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Beginning teachers perceptions of curriculum for agricultural science education training and classroom implementation

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**Beginning teachers' perceptions of curriculum for agricultural science education training
and classroom implementation**

by

Katelyn Anderson

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

Major: Agricultural Education

Program of Study Committee:
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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this thesis. The Graduate College will ensure this thesis is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2018

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ABSTRACT

The purpose of this thesis was to explore perceptions beginning teachers held when becoming Curriculum for Agriculture and Science Education (CASE) certified within the Agriculture, Food, and Natural Resources (AFNR) content area. The objectives of this thesis were to: (1) describe perceptions of benefits and challenges beginning teachers have to becoming certified in the CASE AFNR Institute; (2) identify factors that contribute to the benefits and challenges beginning teachers have when implementing the CASE AFNR curriculum into their classrooms; and (3) describe the perceptions beginning teachers have of the CASE AFNR curriculum material.

Six beginning agricultural educators (within two years of beginning teaching), who had become CASE AFNR certified served as participants in this study. The educators were certified during a pre-professional teacher's workshop hosted by Iowa State University. The study was of qualitative nature, comprised of one-on-one interviews with participants to gain insight into personal perceptions of participants.

Beginning teachers found that active learning had a major impact on their CASE AFNR Institute experiences, as well as for their students when implementing the CASE AFNR curriculum into their classrooms. Beginning agricultural educators enjoyed the cohesiveness of the CASE AFNR curriculum, which provides a thorough introduction into each of the agricultural career content pathways. Having pre-planned lessons and activities helped the beginning teachers gain confidence teaching all content areas, and allowed for extra time to be devoted towards other courses. Beginning teachers found the time commitment and large amount of information to be learned in the CASE AFNR Institute as demanding, and which impacted their personal lives. Teachers identified that funding to attend the CASE AFNR curriculum was

a challenge to attain, as well as being able to implement the curriculum in classrooms. Some CASE AFNR activities are not completed because resources were not available

It is recommended that future CASE AFNR Institutes continue the usage of active participation, utilizing the lead teachers to their fullest extent. Fast track opportunities and external funding resources could be beneficial to beginning teachers to be able to secure availability to participate in CASE Institutes. Finally, it is recommended future studies be conducted utilizing various CASE AFNR Institutes, as well as CASE Institutes outside of the AFNR curriculum area.

CHAPTER I. INTRODUCTION

Background and Setting

Vocational education was initially created with the foundational premise of providing “meaningful, relevant, and practical curricula” to meet the need for preparation of students in real-world circumstances and for future work experiences (Rose, 2004; Winship, 1917).

Agricultural education was included in one sector within the vocational education program, with its roots in the preparation of students to work in production agriculture (Wonacott, 2003).

Today, the agricultural industry includes a broad expanse of professions that range from production farming, agribusiness, education and food processing.

The National Council for Agricultural Education stated, “The agriculture, food and natural resources (AFNR) industry is a highly technical and ever-changing sector of the global economy upon which everyone is dependent (2015).” Such a wide range of professions leads to an even wider range of needed skill sets. Additionally, through the evolution of agricultural education, the inclusion and incorporation of career skills aiding to the success of students in their future endeavors regardless of the direction that pursuit will take them was incorporated (Wonacott, 2003). It is expected that agricultural education teachers should have a foundation of content knowledge strong enough to reach each individual’s needs within all of these pursuits, as well as proper teaching techniques to meet the needs of each student in their classroom (Whittington, 2005). This emphasis on future preparation has steered agricultural education into the encompassment of a vast collection of competencies, most notably Science, Technology, Engineering, and Math (STEM) education and inquiry-based learning.

In an ever-changing world, STEM career availabilities are extensive and expanding (Langdon, McKittrick, Beede, Khan, & Doms, 2011; Vilorio, 2014). Individuals with STEM

careers have the potential to serve as innovators for future progress; however, there is a lack of supply of individuals to fill the demand for careers available (Langdon et al., 2011). Dobbs et al. (2012) indicated more than half of the STEM positions available remain open due to the unavailability of qualified workers. Additionally, Vilorio (2014) indicated that careers in STEM fields are expected to grow to more than 9 million positions by 2022. With vast possibilities of potential STEM careers in the agricultural industry, it is vital for agricultural education programs to incorporate STEM into the curriculum.

Inquiry-based learning (IBL) is the attainment of knowledge through students' active investigation using the process of observing, questioning, investigating, experimenting, analyzing results, drawing conclusions, and sharing their findings (Olson & Loucks-Horsley, 2000). The utilization of inquiry-based learning in the classroom aids with critical thinking skills of students and higher reasoning abilities (DiBenedetto, Easterly & Myers, 2015; Wells et al., 2015). Blythe, DiBenedetto, and Myers (2015) found that students perceived their learning was more thoroughly impacted through inquiry-based methods rather than traditional methods of instruction.

Statement of the Problem

Agricultural education requires a foundation of broad knowledge due to the multi-dimensional manner of the agricultural industry and skill set for career preparation. Because of the vastness of topics covered in agricultural education, a lack of personal perceived content credibility has been found within agricultural education teachers (Rice & Kitchel, 2017). With little to no experience leading their own classrooms, beginning teachers have an increased chance of falling within this realm (Claycomb & Petty, 1983). Professional development is a

means of attaining content knowledge, as well as curriculum to aid in lessening the pressures within the classroom (Rice & Kitchel, 2015).

Curriculum for Agricultural Science Education (CASE) is one source of professional development available to agricultural educators. In 2009, CASE began classroom implementation, since then the number of CASE certified teachers has increased to over more than 1,539 teachers in 45 states and Puerto Rico (CASE, 2011). With the demand for curriculum availability, it is important for educators to gain the most benefit out of professional development opportunities. Previous studies have indicated professional development events for teachers should include useful training tactics to ensure the development of teaching techniques, content information, and resource availability to the teachers participating (Desimone, Porter, Garet, Yoon, & Birman, 2002; Darling-Hammond & Richardson, 2009).

Purpose and Objectives

The purpose of this study was to gain insight from beginning teachers into the effectiveness of becoming certified within the Agriculture, Food, and Natural Resources, (AFNR), content through the CASE institute, as well as the implementation of the curriculum within their individual agricultural education programs. To more fully grasp the complete understanding of the effectiveness of CASE, this study focused on first- to second-year agricultural educators that have been certified within the AFNR content area. The following objectives served as a guide for this study:

1. Describe perceptions of benefits and challenges beginning educators have pertaining to becoming certified in the CASE AFNR Institute.
2. Identify factors that contribute to the benefits and challenges beginning educators have when implementing the CASE AFNR curriculum into their classrooms.

3. Describe the perceptions beginning educators have of the CASE AFNR curriculum material.

Importance

The results of this study have the potential to lead to benefits in the following forms:

1. Provide data to the limited data present within the realm of CASE Institutes.
2. Data collected within the realm of CASE Institute involving beginning educators is limited.
3. Provide a determination of the overall effectiveness of professional development regarding the CASE Institute and forms of improvement for the future.
4. The findings of this study will assist in identifying barriers for beginning educators when seeking certification in CASE AFNR curriculum. The identification of barriers has the potential to mitigate the barriers and identify solutions.

Definition of Terms

Agriculture, Food, and Natural Resources (AFNR): “Career Cluster prepares learners for careers in the planning, implementation, production, management, processing and/or marketing of agricultural commodities and services, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products. It also includes related professional, technical, and educational services (Kreifels, n.d.).”

Curriculum for Agricultural and Science Education (CASE): “CASE is an ambitious project started by the National Council for Agricultural Education in 2007. The project goal is to implement a national curriculum for secondary agricultural education that provides a high level of educational experiences to enhance the rigor and relevance of agriculture, food, and natural resources (AFNR) subject matter. Besides elevating the rigor of AFNR knowledge and skills,

CASE provides purposeful enhancement of science, mathematics, and English language understanding (CASE, 2011)."

STEM: "STEM Education is a philosophy designed around a cooperative effort to provide students with a comprehensive, meaningful, real-world learning experience (Gomes & Albrecht, 2014, p.8)."

CHAPTER II. REVIEW OF THE LITERATURE

A vast majority of literature written in the field of education indicates a need for continuous learning for individuals who pursue a lasting career within education. One form of attainment is through professional development opportunities. Desimone, Porter, Garet, Yoon, and Birman (2002) found that professional development that incorporated active learning activities had a beneficial influence on educators by giving them the opportunity to see how students would react to the instructional activities given. In 2009, Darling-Hammond and Richardson indicated short, one to two day sections of professional development were ineffective due to the vast amount of information, with little time to interact with the content. These studies have indicated, professional development with active learning and long durations, is needed in the field of education for teachers to grow in their careers (Desimone, et. al, 2002; Darling-Hammond & Richardson, 2009).

Professional development needs within the realm of agricultural education are vast due to the multifaceted curriculum that agricultural educators face in the classroom, as well as an increase pressure to incorporate STEM. Rice and Kitchel (2017) indicated a major stressor within the agricultural education profession is the educator's perceived credibility as a content teacher. Agricultural educators have indicated a need for course planning and curriculum as these are obstacles for them to overcome when entering the classroom (Smalley & Smith, 2017). Rice and Kitchel (2015) showcased forms of attaining the resources to overcome their obstacles in the classroom through professional development, as well as through experiences with the largest influencer being on the job teaching experience. For novice educators entering the classroom for the first time, this can be a huge barrier, which increases the importance of professional development for educators until they gain classroom experience (Rice & Kitchel, 2015).

Claycomb & Petty (1983) found that the intention and content of professional development changes throughout a teacher's career. Myers, Dyer, and Washburn (2005) indicated professional development for beginning educators should apply to their specific needs.

Veenman (1984) reviewed the results of 83 studies of perceived problems beginning educators encounter their first years of teaching in the realm of elementary through secondary education. The eight variables indicated the most frequently in the studies included classroom discipline, motivating students, dealing with individual differences, assessing students' work, relationships with parents, organization of class work, insufficient materials and supplies, and dealing with problems of individual students. Beginning agricultural educators identified the following problems: lack of preparation time, being technically competent in all areas of agriculture, lack of structured curriculum for specific courses, motivating students, and availability of resources (Myers, Dyer, & Washburn; Garton & Chung, 1996; Veenman, 1984; Joerger & Boettcher, 2000; Joerger, 2002; Camp & Heath-Camp, 1992).

A lack of resources for educators has been indicated throughout literature across relatively all content areas including that of agricultural education (McCubbins, Anderson, Paulsen, & Wells, 2016; Trexler & Hikawa, 2001; McKim & Saucier, 2013; Lankford & Mims, 1995; Niemann, 1970). One of the eight variables indicated to be a perceived challenge by beginning teachers was insufficient materials and supplies (Veenman, 1984). In the realm of beginning agricultural educators, program funding/financial support (Touchstone, 2017; Hasselquit, et. al., 2017) and alternative funding opportunities, external funding opportunities and writing proposals (Touchstone, 2015; Golden, Parr, & Peake, 2014; Sorensen, Lambert, McKim, 2014), were indicated as areas that were stressors for beginning educators or areas where they believed they had professional development needs.

Agricultural education has been tied to creating curriculum rich in experiential learning since its creation, with an emphasis on learning by doing (Roberts, 2006). Baker and Robinson (2016) found that having instruction based on experiential learning had a positive impact on the creative intelligence of the students, as well as practical intelligence when being compared to curriculum founded on the direct instruction approach. Experiential learning and critical thinking has also been shown to be preferred for individuals going into an agriculture career (Trede & Whitaker, 2000). When incorporating experiential learning into the classroom, it has been shown that teachers who create the lesson plans for their classrooms themselves miss multiple stages of experiential learning within their curriculum (Shoulders & Meyers, 2013). This is causing students to not gain the full potential of experiential learning in the classroom that they could have received (Shoulders & Meyers, 2013). The activities that made an appearance within the classroom had more focus on the attainment of content knowledge, rather than active experiences that students can learn from (Shoulders & Myers, 2013).

DiBenedetto, Easterly, and Myers (2015) reported that teachers in agricultural education who utilize inquiry-based education within the agricultural classroom led to students attaining higher scientific reasoning abilities. An increase of scoring within these abilities was indicative of a future career within Science, Technology, Engineering, and Math (STEM), as well as a higher increase on the pursuit of higher education. Thoron and Burlison (2014) found inquiry-based learning, in the realm of agricultural education, had a positive influence on perceptions of agriscience and its importance. This study also indicated students preferred inquiry-based education and would pursue future classes that utilized this form of learning in and outside of the realm of agricultural education.

Curriculum for Agricultural and Science Education (CASE) is a venture through the National Council for Agricultural Education with the focus on the development of agricultural education curriculum that integrates science, math, and language skills through means of active, inquiry-, and experiential-based learning opportunities (CASE, 2011). CASE provides intensive professional development institutes that aid teachers in attaining curricula within desired areas through actively participating in the CASE curriculum activities. Upon completion of the CASE Institute, certified participants are given access to curriculum, as well as the ability to obtain the resources to teach the subject matter within their own classrooms (CASE, 2011).

CASE appears to be ideal in much of the previous literature; however, there is little research within the realm of CASE curriculum specifically. The purpose of this study is to determine beginning teacher's perceptions of CASE training and implementation. Novice teachers have a lack of experience when creating curriculum for the students, as well as low-perceived content knowledge, which indicates they would be the most likely to need an increase in professional development. It is in the interest of the profession to investigate beginning teachers as an ideal focus for this study.

Framework

The theoretical framework that served as a guide to this study was Bandura's (1997) work determining teacher self-efficacy. Bandura (1986) defined self-efficacy as "people's judgements of their capabilities to organize and execute courses of action required to attain designated types of performances (p. 391)." An individual's self-efficacy contributes to decisions pertaining to what they choose to actively participate in, the effort they put forth, and their tenacity towards that activity to reach mastery (Bandura, 1977). More specifically, Tschannen-Moran and Hoy (2001) defined teacher self-efficacy as, "A teacher's efficacy belief is a judgment

of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated (p. 1).” Bandura (1997) indicated four sources that contribute to high self-efficacy in teachers including mastery learning experiences, social persuasion, physiological and emotional states, and vicarious experiences. McKim and Velez (2016) constructed figure 1 to serve as a guide to Bandura’s teacher self-efficacy sources and examples.

Experience	Definition	Teacher Development Examples
Mastery	Successfully accomplishing the task.	Student teaching, early field experiences, peer teaching
Vicarious	Observing someone else successfully accomplish the task.	Observing peers teach, observing early career teachers, observing videos of teachers
Social Persuasion	Encouragement or feedback on your ability to accomplish the task.	Communication with cooperating teacher, peer encouragement, feedback from teacher educator
Physiological and Emotional States	Internal state and emotions when considering or completing the task.	Occurs when contemplating or completing any task associated with teaching

Figure 1: Self-efficacy descriptions and examples (McKim & Velez, 2016).

The first source contributing to teacher self-efficacy are mastery learning experiences. Mastery learning experiences are the experience of an individual completing a task (Bandura, 1997). The attainment of mastery experiences has the most positive effect on self-efficacy because if an individual can complete a task successfully, they are likely to repeat this form of success (Bandura, 1997). The opposite is also true, if an individual personally fails at a task at hand, they are less likely to attempt said task again for fear of continual failure (Bandura, 1997).

The second source that contributes to self-efficacy in teachers is social persuasion. Social persuasion is the emotional support from other individuals (Bandura, 1997). Positive feedback

regarding an individual's personal capabilities, raises their efficacy regarding that skillset area (Bandura, 1997). The higher the regard held for the individual giving encouragement, the higher the influence on one's perceptions of being able to complete the task at hand for one's self.

The third source that contributes to teacher self-efficacy are physiological and emotional states. McKim and Velez (2016) defined physiological and emotional states as, "Internal state and emotions when considering or completing the task (p. 74)." Individuals with high internal vulnerability to stressors, become more effected within instances stress (Bandura, 1997). Similarly, individuals with lower self-efficacy, have a higher tendency to have self-doubt, creating emotional stressors for the individual (Bandura, 1997).

The last source that contributes to teacher self-efficacy are vicarious experiences. Bandura (1997) defined vicarious experiences as, "Experiences that alter efficacy beliefs through transmission of competencies (p.79)." Viewing a task completion successfully, by a higher qualified individual can aid an individual by thinking that they too could complete the task (Bandura, 1997). The belief of being able to successfully accomplish a task, increases the chances of the individual to attempt said task. There is less fear of failure because they have seen the task be successful (Bandura, 1997).

CHAPTER III. METHODS

Purpose and Objectives

The purpose of this study was to gain insight from beginning teachers into the effectiveness of becoming certified within the Agriculture, Food, and Natural Resources, (AFNR), content through the CASE Institute, as well as the effectiveness of implementing the curriculum within their individual agricultural education programs. To more fully grasp the complete understanding of the effectiveness of CASE, this study focused on first- to second-year agricultural education teachers who have been certified within the AFNR content area. The following objectives served as a guide for this study:

1. Describe perceptions of benefits and challenges beginning teachers have pertaining to becoming certified in the CASE AFNR Institute.
2. Identify factors that contribute to the benefits and challenges beginning teachers have when implementing the CASE AFNR curriculum into their classrooms.
3. Describe the perceptions beginning teachers have of the CASE AFNR curriculum material.

Research Design

To gain an in-depth description into the perceptions of experiences had within the CASE Institute and curriculum implementation, a qualitative approach was used. A qualitative design was chosen to address the purpose and objectives of the study. A qualitative approach is an appropriate way to stimulate a conversation about participants' experiences and allows for the interview to be guided by the interview questions but take the direction of the participant (Knox & Burkard, 2008).

Data Source

This study focused on beginning teachers who had recently become certified within the CASE AFNR curriculum. Due to the nature of the study, participants were teachers in their first or second year of teaching in an agricultural education setting and had completed a CASE AFNR certification in a preservice institute. The timeframes were chosen to best represent the detailed accounts of recent experiences within the CASE Institute and holding a new teaching position.

Records from the 2015 and 2016 CASE Institute hosted by Iowa State University for pre-professional teachers, as well as the Iowa Agricultural Education Instructor Directory, were used to identify and receive contact information of potential participants. The field was narrowed through three limitations: completed the CASE Institute to full certification, held a current teaching position within agricultural education, and have experience within the timeframe previously stated. Six of the eight eligible candidates responded and agreed to participate in the one-on-one interviews.

To gain insight into the participants, their schools, and CASE experiences, demographics were identified. Out of respondents that participated in this study, five were female (83%), and one was male (17%). The majority of teachers ($n = 5$, 83%), held a teaching position in a rural school with an average school size ranging from 40 to 400 students. All participants had either one or two years of teaching experience. None of the participants had experienced CASE curriculum throughout their secondary education background, nor had any of the teachers been certified in an area other than CASE AFNR. For all participants, the CASE AFNR curriculum was being taught in year-long courses, with the total number of students enrolled in CASE AFNR, (multiple sections were taught in some schools), ranging from two to 48 students.

Instrumentation

The interview developed consisted of three major sections: school background, CASE Institute/Training, and CASE AFNR curriculum implementation. School background was included in the instrumentation to gain insight into the types of school the beginning teachers were working at. An example of a question within the school background section is, “What is your average class size?” Gaining information into the background of the school systems could aid in understanding factors such as available resources, number of students in classes, and size of school. Questions making up the CASE Institute/Training section are designed to showcase perceptions the beginning teachers have pertaining to their experiences becoming certified in CASE AFNR curriculum. An example question asked in the CASE Institute/Training section include: What did you like about your CASE training experience? Lastly, the instrumentation included impressions beginning teachers had of the benefits and challenges when implementing the CASE AFNR curriculum in their own classrooms. Example questions include: What challenges did you face when first starting up CASE within your classroom? If given the opportunity would you get CASE certified in any other subject areas? Prior to finalization, the interview protocol was reviewed by an expert in the field to minimize bias and to ensure the questions asked were not guided to a specific outcome (Appendix A).

Data Collection

Participants were contacted via email to schedule one-on-one interviews to be conducted utilizing Zoom. Zoom is an online communications platform, which allows for video conferencing (Zoom, 2018). Zoom was chosen for the primary source of communication due to the ease of access to teachers with limited time. Interviews were recorded inside Zoom,

providing a resource throughout the study. Throughout the interview process, field notes were also recorded to aid in recalling of ideas and concepts participants had.

Once data was collected, interviews were transcribed. Member checking was conducted by the participants being offered the opportunity to review their personal transcribed interview to ensure the correct intentions were portrayed. Transcripts, field notes, and recorded interviews were analyzed to identify commonalities of emerging themes among participants. Once themes were identified, names were changed to ensure anonymity for participants.

Reliability

To ensure trustworthiness of the study, Lincoln and Guba's (1985) evaluation criteria served as a guide. The four evaluation criteria established were credibility, transferability, confirmability, and dependability. To ensure credibility and to establish face validity, a graduate student with a degree in agricultural education teacher certification and two professors in agricultural education with more than 10 years of teaching experiences reviewed and revised the interview protocol. Once the interview protocol was finalized, it was reviewed and accepted by the Institutional Review Board (IRB) (Appendix A). Once data was collected, a triangulation of analysts was utilized to review results. To ensure the transferability evaluation criteria was established, a rich description, which included outreach to participants, interview methods, data sources, modes of data collection, etc. was collected. Recommended by Lincoln and Guba (1985) a rich description was included for an accurate representation, and the possibility of accurately replicating this study. Dependability was established by ensuring the use of proper checks and balances within the research process were utilized and overlooked by an expert advisor. To ensure confirmability, field notes collected through the data collection process and recordings of data collection were used to create accurately detailed transcripts of participant

interviews. Transcribed interviews were used to find themes based on commonalities among participant perceptions and were reviewed by an expert in the field. Once transcribed interviews and themes were established, participants were offered the option to validate the data and conclusions as a source of member checking (Creswell, 1998).

CHAPTER IV. FINDINGS

The purposes of this study were to: identify perceptions of benefits and challenges beginning teachers have pertaining to becoming certified in the CASE AFNR Institute; identify factors that contribute to the benefits and challenges beginning teachers found when implementing the CASE AFNR curriculum into their classrooms; describe the perceptions beginning teachers held of the curriculum material; and identify barriers with becoming certified in additional CASE curriculum areas. Upon analysis of transcripts, five themes were identified through commonalities presented across all interviews. Themes consisted of active learning, resource availability, time commitments, motivation, and curriculum.

Active Learning

The biggest benefit that all interviewees identified with using the CASE curriculum was active learning. The concept of active learning presented itself regarding the teachers attaining training within the CASE Institute, as well as benefits regarding implementation of curriculum to the students.

Institute Training

Ms. Williams taught CASE AFNR during student teaching, prior to becoming certified in the content area. “I struggled during student teaching because I never had the training, I had no prior knowledge of it, so I ended up relying a lot on my cooperating teacher to coach me through the activities.” Similarly, Ms. Miller had some frustrations while trying to student teach the curriculum prior to becoming AFNR certified, “When I student taught I used CASE and it was the same thing every single day that she had them do, and I kind of picked up on that which was frustrating.” Going to the CASE training helped both beginning teachers gain more insight into the curriculum. Ms. Williams stated, “I liked that when we were being trained that we actually

got to participate in it. We got to walk through what these activities looked like. I don't know about anyone else, but I am an extremely visual learner. I need to see what's happening to fully understand what it is that needed to be done and how the lessons went." Ms. Miller commented, "I like that we got to experience the curriculum first hand, as well as being able to ask questions along the way to the experienced teachers who taught it. They were able to give us tips like "oh this works well," or "this you probably need to do more explaining with," or even different methods of teaching the curriculum. Going to the CASE training we went through different ways of going through the purpose or getting students attention, or just other teaching methods that go along with presenting the curriculum, which was very different than my experiences student teaching." While Ms. Moore and Ms. Johnson did not mention their student teaching experience, they did mention similar benefits when attending the CASE Institute. Ms. Moore expressed, "It was nice that it was very interactive and moved at a great pace to understand material." While Ms. Johnson stated, "I liked how we went through every lesson, so that when you teach it a month later you remember doing it. I'm glad they didn't run it where they just explained, I liked actually getting to do the experiments ourselves. Getting to participate helped me learn, and I liked hearing how our instructors implement it."

CASE Curriculum Implementation

Teachers held similar ideals concerning active learning when implementing the CASE AFNR curriculum into their own classrooms. Ms. Moore stated, "The kids really liked all the hands-on activities." Ms. Williams also claimed one of the benefits she saw implementing the curriculum was, "I guess the curriculum itself is great, the kids that I have do like it... My students really enjoy getting to do things. They aren't sitting there listening to me talk or taking notes. Which I am guilty of in some of my other classes, we talk and they take notes. I like that

CASE AFNR brings it to a minimum.” Ms. Johnson agreed saying, “I like the experiments for my students and I like that they [the curriculum activities] are very learning by doing based.” Ms. Williams also found the active participation was aiding more than inside her classroom, “I think it [actively participating in content] helps them understand better, especially the science type parts of it. One of them [a student], she’s a sophomore, and sophomore year students take biology, so I really just reinforce a lot of what she is having in biology. I think it [active participation] ends up helping her learn it a lot better.”

Time Commitments

The second theme common among all participants was time commitments needed for the CASE Institute. A challenge that was indicated by all participants in regard to the CASE Institute is the time commitment needed to be devoted by all of the participants. Ms. Johnson commented, “It was a lot of information and a lot of long days.” Ms. Williams added, “The training was a little long. That is two weeks of just straight-up activities. I mean activities are great, but we did them from what 8-4 or 8-5 every day, for two straight weeks. Also, when they are two weeks long, then that is two weeks out of your summer that you have to try and coordinate around.” Ms. Miller stated, “[If I could change anything] I would make it shorter, I know they have the fast track once you are familiar with CASE, but the two weeks was a long time.” Ms. Moore also mentioned, “The time commitment was a challenge, it was necessary though.”

Resource Availability

A commonality of challenges faced by all participants was resource availability. Resources included funding to attend a CASE institute, availability of materials and costs to purchase the needed materials, and other resources.

Implementation Funding

Mr. Smith stated, “[A challenge faced was] being able to afford to become certified.” Ms. Moore faced a similar challenge, “A challenge for me was money to pay for the institute. We have received the STEM Scale-Up Grant, but it would be hard to find funding without it.” While Mr. Smith and Ms. Moore faced funding issues when trying to be able to register for CASE, Ms. Williams faced funding problems on a personal level, “I had to work in the summer, so that is two weeks that I have to take off work, that I am now not getting paid for..”

Material Availability

Participants had received funding to become CASE certified, but a common challenge faced while attempting to implement the curriculum was having materials available for all AFNR activities. Ms. Miller stated, “I would say the big thing is finding the funding, grants and things. The other thing is yes you can find money to go to trainings, but then you also have to find money to buy all of the supplies, so that can be a challenge too. For example, we are a low-income school, which we are fortunate to get a certain amount of money because we have such a great amount of diversity, but it is also a struggle because you don’t have the money to purchase everything you want especially consumables and things.” Ms. Williams has similar challenges that she faces, teaching in small, low income schools. Ms. Williams commented, “I mean CASE is awesome, it has all of the things that you need, but when you are in a small, rural school that doesn’t have a ton of money it can be really hard to finance. Granted, we can use Perkins funding on some of it, but that funding has to be shared with other people. I wouldn’t receive all of that Perkins funding for my program... A lot of those consumable materials I just buy out of my own pocket, or if I have some at home I will just bring it from home. In the end, it is a lot of money out of my own pocket.” Being a beginning teacher at the school, Ms. Johnson faced challenges

feeling comfortable asking for resources, “My biggest downfall [with implementing CASE AFNR] is all of the materials that you need and having to order it ahead of time. I hate having to go to the principal and keeping having to ask to have more money to pay for more materials. No one wants to be costing the school a bunch of money to be able to teach.” Mr. Smith agreed with these challenges, Mr. Smith mentioned, “[A challenge of implementing CASE AFNR was] making sure I had all of the equipment that I needed to effectively implement the curriculum.” When the funding is too much of a challenge, it was indicated by several of the participants that the areas lacking resources were the areas that ended up getting skipped over. Ms. Williams commented on these areas stating, “I do have to skip some things, for example unit I believe 6 that you need the circuit board for. I don’t have them so I either have to track down teachers in my school that have access to them or something similar to it. Or I will end up just having to skip over it because I can’t get them.”

Curriculum

One focus of this study was to identify perceptions beginning teachers have of the CASE AFNR curriculum. Commonalities found throughout the participant’s interviews included observations regarding the students and curriculum interactions, as well as how having access to the curriculum affected the beginning teachers. When considering the students experiences commonalities included the cohesiveness of CASE curriculum regarding an introduction to all agricultural content areas and motivation students had when working on completing the course. When considering the curriculum from the beginning teacher’s standpoint, participants mentioned gaining confidence to teach the curriculum and the access to preplanned lessons throughout the course.

Cohesive Introductory Course

Having coursework that encompasses all areas of agricultural education was a benefit many participants identified. Ms. Johnson noted, “I like how it [the CASE AFNR curriculum] is pretty broad, it has a little bit of everything ranging from mechanics, plant, animal, and communications leading to more specific coursework.” Ms. Williams agreed, “AFNR is one of those [courses] that I like because it is an intro course and it gives them a little bit of everything. From there they can pick what things they like the most from that class and follow those classes further. If they really like the animal part they can take animal science, if they really like the plant part of it they can take horticulture. I really like it [the curriculum] from that aspect.” Ms. Jones enjoyed changing current curriculum to the CASE AFNR curriculum and commented, “Right now our Ag one is strictly animal science, so I am excited to incorporate all of AFNR into our Ag one because it has a little bit of plant science, a little bit of animal science, really everything introductory to agriculture. I am also excited that it ties to science for the kids that may not really want to be in an ag class.”

Student Motivation

Mr. Smith mentioned, “[A challenge with the curriculum was] the motivation to get the students to be engaged the entire time.” Ms. Jones agreed, “The only challenge I see [with the CASE AFNR curriculum], is that sometimes kids get tired of CASE in general, so it can be hard to get them excited when it says CASE at the top of the worksheet.” Ms. Johnson found a similar situation as Ms. Jones and mentioned, “The students said that it was boring, the first couple of units aren’t very exciting and it was hard to motivate them with all of the worksheets.” Ms. Moore more specifically pointed out motivating students to read instructions and to take time to answer questions for themselves, “[A challenge faced with the curriculum was] getting kids to

read and understand the instructions that were in the packet and pushing them to think independently instead of asking me to check their answers before committing.”

Gaining confidence

When considering a benefit to the curriculum availability for the beginning teacher, a big factor was the affect it had on teaching confidence levels. Ms. Jones mentioned she initially sought certification due to, “I hadn’t student taught yet, so it was hard to tell what I was going to do in the classroom.” Ms. Miller found that a benefit of having the CASE AFNR curriculum was, “Being able to have a little bit of a background in curriculum before beginning teaching. Even though we had the methods courses, I don’t think they fully prepared us for what creating curriculum and what actual curriculum is about. So, what interested me in CASE in the first place was that at least I would have somewhere to get my feet wet.” Ms. Williams had similar thoughts when asked if there was a possibility of becoming certified in a different CASE content area, “I would be certified in NRE because it is the area that I am the least confident teaching. Right now, I am using all materials from another teacher, which is fine, but it would be nice to have CASE that I could use to become more confident in it.”

Coursework Planning

Participants noted a main benefit of becoming CASE AFNR certified was having access to coursework that is already planned. Ms. Moore said, “[CASE] made planning a lot easier. I was gone a lot, so it made for easy sub plans too.” Mr. Smith agreed, “A big benefit was the already prepared lesson plans! It has saved me a ton of time.” Ms. Johnson commented, “I like having it so that I can push it kind of on the backburner and focus on planning for my other courses.” Ms. Jones found, “I really enjoyed that everything is planned out for you, yes you have

to do the lab prep, but you knew what you were teaching the next day, even if you didn't lesson plan."

CASE AFNR Curriculum Content

To evaluate perceptions of CASE AFNR as a whole, the participants gave insight into their perceptions of the content the CASE AFNR curriculum consisted of. The impressions participants have of the content were diverse. Regarding content, Ms. Jones said, "AFNR, the only training I have been to, is very science heavy...I feel like that could turn some kids off that maybe don't enjoy science." Ms. Miller had a similar perceptions of science content in CASE AFNR wishing there was other content included with the science based education, "I think if they added more skills along with the physics and sciences behind everything, that would be very helpful, for example I am teaching multiple mechanics classes and there is no curriculum that aligns with the skills that I am trying to teach." Ms. Moore had found little desired changes to make within the content and said, "[Content is] easy to gauge student understanding and is overall really good content." Ms. Miller liked the structure of CASE so much that she wishes to incorporate similar aspects into her other coursework, "I would like to try implement more of a CASE style into my other classes... I want to try to make it so that you can learn information, do an activity or project, then go back to learn information. So, I think the process is really good."

CHAPTER V. CONCLUSIONS AND DISCUSSION

The purpose of this study was to gain insight from beginning teachers into the effectiveness of becoming certified within the Agriculture, Food, and Natural Resources, (AFNR), content through the CASE institute, as well as the implementation of the curriculum within their individual agricultural education programs. To more fully grasp the complete understanding of the effectiveness of CASE, this study focused on first- to second-year agricultural education teachers who have been certified within the AFNR content area.

Results of this study are not generalizable to the entirety of the beginning teacher population. Participants found a major benefit to becoming certified within CASE AFNR was the chance to actively engage with the content in each lesson, which increased their ability to implement the curriculum themselves by looking back at their CASE Institute examples. Challenges beginning teachers identified with becoming CASE certified was the personal time commitments to the Institute and finding funding to be able to attend. Beginning teachers felt the CASE Institute training was too long, and felt overwhelmed by the amount of information shared. Finding funding to be able to attend the CASE AFNR Institute was indicated as a barrier for ever becoming certified in any other CASE curriculum areas.

In the realm of CASE AFNR implementation a benefit was the active learning experiences for the students enrolled in the coursework, teachers even mentioned they wish to set up other courses they teach in a similar fashion. A challenge faced with the implementation of the curriculum into the beginning teacher's classrooms was ensuring they had all the resources to be able to teach the coursework properly, skipping over activities where they were lacking the resources.

Beginning teachers found a vast array of positives and negatives when it came to the CASE AFNR curriculum itself. Participants enjoyed the wholesomeness of CASE AFNR curriculum, having a brief introduction into the different career pathways found in agriculture. Beginning teachers found having the CASE AFNR curriculum boosted their confidence in the area and having the availability of already prepared lessons let them focus needed attention on their other courses. A drawback found with having the CASE curriculum was student motivation, one participant commenting that it was hard to motivate students once they have too many worksheets.

The first objective of this study was to describe perceptions of benefits and challenges beginning teachers held pertaining to becoming certified in the CASE AFNR Institute. Analysis of commonalities in participants' responses lead to the conclusion of several themes within the benefits and challenges faced when becoming certified in a CASE AFNR Institute.

Participants identified many themes within benefits pertaining to becoming certified in the CASE AFNR Institute. With no prior experience with CASE curriculum throughout their educational careers, participants struggled using the curriculum during their student teaching experiences, relying heavily on cooperating teachers to coach them to be able to successfully teach the AFNR curriculum for themselves. Experiencing training within the CASE AFNR Institute, the beginning teachers found actively working with the curriculum, as well as working with experienced lead teachers to be beneficial. Active, hands-on participation with curriculum helped beginning teachers engage in mastery experiences with the content through being able to successfully complete the activities within the curriculum prior to teaching it in their own classrooms (Bandura, 1997). Participant's preference for active engagement with content aligns with Desimone, Porter, Garet, Yoon, and Birman (2002), which indicated active engagement in

professional development opportunities positively impacted the influence professional development had on participants by having the ability to experience curriculum in the same way students would. Participants found vicarious experiences, being able to visually see the activities aided in learning the curriculum intentions. Interactions with experienced teachers during the CASE AFNR Institute benefited participants due to the availability of guidance, expert opinions, and providing authentic classroom feedback, embodying Bandura's (1997) social persuasion source of teacher self-efficacy. Support and relationships from others were indicated in previous literature to hold a significant impact on beginning teachers' self-efficacy (Hasselquist, Herndon, & Kitchel, 2017).

Participants identified one challenge within becoming certified in the CASE AFNR Institute. While Darling-Hammond and Richardson (2009) indicated long durations of professional development to be the most effective, participants found the time commitment needed to devote to the CASE AFNR Institute was a challenge. One factor participants would change with their experiences becoming certified in CASE AFNR was the two weeks of information intense days. The time commitment, personally, affected one beginning teacher by having to plan around those days in their summer.

Recommendations for future CASE AFNR Institutes include continuation of active engagement of participants with the curriculum, as well as the lead teachers. One participant even recommended having a panel of teachers from different states available for a day, to be able to gain more feedback on tips for the participants to take back to their classrooms. A recommendation for the challenge of time commitments would be the possibility for fast track courses in CASE AFNR, so such a large amount of time doesn't have to be devoted by the CASE Institute participants.

The second objective of this study was to identify factors that contribute to the benefits and challenges beginning teachers found when implementing the CASE AFNR curriculum into their classrooms.

Benefits the participants found in the implementation of the CASE AFNR curriculum into their classrooms included experiential learning experiences. Experiential learning was a benefit for beginning teachers when becoming CASE AFNR certified, but it was also a benefit when implementing the curriculum within their classrooms. Trede and Whitaker (2000) indicated experiential learning had been preferred for individuals going into agricultural career pathways. Students enjoy having hands-on experiments and activities inside the classrooms. Beginning teachers found that learning by doing curriculum style was also aiding students that were struggling with the same content in other courses. Literature has stated that having instruction based on experiential learning has a positive impact on the creative intelligence, as well as practical intelligence of the students when being compared to curriculum founded on the direct instruction approach (Baker & Robinson, 2016). These experiences exemplify the mastery experience source of Bandura's attainment of higher self-efficacy (1997) by successfully accomplishing activities within the lessons, students gained a high self-efficacy in that area. Successfully achieving results by oneself, makes it less likely to correlate negative experiences with that task, and makes them more likely to attempt similar tasks.

A major challenge faced when implementing CASE curriculum was found to be resource availability. Teachers don't have access to all the materials required to properly teach the curriculum inside their own classroom, causing the participants to search for materials that could be substituted during the activities or find funding to purchase the resources. If the beginning teachers couldn't find the resources, it caused them to skip over content. Beginning teachers are

having negative impacts with Bandura's (1997) physiological and emotional states when having to ask for funding, leading to feeling as though they are being costly to the school.

A recommendation for the lack of resource availability would be to utilize the budgeting for CASE curriculum implementation to made available by CASE. A list of external funding opportunities could be beneficial for participants attending CASE to have access to, giving certified teachers opportunities to find funding options to be able to purchase the equipment. Lastly, a purchasing manual provided by CASE with alternative resources that could be used, or a necessity purchasing manual that lists a shortened amount of supplies that are required for teachers wanting to implement CASE with low funding opportunities.

The third objective of this study was to describe the perceptions beginning teachers held of the CASE AFNR curriculum material.

Whittington (2005) found it is expected that agricultural education teachers should have a foundation of content knowledge strong enough to reach student's needs within all these pursuits. A major stressor found in the agricultural education profession is the educator's perceived credibility as a content teacher (Rice and Kitchel, 2017). Beginning teachers found that having set curriculum available to them boosted their confidence in that content area. This acts as a positive force of teacher self-efficacy by means of the physiological and emotional state source (Bandura, 1997). Beginning teachers gaining mastery experience by successfully teaching the CASE curriculum, increases their teacher self-efficacy. The increase in the teacher-self efficacy can make the beginning teachers have fewer doubts when teaching the curriculum to their students in the future, having an impact on their physiological and emotional states (Bandura, 1997). This confidence boost in teaching the content area is driving beginning teachers to seek certification in differing content areas.

Smalley and Smith (2017) found agricultural education teachers have indicated a need for course planning and curriculum as these are obstacles for them to overcome when entering the classroom. The availability of pre-planned lessons was identified as a big benefit by all participants. Having one class that already has pre-planned lessons for lets the beginning teachers focus their efforts on other course that have more intensive preps.

Recommendations for future studies would include replicating the current study with a greater range of participant population. Future studies could utilize participants coming from different CASE Institute locations, or of CASE Institutes in differing content areas. A future study could explore communications among universities hosting similar CASE Institutes and possibility for collaboration of preparation.

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APPENDIX: INSTITUTIONAL REVIEW BOARD APPROVAL FORM

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 2/22/2018

To: Katelyn Anderson
220 Curtiss Hall

CC: Dr. Scott Smalley
217C Curtiss Hall

From: Office for Responsible Research

Title: Beginning Teachers' perceptions of Curriculum for Agricultural Science Education Training and Classroom Implementation

IRB ID: 18-082

Study Review Date: 2/22/2018

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
 - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
 - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. **Only the IRB or designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.**

Addendum for IRB ID 18-082
PI: Katelyn Anderson
IRB & PI Communication

IRB Request: Will you be collecting any other data besides the interview data?

PI Response: No additional data will be collected.

IRB Request: In part E, question 8 you indicated that no identifiers will be linked to the data at any point in time, but part C describes sending transcripts to the participants to ensure accuracy. What identifiers will be collected and how will they be handled? Will they be removed prior to analysis?

PI Response: Identifiers would remain with the data until the point of analysis. Participants would receive their transcribed data to ensure it wasn't misinterpreted. Following approval of the material an analysis will occur.

[received by email from PI on 2/22/18 –rb]