

ASSESSING THE SKILLSETS OF ALTERNATIVELY CERTIFIED
AGRICULTURAL SCIENCE TEACHERS: A DELPHI STUDY

by

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ABSTRACT

The purpose of this descriptive study was to determine what competencies need to be included in alternative certification programs to best serve the alternatively certified teacher in agricultural science. Chapman's Model of Teacher Retention served as the theoretical framework for this study. The selected population of this descriptive study was identified as alternatively certified agricultural science teachers in the state of Texas. In order to achieve the purpose of this study, data was collected via Qualtrics surveys from alternatively certified agriculture science teachers. Data was collected using three rounds of survey instruments using the Delphi method along with an initial demographic survey distributed across the state. Two-hundred and thirty-three demographic surveys were completed state-wide; of those, 42 respondents identified as being alternatively certified. Of the 42 alternatively certified respondents, thirteen chose to participate in all three rounds of the Delphi study. The instrument was designed to address the competencies that were adequately and inadequately covered through alternative certification programs. The initial instrument utilized three open-ended questions to collect responses; the second and third instruments utilized a six point Likert type scale to capture the data needed. Respondents agreed that they received adequate knowledge in areas of lesson planning and classroom management through their alternative certification programs; however, they agreed they received less adequate training in areas such as managing SAE projects and advising an FFA program.

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CHAPTER I

INTRODUCTION

Throughout the United States, there exists a shortage of qualified teachers, and agricultural science has not been immune to this situation. In an effort to fill teaching positions, administrators are hiring alternatively certified teachers (Rocca & Washburn, 2006). There is often a negative connotation associated with alternative certification. In 2018 the National Association of Agricultural Educators (NAAE) reported there were 1,027 vacant agriculture teaching positions and there were 464 alternatively certified or non-licensed agriculture science teachers in the classroom nationwide (<https://www.naae.org/>). According to Roberts and Dyer (2004), this shortage has existed for at least 37 years. In an effort to help remedy this shortage, there has been an increase in the number of states that have created alternative certification programs (Duncan and Ricketts, 2008).

Wise defined alternative certification as a process in which a state licenses a person who has not completed a post-secondary teacher education program (2001). Alternatively certified teachers are often questioned whether they are as successful and capable of instructing students as traditionally certified teachers (Duncan and Ricketts, 2008). Although there is this stereotype with alternatively certified teachers, Duncan and Ricketts (2008) reported there is limited research data in agricultural education that either supports or counters the argument that traditionally certified agriculture science teachers are more effective than alternative certified agriculture science teachers.

Traditionally, certified teachers were defined as teachers who successfully completed approved programs and pass any required certification exams (Boyd, Goldhaber, Lankford & Wyckoff, 2007). An issue facing agriculture education is that candidates who were traditionally certified may not enter the teaching field. In 2008, NAAE reported that nationally there were 873 agriculture education graduates with only 654 graduates accepting teaching positions. According to Wolf, Foster and Birkenholz (2010), a recent supply and demand study showed only 69.8% of newly-qualified agricultural education teaching candidates entered the teaching field and a number of secondary agricultural education programs have closed because a lack of qualified instructors.

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified agricultural science teacher. This study is relevant because alternatively certified teachers are a need across the nation because of the current teacher shortage. It is of value to understand that alternatively certified teachers fill a need and can be effective teachers. This research aimed to identify skills alternatively certified agricultural science teachers perceived they gained in their teacher certification program as well as identify what was not covered in their alternative programs. The results might assist in preparing alternatively certified agricultural science teachers through improved certification programs. To achieve this study's purpose, Delphi methodologies were implemented.

Research has been done on this topic in Florida but not in Texas (Rocco & Washburn, 2006). With Texas being one of the largest agricultural producing states and having a robust FFA program, this study is essential to the success of high school

agricultural science programs. To disprove this misconception of alternatively certified agriculture science teachers, this study surveyed teachers and described their knowledge and efficacy in the classroom. However, it also described areas that the teacher could have been more prepared in. The intended outcome of this study was to give insight on areas that need to be strengthened in the alternative certification program that will better prepare teachers and produce high caliber agricultural science programs.

Statement of the Problem

Because of a shortage of certified teachers across the nation, many school districts hire alternatively certified teachers or even uncertified teachers. According to Rocca and Washburn (2005), alternatively certified teachers often receive a negative stereotype and are thought to be less qualified. This research looked to identify perceptions of alternatively certified agricultural science teachers toward the training they completed in their own teacher certification program. Specifically the participants identified areas of training or skills they felt best helped them in their teaching as well as areas that might have been enhanced. Clarity toward these specific areas and skills might help identify possible enhancements toward alternative teacher certification programs in agricultural science as well as identify areas of future research in this area.

Purpose and Objectives

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified

teacher in agricultural science. In order to accomplish this purpose, the following objectives were established:

1. Identify selected demographic characteristics of agriculture science teachers in the state of Texas.
2. Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.
3. Identify perceived skills or competencies, that were inadequately covered within alternative teacher certification programs.
4. Identify areas of professional development alternatively certified teachers have sought to gain for additional teaching skills and competencies.

The finding for each objective of this study is explained with the information and data found from the research conducted.

Definition of Terms

For the purpose of this study, the following terms were defined to help the reader better understand the study:

Delphi Method – a method of securing and refining group opinions and substituting computed consensus for an agreed-upon majority opinion (Helmer, 1966).

Alternatively Certified – A route of teacher certification that does not require a four-year education degree. Participants with a bachelors degree in a previous area of study can choose to take online courses covering teaching methods and pedagogy, followed by certification exams to earn a teaching certification.

Traditionally Certified – Teachers that have typically graduated with a bachelors degree in education (<https://www.edpolicyinca.org>).

PACE Program (Panhandle Certification for Educators) – A highly respected, university-based, online Texas teacher certification offered through West Texas A&M University (<https://www.wtamu.edu>).

Efficacy – The power to produce an effect (<https://www.merriam-webster.com/dictionary>).

Pedagogy – The science, or art of teaching (<https://www.merriam-webster.com/dictionary>)

FFA – A dynamic youth organization that changes lives and prepares members for premiere leadership, personal growth and career success through agricultural education (<https://www.ffa.org>)

SAE - The Supervised Agricultural Experience (SAE) program involves practical agricultural activities performed by students outside of scheduled classroom and laboratory time. SAEs provide a method in agricultural education for students to receive real-world career experiences in an area of agriculture that they are most interested in (<https://www.texasffa.org>).

Limitations of the Study

The researcher acknowledges this research was restricted to the following limitations. Data were collected from a small sample size of alternatively certified agricultural science teachers in Texas. This sample does not represent the large number of alternatively certified teachers across the state and nation. Generalizations to other populations should not occur.

Assumptions

There were a few assumptions that were implied while conducting this study. The researcher assumed the respondents provided honest answers that reflected their familiarity with teaching certification requirements in Texas as well as alternative certification methods. Further it was assumed these teachers are qualified teachers who have persevered through multiple years of teaching. A final assumption assumed the settings in which participants completed the instrumentation were similar in nature.

Significance of the Study

Alternative certification programs have been evolving since 1983 when uncertified teachers who were considered “interns” began having their certification updates requested by the National Center of Education Information. In 1985, 275 teaching interns were enrolled in alternative certification programs, now there are approximately 60,000 annual participants in alternative certification programs. Alternative certification programs are now servicing every state, with 485 different program options (National Center for Education Information, 2007).

This study has relevance because alternatively certified teachers are a need across the nation because of the teacher shortage. It is important to understand alternatively certified teachers can be effective. This study identified skills or competencies alternatively certified teachers perceived they gained as well as did not gain through alternative teacher certification programs. The results might assist in creating and enhancing alternative teacher certification programs in agricultural science. The National Research Agenda for Agricultural Education and Communications identified preparing

and providing an abundance of fully qualified and highly motivated agriscience educators at all levels as a priority area (Osborne, 2007).

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified teacher in agricultural science. In order to accomplish this purpose, the following objectives were established:

1. Identify selected demographic characteristics of agriculture science teachers in the state of Texas.
2. Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.
3. Identify perceived skills or competencies, that were inadequately covered within alternative teacher certification programs.
4. Identify areas of professional development alternatively certified teachers have sought to gain for additional teaching skills and competencies.

The finding for each objective of this study is explained with the information and data found from the research conducted.

Introduction

The following review of literature was done to establish a theoretical framework and background for this study. The focus of this review is on comparing the skillsets and efficacy of alternatively and traditionally certified agricultural science teachers. Due to a

nation wide shortage of educators, specifically Agriculture Science teachers, most states have put in place alternative certification programs. This review consists of literature from the following topics: The Delphi methodology, a national teacher shortage, efficacy of agriculture science teachers, alternatively versus traditionally certified teachers and characteristics of effective alternative teacher certification programs.

Theoretical Framework

This study was based on the framework for Chapman's (1984) model of teacher retention. This theory introduced the idea that if a teacher feels adequately prepared in a particular subject area they have a higher chance of staying in the teaching field. If the teacher feels as if they are inadequately prepared, they may feel the need to seek additional professional development or leave the profession all together. Chapman's theory suggests that social learning theory, along with previous learning behavior and environment can influence a teacher's decision to stay in the field or pursue other career opportunities.

For the purpose of this study Chapman's (1984) model was conceptually adapted and simplified to follow more closely with the themes and limitations of this study. Figure 1 shows an adapted model of Chapman's (1984) model that conforms closely with the limitations and subjects of this study. This portion of a larger study was intended to observe only the adequacy of teacher preparation program impact mentioned in Chapman's (1984) complete framework. The model portrays the idea that if certification programs know whether teachers feel adequately prepared or inadequately prepared for the teaching field given the knowledge they have learned through their certification program will aid in evaluating the program.

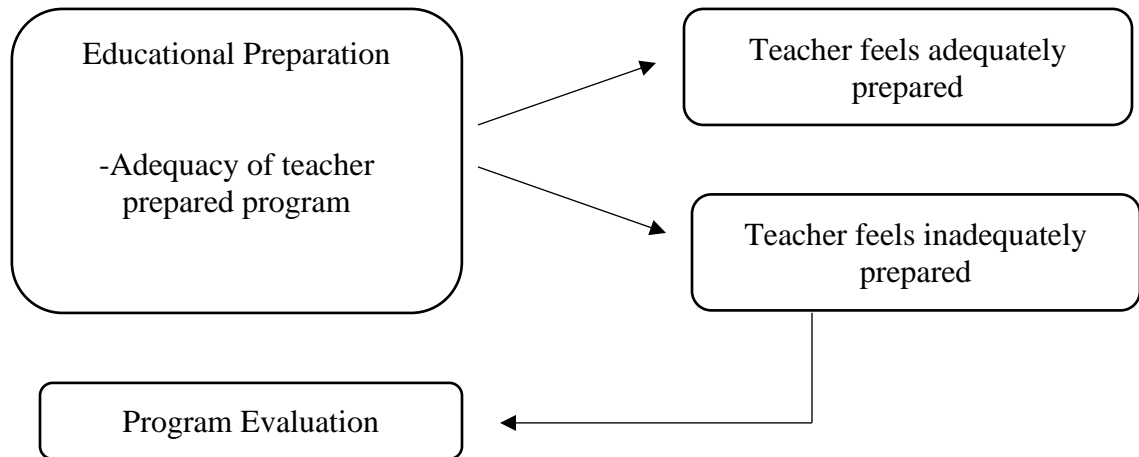


Figure 1. An adapted model of Chapman’s (1984) model of teacher retention.

The figure portrays the perceived adequacy of preparation as a potential contributing factor of program evaluation. According to Chapman (1984), if a teacher feels adequately prepared in a subject, he or she may have a better chance of remaining in the profession. From Breeding, Rayfield and Smith (2018), looking at preparation experiences for teachers who chose to stay in the profession, and comparing the preservice experience of successful teachers to those who chose to leave teaching may provide valuable insight into practices that impact early-career retention and job satisfaction.

Delphi Method

The Delphi Method was developed at The Rand Corporation in the late 1940s and was designed to generate expert opinion in a systematic manner (Sackman, 1974).

Helmer described the Delphi Method in its simplest form as a way of eliminating committee activity among the experts and replacing it with a carefully designed program of sequential individual interrogations interspersed with information and feedback (1967). Dalkey and Helmer (1963) described the method as being a well-suited means

and method for consensus-building by using a series of instruments to collect data from a panel of selected subjects. This method allows the selected participants to reassess their initial judgments about the information provided in previous instruments. The method also allows the ability to provide anonymity to participants and a controlled feedback process (Hsu & Sanford, 2007).

According to Martin and Frick (1998), the Delphi method has been widely used in the agricultural education field. It was found in the early 1990s that 19 articles in the *Journal of Agricultural Education*, *Journal of Extension* and *Journal of Vocational Education Research* were found to employ the Delphi method or some modification. Although it is not the most frequent method used in the field, this method does appear to have a fair degree of acceptance (Martin & Frick, 1998).

The Delphi method can be continuously iterated until consensus is achieved (Hsu, Sanford, 2007). The process typically uses three rounds of questionnaires to collect the needed information.

Round 1: The first round traditionally begins with an open-ended questionnaire. This instrument serves as the foundation of imploring specific information about a content area from the selected participants. After receiving responses from the initial instrument, researchers transform the collected data into a well-structured survey instrument to use in the second round (Custer, Scarcella, & Stewart, 1999).

Round 2: In round-two, each respondent receives a second survey instrument and is asked to review the items summarized by the researchers based on the content provided in round 1. Participants are typically asked to rank items to establish preliminary

significances among items. Round two results in areas of agreement and disagreement (Ludwig, 1994). This round is where consensus begins forming (Jacobs, 1996).

Round 3: In the third round, participants receive a questionnaire that includes the items and ratings summarized by the researchers from round 2 and are asked to review their decision to specify the reasons for not reaching consensus (Pfeiffer, 1968). This round gives respondents an opportunity to clarify the information and their ruling of the relative importance of the items. In this round, a slight increase or decrease in consensus compared to the previous round can be expected (Weaver, 1971; Dalkey & Rourke, 1972; Anglin, 1991; Jacobs, 1996).

Subjects chosen to participate in a Delphi study should be considered experts and highly trained and competent in the area of research. The selection of subjects for a Delphi study is said to be the most important step in the process because it directly relates to the quality of the study (Judd, 1972; Taylor & Judd, 1989; Jacobs, 1996). There is no exact criteria to be eligible to participate in a Delphi study, However, individuals are considered to be qualified if they have somewhat connected backgrounds and experiences regarding the target subject, are capable of contributing helpful ideas and are willing to revise their previous decisions for the purpose of reaching or attaining consensus (Pill, 1971; Oh, 1974). Subjects should be highly skilled and competent within the particular area of knowledge related to the target issue (Hsu & Sanford, 2007).

Teacher Shortage

The United States has been faced with a shortage of teachers covering all disciplines, thus causing a concerning shortage of agriculture science teachers. This shortage has existed for at least 37 years, and the shortage is not unique to agriculture

science (Camp, Broyles, & Skelton, 2002). Kantrovich (2007) reported that the issue of teacher shortage dates back to four years after signing the Smith Hughes Act when there were only 283 graduates from specialized teacher programs in agricultural education for 38 colleges of agriculture in the United States.

According to the Education Commission of the States (2016), the teacher shortage that is facing the nation is likely due to the Great Recession rather than to long-term issues in the teacher labor market. The reason being is that poor economies tend to drive students away from the teaching field and toward more lucrative professions. However, overall teacher production has grown steadily since 1985. It is projected that the number of new teacher hires nationwide is expected to increase 29% between years 2011 and 2022 (National Center for Education Statistics, 2015)

According to National Center for Education Statistics (2009), in 2008 there were 49.8 million students serviced in the public school system nationwide and it was projected that enrollment would reach over 54 million by 2017. It has been found that 53% of the teacher workforce is of the Baby Boom Generation, accounting for 1.7 million teachers and principals in the United States (National Commission on Teaching and America's Future, 2009). With many Baby Boomers approaching retirement age, it was concerned that there are not enough incoming teachers to fill this gap. Therefore, school districts have been forced to place teachers out-of-field and hiring uncertified teachers to serve as unofficial teachers of record (Ludlow, 2011).

Morehead State University studied the supply and demand for teachers of agricultural education, finding that in 2007 approximately 785 new teachers were produced nationally by agricultural education programs; however, it was estimated

according to past trends that only 53% (401) teachers would accept teaching positions. This would leave 251 jobs vacant out of a total of 651 positions nationwide (Kantrovich, 2007). This study concluded that there simply were not enough newly qualified teachers being produced, not enough of the prospective teachers are entering the field, and there are more positions open than there are candidates who are willing or qualified to accept these positions. The National Association of Agricultural Educators studied the supply and demand for agriculture science teachers, finding in 2018 that there were 1,027 vacant positions nationwide. However, NAAE's supply and demand profile did find that the retention rate for agriculture science teachers is at a historical high of nearly 96% and individuals majoring in agricultural education is increasing by 1% even as other education content areas are decreasing (<https://www.naae.org>, 2018).

Teacher Preparation

Graham and Garton (2003) stated that developing quality teachers for public schools has been, and continues to be, the goal of teacher education programs in universities and colleges across the United States. The issue of teacher quality is not a new phenomenon. As previously mentioned, the National Research Agenda for Agricultural Education and Communications identified preparing and providing an abundance of fully qualified and highly motivated agriscience educators at all levels as a priority area (Osborne, 2007). Researchers state that teacher preparation programs have struggled to meet the increasing demand of the teacher shortage problem, as a result of the shortage, alternative certification programs have become increasingly popular (Robinson & Edwards, 2012).

Boyd, Goldhaber, Lankford and Wyckoff (2007) found the value of teacher preparation may well differ depending on the grade level or types of students being taught. They found that it has previously been established that students of teachers with a graduate degree perform no better than those of teachers with a bachelor's degree. They also found that essentially all certification programs, regardless of whether they are alternative or traditional, teach the concept of pedagogy. Thirty-eight states across the nation require beginning teachers to have field experiences such as student teaching. This study found that many close observers of teacher education believe that field experiences apply an important influence on teacher preparation (Boyd, Goldhaber, Lankford & Wyckoff, 2007).

In Graham and Garton's (2003) study of the correlation between certification measures and teacher performance, it was found that none of the teacher certification measures such as GPA and credit hours were predictive of the agriculture science teachers' classroom teaching performance. The findings of this study implied there are other factors that could be utilized to more accurately identify individuals who have the potential to become successful agriculture classroom teachers. This conclusion implied that the primary use of the identified certification measures to serve as a gatekeeper in the teacher preparation process for agricultural education students may be unjustified (Graham & Garton, 2003).

According to Graham and Garton (2003), supervising administrators perceived that it can be concluded that cognitive and affective characteristics are important to effective teaching. These traits were identified as a caring-nature, being people-oriented, and self-reflective. Administrators claimed that traditional abilities of content knowledge

and instructional methodology were important but cognitive characteristics were just as or even more important in regards to effective teaching. A majority of administrators perceived higher academic capabilities to be negatively associated to a teacher's ability to connect and relate with students. A comparatively high degree of rank was placed on affective characteristics such as personality, caring, and desire to work with students (Graham & Garton, 2003).

Alternatively Certified vs. Traditionally Certified

Traditionally certified teachers are defined as teachers who successfully complete approved programs and pass any required certification exams (Boyd, Goldhaber, Lankford & Wyckoff, 2007). While teachers can take the alternative or traditional route to gain certification, both paths require certification exams. However, it was found in many states teachers who fail certification exams are allowed to teach as uncertified teachers. Boyd et al. (2007) found that the tests are not directly linked to student outcomes and thus may not be a good measure of how well a teacher will perform in the classroom. It was also discovered that performance on required certification exams was predictive of teachers' abilities to increase student achievement.

Boyd et al. (2007) also discussed the effect of certification and preparation on teacher quality and found that there is evidence that highly selective alternative route programs can be a good source of qualified teachers. They determined that highly selective alternative route programs can produce effective teachers who perform about the same as teachers from traditional routes after two years on the job. This study found that whether the varied components of teacher preparation or certification improve student outcomes depends on the relationship of these components to improved teaching

and on the teacher hiring decisions that would be made in the absence of minimum requirements.

As previously mentioned, in order to aid in the nationwide teacher shortage, districts are hiring alternatively certified teachers to fill vacancies. Feistrizier and Haar described alternative certification programs as field-based programs “designed to recruit, prepare and license talented individuals who already had at least a bachelor’s degree and often other careers in fields other than education” (2008).

Alternative certification programs have been evolving since 1983 when uncertified teachers who were considered “interns” began having their certification updates requested by the National Center of Education Information. In 1985, 275 teaching interns were enrolled in alternative certification programs, now there are approximately 60,000 annual participants in alternative certification programs. Alternative certification programs are now servicing every state, with 485 different program options (National Center for Education Information, 2007).

While there are supporters and opponents of alternative certification programs, they are an innovative response to filling the shortage of teachers. According to Blair (2003), alternative certification programs are appealing to cultural minorities and individuals in high demand disciplines such as math and science. On the opposing side, opponents of alternative certification caution that a lack of pedagogical knowledge on behalf of the teacher will lead to lower student achievement and teacher satisfaction (Noll, 2008).

Robinson and Edwards (2012) assessed the level of self-efficacy of first-year secondary agriculture science teachers in Oklahoma, comparing traditionally and

alternatively certified teachers on assessment scores of their university supervisors and teachers' retention as agriculture science teachers. They found that first-year teachers had the highest increase in efficacy in the area of classroom management followed by instructional practices. It was found that first-year teachers experienced the least amount of growth in the area of student engagement. Additionally, traditionally certified teachers self-efficacy decreased in the areas of student engagement and instructional practices. Traditionally certified teachers were found to have an increase in the area of classroom management. This study concluded that teacher self-efficacy of first-year teachers increased in all areas over the course of the full school year. However, traditionally certified teachers had higher beginning scores in the areas of student engagement and instructional practices as compared to alternatively certified teachers. Alternatively certified teachers perceived the largest amount of growth in the areas of student engagement and instructional practices throughout the year.

Breeding, Rayfield and Smith (2018) discussed the preservice and preparation experiences of early-career award-winning agricultural educators, finding that teacher preparation programs provide adequate preparation in the areas of teaching animal science, teaching FFA, classroom instruction, introductory lessons and units, and developing curriculum. Dobbins and Camp (2003) found there is more need for instruction in curriculum development, teaching methods and teaching techniques. This study indicated that according to this panel of experts, agricultural education teacher preparation programs as a whole are providing adequate levels of preparation to early-career educators in instructing animal science courses and performing the basic tasks associated with teaching (Breeding, Rayfield, & Smith, 2018).

Robinson and Baker (2013) studied the effect of human capital on principal's decisions to interview candidates in agricultural education. Previously, Cantrell and Weeks (2004) concluded that administrators in Oklahoma preferred traditionally certified teachers over alternatively certified teachers, while Robinson and Baker (2013) did not find a significant difference between the proportion of traditionally and alternatively certified teachers that principals were willing to interview. After combining all factors of human capital (sex, rigor, and certification type) it was found that administrators preferred candidates who were traditionally certified and had strong academic rigor as their No. 1 preference. The second most likely candidate to receive an interview was one that was alternatively certified and had strong academic rigor.

Professional Development

Roberts (2004) compared the self-perceived in-service needs of traditionally and alternatively certified agricultural education teachers in Florida. It was found that alternatively certified teachers reported a greater need for professional development in classroom management, and that the more experienced teachers felt less of a need for in-service. The results of this study showed that traditionally certified teachers have the highest level of self-perceived in-service needs in the Professional Development and the Program Planning and Management constructs. Both traditionally and alternatively certified teachers said that their greatest need was writing grant proposals for external funding (Roberts & Dyer, 2004).

Wolf, Foster and Birkenholz studied the relationship between teacher self-efficacy and the professional development experiences of agricultural education teachers candidates, finding that teacher candidates in this study were most efficacious about

classroom management, slightly less efficacious about instructional strategies, and the least efficacious about student engagement. Further, student teachers self-efficacy could be negatively impacted by the type of feedback they were receiving from their cooperating teachers as well as the course load they are teaching. It was recommended that student teachers receive more verbal feedback from their cooperating teachers and cooperating teachers should also be cautious and avoid overloading teacher candidates with too many courses which may result in situations where candidates are not successful which will then effect their self-efficacy.

Easterly & Myers (2019) found that participation in professional development for agriculture science teachers was high at 92.9% of participants responding that they agree or strongly agree that they participate in professional development. Engagement in workshops related to agricultural education, participating in professional learning communities, and having informal dialogue were professional development areas of high interest for agriculture science teachers. It was determined that there was a moderate correlation between professional development needs and career satisfaction (Easterly & Myers, 2019).

Total Program Efficacy

Rocca and Washburn (2006) discussed traditionally certified and alternatively certified agricultural science teachers in Florida and compared their perceptions of teacher efficacy and observed the relationship between teaching experience and teacher efficacy. Their research used a survey adapted from the Teacher's Sense of Efficacy Scale (TSES). The survey included 12, Likert-type questions that asked participants to rate their beliefs on how they would respond to certain teaching scenarios. The survey

was completed by teachers within their first five years of teaching. The researchers related demographic factors to whether the teacher was alternatively certified or traditionally certified. Teachers that were alternatively certified were more diverse in gender and race than traditionally certified teachers.

Duncan and Ricketts (2008) studied traditionally and alternatively certified agriculture teacher's perceived levels of efficacy as it relates to managing the total program of agricultural education. Results showed that traditional teachers were most successful in program management and least effective in technical agriculture knowledge, and alternatively certified teachers were most successful in their instructive strategies and least effective in their technical agriculture content knowledge. This study also showed that traditionally certified teachers exhibit more self-efficacy than alternatively certified teachers in technical content knowledge, conducting FFA leadership development, SAE activities and in managing the program as a whole (Duncan & Ricketts, 2008).

Swan, Wolf and Canon (2011) researched changes in teacher self-efficacy from the student teaching experience through the third year of teaching and found that the lowest levels of teacher self-efficacy occurred at the conclusion of the first year of teaching. This discovery was supported by previous research that found that teacher self-efficacy declines during the first year of teaching, this is likely caused by the absence of the cooperating teacher (Woolfolk & Burke-Spero, 2005). This study also found that there was an increase in teacher self-efficacy from year one to year two of teaching, indicating that teachers who persevere after year one become more confident and become more efficacious. It was suggested that because teachers normally experience a decline in

self-efficacy from student teaching to their first year of teaching, it might be beneficial for a supportive mentor to be paired with the new teacher (Swan, Wolf, & Cano, 2011).

Characteristics of Effective Alternative Teacher Certification Programs

Humphrey, Wechsler and Hough (2018) studied seven different alternative certification programs across the nation. Researchers interviewed personnel in each program three times over the course of the study. They also surveyed participants of each program. The survey included questions regarding teaching background, reasons for going into education and reasons for choosing the alternative program. Participants were surveyed at the beginning and end of their program.

This study explained each of the different programs that were studied and included a variety of different programs so the readers were able to understand different ways of alternatively certifying. Findings of this study gave a display of each program's coursework and the success rate of the teachers in those programs.

FFA and SAE

Roberts and Dyer (2004) found that content knowledge may be of greater importance than pedagogical knowledge. They found that agriculture science teachers, regardless of certification method, have a continuing desire and need for in-service training to ensure their skills are current. Experienced teachers needed training in using computers and technology in classroom teaching, preparing FFA degree applications, preparing proficiency award applications and teaching record keeping skills. This study found that traditionally certified teachers had a higher level of understanding of community relations, cultures and traditions; formulating instructional objectives;

sequencing instruction, and planning and preparing lesson plans. While alternatively certified teachers had greater concern in areas of simple tasks such as grading tests.

Traditionally certified teachers had the highest level of self-perceived in-service needs in the Professional Development and the Program Planning and Management constructs, while alternatively certified teachers greatest need was in the areas of Professional Development, program planning and management, technical agriculture, FFA and SAE supervision and constructing instruction and curriculum (Roberts & Dyer, 2004).

Robinson and Haynes (2011) found that each alternatively certified teacher that was surveyed responded that the SAE program component of the agricultural education model is a highly effective, impactful, and relevant tool that is used to assist students in acquiring important life skills and experiences. Teachers responded that valuable skills are learned by students and that the program is successful in preparing them for life if it is student owned and managed. Teachers agreed that although they would like all students to have an SAE, it is difficult due to students lack of interest. Teachers also stated that SAE's are not always feasible for each of their students due to money and time restraints.

It can be assumed that these alternatively certified teachers might have a limited or narrow understanding of what constitutes a SAE. Teachers in this study discussed their expectations for students to have a variety of SAE's but it is undetermined if teachers understand enough and the vastness of different SAE opportunities (Robinson & Haynes, 2011).

Mundt and Connors (1999) studied the problems and challenges associated with the first years of teaching agriculture and it was found that consensus was reached on 17

categories of problems and challenges associated with the first years of teaching agriculture in the study. Ten of these categories were rated as important and seven rated in the very important range. Three of the seven categories related to time and organizational management issues and two of the seven categories related to building support for the program. Managing the overall activities of the local FFA was consistently ranked at the top of problems and challenges facing new teachers.

CHAPTER III

METHODOLOGY

Purpose and Objectives

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified teacher in agricultural science. In order to accomplish this purpose, the following objectives were established:

1. Identify selected demographic characteristics of agriculture science teachers in the state of Texas.
2. Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.
3. Identify perceived skills or competencies, that were inadequately covered within alternative teacher certification programs.
4. Identify areas of professional development alternatively certified teachers have sought to gain for additional teaching skills and competencies.

The finding for each objective of this study is explained with the information and data found from the research conducted.

Design

This research was descriptive in nature and utilized the Delphi method (Sackman, 1975). The Delphi method was developed in the 1950s and 1960s by Dalkey and Helmer (1968), and is a structured process used to collect and distill knowledge from a group of experts on a particular topic (Ziglio, 1996). The Delphi method is especially effective in

obtaining consensus among a purposively selected group of experts (Stufflebeam, McCormick, Binkerhoff, & Nelson, 1985). The Delphi method was characterized as a communication process structured to produce a detailed examination of a topic/problem and discussion from the participating group, but not one that forces a quick compromise (Linstone & Turoff, 1975).

The purpose of the Delphi method is to gather responses from an expert panel and combine the responses into one useful statement (Stitt-Gohdes & Crews, 2004). The panel of experts in this study included 13 participants. Participants were alternatively certified agriculture science teachers in the state of Texas who had persevered beyond their first year of teaching. These participants participated in one round of a demographic survey, followed by three rounds of data collection consistent with Delphi methodologies.

The Delphi method is a popular method in the field of agricultural education. The *Journal of Agricultural Education* found that from 2000-2006 there were eight studies that depended on the Delphi method to research various significant topics to agricultural education. From 2012-2018, there were 16 Delphi articles published in the *Journal of Agricultural Education*.

Population

The target population of this study was identified as alternatively certified agricultural science teachers in the state of Texas. To achieve the purpose of this study, participants were solicited through an online demographic survey developed in Qualtrics. This survey was distributed to 12 Agricultural Area Coordinators in Texas who had email access to all agricultural science teachers in their designated area. Each area represents a

specific geographical area of Texas, and is part of Texas FFA chapter classifications. Nine of the 12 area coordinators chose to forward the demographic survey to their teachers. In all, 233 teachers completed the survey. From this, 42 teachers were identified as being alternatively certified. These teachers classified as “experts” toward this research due to their background and experiences toward teaching. From this group, 13 of 42 teachers agreed to participate in this research. Though this sample size is relatively small with only 13 participants; when using the Delphi method, the size of the expert panel varies, and good results have been gathered using panels of no more than 10 to 15 individuals (Linstone & Turoff, 1975).

Purposeful sampling was used in the selection of participants for this study. Purposeful sampling is defined as “a qualitative sampling procedure in which researchers intentionally select individuals and sites to learn or understand the central phenomenon” (Creswell, 2005, p. 359). The panel of experts for this study were described as experts based on completing alternative certification and persevering through more than one year of teaching.

Instruments and Procedure

The survey instrument was created as a tool to determine what competencies and skills alternatively certified agriculture science teachers felt that they were equipped with and those that they felt they needed additional training.

The initial instrument was a demographic survey that was sent to all agriculture science teachers across the state of Texas followed by three survey components that were completed by the participants that were found to be eligible and willing to for the study and willing to participate. The initial demographic survey was completed on a voluntary

basis by the teachers who received an email with the survey link. This survey determined which teachers were considered alternatively certified and who would be eligible to participate in the next three rounds of surveys. This instrument contained seven questions to identify key demographic characteristics of agriculture science teachers, including academic major in college, years of teaching, undergraduate institution and additional degrees and certifications that participants might obtain.

The first survey included three open-ended questions asking participants to list any and all skills that were gained in their alternative certification program that are most applicable to teaching agriculture science. The second question asked participants to list any and all skills or competencies that they felt were not covered or could have been covered in more detail that are needed and applicable to teaching agricultural science. The final question of this instrument asked participants to list where they sought professional development or assistance to address the areas where they felt inadequately prepared. The second survey's questions were based off the answers from round one. The items listed in the first survey were then compiled by the researchers into a well structured instrument. Nineteen competencies and eight areas of professional development were compiled from the list in round one to be used in the instrument survey of round two. The second survey was built using a Likert-type format asking participants to rank their level of agreement from one to six (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly agree, 5=agree, 6=strongly agree). The third survey included the questions that did not reach consensus in round two. Questions that reached between 50-75% agreement did not meet consensus; therefore, they moved on to the round three survey. If the question was less than 50% agreement, it was eliminated

from the study due to lack of agreement. If the item reached 75% agreement, they were at consensus and did not move on to the third round. The study surveyed teacher's familiarity in classroom management, program management and curriculum knowledge. This study determined what competencies were inadequately covered in the teacher's alternative certification program based on the three previous topics.

Upon completion of the survey, the data was entered into Microsoft Excel to analyze descriptive statistics. The outcome of this study was to create a partnership program with the Agriculture Teacher Certification program and the PACE program at West Texas A&M University to create a joint agriculture education alternative certification program.

Reliability and Validity

Once the surveys were developed, they were reviewed by a panel of experts from the Department of Agricultural Sciences at WTAMU. Edits were made based on recommendations from the panel. The Institutional Review Board (IRB) required a review of the survey. It was approved on December 17, 2018.

Although this study included a small sample, when using the Delphi method, the size of the expert panel varies, and good results have been gathered using panels of no more than 10 to 15 individuals (Linstone & Turoff, 1975). Therefore, a sample of 13 participants shows to be reliable. A *Post hoc* Chronbach's alpha was used to calculate reliability of the scaled items in the round two instrument at 0.82.

Data Collection

The instruments was reviewed and approved by the university's Institutional Review Board (IRB). The target participants was informed their participation in the study

was completely voluntary, following the university's IRB protocol. Participants were informed their provided responses would remain confidential. The participants were given contact information for the researchers for any follow up questions about their participation in the study.

The instrument for this study was created using the Qualtrics survey system and was distributed via email to agriculture science teachers across the state of Texas. This email was distributed by the Vocational Agriculture Science Teachers Association of Texas (VATAT) to area coordinators. Area coordinators are teachers from each respective area who serve as the liaison between the area and the state association. The first initial email contained a demographic survey that would determine which teachers were considered alternatively certified. This email was sent on March 7, 2019.

A series of three surveys followed the initial demographic survey. The first of the three surveys included three open-ended questions pertaining to the competencies covered in alternative certification programs. The first survey was originally sent to 18 teachers who classified themselves as alternatively certified teachers in the Texas FFA Areas I and II. A response rate of only 27% was achieved from this survey. Because of the low response rate, the researchers decided to re-send the survey statewide. Following the demographic survey, an email was sent to 22 additional alternatively certified teachers statewide asking them to participate in this study on March 18, 2019.

The first-round of questionnaires was sent to the additional 22 teachers who classified themselves as being alternatively certified on March 22, 2019. This survey was sent to a total of 42 alternatively certified agriculture science teachers statewide, 13 teachers chose to participate which reached a 32.5% response rate.

The second questionnaire was sent to 13 participants on April 12, 2019. This questionnaire included three sections of Likert-type questions. This questionnaire reached a 100% response rate. The third questionnaire was sent to the same 13 participants on May 13, 2019. This questionnaire contained the questions that did not reach consensus in round two. There were a total of 17 questions across the three sections that did not reach consensus. This questionnaire reached a 100% response rate. Each of the questionnaires was sent via email by a graduate research assistant. Each email contained a unique “subject” and content.

Data Analysis

Data was exported from Qualtrics to a Microsoft Excel document. Data was organized in four Excel sheets for each respective survey. If a participant selected “not applicable” as an answer to a survey question, the respected answer was replaced with a period in order for data to be analyzed. “Descriptive statistics were ran on the demographic survey as well as each of the three questionnaires. Data from this instrument was analyzed using Microsoft Excel on a Mac OS operating platform.

CHAPTER IV

RESULTS AND FINDINGS

Purpose and Objectives

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified teacher in agricultural science. In order to accomplish this purpose, the following objectives were established:

1. Identify selected demographic characteristics of agriculture science teachers in the state of Texas.
2. Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.
3. Identify perceived skills or competencies, that were inadequately covered within alternative teacher certification programs.
4. Identify areas of professional development alternatively certified teachers have sought to gain for additional teaching skills and competencies.

The finding for each objective of this study is explained with the information and data found from the research conducted.

Findings Related to Objective One

Objective 1: Identify selected demographic characteristics of agriculture science teachers in the state of Texas.

The initial demographic survey of this study was distributed to Texas FFA Area Coordinators in each area. In order to obtain demographics regarding agricultural science teachers in Texas, a seven question demographic survey was sent to 12 area coordinators according to FFA areas. Nine of the 12 area coordinators elected to forward that email. Three did not respond to requests to do so. This survey was completed by 233 respondents ($n=233$). Table 4.1 represents the area in which respondents teach in. Area one respondents made up 30.9 percent ($n=72$) of the population, area two respondents made up 27.9 percent ($n=65$) of the population, area five respondents made up 8.15 percent ($n=19$) of the population, area seven respondents made up 6.01 percent ($n=14$) of the population, area eight respondents made up 4.72 percent ($n=11$) of the population, area nine respondents made up 7.3 percent ($n=17$) of the population, area 10 respondents made up 7.73 percent ($n=18$) of the population, area 11 made up 2.15 percent ($n=5$) of the population and area 12 made up 1.29 percent ($n=3$) of the population. There was a 3.86 percent ($n=9$) of respondents who preferred not to specify which area they teach in. Areas three, four and six chose not to participate in the study.

Table 4.1
Texas FFA Area of Respondents ($n=233$)

Area	<i>f</i>	%
One	72	30.90%
Two	65	27.90%
Five	19	8.15%
Seven	14	6.01%
Eight	11	4.72%
Nine	17	7.30%
Ten	18	7.73%
Eleven	5	2.15%
Twelve	3	1.29%
Non Respondent	3	1.29%

Table 4.2 represents the area in which respondents teach in for respondents who identified as alternatively certified. Area one respondents made up 46 percent of the

population ($n=6$) and area two respondents made up 31 percent ($n=4$) of the population. Area seven respondents made up 18 percent ($n=2$) of the population and area ten respondents made up 9 percent ($n=1$) of the population. Areas three, four, five, six, eight, nine, eleven and twelve did not have and respondents that were alternatively certified.

Table 4.2
Texas FFA Area of Respondents ($n=13$)

Area	<i>f</i>	%
1	6	46%
2	4	31%
5	0	0%
7	2	18%
8	0	0%
9	0	0%
10	1	9%
11	0	0%
12	0	0%

Table 4.3 demonstrates the demographic of respondent's academic major. Respondents with a degree in agricultural education with a teaching certificate made up 63.95 percent ($n=149$) of the population, respondents with an animal science degree made up 13.3 percent ($n=31$) of the population, respondents with an other ag degree made up 3.43 percent ($n=8$) of the population, respondents with an other non-ag degree made up 3.43 percent ($n=8$) of the population, respondents with an agricultural communications degree made up 3 percent ($n=7$) of the population, respondents with and agricultural business degree made up 2.58 percent ($n=6$) of the population, respondents with and agricultural leadership degree made up 2.15 percent ($n=5$) of the population, respondents with a horticulture degree made up 2.15 percent ($n=5$) of the population, respondents with an agriculture degree made up 1.29 percent ($n=3$) of the population, respondents

with a pre-vet degree made up .43 percent ($n=1$) of the population, respondents with a plant science degree made up .43 percent ($n=1$) of the population, respondents with a natural resources degree made up .43 percent ($n=1$) of the population. There was a 3.43 percent ($n=8$) of the population who preferred not to specify their academic major.

Table 4.3
Academic Major of Respondents (n=233)

Academic Major	<i>f</i>	%
Agricultural Education with Teacher Certification	149	63.95%
Animal Science	31	13.30%
Other Ag Degree	8	3.43%
Other Non-Ag Degree	8	3.43%
Agricultural Communications	7	3.00%
Agricultural Business	6	2.58%
Agricultural Leadership	5	2.15%
Horticulture	5	2.15%
Agriculture	3	1.29%
Pre-Vet	1	0.43%
Plant Science	1	0.43%
Natural Resources	1	0.43%
Non Respondent	8	3.43%

Table 4.4 demonstrates the demographic of respondent's academic major of respondents who identified as alternatively certified. Respondents with an animal science degree made up 54 percent ($n=7$) of the population. Respondents with an agricultural business degree made up 15 percent ($n=2$) of the population. Respondents with plant science, agriculture, agriculture communication and other ag degrees each made up 8 percent ($n=1$) of the population. There were no respondents with degrees in agricultural education with a teaching certification, pre-vet, agricultural leadership, horticulture, natural resources or other non-agriculture.

Table 4.4

Academic Major of Respondents (n=13)

Academic Major	<i>f</i>	%
Animal Science	7	54%
Agricultural Business	2	15%
Plant Science	1	8%
Agriculture	1	8%
Agricultural Communications	1	8%
Other Ag Degree	1	8%
Agricultural Education with Teacher Certification	0	0%
Pre-Vet	0	0%
Agricultural Leadership	0	0%
Horticulture	0	0%
Natural Resources	0	0%
Other Non-Ag Degree	0	0%

Table 4.5 represents any additional degrees and certifications that were held by respondents. Respondents with a master's degree made up 44.19 percent ($n=118$) of the population. Respondents with a principal's certification made up 10.49 percent ($n=28$) of the population. Respondents with a counseling certification made up 2.25 percent ($n=6$) of the population. Respondents with an Ed. D made up 1.5 percent ($n=4$) of the population. Respondents with a superintendent certification made up .37 percent ($n=1$) of the population. There were zero respondents that held a Ph. D and 47.21 percent ($n=100$) of the population responded not applicable.

Table 4.5

Additional Degrees and Certifications of Respondents (n=233)

Additional Degrees & Certifications	<i>f</i>	%
Master's Degree	118	44.19%
Not Applicable	110	47.21%
Principal's Certification	28	10.49%
Counseling Certification	6	2.25%
Ed. D	4	1.50%
Superintendent Certification	1	0.37%
Ph. D	0	0%

Table 4.6 represents any additional degrees and certifications that were held by respondents who classified as alternatively certified. Respondents with a master's degree made up 38 percent ($n=5$) of the population, respondents with a principal's certification made up 15 percent ($n=2$) of the population and respondents with a counseling certification made up 8 percent ($n=1$) of the population. No respondents had and Ed. D and 38 percent ($n=5$) of the population identified this component as being not applicable.

Table 4.6

Additional Degrees and Certifications of Respondents ($n=13$)

Additional Degrees & Certifications	<i>f</i>	%
Not Applicable	5	38%
Master's Degree	5	38%
Principal's Certification	2	15%
Counseling Certification	1	8%
Ed. D	0	0%

Table 4.7 demonstrates the institution in which respondents received their undergraduate degree. Respondents who received their degree from Texas Tech University made up 23.61 percent ($n=55$) of the population. Respondents who received their degree from Tarleton State University made up 15.45 percent ($n=36$) of the population. Respondents who received their degree from West Texas A&M University made up 14.16 percent ($n=33$) of the population. Respondents who received their degree from Texas A&M University made up 10.73 ($n=25$) of the population. Respondents who received their degree from Sam Houston University made up 9.44 percent ($n=22$) of the population. Respondents who received their degree from an out of state institution made up 6.01 percent ($n=14$) of the population. Respondents who received their degree from Texas A&M Commerce made up 3.86 percent ($n=9$) of the population. Respondents who received their degree from Texas A&M Kingsville made up 3 percent ($n=7$) of the

population. Respondents who received their degree from Angelo State University made up 2.58 percent ($n=6$) of the population. Respondents who received their degree from an other in-state institution made up 2.28 percent ($n=6$) of the population. Respondents who received their degree from Sul Ross State University made up 2.15 percent ($n=5$) of the population. Respondents who received their degree from Stephen F. Austin State University made up 1.29 percent ($n=3$) of the population. Respondents who received their degree from Texas State University made up 1.29 percent ($n=3$) of the population. Respondents who received their degree from Prairie View A&M university made up .43 percent ($n=1$) of the population. Zero percent of respondents received their degree from Texas A&M Corpus Christi. There was a 3.43 percent ($n=8$) of respondents who preferred not to specify where they received their undergraduate degree.

Table 4.7
Undergraduate Institution of Respondents (n=233)

Institution	<i>f</i>	%
Texas Tech University	55	23.61%
Tarleton State University	36	15.45%
West Texas A&M University	33	14.16%
Texas A&M University	25	10.73%
Sam Houston State University	22	9.44%
Out of State Institution	14	6.01%
Texas A&M Commerce	9	3.86%
Texas A&M Kingsville	7	3.00%
Angelo State University	6	2.58%
Other In-State Institution	6	2.58%
Sul Ross State University	5	2.15%
Stephen F. Austin State University	3	1.29%
Texas State University	3	1.29%
Prairie View A&M University	1	0.43%
Texas A&M Corpus Christi	0	0.00%
Non Respondent	8	3.43%

Table 4.8 represents the institution in which respondents who identified as alternatively certified received their undergraduate degree. Respondents who received their degree from West Texas A&M University made up 31 percent ($n=4$) of the

population. Respondents who received their degree from an out of state institution made up 23 percent ($n=3$) of the population. Respondents who received their degree from Texas A&M University made up 15 percent ($n=2$) of the population. Respondents who received their degrees from Sam Houston State University, Sul Ross State University and Texas Tech University each made up 8 percent ($n=1$) of the population. There was also 8 percent ($n=1$) of the population who received their degree an other in-state institution.

Table 4.8
Undergraduate Institution of Respondents (n=13)

Undergraduate Institution	<i>f</i>	%
West Texas A&M University	4	31%
Out of State Institution	3	23%
Texas A&M University	2	15%
Sam Houston State University	1	8%
Sul Ross State University	1	8%
Texas Tech University	1	8%
Other In-State Institution	1	8%
Angelo State University	0	0%
Prairie View A&M University	0	0%
Stephen F. Austin State University	0	0%
Tarleton State University	0	0%
Texas A&M Commerce	0	0%
Texas A&M Corpus Christi	0	0%
Texas A&M Kingsville	0	0%
Texas State University	0	0%

Table 4.9 represents how the respondents obtained their teaching certification. Of the population, 71.67 percent ($n=167$) received their teaching certification while completing their bachelor's degree and 12.02 percent ($n=28$) received their teaching certification through an alternative certification program not tied to a university. Of the population, 6.01 percent ($n=14$) received their teaching certification through an alternative certification program tied to a university, and 5.15 percent ($n=12$) of the population received their teaching certification while completing their master's degree,

There was 5.15 percent ($n=12$) of the population who chose not to specify how they received their teaching certification.

Table 4.9

Method of Obtaining Teacher Certification by Respondent (n=233)

Method	<i>f</i>	%
While completing bachelor's degree	167	71.67%
Alternative Certification Program not tied to a university	28	12.02%
Alternative Certification Program tied to a university	14	6.01%
While completing master's degree	12	5.15%
Non Respondent	12	5.15%

Table 4.10 represents how the respondents who identified as alternatively certified obtained their teaching certification. Respondents who received their certification through an alternative certification program not tied to a university made up 62 percent ($n=8$) of the population. Respondents who received their certification through an alternative certification tied to a university made up 38 percent ($n=5$) of the population. Because all of the 13 respondents were alternatively certified, none of them received their certification while completing a bachelors or masters degree.

Table 4.10

Method of Obtaining Teacher Certification by Respondent (n=13)

How teaching certification was received	<i>f</i>	%
Alternative Certification Program not tied to a university	8	62%
Alternative Certification Program tied to a university	5	38%
While completing bachelor's degree	0	0%
While completing master's degree	0	0%

Table 4.11 represents how many years the respondents have been teaching. Respondents who had been teaching 0 to 1 year made up 9.01 percent ($n=21$) of the population. Respondents who had been teaching 2 to 3 years made up 10.3 percent ($n=24$) of the population. Respondents who had been teaching 4 to 5 years made up 18.88 percent ($n=25$) of the population. Respondents who had been teaching 6 to 10 years made up 18.88 percent ($n=44$) of the population. Respondents who had been teaching 10 to 15

years made up 12.45 percent ($n=29$) of the population. Respondents who had been teaching 15 to 20 years made up 11.16 percent ($n=26$) of the population. Respondents who had been teaching 20+ years made up 24.46 percent ($n=57$) of the population. There was 3 percent ($n=7$) of the population who chose not to specify how many years they had been teaching.

Table 4.11
Years of Teaching by Respondent (n=233)

Years	<i>f</i>	%
0-1	21	9.01%
2-3	24	10.30%
4-5	25	18.88%
6-10	44	18.88%
10-15	29	12.45%
15-20	26	11.16%
20+	57	24.46%
Non Respondent	7	3.00%

Table 4.12 represents how many years the alternatively certified respondents have been teaching. Respondents who had been teaching 0 to 1 year made up 8 percent ($n=1$) of the population. Respondents who had been teaching 2 to 3 and 4 to 5 years each made up 15 percent ($n=2$) of the population. Respondents who had been teaching 6 to 10 years made up 31 percent ($n=4$) of the population. Respondents who had been teaching 10 to 15 and 15 to 20 years also each made up 15 percent ($n=2$) of the population. None of the respondents who were alternatively certified had been teaching 20 years or more.

Table 4.12

Years of Teaching by Respondent (n=13)

Years of Teaching	<i>f</i>	%
0-1	1	8%
2-3	2	15%
4-5	2	15%
6-10	4	31%
10-15	2	15%
15-20	2	15%
20+	0	0%

Findings Related to Objective Two

Objective 2: Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.

The following tables summarize what skills or competencies were perceived to have been adequately covered through their own alternative certification program. In all, five total items emerged from the open-ended question. Table 4.13 shows the skills and competencies that were listed by alternatively certified teachers as most applicable to their teaching field. These items generated by the panel of alternatively certified teachers determined the items presented in round two. Respondents most consistently identified lesson planning as the most applicable skill gained through their alternative certification program. This was followed by classroom management and differentiating lessons.

Table 4.13

Most Applicable Skills and Competencies gained through Alternative Certification Program (n=13)

Skill	<i>n</i>
Lesson Planning	7
Classroom Management	5
Differentiating Lessons	2
Curriculum Development	1
Teaching in a Diverse Classroom	2

Items generated by alternatively certified agricultural science teachers in round one were moved forward to round two using Likert Type questions. Participants were given six options where three options indicated some level of disagreement and three options indicated some level of agreement. Table 4.14 represents level of agreement toward the skills and competencies that respondents agreed were adequately covered through their alternative certification program. Items that reached between 50-75% for overall agreement moved from round two to three to be reevaluated in or to meet consensus. The researchers determined *a priori*, for consensus to be reached, there must be a level of agreement at 75 percent or higher by participants in either Round Two or Round Three if necessary. Items with a total level of agreement below 75 percent were believed to not reach consensus. It was also determined *a priori* that round two items that did not receive a 50 percent level of agreement would be eliminated and not evaluated in round three.

The items in table 4.13 were further analyzed in round two and were used to determine the topics that would continue to round three. In round two, two of five items reached consensus with teaching in a diverse classroom at 84 percent total agreement and lesson planning at 77 percent total agreement. Curriculum development was eliminated

because its level agreement was low at 46 percent. Therefore, two items, lesson planning and classroom management, continued to round three.

Table 4.14

Skills and Competencies that adequately prepared Alternative Certification candidates (n=13)

Skill	Not Applicable <i>n</i>	Strongly Disagree <i>n</i>	Disagree <i>n</i>	Slightly Disagree <i>n</i>	Slightly Agree <i>n</i>	Agree <i>n</i>	Strongly Agree <i>n</i>	Total Agreement % <i>n</i>
Teaching in a Diverse Classroom	0	0	0	2	4	7	0	84%
Lesson Planning	0	0	2	1	6	4	0	77%
Classroom Management	0	0	3	1	5	4	0	69%
Differentiating Lessons	0	0	3	1	4	5	0	69%
Curriculum Development	0	2	4	1	4	2	0	46%

Table 4.15 highlights results from rounds two and three. These were items that participants perceived that their alternative certification program adequately prepared them in from round one. In round two, two items reached consensus with levels of agreement higher than 75 percent, one item was eliminated as it fell below 50 percent level of agreement. Two items remained and were sent again in round three, of those two items, classroom management reached consensus at 77 percent agreement and differentiating lessons did not reach consensus at 62 percent agreement. In all, three of the five items reached consensus.

Table 4.15

Skills and Competencies that adequately prepared Alternative Certification candidates (n=13)

Skill	% Agreement	Consensus
Teaching in a Diverse Classroom*	84%	Round Two
Lesson Planning*	77%	Round Two
Classroom Management*	77%	Round Three
Differentiating Lessons	62%	Round Three
Curriculum Development	46%	Round Two

*Indicate which items reached consensus

Findings Related to Objective Three

Objective 3: Identify perceived skills or competencies, that were inadequately covered within alternative teacher certification programs.

Table 4.16 shows the skills and competencies that were listed by alternatively certified teachers as not being covered or could have been covered in more detail through their alternative certification program. The items below were listed by the respondents as topics that they felt as individual teachers they were the least knowledgeable in. Respondents listed advising an FFA program as the most common skill that participants felt was inadequately covered (n=6). Respondents listed school business

procedures/budgets, administration/school board/community relations, relationships with parents, agriculture TEKS, and CTE certifications all as being the least inadequately covered topics ($n=1$) in their alternative certification programs.

Table 4.16

Skills and Competencies that were inadequately covered through Alternative Certification Program ($n=13$)

Skill	<i>n</i>
Advising an FFA Program	6
Managing Deadlines (CDE/LDE contest, livestock show, validation)	2
Ag Mechanics	2
Coordinating a livestock show program	2
Communication	2
Managing SAE Projects	2
School Business Procedures/Budgets	1
Administration/School Board/Community Relations	1
Relationships with Parents	1
Agriculture TEKS	1
CTE Certifications	1

Table 4.17 represents the skills and competencies that respondents agreed were inadequately covered through their alternative certification program. As previously mentioned, items that reached between 50-75% agreement moved from round two to three to be reevaluated to meet consensus. The researchers determined *a priori*

for consensus to be reached there must be a level of agreement at 75 percent by participants in either round two or round three. Items below 75 percent were believed to not reach consensus. It was also determined *a priori* that round two items that did not receive a 50 percent level of agreement would be eliminated and not evaluated in round three.

The items in table 4.17 were analyzed in round two and were used to determine the items that would continue to round three or reach final consensus or elimination. In

round two, all 12 items had levels of agreement between 50-75 percent, consequently they continued to round three.

Table 4.17

Skills and Competencies that inadequately prepared Alternative Certification candidates through their certification program (n=13)

Skill	Not Applicable <i>n</i>	Strongly Disagree <i>n</i>	Disagree <i>n</i>	Slightly Disagree <i>n</i>	Slightly Agree <i>n</i>	Agree <i>n</i>	Strongly Agree <i>n</i>	% Agreement <i>n</i>
Managing SAE Projects	1	2	1	0	3	1	4	73%
Managing Deadlines (CDE/LDE contest, stock show)	0	2	2	0	2	2	4	66%
Ag Mechanics	0	3	1	0	1	1	6	66%
Relationships with Parents	0	0	1	3	6	2	0	66%
Coordinating a Livestock Show	0	3	1	0	3	1	4	66%
School Business Procedures/Budgets	0	1	2	2	1	2	4	54%
Administration/School Board/Community Relations	0	2	2	1	1	1	5	58%
Agriculture TEKS	0	4	0	1	4	2	1	58%
CTE Certifications	0	3	0	2	2	1	4	58%
49 Communication	0	1	2	3	1	4	1	50%
Advising an FFA Program	1	1	2	2	1	0	5	50%
Curriculum Development	0	2	2	2	4	1	1	50%

Table 4.18 represents which items respondents listed that they felt inadequately prepared through their alternative certification program. Items that reached between 50-75% agreement moved from round two to three to be reevaluated in order to reach consensus. No items in round three reached consensus, however all items did have a level of agreement between 50 and 75 percent or higher that these items were not covered in alternative certification programs. Managing SAE projects was the highest level of agreement at 73 percent. Four items reached 67 percent agreement including ag mechanics, coordinating a livestock show, managing deadlines, and relationships with parents. Curriculum development was the lowest level of agreement at 50 percent.

Table 4.18

Skills and Competencies that inadequately prepared Alternative Certification candidates (n=13)

Skill	% Agreement	Consensus
Managing SAE Projects	73%	Round Three
Ag Mechanics	67%	Round Three
Coordinating a livestock show program	67%	Round Three
Managing deadlines (CDE/LDE contest, stock show)	67%	Round Three
Relationships with Parents	67%	Round Three
Communication	50%	Round Three
Advising an FFA Program	55%	Round Three
School Business Procedures/Budgets	58%	Round Three
Administration/School Board/Community Relations	58%	Round Three
CTE Certifications	58%	Round Three
Agriculture TEKS	58%	Round Three
Curriculum Development	50%	Round Three

Findings Related to Objective Four

Objective 4: Identify areas of professional development alternatively certified teachers have sought to gain for additional teaching skills and competencies.

The following tables represent what sources respondents utilized to seek additional training in areas that were not adequately covered in their alternative certification programs. Table 4.19 shows what resources respondents listed as being the most sought out sources of additional professional development. Respondents listed fellow ag teachers the most frequently($n=8$), and listed CTEonline the least frequent ($n=1$).

Table 4.19

Resources used to seek Professional Development (n=13)

Resource	<i>n</i>
Fellow Ag Teachers	8
VATAT Conference	4
Mentor Teachers	3
iCEV	2
Trial & Error	2
Workshops	2
Online Training	2
CTEonline	1

Table 4.20 represents the resources utilized by respondents to seek additional professional development and assistance. In this objective, four items reached consensus in round two; iCEV (100%), fellow agriculture teachers (100%), VATAT conference (100%) and trial and error (85%). One item, online training, had a level of agreement of 30 percent and was eliminated. CTEonline was eliminated as 46 percent of participants viewed it as not applicable; similarly, mentor teachers as 38 percent of participants perceived it as not applicable. Finally, workshops had a level of agreement of 72 percent and therefore was the one item in round three.

Table 4.20

Resources used to seek Professional Development (n=13)

Skill	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	% Agreement
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
iCEV	0	0	0	0	4	7	2	100%
Fellow Ag Teachers	1	0	0	0	2	9	1	92%
Trial & Error	0	1	0	1	0	1	10	85%
VATAT Conference	3	0	0	0	1	3	6	77%
Workshops	2	1	1	1	5	3	0	62%
Online Training	3	3	3	1	1	2	0	23%
Mentor Teachers	5	0	2	0	1	4	1	N/A
CTEonline	6	0	1	1	4	1	0	N/A

Table 4.21 represents which resources utilized for additional professional development and assistance. Items that reached between 50-75% agreement moved from round two to three to be reevaluated in or to reach consensus. Items that ranked below 50 percent were eliminated because of lack of agreement. Items that were above 75 percent were determined *a priori*. Three items each reached 100 percent agreement in round two, including iCEV, fellow ag teachers, and VATAT conference. Trial and error reached 85 percent agreement in round two; similarly, workshops continued to round three and also reached 85 percent agreement. CTEonline and online training were both eliminated because almost half of the participants responded to those items as being not applicable.

Table 4.21

Resources used to seek Professional Development (n=13)

Skill	% Agreement	Consensus
iCEV*	100%	Round Two
Fellow Ag Teachers*	100%	Round Two
VATAT Conference*	100%	Round Two
Trial & Error*	85%	Round Two
Workshops*	85%	Round Three
Mentor Teachers	30%	Round Two
CTEonline	N/A	Round Two
Online Training	N/A	Round Two

*indicate which items reached consensus

Summary

Three open-ended questions pertaining to preparation of 13 alternatively certified agricultural science teachers yielded 24 items which were evaluated in this study. Of those 24 items, consensus was reached on eight total items. This consensus came in round two on five of these items and round three on three of these items. Of those 24 total items, three items reached consensus from where participants felt best prepared. Five items reached consensus tied to professional development, our third and final open-ended

question. With areas participants felt inadequately prepared, no items reached consensus. However, all items had levels of agreement between 50-73 percent.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

Summary

As a shortage in teachers continues to be a rising issue across the nation, school districts are continuing to bridge the gap by hiring alternatively certified teachers (Rocca & Washburn, 2006). However, according to Rocca and Washburn, alternatively certified teachers are often negatively stereotyped. This stereotype implies that alternatively certified teachers typically come from different backgrounds than those who are traditionally certified. Alternatively certified teaching candidates have the option to accept a teaching position before they are either entirely certified, or have even started the certification process. In turn, they are able to work towards obtaining a teaching certificate while already teaching. According to the Vocational Agricultural Teachers Association of Texas, on July 29, 2019, there were still 29 unfilled agriculture teaching positions in Texas (<https://www.vatat.org>); therefore, the teacher shortage is shown to be continuing. Alternative certification can be a necessary tool in aiding this issue. However, determining the needs of alternatively certified agricultural science teachers is essential in recruiting and retaining those teachers. It is also needed for building and executing functional alternative certification programs.

This study asked respondents to identify skills and competencies that were perceived to have been adequately and inadequately covered within their alternative certification program. Further respondents were asked to identify areas of professional development they had utilized to enhance skills and competencies as well. Respondents

received three surveys that gauged their level of agreement on the competencies that were identified by the participants. Using the Delphi method, items that reached a total level of agreement between 50-75% in round two went on to round three. Items that were below 50% in round two were eliminated because of a lack of agreement. Items with a total level of agreement above 75% were considered to have reached consensus whether this occurred in round two or three.

Participants in this study included 13 alternatively certified agriculture science teachers that had persevered through at least the first year of teaching. They were considered experts because of their background and knowledge towards teaching as well as their completion of an alternative certification program.

Purpose and Objectives

The purpose of this study was to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified teacher in agricultural science. In order to accomplish this purpose, the following objectives were established:

1. Identify selected demographic characteristics of agriculture science teachers in the state of Texas.
2. Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.
3. Identify perceived skills or competencies, which were inadequately covered within alternative teacher certification programs.

4. Identify areas of professional development alternatively certified teachers have sought to gain additional teaching skills and competencies.

The findings for each objective of this study are explained with the information and data found from the research conducted.

Conclusions

Objective 1: *Identify the demographic characteristics of agriculture science teachers in the state of Texas.*

A total of 233 respondents participated in the initial demographic survey ($n=233$). Of the 233 respondents, 42 respondents identified that they were alternatively certified. Being that there are 1,247 public schools in Texas (<https://tea.texas.gov>), it can be determined that much of the population of Texas agriculture science teachers did not respond to the survey. Therefore, the small sample of alternatively certified teachers does not necessarily reflect the percentage of alternatively certified teachers in the state. From the participants who responded, the majority of the population claimed to receive their teaching certification while obtaining their bachelor's degree, 71.67 percent ($n=167$), this group would classify as traditionally certified. Respondents who were alternatively certified were primarily found to have received their alternative certification through an alternative certification program not tied to a university, 12.02% ($n=28$), while 6.01% ($n=14$) received their alternative certification through an alternative certification program that was tied to a university.

A large percentage of the population claimed to have been teaching for 20+ years, 24.46% ($n=57$), followed by 18.88% ($n=44$) responding they have been teaching 6-10 years. Over half of the respondents academic major was agricultural education with a teaching certification, 63.95% ($n=149$), followed by animal science majors making up 13.3% ($n=31$) of the population.

There were 42 participants who classified as alternatively certified, of those 42, 13 respondents chose to participate in the following three rounds of data collection. Over half, 54%, of the 13 alternatively certified respondents had an undergraduate major of animal science ($n=7$). There were 38% ($n=5$) of the 13 respondents who also had a master's degree, 15% ($n=2$) with a principal's certification and 8% ($n=1$) with a counseling certification. Of the alternatively certified respondents, 31% ($n=4$) had been teaching for six to ten years, while respondents who had been teaching two to three, four to five, ten to fifteen or fifteen to twenty years, each made up 15% ($n=2$) of the population.

Objective 2: *Identify perceived skills or competencies gained by alternatively certified agricultural science teachers through alternative teacher certification programs.*

The most applicable competency that was covered in alternative certification programs was lesson planning, followed by classroom management and differentiating lessons. In round one of the survey, lesson planning ($n=7$) was identified the most number of times, next classroom management was identified by five teachers and differentiating lessons was recognized twice. In round two, teaching in a diverse classroom was found to be the most adequately covered competency with 84% agreement

therefore reaching consensus, curriculum development was found to be the least adequately covered competency at 46% agreement. Items that reached consensus in this objective included classroom management, lesson planning and teaching in a diverse classroom. In order to reach consensus, items had to reach a level above 75% agreement.

Objective 3: *Identify perceived skills or competencies, which were inadequately covered within alternative teacher certification programs.*

The skill that respondents the most often identified was advising an FFA program ($n=6$). School business procedures/budgets, administration/school board/community relations, relationships with parents, agriculture TEKS, and CTE certifications all listed as being the least commonly covered skill ($n=1$). In round two, managing SAE projects was found to have the highest agreement at 73%. Communication, advising an FFA program and curriculum development were found to be the least inadequately covered competencies at 50% agreement. No items in this round reached consensus, however all items received between 50-75% agreement. While consensus was not met, it appears that participants have some level of agreement on these items that preparation toward these activities might be lacking.

Objective 4: *Identify areas of professional development alternatively certified teachers have sought to gain additional teaching skills and competencies.*

The resource that respondents listed as the most utilized in seeking additional professional development was fellow ag teachers ($n=8$). Respondents listed CTEonline as being the least commonly listed resource for professional development ($n=1$). In round two, respondents agreed that iCEV and fellow ag teachers were the most common

sources utilized for additional professional development at 100% agreement. Respondents agreed that online training was the least utilized source at 30% agreement. Mentor teachers and CTEonline were eliminated because almost half of the 13 respondents identified those items as being not applicable.

Items that reached consensus were iCEV at 100 percent agreement, fellow agriculture teachers at 100% agreement, trial and error at 85% agreement, workshops at and VATAT conference both at 85% agreement. In order to reach consensus, items had to reach above 75% agreement.

Discussion and Implications

Ultimately, this research determined that alternatively certified agriculture science teachers perceived themselves to be adequately prepared in areas of lesson planning and classroom management. It has been determined that participants feel less prepared in areas specific to teaching agriculture including advising a FFA program and managing SAE projects.

The demographic area of this study was found to be fairly diverse in terms of years of teaching. It was found in the demographic area of this study that participants teaching six to ten years made up 31 percent ($n=4$) of the population, individuals who had been teaching two to three, four to five, ten to fifteen and fifteen to twenty years each made up 15 percent ($n=2$) of the population. While alternative certification programs are assumed to be a new method of certification, they have been implemented since the early 1980s. This data showed that while there have been multiple learning curves for these individuals, they have persevered and stayed in the profession.

The demographic area of this study also found that 38 percent ($n=5$) of the population had master's degree. There were also several respondents who had additional certifications; 15 percent ($n=2$) of the population had a principal's certification and 8 percent ($n=1$) had a counseling certification.

This panel showed consistency in the fact that all 13 respondents were alternatively certified and have persevered through at least the first year of teaching and are staying in the profession. While respondents clearly have areas in which they have struggled because they felt inadequately prepared, they have sought out professional development and assistance to fill the knowledge gap. With five of the eight items in the professional development category reaching consensus, professional development is being used by alternatively certified agricultural science teachers. Three of the eight items mentioned above, iCEV, fellow agriculture science teachers and VATAT conference each reached 100 percent agreement. It is very interesting to find that the results of this study show such high levels of agreement in the area of professional development. It is obvious that the agriculture education profession is delivering effective tools for professional development to new and current teachers. Five of the eight professional development items, each reached over 75 percent agreement.

It is evident that alternative certification programs are adequate in the areas of general pedagogy. Roberts and Dyer (2004) found when studying the in-service needs of traditionally and alternatively certified teachers, alternatively certified teachers expressed the lowest level of in-service needs in the instruction and curriculum instruct. This finding aligns with the findings of objectives two and three, where it was found that teaching in a diverse classroom (84% agreement), lesson planning (77% agreement) and

classroom management (77% agreement) all met consensus. However, the respondents of this study perceived they are less prepared in their specific subject area. Nevertheless, on many items specific to agriculture science over 50% agreement was reached. Half of the respondents listed that they felt inadequately prepared to advise an FFA program through their alternative certification program experience. Other areas of teaching agriculture such as ag mechanics, coordinating a livestock show program and managing SAE projects were all listed by respondents as areas that they also felt inadequately prepared.

The first open-ended question that participants answered, asked them to list skills and competencies that were adequately covered in their alternative certification program, the results of this question showed only general pedagogy items such as classroom management and teaching methods. The second question asked participants to list areas that they felt were inadequately covered in their alternative certification program, there were items specific to agriculture science listed here such as coordinating a livestock show program, advising an FFA program and managing SAE projects. However, none of these items reached consensus; they reached between 50-75% agreement but not consensus.

As mentioned previously, Breeding, Rayfield and Smith (2018) found that teacher preparation programs provide adequate preparation in the areas of classroom instruction, introductory lessons and units, and developing curriculum which aligns with findings of objective two of this study. While Duncan and Ricketts (2008) found that traditionally certified teachers exhibit more self-efficacy than alternatively certified teachers in technical content knowledge, conducting FFA leadership development, SAE activities

and in managing the program as a whole; this literature also supports the findings of objective three of this study.

While general pedagogy is extremely important to the classroom teacher, the added responsibilities of advising an FFA program and managing SAE projects are equally as important. It might be assumed that alternatively certified teachers are not as knowledgeable in the specific content areas of agriculture. However, it has been found that alternatively certified teachers are typically older individuals who pursue teaching as a second career choice after working in industry (Rocca & Washburn, 2006). Therefore, alternatively certified teachers are very competent in their subject areas, they are just lacking the specific skillset taught in a traditional agriculture education degree to manage an FFA program and an effective agriculture classroom. As previously mentioned, Roberts and Dyer (2004) found that content knowledge may be of greater importance than pedagogical knowledge. They found that agriculture science teachers, regardless of certification method, have a continuing desire and need for in-service training to ensure their skills are current.

According to Duncan and Ricketts (2008), not only does the agricultural education profession in the United States need competent, effective teachers, it continues to face a shortage of qualified teachers. In order to aid in the shortage of agriculture science teachers and to produce effective agriculture science teachers, alternative certification programs will need to tailor their modules to the specific content area of agriculture.

Recommendations

With this being a descriptive study, caution should be used in explanation of results and findings to other populations. However, based on this data it is suggested all parties involved consider the following:

1. This study has identified characteristics of agriculture science teachers across the state of Texas. Similar data should be collected from agriculture science teachers who both are retained within and who leave the profession. Analysis should also be done on the retention of traditionally certified teachers as well as alternatively certified teachers because not only is hiring teachers a dilemma in Texas, retaining them is difficult too.
2. It is also recommended to follow this study with a quantitative study using a larger sample size. According to the National Association of Agricultural Educators in 2018 there were 474 alternatively certified or non-licensed teachers hired nationwide (94% response rate). Therefore, a study with a larger sample size would be extremely beneficial in helping to identify inadequately covered competencies in the alternative certification programs.
3. Because there are many successful alternatively certified agricultural science teachers, a similar study using qualitative research methods to further assess characteristics and tendencies of alternatively certified teachers who are leading well perceived agricultural science programs at the secondary level could be beneficial.
4. While pedagogy remains crucial to the success of agriculture science teachers, participants have indicated that they feel inadequately prepared in their specific content area. It is recommended that agricultural teacher preparation

programs should further explore needs and opportunities for alternative certification programs specific to the agriculture content area. It is also recommended that current alternative certification programs work with agricultural education experts to create modules specific to candidates who wish to teach agricultural science upon completion of their certification.

5. While this data does list specific skills that respondents were surveyed upon, it is recommended to further study specific skills in more detail. Respondents listed program skills such as managing SAE projects and coordinating a livestock show program. It would be beneficial to study program skills that were listed as inadequately covered more in-depth.
6. The 13 respondents that participated in this study have all persevered through at least the first year of teaching and have stayed in the profession. They have utilized professional development resources well and sought out additional assistance where it is needed. This finding leaves a question of if individuals who are leaving the profession are utilizing the same professional development resources and if so how efficient are they using them? Also, with mentor teachers, VATAT conference, and online curriculum being utilized efficiently by alternatively certified teachers in this study, it could be advantageous to incorporate enhanced professional development resources from multiple platforms.
7. If this study were to be executed again, it would be beneficial to incorporate a comment section in the round three instrument. Giving respondents an

opportunity to elaborate on why they agree or disagree would give the researchers a more in-depth insight.

8. It could also be beneficial to execute this study at a different time of year.

With the instruments of this study being distributed in the spring semester it was difficult to get a large response rate. It was also difficult to get responses in a timely manner due to teachers being gone to CDE contests and livestock shows. If this study were deployed in the fall semester, there could potentially be a higher sample.

9. Lastly, it could be advantageous to study the perceptions of alternatively certified teachers by school administrators such as campus principals and district superintendents. It would be beneficial to study areas in which administrators see alternatively certified teachers needing extra assistance or professional development.

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APPENDIX A
IRB CONSENT

Informed Consent Form

West Texas A&M University Master's Research Participation

Title Of Study: A Delphi Study Assessing the Skillsets of Alternatively Certified Agricultural Science Teachers

Introduction

The purpose of this study is to determine what competencies need to be included in alternative certification programs to best benefit the alternatively certified teacher. You are one of 15 alternatively certified Agricultural Science Teachers who have been selected to participate in this study.

Procedures

Participants will be asked three rounds of survey questions with the first-round containing three open-ended questions. The second-round of questions will be Likert-type questions based off the findings from the first-round. The third-round will be an agreement-type asking if you agree on the consensus of the study.

Risks/Discomforts

There are no direct risks for participants, other than utilization of time during daily life.

Benefits

There are no direct benefits for participants. However, it is hoped that through your participation, researchers will better understand what areas are lacking in alternative certification programs and can implement an action plan to bridge the gap between certification programs and classroom teaching specific for agriculture science.

Confidentiality

All data obtained from participants will be kept confidential and will only be reported in an aggregate. All questionnaires will be concealed, and no one other than the primary investigator and assistant researchers listed below will have access to them. The data collected will be stored in the HIPPA-compliant, Qualtrics-secure database until the primary investigator has deleted it. The data collected will be deleted no later than September of 2021.

Compensation

There is no compensation.

Participation

Participation in this research study is completely voluntary. You have the right to withdraw at any time or refuse to participate entirely. If you desire to withdraw, please close your Internet browser. If under the age of 18 years old, please exit out and close

you Internet browsers. As someone under the age of 18 are not eligible for this study. By taking this survey, participants are agreeing to participate in this research study.

Questions about the Research

If you have questions regarding this study, you may contact Stefanie Wolf, srwolf1@buffs.wtamu.edu, or Dr. Kevin Williams, kwilliams@wtamu.edu. Additional questions may be addressed to Dr. Angela Spaulding, Vice President for research and compliance and Dean of graduate studies.

Questions about your Rights as Research Participants

If you have questions you do not feel comfortable asking the researcher, you may contact the West Texas A&M University Institutional Review Board for the Protection of Human Subjects, Office of Research Services, or call (806) 651-2732.

As a research participant if you would like access to the findings of this study please e-mail Stefanie Wolf, srwolf1@buffs.wtamu.edu, or Dr. Kevin Williams, kwilliams@wtamu.edu.

APPENDIX B
SURVEY INSTRUMENT #1

Delphi Study - Demographics Survey

Q1 Name

Q2 Where do you currently teach?

Q3 Which area do you teach in?

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

☐ 9

☐ 10

☐ 11

☐ 12

Q4 Which option below best describes your academic major in college?

- ☐ Animal Science
- ☐ Pre-Vet
- ☐ Agricultural Business
- ☐ Plant Science
- ☐ Agricultural Education with Teacher Certification
- ☐ Agriculture
- ☐ Agricultural Communications
- ☐ Agricultural Leadership
- ☐ Horticulture
- ☐ Natural Resources
- ☐ Other Ag Degree
- ☐ Other Non-Ag Degree

Q5 Do you hold or are working towards any of the degrees or certifications listed below?

☐ Master's Degree

☐ Ph. D

☐ Ed. D

☐ Superintendent Certification

☐ Counseling Certification

☐ Principal's Certification

Q6 What institution did you receive your undergraduate degree from?

- ☐ Angelo State University
 - ☐ Prairie View A&M University
 - ☐ Sam Houston State University
 - ☐ Stephen F. Austin State University
 - ☐ Sul Ross State University
 - ☐ Tarleton State University
 - ☐ Texas A&M University
 - ☐ Texas A&M Commerce
 - ☐ Texas A&M Corpus Christi
 - ☐ Texas A&M Kingsville
 - ☐ Texas State University
 - ☐ Texas Tech University
 - ☐ West Texas A&M University
 - ☐ Other In-State Institution
 - ☐ Out of State Institution
-

Q7 How did you receive your teaching certification?

- ☐ While completing my bachelor's degree
 - ☐ While completing my master's degree
 - ☐ Alternative Certification Program tied to a university
 - ☐ Alternative Certification Program not tied to a university
-

Q8 How many years have you been teaching?

- ☐ 0-1
 - ☐ 2-3
 - ☐ 4-5
 - ☐ 6-10
 - ☐ 10-15
 - ☐ 15-20
 - ☐ 20+
-

APPENDIX C

SURVEY INSTRUMENT #2

Delphi Study - Round One

Q1 Name

Q2 Please list any and all skills or competencies that you gained in your alternative certification program that are most applicable to teaching agricultural science.

Q3 Please list any and all skills or competencies that you feel were not covered, or could have been covered in more detail that are needed and applicable to teaching agricultural science.

Q4 For skills or competencies not covered in your alternative certification program, please list where you have sought professional development or assistance to address those needs.

APPENDIX D

SURVEY INSTRUMENT #3

Round 2

Q1 Name

Q2 For each item listed below, please indicate your level of agreement that the alternative certification program you completed adequately prepared you toward this teaching skill or competency relative to teaching agricultural science.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Lesson Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classroom Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curriculum Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Differentiating Lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teaching in a Diverse Classroom	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accommodating Various Cultures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 For each item listed in this section, please your level of agreement that the alternative certification program you completed did not provide adequate preparation toward this teaching skill or competency relative to agricultural science.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advising an FFA program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Business Procedures/Budgets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/School Board/Community Relations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing deadlines (CDE/LDE contest, livestock show, validation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ag Mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curriculum Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relationships with Parents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agriculture TEKS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CTE Certifications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordinating a livestock show program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 For teaching skills or competencies you needed additional help with beyond your alternative certification program, please indicate your level of agreement toward the usefulness of various resources you may have utilized to meet these needs.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
iCEV	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CTEonline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
VATAT Conference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mentor Teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fellow Ag Teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trial & Error	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX E

SURVEY INSTRUMENT #4

Round 3

Q1 Name

Q2 For each item listed below, please indicate your level of agreement that the alternative certification program you completed adequately prepared you toward this teaching skill or competency relative to teaching agricultural science.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Classroom Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curriculum Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Differentiating Lessons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q3 For each item listed in this section, please indicate your level of agreement that the alternative certification program you completed did not provide adequate preparation toward this teaching skill or competency relative to agricultural science.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Communication	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advising an FFA program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing SAE projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School Business Procedures/Budgets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administration/School Board/Community Relations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Managing deadlines (CDE/LDE contest, livestock show, validation)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ag Mechanics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Curriculum Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Relationships with Parents	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agriculture TEKS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CTE Certifications	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordinating a livestock show program	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7 For teaching skills or competencies you needed additional help with beyond your alternative certification program, please indicate your level of agreement toward the usefulness of various resources you may have utilized to meet these needs.

	Not Applicable	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
Mentor Teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workshops	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX F

INITIAL INVITATION EMAIL

Ag Teachers,

You are invited to participate in “A Delphi Study Assessing the Skillsets of Alternatively Certified Agriculture Science Teachers” conducted by the Department of Agricultural Sciences at West Texas A&M University. You have been chosen for this study based on your educational background and the successful completion of an alternative certification program. Your participation will help aid in West Texas A&M University’s efforts to fulfill the needs of alternatively certified agricultural science teachers.

Through this study, you will receive three rounds of questions. The first-round will be three open-ended questions about your skillsets that you gained in your alternative certification program. The second-round will be a short set of Likert-type questions based off of the answers of the first-round. The final round will be an agree/disagree statement based off of the findings of answers of rounds one and two.

Each survey will be sent on the dates listed below. The surveys will be open for exactly seven days.

Wednesday, February 13 – first survey

Wednesday, February 27– second survey

Wednesday, March 13 – third survey

If you are willing to participate in this study, please follow the link below email to the first survey.

http://wtamu.az1.qualtrics.com/jfe/form/SV_6gIsSf7xalBVfiR

All responses of this study will be confidential and only summarized data will be recorded. If you wish to terminate participation in this study, you may do so at anytime. If you have any questions regarding this study, please contact Dr. Kevin Williams at kwilliams@wtamu.edu.

Your participation is greatly appreciated!

Thank you,
Stefanie Wolf
Graduate Research Assistant
West Texas A&M University

APPENDIX G

EMAIL #2

Ag Teachers,

Thank you for participating in the first survey of “A Delphi Study Assessing the Skillsets of Alternatively Certified Agriculture Science Teachers” conducted by the Department of Agricultural Sciences at West Texas A&M University.

Please follow the link at the bottom of this email to the second survey. This survey is based on the Likert scale and uses a six-point response scale to rate the skills: “1” = “Strongly Disagree,” “2” = “Disagree,” “3” = “Slightly Disagree,” “4” = “Slightly Agree,” “5” = “Agree,” and “6” = “Strongly Agree.”

This study is based off of the Delphi technique which involves three rounds of surveys, each based off of the results of the previous answers. Upon completion of this second survey, you will receive one more survey that will ask you to rate your level of agreement for the skills discussed in the previous survey.

You have been selected to participate in this study based off of the successful completion of an alternative certification status. This study is only sent to a small population of participants. Your feedback and participation is greatly appreciated and extremely beneficial in West Texas A&M's effort to better alternative certification for agricultural science teachers.

Please follow the link below to complete the survey no later than **Friday, April 19th**. The following survey will take less than 10 minutes to complete and all responses will remain confidential.

http://wtamu.az1.qualtrics.com/jfe/form/SV_6XdH0vMAdVhXBZj

Your participation is greatly appreciated!

Thank you,
Stefanie Wolf
Graduate Research Assistant
West Texas A&M University

APPENDIX H

EMAIL #3

Hello Ag Teachers,

Thank you so much for your continued participation in “A Delphi Study Assessing the Skillsets of Alternatively Certified Agriculture Science Teachers” conducted by the Department of Agricultural Sciences at West Texas A&M University. This study is only sent to a small population of participants and your feedback and participation is greatly appreciated.

We have reached the third and final survey. It is a shortened version of the Round 2 Survey and should take you a very limited amount of time. You will notice some replicated questions, these are the questions that have not yet reached consensus and we desire your final opinion toward these items. Please follow the link below to the this final survey.

For your time we will be happy to mail you a WT Agriculture Cap for your time in this research process. For this cap, simply drop us a follow up email with your best address to let us know you completed the final round.

We truly appreciate your participation and dedication to this survey and helping West Texas A&M better aid agriculture education.

http://wtamu.az1.qualtrics.com/jfe/form/SV_8emb9rBTfIQ2ILv

If you have any questions, please feel free to contact me or Dr. Kevin Williams at kwilliams@wtamu.edu.

Thank you,
Stefanie Wolf
Graduate Research Assistant
West Texas A&M University