricula	-1.03	4.38	0.65	4.13	0.95
19	Planning for teaching in a block schedule	-2.36	4.21	1.28	3.54	1.53

Objective 4: Identify the Shared, Highest-Ranked, Self-Perceived Professional Development Needs Between the Three Professional Life Phases of Agriscience Teachers Based on Mean Weighted Discrepancy Scores (MWDS)

When comparing the ranked needs of the three career phases of agriscience teachers, they collectively shared one of their highest ranked self-perceived instructional practice needs. Early-career phase agriscience teachers and mid-career phase agriscience teachers shared an additional two of their highest ranked self-perceived instructional practice needs. Mid-career phase agriscience teachers and late-career phase agriscience teachers shared an additional top ranked self-perceived instructional practice need (Figure 2).

Figure 2

Comparison of the Top Five Instructional Practice Needs by Career Phase



Conclusions

The purpose of this study was to identify the instructional practice needs of Florida agriscience teachers. After examination of the data, 60.6% of the respondents were classified as early-career phase teachers with zero to seven years of teaching experience in agriculture. Early-career phase teachers reported their top five self-perceived needs as being *determining content to be taught in specific courses, sequencing lessons and units of instruction, assessing student learning in the classroom and lab, modifying instruction for students with special needs,* and *identifying resources for curricula*. This conclusion is consistent with Day and Gu's (2014) inference that teachers in this stage may struggle with balancing their responsibilities and this may affect their identities.

The mid-career phase teachers represented 30.5% of the respondents. Mid-career agriscience teachers ranked *modifying instruction for students with special needs, using experiments in teachings, assessing student learning in the classroom and lab, identifying resources for curricula,* and *motivating students* among their top five self-perceived instructional practice needs. Three out of five of these needs can be categorized in the course planning theme and align with Smalley and Smith (2017).

Only 8.9% of respondents represented the late-career phase teachers. *Modifying instruction for students with special needs, using instructional technology (e.g., interactive whiteboards, tablets, smartphones, etc.), motivating students, highlighting reading strategies in agriculture courses,* and *teaching for different learning styles* were the top five reported self-perceived instructional practice needs. Day and Gu (2014) reported classroom knowledge updates and struggling motivation as needs among the teachers in the late-career phase as well. This conclusion also aligns with Figland et al. (2019) who stated that using instructional technologies was the highest need among agriculture teachers with 21 years or more of teaching experience.

All three career phases shared *modifying instruction for students with special needs* as one of their top identified instructional practice needs. This is congruent with the conclusion of Hoerst and Whittington (2009). Early and mid-career phase teachers shared *identifying resources for curricula* and *assessing student learning in the classroom and lab,* while the mid and late-career phase teachers had *motivating students* as a shared need regarding instructional practice.

Recommendations

Recommendations for Practice

The results of this study should be shared with state agricultural education staff, university faculty, the Florida Association of Agricultural Educators, and anyone else who provides professional development experiences for agriscience teachers. These groups should work together in the vested interest of agriscience teachers to offer relevant professional development based on professional life phases. It is recommended that agricultural education professional development organizers consider years of experience when planning workshops and opportunities. The "cookie cutter" method or "one size fits all" themes for professional development may not be the most effective way to continue offering these workshops since the findings of this study and others indicate differing needs of agriscience teachers based on their professional life phase and years of experience.

Specifically, for teachers in the early-career phase (zero to seven years), professional development opportunities could be offered on determining content to be taught in specific courses. For example, the use of collaborative curriculum development and curriculum mapping among early-career teachers and more seasoned teachers could be the focus of this specific professional development opportunity. This opportunity would afford early-career teachers to outline a sequence for delivering content, and provide an outline for what must be taught with a more seasoned peer. For mid-career phase teachers (eight to 23 years), the area of using experiments in teachings would be a beneficial professional development topic. As cited in the literature, these mid-career teachers are often overlooked because they are established and settled (Hargreaves & Fullan, 2012) despite their desire to learn more and experiment with new teachings methods to obtain motivation (Day & Gu, 2014; NAAE,

2015). Perhaps a good strategy for professional development providers to use with this group would be a models and modeling approach. Specifically, in the area of using experiments in the classroom, professional development providers could use a "lab classroom" with an expert teacher who demonstrates (modeling) best practices when using experiments. The lab classroom and expert teacher could provide an effective model for teachers to see best practices and provide a safe place for teachers to practice (model) what they have learned to later implement in their classrooms.

Additionally, late-career phase teachers (24 or more years) should receive professional development opportunities related to using instructional-technology. According to Day and Gu (2014) teachers in this phase have coped with change over an entire career. One very well documented change has been the use of technology in the classroom. As such, it is recommended that a show, don't tell approach be taken when hosting an instructional- technology professional development workshop. This type of approach allows teachers to observe the technology, and try out the technology rather than being told about the technology and its benefits.

Lastly, in the world of teacher professional development, providers do not always have the luxury of working with only one professional life phase. Thus, when it is not possible to offer a workshop geared toward teachers in a specific professional life phase, it is recommended that an audience consisting of members from each career-phase be offered professional development in the area of modifying instruction for students with special needs since all three phases identified this competency as a shared priority need area. Topics of such professional development could include (a) accommodations and modifications, (b) specific disorders, (c) gifted and talented, (d) grading, and (e) differentiated instruction to name a few.

Recommendations for Future Research

This study only identified the instructional practice needs of the agriscience teachers based on professional life phases. Further research should look at the self-perceived needs included in the additional areas of the questionnaire. There is much knowledge to be gained about future professional development opportunities from these areas that include data on agriscience teacher needs concerning (a) industry certifications, (b) technical agriculture, (c) laboratory settings, (d) program management, and (e) teacher development. Specifically, in Florida, and many other states, industry certifications are and are becoming a driving force in the agricultural education curriculum. This is an area that few studies have addressed in the past, and a direction for future needs assessments to investigate. As such, it is recommended that further investigation and effort be dedicated toward teacher preparation in content and delivery of industry certifications.

An additional question emerged from the findings of this study. Why is modifying instruction for students with special needs a priority area of need among agriscience teachers in every career phase? A study which explores the curricula currently being taught in teacher preparation programs to identify if the content in the courses are effectively preparing future teachers to work with students with special needs would be informative. To coincide with an examination of the curricula, since not all teachers are traditionally certified, a mixed-methods study should be conducted with the agriscience teachers to identify specific needs when working with students with special needs, and how to best address these needs. Additionally, adjustments to the instrument used in this study need to be made. Specifically, when examining the items used in all areas, the items seem to be surface level identifying overarching needs. An instrument to measure specific and focused need is warranted. Future needs assessments should be administered periodically to collect the most current agriscience teacher's needs data. Finally, analysis of need changes over time should be conducted to monitor professional development progress in the top priority areas.

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