Journal of Agricultural Education, 58(3), 56-71.
https://doi.org/10.5032/jae.2017.03056

You Seize What Pops Up: A Qualitative Investigation of The Core Features Of School-Based Agricultural Education Professional Development

R. G. (Tre) Easterly III[1] & Brian E. Myers[2]

Abstract

Desimone's core features of professional development (PD) guides the PD for teachers. The purpose of this study was to examine the PD practice of School-Based Agricultural Education (SBAE) teachers in the enthusiastic and growing career stage. Semi-structured telephone interviews were conducted with five teachers from five different states. The transcriptions of the interviews were coded using content analysis to determine if Desimone's core features were evident in the PD practice of enthusiastic and growing teachers. The codes for four teachers indicated that they were in the enthusiastic and growing career stage and were included in the content analysis. The respondents indicated PD for SBAE teachers included collective participation, content focus, and active learning. Discrepancy was found between Desimone's core features of PD of coherence and duration. PD should be designed in SBAE to include the core features of PD. A Team Ag Ed. approach to planning and implementing PD is recommended to increase coherence and promote participation in PD offerings. Efforts should also be made to incorporate school district and subject-specific initiatives. Further investigation is needed to explore Desimone's full model of PD for SBAE teachers.

Keywords: Qualitative, Enthusiastic and Growing, School-based agricultural education, Professional Development, career cycle, career stage

Introduction

The journey of teacher development is a process that begins when that person decides to become a teacher and continues until they reach retirement or leave the profession (Fessler & Christensen, 1992). Historically, the emphasis on developing teachers has been the focus of preservice training (Fessler & Christensen, 1992). While preservice training has been a crucial part of teacher development, there should be an emphasis on continued professional growth throughout their career (Bransford, Darling-Hammond, & LePage, 2005). Despite the importance of continued professional growth, the typical professional development (PD) practice of teachers has been described as sit-and-get (U. S. Department of Education, 2005). According to the United States Department of Education (2005), teachers are involved in PD, but most of the involvement takes place is short intervals and has limited effectiveness. Effective PD should ultimately lead to increased student learning (Desimone, 2009). According to Desimone, five core features of effective PD have emerged as consensus in the literature as the key characteristics of effective PD. These features are content focus, active learning, coherence, duration and collective participation.

[1] Tre Easterly is an assistant professor in the Agricultural and Extension Education Department at New Mexico State University, 105 Gerald Thomas Hall, Las Cruces, NM 88003, easterly@nmsu.edu.

[2] Brian Myers is a professor and chair of Agricultural Education and Communication at the University of Florida, 305 Rolfs Hall, Gainesville, FL, 32611, bmyers@ufl.edu.

Teacher PD in School-Based Agricultural Education (SBAE) has historically been differentiated by the type of teacher preparation program the teacher used to become certified to teach. For most teachers in SBAE, the process began in an undergraduate or graduate teacher preparation program, others became teachers later in their career after working in the agriculture industry; while still others have entered the discipline from other subject areas to teach agriculture (Kantrovich, 2010; Roberts & Dyer, 2004; Robinson & Edwards, 2012; Rocca & Washburn, 2006). PD has also been historically guided by needs assessments where teachers indicate their need and interest in learning different subjects. Several researchers (Dunkin, Ricketts, Peake, & Uesseler, 2006; Golden, Parr, & Peake, 2014; Layfield & Dobbins 2002; Roberts & Dyer, 2004) have conducted teacher needs assessments to guide PD. Further, several researchers in agricultural education (Roberts & Dyer, 2004; Robinson & Edwards, 2012; Rocca & Washburn, 2006) reported alternatively certified and traditionally certified teachers have different needs, thus their PD should be structured differently. While these studies are crucial in determining teacher needs, they may not fully detail a plan for teacher growth from a novice, or beginning teacher, to one that is an effective expert in the profession.

While traditional PD programs have been designed as a one-size-fits-all or based on how an individual entered the profession, Fessler and Christensen (1992) purported PD experiences should be differentiated by career stage. To provide insight into PD needs for teachers in different stages of their careers, Fessler and Christensen identified the teacher career cycle. Teachers in different stages of their careers have different experiences, therefore different teachers have unique PD needs. Fessler and Christensen described the process of teacher growth as a ". . . meandering path of successes and failures, enthusiasm and despair, growth and stagnation, and confidence and doubt" (p. 1). During this journey, the needs of teachers change. While there is current research to suggest SBAE teacher PD should be tailored based on teacher training and current needs, Fessler and Christensen suggested teachers should participate in PD based on their specific needs which are unique to each career phase.

Investigating how teachers develop and grow can provide some insight into the PD needs of teachers. The outcome of this study should be examined by individuals who develop PD opportunities for agriculture teachers and by teachers who are interested in professional growth.

Theoretical Framework

Fessler and Christensen's (1992) teacher career cycle model was the theoretical framework for this study. The teacher career cycle model specifies certain traits of teachers during the differing stages of their career. According to Fessler and Christensen, the career cycle model is a non-linear process that explains how a teacher interacts with PD through their career. The model also describes the impact professional and personal influences have on a teacher's career stage.

The current study examined teachers in the enthusiastic and growing stage. If PD is designed for teachers in the enthusiastic and growing stage, and support systems are developed to get teachers to move from other stages into the enthusiastic and growing stage, then perhaps a more effective system will be established. Teachers in this stage have a high level of job competence coupled with a high level of job satisfaction. These teachers have had their basic PD needs met and are considered expert teachers, however they are still cognizant of the PD process and focus on PD opportunities that fit their interest. Teachers in this stage are also likely to serve as leaders in the school in identifying and promoting PD opportunities (Fessler & Christensen, 1992). Teachers in the enthusiastic and growing stage have been found to have more positive attitudes towards PD (Maskit, 2011). Since the enthusiastic and growing stage is the most desirable stage for teachers to be in, the goal for PD and teacher support systems should be to get teachers to the enthusiastic and

growing stage as quickly as possible or to get them to return to that stage if they enter into the frustration or stability stages. Teachers in the frustration and stability stage are not purposeful in their professional growth and typically only participate in compulsory PD. Teachers in the competency building stage are still developing their teaching skills and do not yet have a high level of competence in their practice (Fessler & Christensen, 1992).

Review of Literature

Despite the potential benefit of PD, there is evidence to suggest teachers do not fully embrace the PD process. According to National Center for Education Statistics (2001), a majority of teachers reported spending just over one day per year in PD experiences, which is below the typical state requirement for PD of 15 days over a five-year period (NASDTEC, 2004). According to Bezzina (2006), few teachers were satisfied with their PD system despite being cognizant of their needs for PD. According to Maskit (2011), a teacher's career stage can have an influence on their view of PD. Maskit reported teachers in the competency building and enthusiastic and growing stages have more positive attitudes towards PD.

Early teacher PD has been established and implemented at the local level (U. S. Department of Education, 2005). The typical programmatic assessment measures for teacher PD determined whether the teachers who participated enjoyed the training and implemented the strategies taught in the training. The move towards standardized testing has created an increase focus on student scores on achievement tests and thus, PD related to standardized tests (Hill, Beisiegel, & Jacob, 2013). The current landscape of PD has included teacher and developer perceptions, measures of teacher knowledge, and an evaluation of student outcomes (Hill et al., 2013). The value of the teacher as a professional has also been evident in the landscape of PD. According to Roseler and Dentzau (2013), using a 'top down' approach for PD may not be as effective as PD that relies on teachers as experts in the school. This was congruent with the recommendations of Darling-Hammond and McLaughlin (1995) who suggested teachers should be given the opportunity to share what they know, focus on what they want to learn and engage in learning in their own unique context.

Alternative Types of Professional Development

PD has not typically been limited to in-service workshops and formal teacher training. Desimone (2009) identified PD as any activity that prepares teachers for improved performance, which can include workshops, but also includes brief hallway conversations with colleagues, professional reading, reflecting on a lesson, meeting in a small group with other teachers and finding new instructional materials. Vescio, Ross, and Adams (2008) identified professional learning communities of teachers as an effective means of PD that leverages the teacher as the expert and catalyst for their own growth.

While some types of PD may be beneficial for all teachers, it is possible that teachers prefer different modes of PD delivery based on their career cycle. When analyzing German teachers, Richter, Kunter, Klusmann, Ludtke, and Baurmert (2011) found the use of professional literature increased as the age of the teacher increased while formal PD training peaked during the middle part of the teachers' career, and teacher collaboration decreased as the age increased. An analysis of German PD is valuable since teachers have not been required to participate in PD, which helps control a variable present in PD research in the U. S. These findings indicated more experienced teachers are more likely to use professional reading to inform their practice whereas younger teachers are more likely to utilize collaboration or consult a mentor to guide their practice.

Teacher Professional Development in School-Based Agricultural Education

The literature regarding specific teachers' needs for PD is thorough (Andresen, Seevers, Dormody, & VanLeeuwen, 2007; Barrick, Ladewig, & Hedges, 1983; Birkenholz & Harbstreit, 1986; Christensen, Warnick, Spielmaker, Tarpley, & Straquadine, 2009; Duncan, Ricketts, Peake, & Uessler, 2006; Edwards & Briers, 1999; Garton & Chung, 1996; Golden, Parr, & Peake, 2014; Harris, 2008; Haynes & Stripling, 2014; Joerger, 2002; Johnson & Shumacher 1989; Koundinya, & Martin, 2010; Layfield & Dobbins, 2002; McCraken, Newcomb, & Moore, 1975; McKim & Saucier, 2011; Myers, Dyer, & Washburn, 2005; Newman & Johnson, 1994; Roberts & Dyer, 2004; Robinson & Edwards, 2012; Rocca & Washburn, 2006; Saucier & McKim, 2011; Sorenson, Lambert, & McKim, 2014; Sorensen, Tarpley, & Warnick, 2010). Further investigations have explored how teachers interact with specific types of PD practices (e. g. Shoulders & Myers, 2014; Ulmer, Valez, Lambert, Thompson, Burris, & Witt, 2013). There is evidence in the literature to suggest that PD available to career and technical teachers is minimal and not useful (Ruhland & Bremer, 2002). While inquiry in the area of needs assessment for PD is important, there has been a limited amount of investigation regarding how teachers grow and develop as a result of the cumulative PD in which they participate.

Specific features of PD are evident in the literature. De Lay and Washburn (2013) found teacher collaboration in PD efforts can increase the overall effectiveness of the PD. They did note there were some barriers to collaboration among SBAE teachers and most collaborative experiences were a product of informally structured experiences. Westfall-Rudd (2011) found when agriculture teachers were involved in the planning of their PD, they felt a greater sense of ownership in training. These findings are congruent with Desimone's (2009) framework which identified collective participation as a necessary part of effective PD.

Professional Development That Expedites Novice-to-Expert Growth

Desimone's (2009) proposed core conceptual framework for studying the effects of PD on teachers and students provides insight into the core features of PD. In that framework, Desimone identified content focus, active learning, coherence, and duration as necessary aspects of PD that led to improved student learning. Greiman (2010) stated in-service training in SBAE has typically been a one-shot process, and the focus of PD should become a continuous process that emphasized daily learning, application and reflective practice.

Some programs in SBAE have the aspects of PD that Greiman (2010) and Desimone (2009) identified as being important for successful PD. These aspects are part of the National Agriscience Teacher Ambassador Academy (NATAA). The NATAA is a time intensive, sequenced PD opportunity where participants complete an intensive weeklong training and up to two years of professional growth experiences which, includes training others in inquiry-based instruction and collaborating with others in the program. The NATAA program has been shown to increase the participants students' scientific reasoning skills (Thoron & Myers, 2012b), and improve argumentation skills (Thoron & Myers, 2012a). Inquiry-based instruction taught in the NATAA program leads to an increase in content knowledge achievement for all students (Thoron & Myers, 2011), as well as students with special needs (Easterly & Myers, 2011). The program also developed teachers' ability to incorporate science into instruction (Shoulder & Myers, 2011), which highlighted the effectiveness of the in-depth model of PD. Shoulders and Myers (2014) found continued PD in the NATAA program led to teacher behavior change, and that the NATAA included the components of PD as found by Desimone.

The Curriculum for Agricultural Science Education (CASE) PD program is another PD series that has aspects of quality PD identified by Desimone (2009). CASE is an 80-hour PD program where teachers are involved in hands-on training on implementing agriscience instruction. Participation in CASE training has been effective in increasing teacher self-efficacy, which lasted over a nine-month period (Ulmer et al., 2013).

Research Question

The purpose of this study was to examine the PD practice of SBAE teachers in the enthusiastic and growing career stage. Enthusiastic and growing SBAE teachers were identified for this inquiry because they are more likely to have experienced a myriad of PD experiences, are actively involved in PD and have a positive view of PD (Fessler & Christensen, 1992). To accomplish the purpose, this study was guided by the following research question: Are Desimone's (2009) core features of PD evident in the PD experiences of enthusiastic and growing SBAE teachers?

This research aligned with research priority number five in the American Association of Agricultural Education's research priority areas which calls for research that evaluates the effectiveness of the PD attributes established by Desmine (2009; Thoron, Myers, & Barrick, 2016). Thieman, Henry and Kitchel (2012) also call for research that identifies characteristics and qualities of effective and resilient agricultural educators. While research has been conducted on issues that induction stage teachers face, and how to help induction stage teachers adapt to their careers, little has been done on how SBAE teachers progress from novice-to-expert, which happens well past the induction stage.

Methods

This study utilized a basic interpretative qualitative approach used to determine the factors of effective PD for SBAE teachers (Merriam, 2002). According to Ary, Jacobs, Sorensen, & Walker (2014) the purpose of this type of research is to provide a rich description of a process. The process under investigation in this study was teacher PD as interpreted by expert teachers, specifically as it relates to their growth in becoming an expert teacher. Different individuals develop their own meaning for any experience. This research approach was used to explore similarities that expert teachers found in their PD process in a rich, all-encompassing manner.

The population of the study was expert SBAE teachers. For this study SBAE teachers in the enthusiastic and growing stage defined by Fessler and Christensen (1992) were purposefully selected as the population of interest in the study. These individuals were described as expert teachers who have a high level of competency in the classroom. Despite their high level of competency, they actively participate in PD. Their professional growth is driven by their interest and curiosity rather than deficiency (Fessler & Christensen, 1992). A criterion sample was used to achieve a sample of teachers in the enthusiastic and growing stage of their career. Teachers from five purposefully selected states were selected for this study to allow for a variety of PD experiences. The states were California, Illinois, Florida, Minnesota, and Pennsylvania. These states were selected to represent both geographical diversity and to introduce possible differences in the PD systems of each state. Three individuals involved in the SBAE leadership from each state were asked to provide a list of 10 teachers who fit the criteria for the study. If a teacher appeared on multiple lists, consensus was reached and that teacher was selected for participation in the study. If more than one teacher was on all three lists, one teacher was chosen at random. The researchers analyzed the respondents' transcripts to ensure the teachers were in the enthusiastic and growing stage. A pilot interview was conducted by the researcher. The participant of the pilot interview was

an expert SBAE teacher in Florida. The participant of the pilot interview was eliminated from the pool of candidates for the study.

The standards of rigor were addressed by using commonly accepted methods as presented by Ary et al. (2014). This study utilized one-on-one semi-structured interviews with expert teachers. Semi-structured interviews were used rather than focus groups because the purpose of the study was to examine individuals' experiences rather than the collective group perception of PD. The moderator's guide was developed by the researchers to determine how the expert teachers have grown as professionals. Questions were also asked to ensure the teachers were in the enthusiastic and growing stage as defined by Fessler and Christensen (1992). Since the interviews were semi-structured, the questions varied based on the responses received.

Phone interviews were conducted and recorded for data coding. Notes were also taken by the researcher during the interviews. The recordings of the interviews were transcribed by the researcher and cross-checked with the field notes to check for accuracy. Each interview was conducted at a time of the teachers choosing. The interviews lasted approximately one hour each. During the interview, the researcher refrained from explaining or defining the enthusiastic and growing stage or any biases towards PD. A subjectivity statement was completed by the researchers to identify their biases related to teacher growth and PD. Through the audit trail process, we recognized possible biases in preference of PD preferring training that provides substantive theory to change teachers practice rather than one-shot training facilitated through workshops related to contest preparation or other finite tasks. These biases were recorded in an audit trail to assure dependability and to recognize the possibility enthusiastic and growing teachers may need one-shot training related to finite tasks. Member checks were used to establish credibility and to ensure all conclusions were data driven (Lincoln & Guba, 1985). While five interviews were determined a priori, additional interviews could have been added to the study if saturation had not been met (Moustakas, 1994).

Data Analysis

The interview transcripts served as the data medium for the study. A direct content analysis was used to analyze the data (Hsieh & Shannon, 2005). The interviews were first analyzed by the researchers to determine if the teachers fit the description of enthusiastic and growing. According to Hsieh and Shannon (2005), the purpose of direct content analysis is to validate or extend a theory, in this case Desimone's (2009) core features of PD. Prior to the coding process, the researchers reviewed Desimone's core features of PD to develop consensus about how the themes will be interpreted. One participant was found not to be in the enthusiastic and growing phase and was removed from the study. At the conclusion of the coding process the researchers summarized their codes and developed generalizations.

Since qualitative methods were used and a limited number of participants were part of the study, the results are not generalizable to the population; however, thick descriptions are provided in the results so a determination can be made regarding the transferability of the findings (Ary et al., 2014).

Teacher Career Cycle

Prior to coding, a content analysis of the transcripts was conducted to ensure each of the teachers were in the enthusiastic and growing stage as defined by Fessler and Christensen (1992). Codes were related to involvement in PD, motivation to participate in PD, and attitudes towards the teaching profession and PD.

Hank had been teaching for 13 years, holds a master's degree in agricultural education and is actively involved in PD in the school and through the state agricultural education association. He was found to be in the enthusiastic and growing stage of his career. According to Hank, he has a responsibility as a teacher to "make sure that I'm engaging myself in opportunities that stretch me as a teacher." Hank was active in the National Science Teachers Association and had participated in the NATAA training. He also served as a NATAA ambassador where he delivered PD training in the local school district and state and national agricultural education association. Hank expressed his need for professional growth by saying, "Anything that's going to sharpen my saw blades, that's going to allow me to me to cut straighter and sharper, that's what I consider PD."

Peggy was found to be in the enthusiastic and growing stage. Peggy is "still growing and learning and finding out new ways to do things," even after 13 years in the classroom. She served as a mentor for other teachers in the state and in leadership positions in the state and national agricultural education association. She actively participates in PD in her school and in the state agricultural education association. Peggy indicated several times that she was active in the PD process. She also mentioned being "very excited about" attending the NATAA training, and mentioned several other PD practices as being helpful to her practice including NAAE communities of practice and technical agriculture workshops held at the local university. According to Peggy, "Anyone who says they no longer need to go to workshops or no longer need to do whatever, they've really kind of closed off and I don't know how helpful they'll be to their students."

Dale has been a teacher for 13 years. He is active in PD in the school and in the state agricultural education association. At the time of the interview he served on the leadership organization for his teacher's union at the school and as a leader in the state agricultural education association. He holds a master's degree in agricultural education. Dale was found to be in the enthusiastic and growing phase. When asked if he would consider himself to be an expert teacher Dale responded, "I would say I'm an effective teacher, but if I don't try to continue to get better, I will lose that title." During the interview Dale talked about being an active participant in PD, however he viewed the system as more passive. According to Dale, "you seize what pops up." He also added that he waits to "get the menu" of the PD offerings to determine his needs. Dale did mention that culture among agriculture teachers was helpful to fill gaps in knowledge. According to Dale, to be successful "you need to ask, you need to find out, you need to explore."

Nancy has been a teacher for seven years. She is active in her state agricultural education association and in her school. During the time of the interview, she served in the leadership group of her local teachers' union, and as a leader in her state agricultural education association. She has earned her master's degree in agricultural education. Nancy was found to be in the enthusiastic and growing career stage. Nancy talked about seeking PD that helped her make programmatic changes related to course curriculum being offered in her program. She has ". . . been slowly looking at [her] curriculum and focusing on what [she] can improve on." Nancy also mentioned that PD can sometime "better your attitude towards teaching." While she acknowledged that her job was often stressful, she used PD to help maintain her enthusiasm towards her job and her students.

Results

The responses were coded using Desimone's (2009) core features of PD as a source for the codes. Each theme appeared at least once in each of the interviews. Overall, the respondents had a positive view of the PD process, which is congruent with the finds of Maskit (2011).

Content Focus

The participants seemed to prefer PD focused in domain specific content focused areas directly related to the subjects they taught. Nancy said,

> If there is a big area that we need to fill some void in the classroom or there's a content [I am] weak on and it's kind of my fault, then I make sure to go to those if possible. . . Some of those workshops don't really apply to me, so I don't go to those, so I guess I try to look at the list [of workshops offered the state agricultural education association] and try to figure out what we really need.

Dale said, "If there's opportunities [sic] for me to gain more knowledge in horticulture workshops, I'm going to go to those." Hank reported, "I would see more so on our state level as far as curriculum you might do a particular topic, a CDE topic, skill topic. . .[I] go through and pick different ones that I appreciate." The content focus PD offered by the state agricultural education associations seemed to be relevant for the teachers. Conversely, the teachers did not seem to value PD that did not fit their content focus areas. Nancy shared this about a workshop on economics, "She did a good job, but you could tell that she didn't have the ag. knowledge to help us out with fitting it into ag business a little more." According to Hank, "PD opportunities that are ineffective. . .[if] you thought it was going to be one thing and it turned out to be a whole other different dynamic, or different topic than what they indicated to me." Peggy added PD at the school was not desirable because of the lack of content focus, "Usually when you meet as a full faculty, a lot of things are given as directives for the full staff, [and] may be very difficult to implement into a CTE course."

While the teachers seemed to appreciate the content focused PD provided by the state agricultural education associations, there was some indication that various forms of school PD were effective despite not having a tie to specific agricultural education content. Nancy reported about a workshop on students with special needs, "It provided a lot of examples and gave you a lot of stuff you can take with you and take to your classroom and see how it would fit your curriculum. . ." In regards to a district training on gangs in the school Dale said, "it makes your campus safer, it makes your approach with the students safer in class, it gives you more understanding to help." He went on to say, "That was a non-subject related [PD] that the district did that was very valuable."

Active Learning

Active learning in PD was a theme for each of the respondents. When describing a district PD in the school Nancy stated, "They kind of did some role play with that one to kind of help you out so it was obvious rather than just of giving you a list of things you could do." She shared a similar sentiment regarding a workshop at the summer teacher's conference, "A lot of time they'll give you stuff that you can take with you or hands-on stuff that you are doing right at the workshop rather than just, 'here's the materials go home, good luck.'" Dale described an effective PD workshop in his district by saying, "It wasn't just lecture, it was asking questions and so forth." Peggy echoed that sentiment by stating, "I've been part of lecture style PDs where someone shared information with me and I may not have really gained a lot from it." She went on to state, "I think a lot of us get into ag. education because of that hands-on approach that we then help our students with." Peggy said about a two-day training for SBAE teachers, "We actually walked through the labs and different activities so during the time we were there . . .we actually just walked through six or seven of the labs that we could then do with our students. . ." When asked about the NATAA training Hank stated, "The presenter did a really nice job of facilitating that, or providing examples." Nancy reflected on a district PD by saying, "[the instructor said] just bring your iPads,

we'll go through the basics, add apps, sort things and go forward from there. And you know? She did a really good job with it." Discussion was also mentioned as an active learning strategy by the teachers. Nancy stated, "Honestly, they kind of opened it up to more of an open forum discussion where people could share their experiences that they had rather than, 'I'm the instructor, I know all.'" Nancy mentioned a lack of active learning was a negative aspect of some of her graduate courses, "It's kind of funny because even at the college level people teaching you how to teach or instruct in front of the classroom, and they aren't doing a very good job of it."

Touring facilities and agricultural operations also emerged as a theme as part of active learning. Peggy stated, "You know you can watch a video on something but then to be able to actually see Tabasco, cutting the peppers and bottling their sauce. How cool is that?" Hank stated about the NATAA facility tours,

> To take us to their facility and to show us how much is invested in science, how much Pioneer invests in agronomist and so forth, and the job availability through that opened my eyes to engineering and chemistry as part of the science that I teach.

Hank identified the experience of being asked to teach college courses at a local community college as PD with an active learning component. He said, ". . . that was PD for me because I had to study a curriculum on a new level, I had to look at different topics, and those things directly relate to my classroom."

Coherence

The themes coded for coherence led to differing results. Nancy cited a specific technical training that had elements of coherence. She stated, "We did a longer series with Google training because . . . the kids have MacBooks." She went on to say, "[the training] has been an ongoing thing." When asked about the summer SBAE teachers' workshops, Hank stated, "Over the years I've been involved in [the summer SBAE teachers' workshops] since I became a teacher, and so you think about that, in 13 years, you get multiple workshops at teacher conventions, that adds up." Peggy referred to her growth as a leader in the agriculture teachers association as a coherent process. She stated, "My growth through the organization pretty much spanned my entire career, my first and second year as a teacher I was asked to be on committees here in [state] by expert teachers at the time."

Some teachers provided responses which indicated they had a plan for coherence in their own PD. This conclusion was made evident by Hank, who said,

> [I] thought [the workshop] was going to be one thing and it turned out to be a whole other different dynamic, or different topic than what the real topic they indicated to me. I feel like that [is] a waste of time.

Dale highlighted the coherent nature of his PD when reflecting on the industry tours that rotate to different areas in the state. According to Dale,

> I think the most effective thing is that in those regional fall meetings are rotated within each section. . .so those tours pertain to that specific area that those meetings are held at [sic]. So it's kind of cool because over a five-year period you've kind of been all over the region and you've expanded your knowledge, awareness and experience of different ag. industry areas.

Other statements may indicate a lack of coherence in PD planning. According to Dale, "You seize what pops up and say, 'you know that fills a need or a niche or [sic] an interest.'" Dale also stated, "It's not like I wake up and say, oh I need this. . . I'm always just out and open for things that are going to be a benefit." Peggy expressed a need for more coherence among PD by stating, "Having an opportunity to come back to it and work on it again would be beneficial." She went on to say, "That's actually been some [sic] discussion from NAAE even of ways to try to make that happen. . .to keep in contact, come back work on things, keep up. . .to keep the conversations going."

Duration

There was a lack of PD with a long duration, which is congruent with Greiman's (2010) assessment of PD. Only one respondent participated in a training that lasted longer than two days. Hank offered this about his NATAA experience,

> Not only are you gaining materials and ideas as far as how to teach different topics, you're developing the skill of using inquiry in the classroom and then you're enlightened in how to share that skill with others, how to help others implement that into their classroom. . .PD at our state conferences, is topical within the classroom that you would use, NATAA would be a strategy that I am going to implement in all my classes, or in my entire department.

Peggy attended some two-day workshops focused on teaching agriculture technical content. Peggy stated, "[The workshops] were great. I still use a couple of lessons I learned through those workshops." She also stated, "I think having workshop or PD that could be longer than 30-45 minute sessions certainly would lend itself to being more useful."

The respondents indicated duration was not essential for teachers to find value in PD. According to Hank, "[Week-long training and one-shot PDs] both have their place. And that's the great thing about ag. teacher's PD." Peggy stated, "You can't say that a 30-minute workshop was ineffective if you walked away with something to bring back to your classroom." Dale reported finding value in reading, a short duration PD experience that informs his teaching practice. "Our state ag. has teacher written articles on the publications . . . we'll get e-mail from other school and teachers that say, 'hey, just found this resource.'" Hank added, "As far as looking at pedagogy, that's probably where I would tie most of my pedagogy to be, the research behind what they are putting in." He went on to state, ". . .that's something I often think about. I should be spending more time in some science journals." Hank also stated, "I check out Morning Ag. Clips and I see, 'do any of these things apply to what I'm teaching today?'" Nancy reported using Pinterest as a short duration PD event that provides ideas and teaching materials. Nancy stated, "I use Pinterest and I follow a lot of ag. teachers on there, because you'll find helpful videos. . .there's a lot of different stuff on there, even ways to organize your contest curriculum so kids can find it." She went on to state, "It's something short that you don't have to spend a lot of time look for."

Collective Participation

Collective participation had the highest number of codes which indicated the relationship among SBAE teachers is valuable to the teachers in this study. According to Peggy, "I think it is invaluable information to be able to get teachers together and give them a chance to talk." Dale added, "You know everybody, we're a close knit group. I think the organization is solid . . . there's constant conversation and there's numerous opportunities to get together." Nancy compared collaboration between SBAE teachers and PD workshops by stating, "Maybe I just have a question

about how to improve some landscaping around the school. I am going to ask some of my colleagues instead of sitting through some big long workshop on it." She went on to say, "There are a few [SBAE teachers] that have been teaching 30 plus years and know the ropes and have seen things come and go it's been kind of interesting to have conversations with them." Dale stated, I think in general though that's just the culture we have, that you need to ask [other SBAE teachers]. You need to find out. You need to explore, and so there's not one way to go about it." He continued, "The workshops are one, e-mails are another, the written material are one. It's just a great culture."

Conclusions/Recommendations

The findings of this study showed that teachers in the enthusiastic and growing career stage are actively engaged in PD, which confirms the findings of Maskit (2011) and matches the theoretical framework established by Fessler and Christensen (1992). The teachers in the enthusiastic and growing stage reflected positively on their PD practice and were engaged in several PD offerings in their school and agricultural education systems. Despite their engagement in PD, the participants mostly took a passive role in planning and participating in PD. This was typified by Dale, who expressed that he took advantage of the opportunities that "popped up." It is interesting to note that one of the teachers that was identified by several individuals in his state as a teacher who fits the definition of enthusiastic and growing was not found to match this definition in the data analysis. While this change could have been fairly recent, further analysis and investigation is needed to differentiate those teachers who are truly in the enthusiastic and growing stage and those who are merely good citizens in their schools and in the agricultural education community. More importantly, further investigation is needed to examine the effects on student outcomes from these types of teachers. We echo the call of Fessler and Christensen (1992) for the need for empirical research to determine if the stage in the career cycle has an impact on student learning. This investigation also raises the issue of the role of PD in moving teachers back to the enthusiastic and growing stage. Can PD keep teachers in the enthusiastic and growing career stage? Can PD move teachers from the stability stage back to the enthusiastic and growing stage? While the focus of our investigation was not on teachers in the other stages, we encourage research that addresses moving teachers from each stage to the enthusiastic and growing stage.

Desimone's (2009) core features of PD were fairly robust to analysis of SBAE teachers' view of effective PD. The clearest connection was with the core feature of collective participation. SBAE teachers seem to value their relationships with other SBAE teachers, which resonates with the findings of De Lay and Washburn (2013). This can be leveraged in preparing PD. Perhaps developing and enhancing professional learning communities or refining NAAE communities of practice could enhance collective participation of PD offerings. Active learning was also identified as an important component of effective PD by the participants in the study. Since active learning was an important part of the PD for the teachers in the study, those charged with implementing PD are encouraged to incorporate active learning strategies in PD. Further inquiry is needed to determine how to best deliver instruction for teachers to maximize the role of active participation. These findings suggest the teacher career cycle model should include Desimone's core features of PD, especially for teacher in the enthusiastic and growing phase. Further studies should investigate the utility of the conceptual frame for teachers in others stages.

Discrepant results were found in the core features of duration and coherence. The participation in PD of longer durations should be quantified and investigated. Research should be conducted to explore the barriers that limit participation in PD of longer duration. Since only one respondent participated in NATAA and none of the respondents attended CASE, further studies should be conducted to explore their effectiveness in changing teaching behavior. Since SBAE

teachers seemed to be open to innovative forms of PD, innovation should be encouraged in developing experiences for teachers.

The findings of this study indicate the features of coherence and duration could be combined for SBAE teachers as one can augment the other. Further investigation is needed to determine if well sequenced, coherent, goal-based PD can have similar impacts to PD of significant duration. Greiman (2010) described the PD system as a shotgun approach. The findings of this study indicated the PD system that currently exists does not contain coherence as substantial part. Despite this shortcoming, some teachers are able to piece together their PD experiences to create coherent PD. Other teachers, such a Dale, seem to merely, "seize what pops up," rather than engaging in a planned and intentional PD system. As a result, we recommend that the parties involved in planning PD engage in meaningful dialogue using a Team Ag. Ed. approach to create a coherent system of PD. Teachers should also be included in the creation of such a system. Further, teachers should be encouraged to develop a coherent plan for their personal PD and take an active role that leads to meaningful growth (Roseler et al., 2013). This includes taking into consideration the PD initiatives at the national, state, and school/district level and incorporating those into PD for SBAE teachers.

This inquiry was qualitative in nature; therefore, the results cannot be generalized to the larger population. However, this study can provide insight into the PD practice of teachers. It is worth noting that all of the teachers in this study participated in a formal teacher preparation program. Future studies should examine the practices of lateral entry teachers who are in the enthusiastic and growing career stage. The goal for all PD should be to improve student learning (Hill et al., 2013). This investigation took a system approach for investigating the PD practice of teachers. The findings of this study suggested the current PD systems provide PD that includes collective participation, active learning, and is focused on relevant content. These features should continue to be emphasized in PD. The findings of this study also show a lack of coherence and duration in PD for SBAE teachers. Pointed efforts should be made to increase these features of PD for teachers.

References

Andresen, R. J., Seevers, B. S., Dormody, T. J., & VanLeeuwen, D. M. (2007). Training needs of New Mexico agricultural education teachers related to inclusion of students with special needs. *Journal of Agricultural Education*, *48*(4), 117–128. doi:10.5032/jae.2007.04117

Ary, D., Jacobs, L. C., Sorensen, C., & Walker, D. A. (2014). *Introduction to Research in Education* (9th ed.). Belmont, CA: Wadsworth, Cengage Learning.

Barrick, R. K., Ladewig, H. W., & Hedges, L. E. (1983). Development of a systematic approach to identifying technical in-service needs of teachers. *Journal of the American Association of Teacher Educators in Agriculture*, *24*(1), 13–19. doi:10.5032/jaatea.1983.01013

Bezzina, C. (2006). Views from the trenches: Beginning teachers' perceptions about their professional development. *Journal of In-service Education, 32*(4), 411–430. doi 10.1080/13674580601024515

Birkenholz, R. J., & Harbstreit, S. R. (1986). Analysis of the inservice needs of beginning vocational agriculture teachers. *Journal of the American Association of Teacher Educators in Agriculture*, *28*(1), 41–49. doi:10.5032/jaatea.1987.10041

Bransford, J., Darling-Hammond, L., & LePage, P. (2005). Introduction. In L. Darling-Hammond and J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 1–30). San Francisco, CA: Jossey-Bass.

Christensen, J., Warnick, B. K., Spielmaker, D., Tarpley, R.S., & Staquadine, G. S. (2009). Agricultural in-service needs of introductory level career and technical education teachers. *Journal of Agricultural Education*, *50*(4), 1–13. doi:10.5032/jae.2009.04001

Darling-Hammond, L., & McLaughlin, M. W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan, 76*(8), 597–604. doi: 10.1177/003172172171109200622

De Lay, A. M., & Washburn, S. G. (2013). The role of collaboration in secondary agriculture teacher career satisfaction and career retention. *Journal of Agricultural Education, 54*(4), 104–120. doi: 10.5032/jae.2013.04104

Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199. doi: 10.3102/0013189X08331140

Duncan, D. W., Ricketts, J. C., Peake, J. B., & Uesseler, J. (2006). Teacher preparation and in-service needs of Georgia agriculture teachers. *Journal of Agricultural Education, 47*(2), 24–35. doi: 10.5032/jae.2006.02024

Easterly III, R. G., & Myers, B. E. (2011). Inquiry-based instruction for students with special needs in school based agricultural education. *Journal of Agricultural Education, 52*(2), 36–46. doi: 10.5032/jae.2011.02036

Edwards, M. C., & Briers, G. E. (1999). Assessing the inservice needs of entry-phase agriculture teachers in Texas: A discrepancy mode vs. direct assessment. *Journal of Agricultural Education, 40*(3), 40–49. doi:10.5032/jae.1999.03040

Fessler, R., & Christensen, J. C. (1992). *The teacher career cycle: Understanding and guiding the PD of teachers*. Boston, MA: Allyn and Bacon

Garton, B. L., & Chung, N. (1996). The inservice needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education*, *37*(3), 52–58. doi:10.5032/jae.1996.03052

Golden, M. E., Parr, B., & Peake, J. (2014). An assessment of the needs of middle school agricultural education instructors in Georgia. *Journal of Agricultural Education, 55*(5), 222–234. doi: 10.5032/jae.2014.05222

Greiman, B. C. (2010) Continuing professional development. In R.Torres, T. Kitchel, & A. Ball (Eds.), *Preparing and advancing teachers in agricultural education* (pp. 180–200). Columbus, OH: The Ohio State University Curriculum Materials Service.

Harris, C. R. (2008). Career development event participation and professional development needs of Kansas agricultural education teachers. *Journal of Agricultural Education*, *49*(2), 131–138. doi:10.5032/jae.2008.02130

Haynes, J. C., & Stripling, C. T. (2014). Mathematics efficacy and professional development needs of Wyoming agricultural education teachers. *Journal of Agricultural Education, 55*(5), 48–64. doi: 10.5032/jae.2014.05048

Hill, H. C., Beisiegel, M., & Jacob, R. (2013). Professional development research: Consensus, crossroads, and challenges. *Educational Researcher, 42*(9), 476–487. doi: 10.3102/0013189X13512674

Hsieh, H-F., & Shannon, S. E., (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277-1288. doi: 10.1177/1049732305276687

Joerger, R. M. (2002). A comparison of the inservice education needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of Agricultural Education*, *43*(3), 11–24. doi:10.5032/jae.2002.03011

Johnson, D. M., & Schumacher, L. G. (1989). Agricultural mechanics specialists identification and evaluation of agricultural mechanics laboratory management competencies: A modified Delphi approach. *Journal of Agricultural Education, 30*(3), 23–28. doi: 10.5032/jae.1989.03023

Kantrovich, A. J. (2010). *The 36th volume of a national study of the supply and demand for teachers of agricultural education 2006-2009*. West Olive, MI: Michigan State University.

Koundinya, V., & Martin, R. A. (2010). Food safety inservice educational needs of agriculture teachers. *Journal of Agricultural Educatio*n, *51*(4): 82–91. doi:10.5032/jae.2010.04082

Layfield, K. D., & Dobbins, T. R. (2002). In-service needs and perceived competencies of South Carolina agricultural educators. *Journal of Agricultural Education, 43*(4), 46–55. doi: 10.5032/jae.2002.04046

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Maskit, D. (2011). Teachers' attitudes toward pedagogical changes during various stages of Professional Development. *Teaching and Teacher Education, 27*(5), 851–860. doi: 10.1016/j.tate.2011.01.009

McCraken, J. D., Newcomb, L. H., & Moore, G. E. (1975). Development and evaluation of a computerized data bank of inservice education needs of vocational agriculture teachers. *Journal of the American Association of Teacher Educators in Agriculture*, *16*(2), 13–17. doi:10.5032/jaatea.1975.02013

McKim, B. R., & Saucier, P. R. (2011). Agricultural mechanics laboratory management professional development needs of Wyoming secondary agriculture teachers. *Journal of Agricultural Education, 52*(3), 75–86. doi: 10.5032/jae.2011.03075

Merriam, S. B. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: John Wiley & Sons, Inc.

Moustakas, C. E. (1994). *Phenomenological research methods*. Thousand Oaks, CA: Sage.

Myers, B. E., Dyer, J. E., & Washburn, S. G. (2005). Problems facing beginning agriculture teachers. *Journal of Agricultural Education, 46*(3), 47–55. doi: 10.5032/jae.2005.03047

National Association of State Directors of Teacher Education and Certification (NASDTEC). (2004). Knowledgebase table E1: PD description. Whitinsville, MA: NASDTEC.

National Center for Education Statistics (NCES). (2001) *Teacher preparation and professional development: 2000*. NCES 2001–088. Washington DC: U.S. Department of Education

Newman, M. E., & Johnson, D. M. (1994). Inservice education needs of teacher of pilot agriscience courses in Mississippi. *Journal of Agricultural Education*, *35*(1), 54–60. doi:10.5023/jae.1994.01054

Richter, D., Kunter, M, Klusmann, U, Ludtke, O., & Baumert, J. (2011). PD across the teaching career: Teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education, 27*(1), 116–126. doi: 10.1016/j.tate.2010.07.008

Roberts, T. G., & Dyer, J. E. (2004). Inservice needs of traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education, 45*(4), 57–70. doi: 10.5032/jae.2004.04057

Robinson, J. S., & Edwards, M. C. (2012). Assessing the teacher self-efficacy of agriculture instructors and their early career employment status: A comparison of certain types. *Journal of Agricultural Education, 53*(1), 150–160. doi: 10.5032/jae.2012/01150

Rocca, S. J., & Washburn, S. G. (2006). Comparison of teacher efficacy among traditionally and alternatively certified agriculture teachers. *Journal of Agricultural Education, 47*(3), 58–68. doi: 10.5032/jae.2006.03058

Roseler, K., & Dentzau, M. W. (2013). Teacher PD: A different perspective. *Cultural Studies of Science Education, 8*, 619–622. doi: 10.1007/s11422-013-9493-8

Ruhland, S. K., & Bremer, C. D. (2002). Professional development needs of novice career and technical education teachers. *Journal of Career and Technical Education, 19*(1). retrieved from: http://scholar.lib.vt.edu/ejournals/JCTE/v19n1/ruhland.html

Saucier, P. R., & McKim, B. R. (2011). Assessing the learning needs of student teachers in Texas regarding management of the agricultural mechanics laboratory: Implications for the professional development of early career teachers in agricultural education. *Journal of Agricultural Education*, *52*(4) 24–43. doi:10.5032/jae.2011.04024

Shoulders, C. W., & Myers, B. E. (2014). Effective professional development in agriscience education: An examination of core features. *Journal of Agricultural Education, 55*(1), 167–185. doi: 10.5032/jae.2014.01167

Shoulders, C. W., & Myers, B. E. (2011). An analysis of the national agriscience teacher ambassadors' stages of concern regarding inquiry-based instruction. *Journal of Agricultural Education, 52*(2), 58–70. doi: 10.5032/jae.2011.02058

Sorenson, T. J., Lambert, M. D., & McKim, A. J. (2014). Examining Oregon agriculture teachers' professional development needs by career phase. *Journal of Agricultural Education, 55*(5), 140–154. doi: 10.5032/jae.2014.05140

Sorensen, T. J., Tarpley, R. S., & Warnick, B. K. (2010). Inservice needs of Utah agriculture teachers. *Journal of Agricultural Education*, *51*(3), 1–11. doi:10.5032/jae.2010.03001

Thieman, E. B., Henry, A. L., & Kitchel, T. (2012). Resilient agricultural educators: Taking stress to next level. *Journal of Agricultural Education, 53*(1), 81–94. doi: 10.5032/jae.2012.01081

Thoron, A. C., Myers, B. E., & Barrick, R. K. Research priority 5: Efficient and effective agricultural education programs. In T. G. Roberts, A. Harder, & M. T. Brashears (Eds.), *American Association for Agricultural Education national research agenda: 2016-2020* (pp. 41–48). Gainesville, FL: Department of Agricultural Education and Communication.

Thoron, A. C., & Myers, B. E. (2011). Effects of inquiry–based agriscience instruction on student achievement. *Journal of Agricultural Education, 52*(4), 175–187. doi: 10.5032/jae.2011.04175

Thoron, A. C., & Myers, B. E. (2012a). Effects of inquiry–based agriscience instruction and subject matter-based instruction on student argumentation skills. *Journal of Agricultural Education, 53*(2), 58–69. doi: 10.5032/jae.2012.02058

Thoron, A. C., & Myers, B. E. (2012b). Effects of inquiry–based agriscience instruction on student scientific reasoning. *Journal of Agricultural Education, 53*(4), 156–170. doi: 10.5032/jae.2012.04156

Ulmer, J. D., Velez, J. J., Lambert, M. D., Thompson, G. W., Burris, S., & Witt, P. A. (2013). Exploring science teaching efficacy of CASE curriculum teachers: A post-then-pre assessment. *Journal of Agricultural Education, 54*(4), 121–133. doi: 10.5032/jae.2013.04121

United States of American Department of Education. (2005). *Why is professional development so important?*. Reading First Notebook: The Newsletter for the Reading First Program. Retrieved from: http://www.sedl.org

Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education, 24*, 80–91. doi: 10.1016/j.tate.2007.01.004

Westfall-Rudd, D. M. (2011). Agricultural education teacher leaders' development of ownership and responsibility for the profession through participation in continuing professional education program planning: A case study. *Journal of Agricultural Education, 52*(3), 148–161. doi: 10.5032/jae.2011.03148