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The Role of Collaboration Throughout the Agricultural Education Student Teaching Experience

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Abstract

When educators collaborate to create different products, construct knowledge, and solve problems, they develop their collegiality and it motivates them to return each year. Vygotsky's Sociocultural Theory (1962) aided in the understanding of pre-service teachers' experiences related to collaboration during their teacher preparation program. The purpose of this study was to investigate the collaborative efforts conducted among student teachers hosted in school-based agricultural education programs. Findings in this study indicated that working with other teachers enhanced pre-service student teacher's ability to create activities. Participants believed technology could enhance collaboration. Collaboration occurred with various audiences throughout the student teaching semester with participants indicating they primarily worked with their cooperating teacher, other student teachers, and agriculture teachers. Many regularly collaborated with their former high school agriculture teacher. The results indicate that teacher preparation programs need to develop collaborative opportunities throughout the collegiate experience.

Keywords: collaboration; pre-service teachers; student teaching

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Introduction

The continual teacher shortage in the United States (Touchstone, 2015; Smalley & Smith, 2017) has led researchers to question how to retain educators in the profession. Shoulders and Myers (2011) suggested professional development activities can aid educators in improving their skills, which can positively impact student learning. During professional development events, educators bring knowledge from past experiences, but also gain knowledge from other educators (Shoulders & Myers, 2011). Professional development trainings should be catered towards the individual teacher's subject needs (Shoulders & Myers, 2011). Beginning teachers need advice on how to translate their knowledge into their classrooms (Rice & Kitchel, 2015). Furthermore, professional development allows educators to learn new knowledge and ideas, and engage with other teachers in their content area (Rice & Kitchel, 2015). However, the current trend of professional development workshops might not be enough to keep teachers in the profession (Shoulders & Myers, 2011) because self-efficacy plays a vital role.

A teacher's self-efficacy can motivate and challenge students in their classroom (McKim, et al., 2017). Teachers can develop self-efficacy through four different experiences: mastering the

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experience, observing someone else complete an experience, telling the individual they can complete the task or experience, or seeing physiological and emotional states (Bandura, 1977, 1986). Self-efficacy not only aids an educator in being successful in the classroom, but also keeps educators in the profession (McKim & Velez, 2017). Collaboration plays a pivotal role in self-efficacy as it allows educators to build relationships (De Lay & Washburn, 2013) and fully engage in the four experiences. Collaboration keeps individuals in the profession by allowing them to work towards a common goal (De Lay & Washburn, 2013). Student teaching allows collaboration with their peers and cooperating teacher, which can increase self-efficacy. Throughout the semester, a student teacher can successfully maneuver through the four experiences (McKim & Velez, 2017). A student's coursework prior to student teaching also increases their self-efficacy (McKim & Velez, 2016). Educators can fully engage with their students using multiple methods of teaching and focus on student-centered learning.

One form of student-centered learning is inquiry-based instruction, which is a method educators' use to engage with students. Inquiry-based instruction requires students to think critically without being provided the correct answer (Thoron, et al., 2011). Inquiry is defined as "something that students do, not something that is done to them" (National Research Council, 2000 p.2). When educators use this type of instruction, they must change their mindset to become a facilitator instead of a deliverer of instruction (Blythe, et al., 2015). Collaboration can aid in utilizing this type of instruction because it allows educators to work with other teachers (De Lay & Washburn, 2013). Collaborating with educators in their content area can motivate them to develop relationships and construct new ideas and results (De Lay & Washburn, 2013). Educators need to engage with five features in their classroom to utilize inquiry-based instruction (Thoron et al., 2011).

The five features in inquiry-based instruction include having the students: engage with questions, address questions using evidence and evaluate possible explanations, use evidence to answer a question, consider alternative options and evaluate the rationalization of peers, and effectively communicate and justify answers (Thoron et al., 2011). By utilizing inquiry-based instruction, there is room for collaboration among teachers.

"Teacher collaboration is a tool, which can work in helping others work toward a common goal," (Dooner, et al., 2008, p. 2). Collaboration allows educators to work together to create different products, gain new knowledge, and assist one another with problems (De Lay & Washburn, 2013). For successful collaboration, both educators need to be forthcoming with sharing, reflecting, and partaking in risks to initiate change (Vescio, et al., 2008). Hargreaves (2001) indicated collaboration assists teachers to professionally develop during their career. This collaboration helps teachers cultivate their collegiality and motivates them to return each year (Boone & Boone, 2007). Morse (2000) suggested in order to have educational reform, collaboration is imperative. "Educators will recognize they are not alone in searching for new modes of human exchange. The fact is, this quest for a new way of human exchange is endemic in the social order… Rejecting collaboration is not an option," (Morse, 2000, p. xi). Working in a collaborative culture creates a higher level of educators who are satisfied with their careers (De Lay & Washburn, 2013). Working with peers during student teaching helps to build an understanding and apply the fundamentals in their educational program (Roth & Tobin, 2001). Knowles and Sudzina (1992) suggested student teachers be placed together in the same school and classrooms.

> Some problems associated with the practicum may be alleviated by placing small clusters or cohorts of pre-service teachers together in schools and classrooms. In the contexts envisaged, the direct purpose is to encourage mutual support, collaborative and cooperative preparation, teaching, evaluation, and generally attempting to dispel the notion that teaching is performed in isolation and behind closed doors (p. 19).

Collaboration among teachers can have several positive outcomes; however, some barriers have been identified. One collaboration barrier identified was teachers do not always have the same learning outcomes (Brownell, et al., 2006). Teachers varied with the teaching style and adapting to changes of instructional practices (Brownell et al., 2006). "Teachers have different conceptions of literacy pedagogy, they had difficulty learning from each other," (Brownell et al., 2006 p. 170).

The structure and complexity of agricultural education programs offers students a variety of responsibilities and challenges. Cochran-Smith (1991) stated, "The only way for beginners to learn to be both educators and activists is to struggle over time in the company of experienced teachers who are themselves committed to collaboration and reform in their own classrooms (p. 307)." Encouraging early collaboration of pre-service teachers allows for meaningful learning and development.

Theoretical Framework

Vygotsky's Sociocultural Theory (1962) helped understand pre-service teachers' experiences related to collaboration during teacher preparation programs. Vygotsky (1962) postulated that higher cognitive function originates within a social context and individuals learn best through the interactions with their teachers, peers, and other knowledgeable individuals. Sociocultural Theory explains how social interactions help individual growth and learning (Brown, et al., 2014). A key component of Vygotsky's Theory is the construct of the zone of proximal development (ZPD). ZPD is described as an area in-between where an individual can learn independently, without guidance, and knowledge not yet known to them (Vygotsky, 1978). The ZPD framework allows learners to collaborate on a task, if they cannot complete the task themselves (Allahyar & Nazari, 2012). This is where true collaboration takes place and learning occurs. Schunk (2012) advocated that peer collaboration is an important application of Vygotsky's Theory suggesting, "When peers work on tasks cooperatively, the shared social interactions can serve an instructional function (p. 246)." Students learn best by talking problems out with their teachers or peers (Allahyar & Nazari, 2012).

Purpose and Objectives

The need for this study is highlighted in the American Association for Agricultural Education's (AAAE) National Research Agenda, research priority area five, "Efficient and Effective Agricultural Education Programs" (Roberts, et al., 2016). Specifically, this study focused on the research question, "how can agricultural leadership, education, and communication practitioners (teachers, extension agents, etc.) collaborate to deliver educational programs effectively?" (Thoron, et al., 2016, p. 43).

The purpose of this qualitative study was to investigate the collaborative efforts conducted between student teachers hosted in school-based agricultural education programs. Specific objectives included:

1. Determine student teachers' understanding of collaboration.
2. Describe positive and negative aspects of the student teaching experience.
3. Identify and describe the types of collaboration that take place during the student teaching experience.
4. Identify potential ways for a teacher education program to further enhance collaboration among its student teachers.

Methodology

A realism epistemological perspective and a basic qualitative approach guided this study. Realism is individuals creating meaning from lived experiences (Maxwell, 2012). Merriam and Tisdell (2016) indicated a basic qualitative study is appropriate when determining how people interpret and

construct meaning within their experiences. The purpose of this research was to investigate how pre-service teachers describe collaborative efforts encountered during a student teaching experience. A qualitative methodology utilizing the realism epistemological perspective and basic interpretive research approach was considered appropriate for this study.

Recruitment

The study was approved by the Institutional Review Board (IRB). A recruitment email containing information regarding the study and participants requirements was shared with all 16 pre-service student teachers in a cohort at Iowa State University. A link was provided to an electronic informed consent document. All 16 pre-service students agreed to participate in the study.

About the Participants

Three pre-service students were male and 13 pre-service students were female. Fourteen participants completed a traditional four-year degree at a land grant university, while two participants were community college transfer students. All students had completed their 16-week student teaching experience when the focus groups were held. A description of the participants and their assigned student teaching sites can be found in Table 1.

Table 1

Cohort Participants and Description of Student Teaching Location

Pseudonyms	Rural* vs Urban	Single vs Multiple Teacher Program	Taught in MS/HS	Student Teaching Laboratory Facilities Available
Adam	Rural	Single	MS & HS	agricultural mechanics, hydroponics, technology computer
John	Rural	Single	MS & HS	technology computer
Gwyn	Rural	Single	HS	Horticulture, agricultural mechanics
Tyler	Urban	Multiple	HS	greenhouse, aquaculture, land lab with produce, technology computer
Allie	Urban	Multiple	HS	greenhouse, aquaculture, land lab with produce, technology computer
Megan	Urban	Single	HS	aquaculture and hydroponics
Julie	Rural	Single	MS & HS	greenhouse, agricultural mechanics, aquaculture, hydroponics, land lab with produce
Katelyn	Rural	Single	MS & HS	agricultural mechanics and technology computer
Brooke	Rural	Single	MS & HS	greenhouse, agricultural mechanics laboratory and hydroponics
Molly	Rural	Single	MS & HS	agricultural mechanics, land lab with produce
Miranda	Rural	Multiple	HS	greenhouse, land lab for produce, conservation land lab
Sara	Rural	Single	HS	agricultural mechanics, land lab with produce, technology mobile lab
Willie	Rural	Multiple	HS	greenhouse, agricultural mechanics, produce and conservation land lab
Whitney	Rural	Single	MS & HS	agricultural mechanics and hydroponics
Wendy	Rural	Single	HS	agricultural mechanics laboratory, technology mobile cart

**Note*. Rural is defined as populations less than 20,000 people

Data Collection

Participants had the opportunity to attend two separate 45-minute focus group interviews. Each focus group included eight participants and the interview session was audio-recorded. The interviews were conducted at the conclusion of the pre-service student teaching experience. Researchers developed and used a semi-structured interview protocol to guide the interview session (Table 2).

Table 2

Questions Used During the Focus Group

Interview Items
Describe the best part of your student teaching experience.
Describe the worst part of your student teaching experience.
Describe what collaboration is to you.
Describe how you collaborated with other student teachers during student teaching.
Describe who you collaborated with most often throughout student teaching.
Describe who you collaborated with the least throughout student teaching.
Describe your collaborative experience in your undergraduate program prior to beginning student teaching.
Describe what you believe could be improved to help enhance your collaboration experience.

Researchers utilized focus group interviews to allow participants to share their opinion and engage with others (Morgan, 1998).

The focus group interviews were conducted by the researchers during the student's final meeting. The final meeting is a time when all student teachers come to campus to discuss their student teaching experiences and plans. This time allowed researchers to setup two different focus group times for participants to accommodate the student's schedules.

Data Analysis

All interview responses were audio-recorded and field notes were taken. Audio files were transcribed verbatim and shared with participants for member check. Field notes and transcriptions were analyzed separately by the researchers using an open-coding technique, then together to confirm the results. Codes were grouped using axial coding, categorized systematically, and informed by the study's purpose (Merriam, 2009). Transcriptions were reviewed and categories were refined and revised as analysis continued. Finally, the primary categories or themes were named. Reliability and trustworthiness of the data was established through use of a research log and peer review of data analysis (Creswell, 2013). Pseudonyms were used throughout the data analysis process to protect the identities of the participants.

In qualitative studies, reliability and validity are established through the credibility, transferability, dependability, and confirmability attained through its methods (Lincoln & Guba, 1985). Credibility can be related to the level of confidence in the researcher and through triangulation efforts. The researchers have more than 15 years of experience in agricultural education and bring a wide range of backgrounds. Each of the researchers previously taught agricultural education at the secondary level.

Additionally, analyst triangulation was utilized to ensure findings were comprehensive and robust. To ascertain transferability, research participants were purposively selected for the study based on their recent student teaching experience. To help achieve a high level of dependability, procedures and benchmarks were kept in place and followed that included: using peer reviewed, credible resources; transcribing data word-for-word; and checking for the accuracy of the transcripts. Confirmability was established by attempting to bracket the biases of the researchers.

Findings

The purpose of this qualitative study was to investigate the collaborative efforts conducted among student teachers hosted in school-based agricultural education programs. During the coding

process, the following concepts were identified and emerged into subsequent themes and sub-themes:(1) working together, (2) common goals, (3) building relationships, (4) working with students, (5) working with teachers, (6) student motivation and discipline, (7) transitioning from student to teacher, (8) cooperating teachers, (9) fellow student teachers, (10) other teachers, (11) technology, and (12) additional contacts.

Objective one sought to determine if student teachers had an understanding of collaboration. Participants were asked to define collaboration and what it meant to them. The following theme transpired revealing that the participants had an in-depth understanding of collaboration.

Theme 1: Collaboration is Utilizing Individual Skills and Resources, While Collectively Working with Others to Meet a Common Goal

"Collaboration to me is the use of one or more other people to collectively meet a set goal," stated Adam. Collaboration uses the minds and resources of all those involved to help achieve success in what the group has set as their goal. John indicated, "Working together to accomplish like goals and sharing ideas with one another." Gwyn explained, "The action of working with others to produce or create something using the skills each person has as a group." Tyler stated, "To me, collaboration is interacting with one another to share experiences and ideas. It is a way to learn from other experiences." Allie continued to explain, "Collaboration is working together with someone who can assist with the knowledge base that is being worked with." Megan explained, "Collaboration is using other people as resources in order to plan. It can be to plan lesson units, or to improve on weaknesses." Julie stated, "Collaboration time is working with someone or a group of people to accomplish one common theme, goal, and/or project."

Objective two attempted to describe both positive and negative aspects of the student teaching experience. While many items surfaced, several concepts were consistently expressed among the participants. The following two themes and additional sub-theme were developed on these premises.

Theme 2: Working and Building Relationships with Students and Teachers are Positive Aspects of Student Teaching

Adam described, "The best part of my experience was being able to connect with students. Building a relationship with each student was very special. I would say overall becoming a role model was also the best part." Katlyn indicated, "Working with and getting to know the high school students was the best part of my experience." John said, "Getting to know my students as each one of them brings something different to the classroom." Gwyn mentioned, "Getting to know the students and staff at my cooperating high school was the best part. I looked forward to talking with the student's everyday as I created a connection with them throughout my experience."

Overall, working with students was a positive facet of the student teaching experience; however, for some student teachers working with students was also a negative aspect of the experience.

Theme 3: Challenges Associated with Managing Student Motivation and Discipline are Potential Negative Aspects of Student Teaching

Managing student motivation and discipline surfaced as a negative aspect of the student teaching experience. Julie indicated that it was difficult trying to motivate the students. While Tyler explained, "One class I was teaching previously had a teacher that was lenient with them and had trouble controlling them. This class tested my patience for the first few weeks until the students knew my expectations were serious." Brooke said, "I struggled with student motivation throughout the

semester of my experience." Allie shared, "As a student teacher, it was hard to deal with the students who refused to see me as one of their teachers. These students tended to treat me like a substitute or refused to do any of the work I assigned them."

An additional sub-theme emerged when analyzing the data for this objective. Many student teachers began to become self-aware of the inevitable "transition from student to teacher". Several of the student teachers found that the shift from a college student to a teacher was difficult due to the task of preparing for a full teaching load. Megan indicated, "Coming up with curriculum from scratch was difficult and is something I struggled with." Molly indicated, "I struggled with piecing things together in a way that makes the most sense." Katlyn said, "The worst part was developing lesson plans and planning lessons." "At the cooperating high school that I was at, students refused to see me as the teacher because they felt I did not know the subject areas," said Adam. "One negative part of my experience was learning time management and figuring out how to come up with stuff on the spot," said Gwyn.

Objective three attempted to identify the types of collaboration that take place during the student teaching experience. It also sought to describe the various types of collaboration, and if collaborating on issues with others was beneficial for working through the negative aspects of student teaching. Theme four and five were devised on the responses to the questions related to this objective.

Theme 4: Student Teachers Collaborate with Several Individuals Including Their Cooperating Teacher, Other Student Teachers, and Other Teachers and Staff, Both In-person and Virtually

Several collaborative efforts were identified in this study. Obvious collaborative partners identified included their cooperating teacher and those individuals within their student teaching cohort. However, additional collaborative partners consistently being recognized included other high school agricultural educators and other teachers and staff members at their student teaching placement site. Additionally, several divulged using social media sites and websites as collaborative outlets, such as the National Association of Agricultural Educators (NAAE) Communities of Practice (COP) website.

John indicated, "I worked mainly with my cooperating teacher, but it is important to work with other teachers who have new ideas of teaching or dealing with a particular student." Brooke indicated, "I collaborated with my cooperating teacher daily as she provided me great feedback and input for my teaching experience. I also collaborated with a few of the other students teachers on a weekly basis." Adam said, "I collaborated with my cooperating teacher and fellow student teacher at different locations." Molly explained her experience,

> I have talked with my cooperating teachers daily to make sure I was teaching the correct material and on track with where I needed to be. I also talk with my high school agriculture teacher weekly. I have also had the opportunity to talk with several other agriculture teachers around the area.

Megan stated, "I talked to my previous teachers and asked fellow student teachers about their approaches. I also spoke to the art teacher, special education, and industrial arts teachers." Julie explained,

> During my experience, I collaborated with my cooperating teacher, the science teacher, the Spanish teacher, guidance counselor, special needs teacher, agricultural student teachers at other schools, other agricultural teachers at other schools, and online social media sites. The Spanish teacher gave me a classroom management idea that I innovated into my own.

Objective three also provided an insight on the positive impact collaborative efforts have on the student teaching experience, as expressed in theme five.

Theme 5: Positive Collaborative Efforts During Student Teaching Can Enhance Self-Efficacy of Pre-service Educators

Each participant in this study indicated that working with other teachers enhanced their ability to develop into an effective classroom teacher. At the onset of the student teaching experience, many struggled with engagement techniques, inquiry-based instruction, and creating a student-centered learning environment. Through constructive collaborative feedback, they were able to adapt their lessons throughout their experience to make these positive changes that alleviated concerns for several of them.

Molly stated, "By collaborating with other teachers I learned how to engage my students with critical thinking skills." Tyler explained, "Before collaborating with my cooperating teachers about making my lessons more engaging for students I struggled. After collaborating with my cooperating teacher about making my lessons more student centered, students became more involved with my lessons." Julie added, "Collaborating with my cooperating teacher and other agriculture teachers allowed me to be able to enhance my lessons to make them focus more on students using deductive reasoning."

The goal of objective four was to identify potential ways for a teacher education program to further enhance collaboration among its student teachers. We asked the study participants how collaboration could be enhanced throughout the student teaching experience and their teacher education program. Our final theme surfaced when analyzing the data from these questions.

Theme 6: Additional Formal Contacts Could Enhance the Student Teaching Experience, Especially Early On

When student teachers were asked ways collaboration could be enhanced, a theme emerged as "additional formal contacts". Formal contacts can be made throughout the student teaching experience in multiple ways. Participants discussed best practice for valuable communication with one another while student teaching. Participants believed one way to enhance collaboration was by using Skype meetings between student teachers to enhance collaboration. It was suggested for this to be done early in the experience to assist in lesson planning and developing a sense of community within the profession.

Adam stated, "I think using a Zoom meeting would be very valuable during student teaching because we can have face-to-face communication without having to be in the same area." Wendy stated, "Being able to blog to the other student teachers on NAAE was helpful for collaboration." Allie stated, "I think Communities of Practice was a great resource for collaboration." Tyler explained, "I feel using Communities of Practice is a great way to start collaborating with other educators."

Conclusions, Implications, and Recommendations

The student teaching experience has a variety of positive and negative aspects. Results indicated that working with students was a common positive and negative feature of the student teaching experience. While the student teachers enjoyed building a relationship with students, they also struggled with discipline and motivating the same population. Additionally, participants indicated it was nice to have the opportunity to apply the knowledge they had accumulated over the past four years in a real-world experience, which is consistent with the literature (Roth & Tobin, 2001). However, they also conveyed feeling unprepared for certain aspects of the student teaching experience and were lacking proficiency in several key areas, including curriculum development.

The pre-service teachers did report the collaboration, which took place during student teaching, helped them work through the negative experiences. Participants indicated collaboration happened with various audiences throughout the student teaching semester, but primarily with their cooperating teacher, other student teachers, and other agriculture teachers around the state. Interestingly, many also collaborated with their former high school agriculture teachers on a regular basis. Pre-service teachers believed the collaborative efforts during student teaching were enough but lacking in other aspects of the teacher preparation program. This finding can be supported by Vygotsky's Sociocultural Theory (1962) that implies where true collaboration takes place learning will occur.

While pre-service teachers in this study collaborated with many people throughout their student teaching experience to gain knowledge, they also gained skills in making their lessons more student-centered and focused on utilizing inquiry-based learning. Inquiry-based learning requires students to be challenged when thinking about answers to questions and allows teachers lessons to become more student centered (Blythe et al., 2015). When teachers utilize inquiry-based instruction, students must go through a process in order to answer the question (Thoron & Myers, 2012). By collaborating with other teachers, the participants in this study learned different ways to engage their students and start the process of utilizing inquiry-based instruction in their future classrooms.

Participants in this study indicated they gained more confidence and self-efficacy by collaborating with their cooperating teacher and other teachers in and out of the school. The first opportunity pre-service teachers receive to develop their self-efficacy is during their student teaching experience (McKim & Velez, 2016). By collaborating with others, student teachers succeeded with many tasks through student teaching, which raised their self-efficacy in teaching (McKim & Velez, 2017). Student teachers also increased their self-efficacy by observing their cooperating teacher succeed in many tasks the student teacher would be completing during their experience (McKim & Velez, 2017).

Pre-service teachers indicated they would like to enhance the communication among other student teachers during their student teaching experience. Forms of communication included Zoom and Skype for face-to-face meetings at a distance to discuss challenges, successes, and information. According to Fritz & Miller (2003) student teachers utilize communication to give advice and share lesson plans.

It was recommended teacher preparation programs develop collaborative opportunities throughout the collegiate experience, and not only during the last semester of student teaching. This collaboration should occur early and often in their experience to allow pre-service students to connect with current agricultural educators through professional development and networking opportunities. Arranging collaborative activities with current agriculture teachers at various district and state events, such as at Career Development Events or the annual summer Agriculture Teachers Conference, should be explored. Tschannen-Moran (2001) found teachers experience higher levels of trust when they collaborate. A collaborative opportunity with others establishes a network of individuals for student teachers to feel comfortable with sharing ideas and seeking input. This would be beneficial to pre-service teachers prior to beginning their student teaching experience.

De Lay and Washburn (2013) suggested collaboration also has a positive impact on a teacher's career satisfaction and can potentially lead to an increased agriculture teacher retention rate. Currently the profession is experiencing a deficit of highly qualified agriculture teachers (Smith, et al., 2017). Increasing teacher collaboration could be a key component in a comprehensive teacher retention plan. It is highly suggested teacher educators explore additional ways to enhance collaborative efforts for agriculture teachers through digital or electronic forums and social media. Continued research in these areas should be conducted with other student teachers to see if similar themes emerge with a larger or

more diverse audience.

Limitations

Results cannot be generalized to the entire population of student teachers across the United States. Future research should be conducted with other groups of student teachers in other states to see if similar themes emerge. This study provides valuable insight into collaboration with Iowa State University teacher education program. The results of this study will assist faculty and staff in shaping and adjusting the coursework for the undergraduate teacher education program to be collaborative throughout the entire collegiate experience.

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