

Professional Development Engagement and Career Satisfaction of Agriscience Teachers

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Abstract

Teachers should possess a set of professional commitments, which includes active participation in professional development that leads to student learning. The purpose of this study was to explore the relationship between professional development engagement and career satisfaction. This study used a quantitative descriptive correlational research design. A purposive stratified sample of states and a census of teachers in those states were used. The Tailored-Design Method, using multiple points of contact with various modes was used to collect data with minimal survey error. There was a response rate of 72.5% (n = 892). The mean score for the professional development engagement was 118.3 (SD = 13.4; n = 858) on a 150 point scale. Agriscience teachers participated in workshops at a higher rate than any other type of professional development. Levels of implementation varied among types of professional development. The mean score for career satisfaction was 19.9 (SD = 4.4; n = 878) on a 25 point scale. Professional development engagement and career satisfaction had a moderate positive correlation (r = .34). These findings showed a high level of participation in professional development, especially workshops and a high level of career satisfaction. Recommendations for practice and future inquiry are provided.

Keywords: professional development; career satisfaction; professional development engagement

Introduction

The purpose of agriscience courses in middle and high school is to prepare individuals for highly skilled, agriculturally related work and to create agriculturally literate citizens who are lifelong learners (Roberts & Ball, 2009). Highly skilled agriscience teachers are needed for this goal to be realized. The shortage of agriculture teachers has been noted (Foster, Lawver, & Smith, 2014). The literature has also explored various reasons for the teacher shortage (e.g., Walker, Garton, & Kitchel, 2004). While these issues are critical and should be the focus of investigation, exploring a dichotomy of whether a person leaves the profession or remains may not tell the entire story. According to Bransford, Darling-Hammond, & LePage (2005), one key to improving education globally depends on improving teacher quality. Bransford et al. also purported teachers should have a set of professional commitments as members of a collective profession in addition to having knowledge and skills related to subject matter and learning processes. The focus for teacher education programs should not only be to have enough teachers but to have enough quality teachers that work to advance the profession and make a difference in their students' lives (Bransford et al., 2005).

The efficacy of agriculture teacher-training programs have been thoroughly examined in the literature (e.g., Myers & Dyer, 2004; Swartzel, 1999; Wordlow & Osborne, 2010). While inquiry in this area is important, and an integral part of the American Association for Agricultural Education (AAAE) National Research Agenda (Thoron, Myers, & Barrick, 2016), it is unrealistic

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to expect teacher-training programs to prepare teachers for the rigor of teaching without supplemental professional development (Lytle, 2000). The AAAE National Research Agenda also recognized the need for inquiry in the area of teacher professional development (Thoron et al., 2016). Grieman (2010) called for further research that explores the impact of professional development on teacher learning.

According to Webster-Wright (2009), continued growth has been an expectation of teachers. According to some researchers (Borko & Putnam, 1995; Desimone, 2009; Gusky, 2000), professional development is a critical part of educational reform. While the importance of professional development has been clear, the ideal way to deliver professional development has been a source of debate. The most visible manifestation of professional development has featured formal conferences, seminars, or workshops (Mizell, 2010). However, teachers also benefit from less visible forms of professional development like professional reading, observations, or professional networking (Desimone, 2009; Little, 1987).

Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009) provided a comprehensive examination of the trends of the professional development practice of teachers in the United States. According to Darling-Hammond et al., 92% of U.S. teachers in 2003-2004, and 95% in 1999-2000 participated in professional development events. Darling-Hammond et al. also reported that 83% of teachers are engaged in learning opportunities in the subjects they teach. While these numbers seem promising, the effects of the professional development have been mixed. According to Darling-Hammond et al., professional development is related to student learning gains if it is intensive, ongoing, and connected to practice. According to Desimone (2009), professional development should be focused on the content teachers are teaching, involve active learning, be coherent with previous professional development offerings, have a significant duration, and involve collective participation between teachers. According to Darling-Hammond et al., the professional development teachers have been receiving has not met these criteria. Further, Darling-Hammond et al. reported teachers are not satisfied with their professional development opportunities.

According to the U. S. Department of Education (2005), sit-and-get or passive, one-shot workshops are no longer adequate for providing meaningful professional development to teachers. Additionally, reports by the U. S. Department of Education (2005) suggested schools have been moving towards more engaging models of professional development that focus on on-going training and emphasize practice, research, and reflection. This new model of professional development has required teachers to be active in reflecting on their practice and applying what they learned in professional development to their practice (Clarke & Hollingsworth, 2002; Desimone, 2009). While professional development reform has created more teacher-centered professional development, little has been done to examine how agriculture teachers engage in professional development and how that is related to their career satisfaction.

Connections between career satisfaction and efficacious practice of teachers have been established in the literature (Blackburn & Robinson, 2008). Links between professional commitments, or being engaged as a professional including professional development, and career satisfaction have also been made (Sorensen & McKim, 2014). Because of these links, a case can be made between professional practice of teachers conceptualized as engagement in professional development and career satisfaction of teachers.

While the professional development needs of agriscience teachers has been thoroughly investigated (e.g., Andresen, Seevers, Dormody, & VanLeeuwen, 2007; Christensen, Warnick, Spielmaker, Tarpley, & Straquadine, 2009; Duncan, Ricketts, Peake, & Uessler, 2006; Harris,

2008; Joerger, 2002; Koundinya, & Martin, 2010; Layfield & Dobbins, 2002; McKim, Saucier, & Reynolds, 2011; Myers, Dyer, & Washburn, 2005; Roberts & Dyer, 2004; Saucier & McKim, 2011; Sorensen, Tarpley, & Warnick, 2010), there is a need to investigate how teachers are currently engaged in various forms of professional development (Thoron et al., 2016) and what impact that has on their career satisfaction (Sorensen & McKim, 2014).

Theoretical and Conceptual Framework

Maslow's (1943) theory of human motivation explains how people strive for esteem and self-actualization once the needs for safety, physiological comfort, and love have been met. According to Maslow, humans ". . . desire for strength, for achievement, for adequacy, for confidence in the face of the world, and for independence in freedom." After the need for self-esteem has been met, humans strive to find their true purpose in life. This study examined agriscience teachers search for esteem, and ultimately self-actualization, through professional development engagement. This search for esteem and self-actualization manifests itself in career-satisfaction. While other researchers (e.g., Herzberg, 1974) have attempted to codify career satisfaction, Maslow's theory provides the most simple and elegant explanation of this phenomena and thus was used to guide this inquiry.

The purpose of this study was to explore the relationship between professional development engagement and career satisfaction. According to Bransford, Darling-Hammond, and LePage (2005) teachers should have a set of professional commitments that push them to grow and learn throughout their career. This study examined the interplay of job satisfaction and professional commitments, chiefly, the professional commitment of professional development engagement. According to Griffin (1983), the purpose of professional development has been to improve teacher practice and beliefs towards an articulated goal. More simply, professional development is the practice of creating meaningful teacher change (Gusky, 2002). This change can create educational reform, be a continuation of the teacher-training process, or help teachers seek greater fulfillment as professionals (Clarke & Hollingsworth, 2002).

Clarke and Hollingsworth's (2002) interconnected model of professional growth served as the conceptual model for this study (see Figure 1). Clarke and Hollingsworth purported that teachers experience a change in four interconnected domains: personal, external, practice, and consequence. These domains are connected through a series of enactment and reflection. Clarke and Hollingsworth explained the process of teacher learning is not always linear, but rather moves between different domains. The critical part of Clarke and Hollingsworth's model is the enactment and reflection that flow between the stages of the model. According to Clarke and Hollingsworth, reflection provides a link between professional experimentation, trying new practices in the classroom, and changing knowledge, attitudes, and beliefs, which prompt individuals to seek external sources of stimuli. These external sources of stimuli constitute a contemporary view of professional development, that is, workshops, training, professional reading, and the like. Clarke, Carlin, and Peter (1992) conducted a case study of a teacher participating in a professional development program. According to Clark et al., the teachers did not enact what was presented in the professional development session until the second session of the in-service training and only after he reflected on the practice. Hollingsworth (1999) used a case study approach to explore how primary teachers experienced mathematics professional development. The results of the analysis of the case studies led to the development of the teacher change model. According to Hollingsworth, teachers enact change from professional development in different ways and use reflection to prompt further exploration of concepts using other resources.

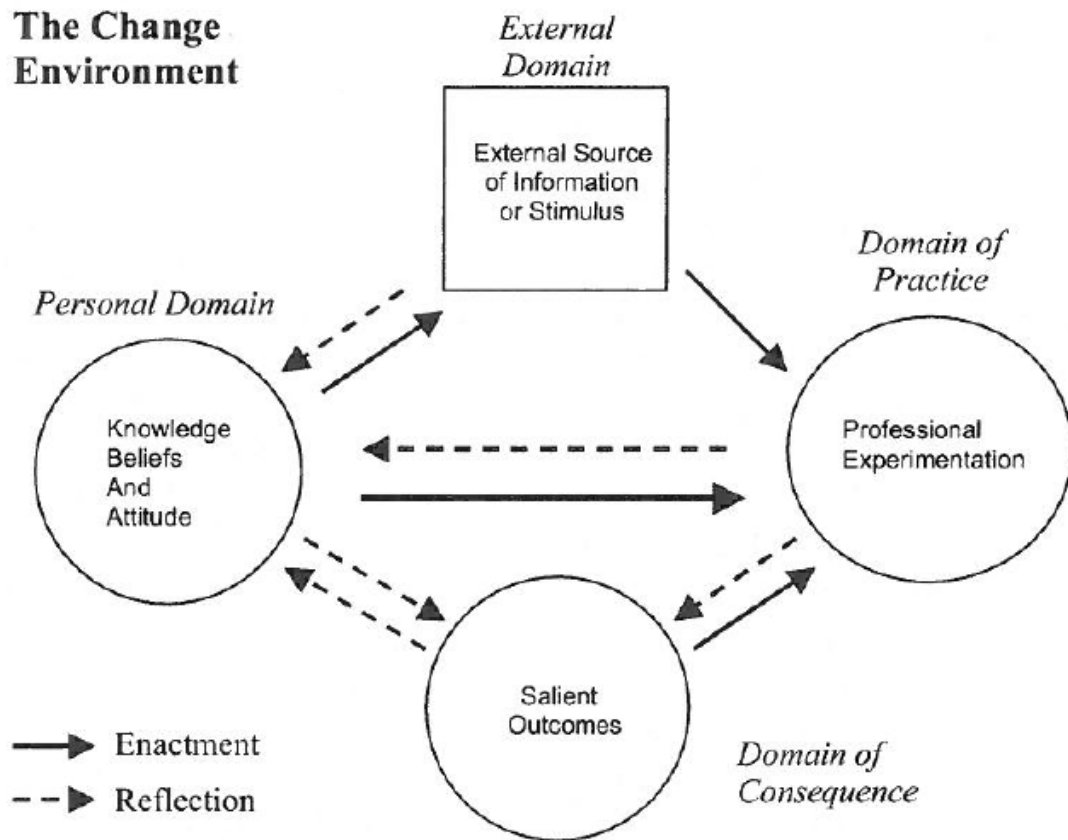


Figure 1. The interconnected model of professional growth (Clarke and Hollingsworth, 2002)

Purpose and Objectives

The purpose of this study was to explore the relationship between professional development engagement and career satisfaction. This study was guided by research priority area 5: efficient and effective agricultural education programs. The specific focus in the priority area was improving program development, delivery, and evaluation of professional development programs (Thoron et al., 2016). The study was guided by the following objectives:

- 1- Describe the professional development engagement of agriscience teachers based on personal and professional demographic factors.
- 2- Describe the career satisfaction of agriscience teachers based on personal and professional demographic factors.
- 3- Describe the relationship between professional development engagement and career satisfaction for agriscience teachers.

Methods

This study utilized a quantitative, descriptive-correlational design to examine the professional development engagement and career satisfaction of agriscience teachers. The population of interest was middle and high school agriscience teachers in the United States. Four states were selected to participate in the study. The states were purposefully selected to represent geographical diversity. Multiple states were selected by the researcher to represent variations in

professional development opportunities and dynamics in the teacher groups that could exist from state to state and could have an impact on professional development participation. Two states were chosen from the AAEE Southern region, one from the North Central region, and one from the Western region. Two states were selected from the southern region because it was the largest region. The states selected to participate in the study were Colorado, Florida, Minnesota, & North Carolina. Caution should be made when generalizing the results because of the lack of randomization of the states selected in each region. A census of agriscience teachers was taken within each state. There were 127 teachers in Colorado, 400 teachers in Florida, 243 teachers in Minnesota, and 483 teachers in North Carolina. The sampling frame was obtained from the state agricultural education coordinator in each state. Because a representative sample of the entire population was used, the data were treated as census data.

The instruments used in this study consisted of two instruments and individual items to collect personal information. The professional development engagement instrument was developed by the researcher. The definition of professional development and core conceptual framework for studying the effects of professional development proposed by Desimone (2009) was used to develop the instrument. Desimone described areas of professional development practice. These areas were adapted for the professional development of agriscience teachers. These areas were (a) workshops related to agricultural education, (b) workshops in the school/district, (c) coaching and/or mentoring, (d) serving in leadership roles, (e) professional reading, (f) formal coursework, (g) informal dialogue, (h) professional learning communities, (i) observing others teach, and (j) feedback from others observing their teaching. Desimone described the levels of professional development as participation (e. g. I read articles related to teaching), value (e. g. I value professional reading), and integration in their teaching (e. g. I implement what I learn from professional reading into my teaching). Each of the ten areas was explored on the three levels of participation, which provided a 30 item instrument which measured overall professional development engagement. Validity was established by a review of a panel of experts including a professor in teacher education, an assistant professor in extension education, an associate professor in education, and a PhD candidate in agricultural education. The internal consistency of the total scale was found to be in the acceptable range with a Cronbach's alpha of 0.91.

Lester (1987) developed the 71 item Teacher Job Satisfaction Questionnaire (TJSQ) to measure teacher job satisfaction. The TJSQ was reduced by the researchers to 23 items, reviewed for content validity, and included in the pilot instrument. The subscales were not used for this study, and only the overall job-satisfaction score was calculated. A five-item semantic-differential measure was used in the pilot assessment along with the TJSQ. The five-item scale was designed to measure teacher career satisfaction using fewer items. The Cronbach's alpha for the five-item scale was .97 for the pilot group. The Cronbach's alpha for the 21-item TJSQ was .85 for the pilot group. Concurrent validity was determined for the five-item scale by measuring the correlation with the TJSQ. The 21 items TJSQ and the five-item semantic-differential instrument were found to have a strong positive correlation ($r = .68$). Because the researcher-developed semantic differential career satisfaction scale was found to be a valid and reliable instrument, the TJSQ was not included in the instrument.

A mixed-mode, e-mail preference survey method delivered using the Tailored Design Method was utilized for this study (Dillman, Smith, & Christian 2014). A pre-notice letter was mailed as the initial contact. The letter contained a \$1.00 incentive for teachers in Florida, Minnesota, and North Carolina and store coupons, including a certificate for a free hat from Murdock's were provided to the Colorado teachers. An e-mail invitation for the survey was sent around the time the mail contact was expected to arrive. After three rounds of e-mail contacts, a

thank-you/reminder postcard was mailed. The non-respondents were sent a mailed paper questionnaire with a business reply envelope after a fourth e-mail contact was made.

The response rate was 72.5% ($n = 892$). The response by state was 74.8% ($n = 89$) for Colorado, 71.4% ($n = 277$) for Florida, 75.2% ($n = 182$) for Minnesota, and 71.4% ($n = 344$) for North Carolina. A total of 97.0% ($n = 865$) respondents completed the survey using the online instrument, the remaining 3.0% ($n = 27$) completed the paper copy. A Chi-square test was not found to be significant to compare the distribution of non-respondents and respondents by state ($X^2 = 2.92$; $p = .57$). Lindner, Murphy, and Briers (2001) suggested comparing early and late respondents to test for a non-response bias. The early respondents were those who responded to the first two contacts. There were 513 early respondents and 355 late respondents. No significant difference was found for age ($X^2 = 38.46$; $p = .74$) or years of teaching experience ($X^2 = 32.36$; $p = .35$).

The data were analyzed using SPSS 22.0. Frequencies were calculated for individual items. Means were totaled for each scale. A Pearson's R was used to determine the correlation of the professional development engagement scale and the career satisfaction scale.

Results

The total summated score for professional development engagement was reported on a scale that ranged from 30 to 150, with 30 representing strongly disagree and 150 representing strongly agree. The mean score for the total scale for professional development engagement was 118.3 ($SD = 13.4$; $n = 858$), indicating the teachers' level of professional development was near the agree range (agree = 120). The frequencies for individual items of the professional development engagement scale are displayed in Table 1 and Table 2. The strongly disagree and disagree responses were combined. The strongly agree and agree scores were also combined. Agriscience teachers reported the highest participation in workshops in their school and district and workshops related to agricultural education. The lowest areas of participation were formal courses for credit. The workshops in the school/district had the highest level of disagreement when participants were asked to rank the value of professional development. The type of professional development with the highest value was workshops related to agricultural education, followed by informal dialogue, coaching/mentoring, having others observe their teaching, and serving on leadership roles. The highest level of implementation into practice was workshops related to agricultural education. Other areas that had high levels of implementation were informal dialogue with other teachers and others observing them teach. The lowest level of implementation in their practice was formal courses for credit and professional learning communities.

The mean professional development engagement scores were examined based on professional demographic variables and are displayed in Table 3. The largest variation of mean scores for professional development engagement was between Minnesota teachers ($M = 120.2$; $SD = 13.0$) and North Carolina teachers ($M = 116.9$; $SD = 13.6$). Teachers who held a master's degree or higher only had a 0.2 higher mean score for professional development engagement than those with four-year degrees.

Table 1

Participation and Value of the Components of Professional Development

	<i>n</i>	Strongly Disagree & Disagree	Neither Disagree nor Agree	Strongly Agree & Agree
<i>Participation</i>				
Workshops (Ag. Ed.)	876	35	53	788
Workshops (School/District)	876	12	40	814
Coaching/Mentoring	873	95	124	654
Leadership Roles	874	114	159	601
Professional Reading	874	137	172	565
Formal course for credit	876	441	206	229
Informal dialogue	874	48	85	741
Professional Learning Community	875	56	59	760
Observing Others	874	131	171	572
Others Observing me	873	135	156	582
<i>Value</i>				
Workshops (Ag. Ed.)	875	11	40	824
Workshops (School/District)	873	169	203	501
Coaching/Mentoring	875	31	114	730
Leadership Roles	875	33	138	704
Professional Reading	876	69	245	562
Formal course for credit	876	97	281	498
Informal dialogue	876	19	72	785
Professional Learning Community	875	95	216	564
Observing Others	875	29	166	680
Others Observing me	872	29	108	735

Note: Items were on a 5-item Likert scale ranging from strongly agree to strongly disagree

The professional development engagement scores were analyzed by personal demographic data and are displayed in Table 4. The professional development engagement scores did not fluctuate beyond one standard deviation for all personal demographic variables. The largest difference in professional development engagement was between white, non-Hispanic individuals ($M = 118.0$; $SD = 13.4$) and all others ($M = 123.2$; $SD = 14.3$). Individuals with a household income from \$120,000-\$139,000 had a higher professional development engagement score ($M = 120.7$; $SD = 12.8$) than all other income groups. Females had a higher mean professional development engagement score ($M = 119.8$; $SD = 12.9$) than males ($M = 116.8$; $SD = 13.8$). It is worth noting that the mean scores did not fluctuate more than 5 points on a 150 point scale.

Table 2

Implementation of the Components of Professional Development

	<i>n</i>	Strongly Disagree & Disagree	Neither Disagree nor Agree	Strongly Agree & Agree	Does Not Apply
<i>Implementation</i>					
Workshops (Ag. Ed.)	860	16	37	807	0
Workshops (School/District)	863	82	148	633	0
Coaching/Mentoring	816	19	111	686	0
Leadership Roles	798	20	123	654	1
Professional Reading	815	46	186	582	1
Formal course for credit	687	38	172	472	5
Informal dialogue	841	19	66	756	0
Professional Learning Community	834	70	164	599	1
Observing Others	814	27	105	682	0
Others Observing me	836	22	107	707	0

Note: Items were on a 5-item Likert scale ranging from strongly agree to strongly disagree

Table 3

Mean Scores for the Professional Development Engagement by Professional Demographic Variables

	<i>M</i>	<i>SD</i>
<i>State</i>		
Colorado (<i>n</i> = 88)	117.5	12.3
Florida (<i>n</i> = 267)	116.9	13.6
Minnesota (<i>n</i> = 174)	120.2	13.0
North Carolina (<i>n</i> = 329)	118.7	13.7
<i>Agriculture Teacher Prep. Program</i>		
Yes (<i>n</i> = 647)	118.5	13.5
No (<i>n</i> = 206)	117.5	13.5
<i>Teach subject other than ag.</i>		
Yes (<i>n</i> = 351)	117.7	13.7
No (<i>n</i> = 504)	118.7	13.2
<i>Teach 9-12 grade students</i>		
Yes (<i>n</i> = 759)	118.4	13.4
No (<i>n</i> = 93)	117.9	13.5
<i>Teach 6-8 grade students</i>		
Yes (<i>n</i> = 303)	119.0	13.6
No (<i>n</i> = 547)	117.8	13.4
<i>Highest Level of Education</i>		
Four-year degree (<i>n</i> = 484)	118.2	12.6
Master's or higher (<i>n</i> = 367)	118.4	14.6

Note: Professional Development Engagement Scores are on a scale from 30 - 150

Table 4

Mean Scores for the Professional Development Engagement by Personal Demographic Variables

	<i>M</i>	<i>SD</i>
Sex		
Female (<i>n</i> = 429)	119.8	12.9
Male (<i>n</i> = 429)	116.8	13.8
Marital Status		
Single (<i>n</i> = 183)	117.9	11.9
Married (<i>n</i> = 604)	118.3	13.9
Widowed/Divorced/Separated (<i>n</i> = 63)	119.7	13.8
Children under 18 in household		
None (<i>n</i> = 469)	118.9	13.0
1 (<i>n</i> = 145)	116.9	15.0
2 (<i>n</i> = 155)	117.4	12.4
3 or more (<i>n</i> = 81)	119.0	14.9
Household Income		
Less than \$40,000 (<i>n</i> = 109)	117.3	11.6
\$40,000 - \$59,999 (<i>n</i> = 181)	118.3	12.6
\$60,000 - \$79,999 (<i>n</i> = 170)	118.3	14.4
\$80,000 - \$99,999 (<i>n</i> = 161)	118.8	13.1
\$100,000 - \$119,999 (<i>n</i> = 112)	118.0	13.9
\$120,000 - \$139,999 (<i>n</i> = 46)	120.7	12.8
\$140,000 or more (<i>n</i> = 51)	117.5	14.9
Ethnicity		
White, non-Hispanic (<i>n</i> = 788)	118.0	13.4
All others (<i>n</i> = 43)	123.2	14.3

Note: Professional Development Engagement Scores are on a scale from 30 - 150

The overall career satisfaction of agriscience teachers was based on a five-item summated scale with a possible range of scores from 5 to 25 where higher scores represented a higher level of satisfaction. The mean score for agriscience teacher career satisfaction was 19.9 (*SD* = 4.4; *n* = 878). Thus, the teachers in this study reported that they were satisfied in their careers.

The mean career satisfaction scores were compared, based on professional demographic variables (see Table 5). The mean scores did not fluctuate more than one point between any of the groups. The standard deviations did not fluctuate more than one standard deviation across the characteristics as well.

Table 5

Mean Scores for Career Satisfaction by Professional Demographic Variables

	<i>M</i>	<i>SD</i>
State		
Colorado (<i>n</i> = 89)	19.5	4.3
Florida (<i>n</i> = 273)	20.1	4.5
Minnesota (<i>n</i> = 179)	20.2	3.9

Table 5

Mean Scores for Career Satisfaction by Professional Demographic Variables Continued...

North Carolina (<i>n</i> = 337)	19.8	4.6
Agriculture Teacher Prep. Program		
Yes (<i>n</i> = 658)	19.9	4.4
No (<i>n</i> = 213)	19.9	4.6
Teach a subject other than ag.		
Yes (<i>n</i> = 362)	20.2	4.2
No (<i>n</i> = 511)	19.8	4.5
Teach 9-12 grade students		
Yes (<i>n</i> = 774)	20.0	4.3
No (<i>n</i> = 96)	20.0	4.8
Teach 6-8 grade students		
Yes (<i>n</i> = 308)	19.8	4.5
No (<i>n</i> = 560)	20.0	4.4
Highest Level of Education		
Four-year degree (<i>n</i> = 495)	19.8	4.4
Master's or higher (<i>n</i> = 374)	20.1	4.5

Note: Career Satisfaction scores are on a scale from 5 - 25

The mean career satisfaction scores were analyzed by personal demographic factors and displayed in Table 6. Single individuals had a lower mean career satisfaction ($M = 18.8$; $SD = 4.5$) than those who were married ($M = 20.2$; $SD = 4.3$) and widowed/divorced/separated ($M = 20.1$; $SD = 4.5$). There was some variability in career satisfaction scores between household income categories. The lowest scores were those with a household income of less than \$40,000 ($M = 18.6$; $SD = 4.8$) and those with a household income of \$140,000 or more ($M = 21.6$; $SD = 4.2$). The difference between the mean scores for males and females was 0.3. The difference between the mean score for white, non-Hispanic and all other ethnicities was 0.1.

Table 6

Mean Scores for Career Satisfaction by Personal Demographic Variables

	<i>M</i>	<i>SD</i>
Sex		
Female (<i>n</i> = 440)	19.8	4.5
Male (<i>n</i> = 438)	20.1	4.3
Marital Status		
Single (<i>n</i> = 186)	18.8	4.5
Married (<i>n</i> = 617)	20.2	4.3
Widowed/Divorced/Separated (<i>n</i> = 65)	20.1	4.5
Children under 18 in household		
None (<i>n</i> = 474)	19.8	4.4
1 (<i>n</i> = 149)	19.8	4.8
2 (<i>n</i> = 162)	20.5	4.2
3 or more (<i>n</i> = 83)	20.1	4.1
Household Income		
Less than \$40,000 (<i>n</i> = 112)	18.6	4.8

Table 6

Mean Scores for Career Satisfaction by Personal Demographic Variables Continued

\$40,000 - \$59,999 (<i>n</i> = 182)	19.7	4.3
\$60,000 - \$79,999 (<i>n</i> = 175)	19.8	4.5
\$80,000 - \$99,999 (<i>n</i> = 164)	20.3	4.1
\$100,000 - \$119,999 (<i>n</i> = 117)	20.1	4.5
\$120,000 - \$139,999 (<i>n</i> = 46)	20.9	4.0
\$140,000 or more (<i>n</i> = 51)	21.6	4.2
Ethnicity		
White, non-Hispanic (<i>n</i> = 801)	19.9	4.4
All others (<i>n</i> = 45)	19.8	4.8

Note: Career Satisfaction scores are on a scale from 5 - 25

Pearson's *r* correlations were used for comparisons between continuous variables. Professional development engagement and career satisfaction had a moderate positive correlation ($r = .34$) using the description of correlation magnitudes established by Miller (1998). This explains 11.6% of the variance between these two variables. The scatterplot was examined and no curvilinear or irregular relationship between these variables was observed.

Conclusions, Implications, & Recommendations

The first objective was to describe the professional development engagement of agriscience teachers, based on personal and professional demographic factors. Overall participation in professional development was high, especially in workshops in the school/district, where 92.9% of the respondents indicated they either strongly agree or agree that they participate in this type of professional development. Engagement in workshops related to agricultural education, participating in professional learning communities, and having informal dialogue was also high. Despite the high participation, the value of certain professional development engagement was more varied. Workshops in the school/district had a lower value compared to other types of professional development. These results showed the most meaningful types of professional development for agriscience teachers are workshops related to agricultural education. Workshops related to agricultural education should continue to be a central part of the professional development practice of agriscience teachers.

The level of implementation for knowledge learned in professional learning communities was relatively low for the agriscience teachers in this study. While these interventions have been promoted as a way to incorporate Desimone's (2009) core features of professional development and reflective practice, they may not be as meaningful for agriscience teachers. Since agriscience teachers rarely teach with more than 1-2 other agriscience teachers in the same school, participating in professional learning communities may be less impactful for them and removed from the context of their teaching. Perhaps a model of Professional Learning Communities of agriscience teachers could be explored. Principals in school districts that have implemented Professional Learning Communities are encouraged to find innovative ways to allow agriscience teachers to form Professional Learning Communities with other agriscience teachers, rather than other teachers within their school. Further research is warranted in this area.

There was a lower level of agreement for the participation, value, and implementation of professional reading when compared to the other items on the scale. Unlike workshops in the

schools, which had a high level of participation and a low level of implementation, these findings showed that teachers are not engaged in professional reading at a high level. Further research is needed in this area. However, the sources of professional reading should be analyzed and improved. According to Little (1987), professional reading can be a part of informal professional development. However, if appropriate and relevant articles are not available, agriscience teachers cannot be expected to engage fully in professional reading. A repository of useful articles related to professional teaching knowledge and technical agricultural content should be developed.

Agriscience teachers value and implement teacher observations. However, they do not participate in observations at a high level. These findings showed teachers value observing others teach and having others observe them teach but are not engaging in this activity as much as they could. Efforts should be made to increase opportunities for agriscience teachers to observe each other's practice and provide feedback. These observations should be solely for the purpose of professional development and not tied to assessment. Perhaps video recordings posted to an online platform could facilitate this type of professional development. Further research is warranted in this area.

Professional development engagement scores were not subject to large degrees of skewness and kurtosis, nor did they fluctuate beyond one standard deviation for any of the subgroups in the study. The fact that this variable was stable and fairly high showed agriscience teachers are involved in professional development. Desimone (2009) cautioned that participation in professional development does not matter as much as involvement in professional development that leads to student learning. This study found that teachers participate in professional development at a high level. This study did not measure the impact of their professional development which should be the focus of future studies.

The normal distribution of professional development engagement shows that teachers tend to participate in professional development, place value on professional development, and use professional development to inform their practice at varied levels. A system where teachers are actively involved in professional development would have a negatively skewed distribution, with more teachers showing high levels of professional development engagement than those who are below the mean. Such a distribution should be the goal for agriscience teachers nationwide.

The second objective was to describe the career satisfaction of agriscience teachers, based on personal and professional demographic factors. The data showed a slightly negatively skewed distribution in the career satisfaction data, which indicated that agriscience teachers are satisfied in their career. It was also observed that the measure of career satisfaction was stable across demographic characteristics, as the mean scores for the groups did not vary more than one standard deviation. These findings were congruent with Blackburn and Robinson (2008) and Sorensen and McKim (2014), who reported no differences in career satisfaction among demographic groups.

The third objective was to describe the relationship between professional development engagement and career satisfaction for agriscience teachers. A moderate correlation was found between professional development engagement and satisfaction. This correlation suggested a link between these variables exist, but engagement in professional development alone does not guarantee career satisfaction. This finding differs from the findings of Sorensen and McKim (2014) who found a large, positive relationship between the variables of professional commitment and job satisfaction ($r = .71$). The discrepancy between the variables could be a result of the difference in how the variables are measured. The professional commitment instrument used by Sorensen and McKim was designed to measure teachers overall attitude towards the profession. This study used an instrument that measured participation, value, and implementation in professional development.

The difference between overall attitude towards professional commitment and the manifestation of professional commitments should be the subject of further investigation. Based on these findings, we recommend teachers engage in professional development and examine their needs for professional growth and take a multifaceted approach to meet their needs as a professional. Since the correlation between career satisfaction and professional development only presented as a moderate correlation, we suggest teachers examine other sources that lead to their own career satisfaction. We recognize that career satisfaction is a complex variable and hope agriscience teachers can engage in professional dialogue and self-reflection to become highly satisfied in their careers as they work to become engaged professionals that make a positive impact on their students. Engaging in professional development can be an important part of that process.

This study was guided by Maslow's (1943) theory of human motivation. Self-actualization was conceptualized as being highly satisfied in one's career. We admit that self-actualization may be more complex than the variables measured in this study. Future investigations should explore factors that impact career satisfaction for agriscience teachers, paying specific attention to the factors that lead to self-actualization in that career. Once these factors have been identified, professional development opportunities can be designed and tested to examine their effect on these variables. We caution researchers to consider the entire professional development system rather than creating more one-shot professional development offerings. The goal of any inquiry in this line should echo Bransford et al.'s (2005) call for quality teachers who are professionally engaged and make a difference in their students' lives.

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