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Perceptions of High School Cooperating Agricultural Teachers on the Performance of Student Teachers

Tori Hendon[1], Mark S. Hainline[2], Scott Burris[3], Jonathan D. Ulmer[4], Rudy A. Ritz[5]

Abstract

The profession of agricultural education is experiencing shortages across the nation. Texas is critically impacted due to the renewed emphasis of career and technical education. This leads to questions about the preparedness of recent college graduates to handle the demands placed upon agricultural educators. Starting in 2012, Texas Tech University restructured the courses within the Department of Agricultural Education and Communications to better prepare graduates. The purpose of this study was to evaluate the agricultural education program at Texas Tech University by examining the preparedness of student teachers as determined by the cooperating teachers. A survey containing the characteristics of effective agricultural teachers identified by Roberts and Dyer (2004) was administered to cooperating teachers of Texas Tech University student teachers. The cooperating teachers evaluated the importance of the characteristics and the preparedness of Texas Tech University student teachers. The results of this survey were analyzed using a Borich needs assessment model. Texas Tech University cooperating teachers perceived student teachers to be most prepared in the categories of personal qualities and community relations and found the student teachers need further development of skills related to the categories of Supervised Agricultural Experience (SAE) and program planning/management.

Keywords: cooperating teachers; student teachers; characteristics of effective teachers; preparedness

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Introduction/Literature Review

As a result of House Bill 5, Texas has restructured graduation requirements to place a greater emphasis on Career and Technical Education (CTE) (Texas Education Agency, 2014a). The new focus on CTE places agricultural education within the selection of endorsements students are required to have for graduation (Texas Education Agency, 2014b).

[1] Tori Hendon is an Agricultural Science Teacher at Reedy High School, 3003 Stonebrook Parkway, Frisco,
TX 75034, hendont@friscoisd.org
[2] Mark S. Hainline is an Assistant Professor in the Department of Agricultural Education and Studies at Iowa State University, 223A Curtiss Hall, 513 Farm House Lane, Ames, IA 50011, mhainlin@iastate.edu
[3] Scott Burris is a Professor in the Department of Agricultural Education and Communications at Texas Tech University, Box 42131, Lubbock, TX 79409, scott.burris@ttu.edu
[4] Jonathan D. Ulmer is an Associate Professor in the Department of Communications and Agricultural Education at Kansas State University, 308 Umberger Hall, Manhattan, KS 66506, julmer@ksu.edu
[5] Rudy Ritz is an Associate Professor in the Department of Agricultural Education and Communications at Texas Tech University, Box 42131, Lubbock, TX 79409, rudy.ritz@ttu.edu

The added emphasis upon coursework providing workforce skills has led to a demand of quality teachers to manage these programs (Myers & Dyer, 2004). The shortage of agricultural education teachers entering the workforce serves as barrier to meeting this demand. In fact, Kantrovich (2010) indicated that only 56% of the agricultural education positions which were filled in 2009, were staffed by individuals qualified to teach agricultural education. The issue of staffing with secondary agricultural education programs (Myers, Dyer, & Washburn, 2005), and the new emphasis on career and technical education in Texas, further exacerbates the issues within the state.

The shortage of agricultural teachers to fulfil these positions within Texas has school administrators looking to universities to produce quality graduates that will remain within the teaching profession. Universities must turn a critical eye at programs currently in place to train future agricultural educators to meet this demand. The Texas Tech University Agricultural Education program gradually began modifying curriculum in 2011, launching the initiative Tech Teach, which was piloted in 2011 and fully incorporated in 2012. The Tech Teach program transitioned the focus and graduation requirements for degrees within education which resulted in a reevaluation of the departmental curriculum to better align with the Tech Teach initiative. The new curriculum sought to enhance aspects of teaching methodology in pre-service agricultural education courses, spark a new commitment to Science, Technology, Engineering and Mathematics (STEM) education, and enhance the quality of field placement experiences. A newly developed problems course was offered to students in the Spring of 2011 which evolved into AGED 4303, *Designing and Integrating the Agricultural Curriculum*. The following year, the *Integrating Science into Agricultural Education* course (AGED 4410) was added to the curriculum to provide a STEM-focused class in the teacher preparation program.

In addition to the new courses added to the pre-service curriculum, four established classes were merged into two. The FFA and supervised agricultural experience (SAE) courses were merged to create AGED 3333, and two agricultural mechanics courses (i.e., small gas engine course and agricultural buildings and environmental control course) were aggregated to create AGSM 4303, Laboratory Methods in Agricultural Mechanics. The duration of the student teaching experience was extended from 12 to 14 weeks to enhance the field-based experiences of the pre-service teachers.

The drastic changes to the teacher preparation curriculum at Texas Tech University presented the need to conduct an evaluation on the curriculum and field-based experience augmentations. Barnes, Clark, and Stephens (2000) indicated, "attempts at curriculum reform are likely to be futile unless accompanied by matching assessment reform" (p. 623). Moreover, Agrawal (2004) posited an evaluation of educational programs are paramount when attempting to assess learners' knowledge and skill acquisition (i.e., technical and professional skills). Therefore, the assessment of the curriculum changes in the Texas Tech University Agricultural Education Program were evaluated with a focus on the program products—the pre-service teachers engaging in the student teaching experience.

To conduct a holistic evaluation of the Texas Tech University teacher preparation program, the evaluation must assess Interdisciplinary Agriculture (in the teacher certification track) students who have completed the augmented coursework and are currently engaging in a professional setting (e.g., the student teaching experience). Aside university teacher educators, cooperating teachers serve as a mentor for pre-service teachers during their student teaching experience and throughout their professional careers (Jones, Kelsey, & Brown, 2014). The extended interaction between the cooperating teachers and student teachers provides a platform for cooperating teachers to evaluate the success of student teachers in a multitude of agricultural education facets (e.g., classroom instruction or supervising teaching laboratories) (Crump, Ricketts, & Duncan, 2010). Due to the

close relationship between cooperating teachers and Texas Tech student teachers, the cooperating teachers' perspectives of the pre-service teachers will provide insight on the overall preparedness of the pre-service teachers and the impact of the new curriculum.

Characteristics of Effective Teachers

Identifying traits of an effective teacher is elusive and ever-changing due to discrepancies in what "effective" teaching encompasses and what metrics should be used to evaluate it (Stronge, 2007). Because of the large impact teachers have on student learning (Sanders, Wright, & Horn, 1997), it is important to identify the common qualities of effective teachers. Rosenshine and Furst (1971) posited 11 traits of effective teachers, based on the findings of previous literature. Of the 11 traits identified, Rosenshine and Furst reported five of the traits were well supported (i.e., clarity, enthusiasm, student opportunity to learn material, task-orientated/businesslike behaviors, and variability). Research conducted on the effective traits of teachers, in general, only partially describes what an agricultural teacher needs to be successful. Agricultural teachers must deal with instructional techniques such as the clarity of their instruction and the enthusiasm when presenting material (Rosenshine & Furst, 1971), as well as conducting business within an agricultural education program (Nesbitt & Mundt, 1993). Based on the three-circle model of agricultural education (i.e., instruction, FFA, & SAE), agricultural teachers must possess skills in time and organizational management, recruitment of students, and building support for the program (Mundt & Conners, 1999; Swortzel, 1995). Roberts and Dyer (2004) sought to combine the ideas of skills needed by effective teachers and characteristics needed by agricultural teachers to identify characteristics of effective agricultural teachers. The results of a three-round modified Delphi technique resulted in eight categories: (1) *instruction*, (2) *FFA*, (3) *SAE*, (4) *community relations*, (5) *marketing*, (6) *professionalism/ professional growth*, (7) *program planning/management*, and (8) *personal qualities*.

Theoretical and Conceptual Framework

Although various educational evaluation models (e.g., experimental / quasi-experimental models, Kirkpatrick's four-level evaluation model, logic model, or the CIPP [Context / Input / Process / Product]) were not specifically established based on educational theories, the educational theories (i.e., reductionism, systems theory, complexity theory) which underpin these models serve as a means to understand and interpret evaluation outputs (Frye & Hemmer, 2012). Some evaluation models which have been readably used in educational settings (Stufflebeam & Shinkfield, 2007) provide a reductionist (i.e., linear) focus from input to program outcome (Durning & Hemmer, 2010; Frye & Hemmer, 2012). According to Frye and Hemmer (2012), the reductionist perspective "suggests that once the factors contributing to an outcome are known, program success or lack of success in achieving those outcomes can be explained" (p. 5).

In contrast to reductionist approaches, evaluations underpinned by system theory view final products (e.g., educational programs) as more than a summation of individual program components (Frye & Hemmer, 2012). Evaluations which align with the systems theory evaluate component parts, relationships among the component parts, and the context (i.e., environment) in which these parts are situated (Frye & Hemmer, 2012). Von Bertalanffy (1972) argued the relationships (between component parts and the environment) in social systems were dynamic and constantly changing. From a systems standpoint, program outcomes of open systems (e.g., educational programs) can be achieved from a myriad of ways and from multiple starting points (Frye & Hemmer, 2012).

In the context of this study, a systems approach was taken to conduct an evaluation of the agricultural education teacher preparation program at Texas Tech University. The program evaluation was operationalized by Cruickshank's (1984) model to guide inquiry in preservice teacher education. This conceptual framework provided a foundation to examine the primary variables (i.e., (1) teacher educators, (2) teacher education students, (3) context of teacher education, (4) context or curriculum of teacher education, and (5) instruction and organization in teacher education) encompassed in teacher preparation programs, which lead to the outcome variable (i.e., outcomes of teacher education).

Though the lens of systems theory, evaluations of educational programs should encompass an evaluation of program components, relationship among the components and the environment (Frye & Hemmer, 2012). In alignment with this theoretical underpinning, Cruickshank's model examines the interconnectedness of primary variables as well as external forces affecting teacher preparation programs. The external forces (i.e., environmental factors) affecting teacher preparation programs are depicted by the area surrounding the rectangle of primary variables (see Figure 1).

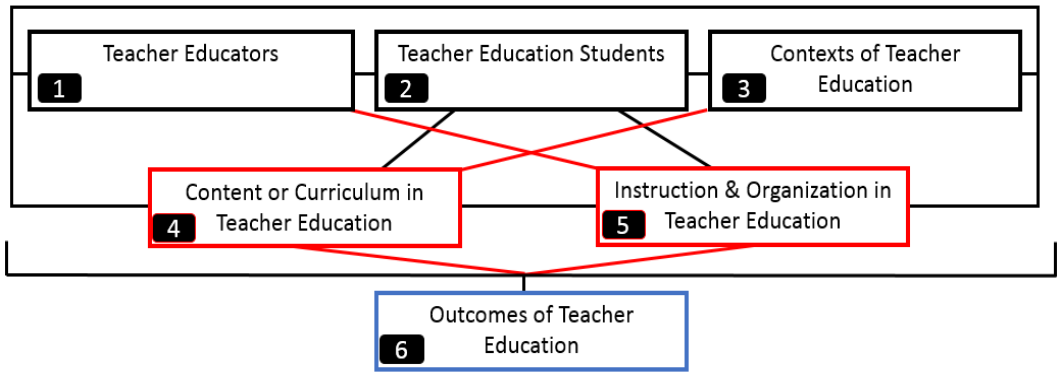

Figure 1. Model to guide inquiry in preservice teacher education (Cruickshank, 1984).

Cruickshank (1984) indicated the five explanatory variables in teacher education are coupled with representative characteristics. In the first level, teacher educators are represented by formative influences (e.g., family background and education), present personal characteristics and abilities (e.g., self-confidence and academic success), and present professional characteristics (e.g., level of interest in teaching teachers). Teacher education students are described by representative characteristics such as formative influences (e.g., sex and mental abilities) and present personal characteristics and abilities (e.g., age and socio-economic status). Cruickshank reported the representative characteristics of context of teacher education to be institutional characteristics (e.g., size and leadership style) and classroom characteristics (e.g., facilities and equipment).

Regarding the explanatory variables in level two, the representative characteristics of content of teacher education were sources, nature, amount, and sequence. Moreover, instruction and organization for instruction in teacher education is described by factors such as instructional alternatives, forms of organization for instruction, and student-teacher ratio. These five variables, in conjunction with the explanatory characteristics, come together to form the structure of teacher preparation. This arrangement leads to an outcome of producing sufficient and effective teachers. This study utilized the outcome of the model, the performance of graduates, to analyze the contexts of teacher education.

Purpose and Objectives

The purpose of this study was to evaluate the agricultural education program at Texas Tech University by examining the preparedness of student teachers, as determined by the cooperating teachers. The overarching aim of this study, to evaluate the viability of the teacher preparation curriculum changes to improve the teaching and learning process, aligns with the American Association of Agricultural Education Research Agenda, Research Priority Area 2, New Technologies, Practices, and Products Adoption (Lindner, Rodriguez, Strong, Jones, & Layfield, 2016). The study was guided by the following objectives:

1. Determine the cooperating teachers' perceived level of preparedness of student teachers and importance of the characteristics of effective agricultural teachers.
2. Analyze cooperating teachers' perceptions of student teacher's level of preparedness in conjunction to importance of characteristics of effective agricultural teachers.
3. Identify additional characteristics required for effective agricultural teachers.

Methodology

Research Design

A quantitative descriptive research design was employed to accomplish the objectives of this research study. The evaluation of the new teacher preparation program curriculum was assessed by the responses of cooperating teachers. Specifically, cooperating teachers were asked to indicate their perceptions of the importance of teaching roles, and then specify the level of preparedness of Texas Tech University student teachers on the same role. The teaching roles assessed by the cooperating teachers (n = 32) and related characteristic categories (i.e., *instruction*, *FFA*, *SAE*, *community relations*, *marketing*, *professionalism / professional growth*, *Program Planning / Management*, and *personal qualities*), were derived from Roberts and Dyer (2004) study on the characteristics of effective teacher. In addition to the provided characteristics, the cooperating teachers were asked to identify other characteristics they perceived to be important for effective agricultural education teachers.

Population

The population was comprised of agricultural science teachers who served as cooperating teachers for Texas Tech University student teachers in spring 2014 and/or spring 2015. There were a total of 13 pre-service teacher graduates in the spring of 2014, and 18 graduates in the spring of 2015. However, four cooperating teachers that received student teachers were omitted from study due to bias or disconnect from the Texas educational system. This led to a total of 27 graduates that apprenticed in 22 school districts across Texas. Secondary agricultural programs with more than one teacher allowed for multiple teachers to observe and mentor the student teacher. As a result, agricultural teachers not serving as the primary cooperating teacher, but with knowledge of student teachers' performance, were admitted into the study. This resulted in a total of 34 high school agricultural teachers in the target population. The cooperating teachers who responded to the study were from 16 different school districts. The average cooperating teacher had 11.95 (SD = 6.89) years of teaching experience and had previously supervised an average of 6.78 (SD = 5.28) student teachers. Of the cooperating teachers (n = 18) who provided demographic data on highest educational degree attainment, nine only had their bachelor's degree while the other nine held a master's degree.

Based on previous recommendations, a comparison of early to late respondents was conducted to control for non-response error (Lindner, Murphy, & Briers, 2001; Miller & Smith, 1983). Early respondents (n = 7) were considered to be those who responded between the first (initial recruitment email) and second (reminder) stimuli and the late respondent (n = 11) group encompassed respondents who completed the survey instrument after the first reminder email. The responses of the two groups on scale items were assessed by conducting independent-samples t-test. No significant differences were found between the early and late respondents which indicated the results could be generalized to the target population (Miller & Smith, 1983).

Instrumentation

The survey instrument contained a total of 40 items which were presented in three divided sections. The first part of the instrument sought to gauge teachers' perceptions of the importance of teaching roles and the level of preparedness of Texas Tech University student teachers in fulfilling the given roles. For each of the teaching roles predicated by Roberts and Dyer (2004), cooperating teachers were asked to specify their perceived importance of the 32 teaching roles (1 = *Not Important*, 2 = *Of Little Importance*, 3 = *Somewhat Important*, 4 = *Important* 5 = *Very Important*), and indicate their perceptions of their student teacher's preparedness to perform these roles (1 = *Not Prepared*, 2 = *Poorly Prepared*, 3 = *Somewhat Prepared*, 4 = *Prepared* 5 = *Very Prepared*), on a coupled set of 5-point scales.

For example, the respondents were asked to rate the level importance and level of their student teachers' preparedness on items such as "Has excellent knowledge of the subject matter" or "Is well organized; has excellent time management skills". The 32 teaching roles were grouped into categories of (1) *instruction*, (2) *FFA*, (3) *SAE*, (4) *community relations*, (5) *marketing*, (6) *professionalism/professional growth*, (7) *program planning/management*, and (8) *personal qualities*. Analogous to Roberts and Dyer's (2004) conceptualization of the eight categories of effective agriculture teachers, the categories merely served as a means of organizing the characteristics in the present study, not separate constructs.

The second section of the instrument was included to allow cooperating teachers an additional opportunity to comment of the effectiveness of teacher preparation program curriculum. This section was comprised of four open-ended questions which included items such as "Are there any other skills needed by the student teachers that need improvement that were not on the survey" and "Overall, are there any areas you believe need to be improved upon to produce better student teachers?"

The final section of the instrument included four items which sought to determine the background (i.e., years of teaching experience, number of student teachers mentored, number of Texas Tech University student teachers mentored) and demographic characteristics (i.e., highest level of educational attainment) of the cooperating teachers.

Validity and Reliability

The instrument was sent to a panel of experts comprised of agricultural education faculty members to establish content validity. Augmentations were made to enhance the readability of the instrument, based on the suggestions provided by the panel of experts. Moreover, Roberts, Dooley, Harlin, and Murphy (2007) provided support regarding the validity of this instrument, indicating the "competencies, particularly categories of competencies, requisite of being a successful agricultural teacher are somewhat stable" (p. 10).

A pilot test was conducted to assess the reliability of the instrument. The individuals who participated in the pilot test (n = 17) were recent graduates who had firsthand knowledge of the Department of Agricultural Education and Communications curriculum. The graduates represented the closest group to the cooperating teacher that would not affect the number of respondents able to contribute to the study. Cronbach's alpha coefficients were calculated for both the teacher's preparedness ratings (α = .95) and importance ratings (α = .91) and the instrument as a whole (α = .96) which constituted a tolerable level of internal consistency (Ary Jacobs, & Sorensen, 2010).

Data Collection

The initial recruitment email was sent to cooperating teachers via the Qualtrics Survey Platform, which contained information about the study and a link to the instrument. Akin to initial recruitment email, three additional emails were sent to the non-respondents at incremental periods of seven days. The instrument distribution schedule was implemented based on a modified version of Dillman, Smyth, and Christian's (2009) mail-based survey delivery schedule. Of the 34 cooperating teachers who were invited to participate in the study, a total of 20 teachers (58.8%) completed the instrument.

Data Analysis

The research objectives served as guiding points to the data analysis used within this study. The data collected within Qualtrics was downloaded and analyzed using Statistical Package for Social Sciences (SPSS), version 22. The first objective was analyzed using descriptive statistics (i.e., frequencies, means, and standard deviations) to evaluate the cooperating teachers' perceptions of importance pertaining to the teaching characteristics and the perceived preparedness of Texas Tech University student teachers.

The second objective was evaluated using the Borich (1980) Needs Assessment Model to further delineate differences between cooperating teachers' perceptions of the importance of teacher characteristics and student teachers' preparedness. To quantify the discrepancies between perceived importance and preparedness and provide a means of ranking the characteristics of effective teachers, mean weighted discrepancy scores (MWDS) were calculated for each item.

The discrepancy scores (DS) were calculated for each characteristic of effective agricultural teachers by subtracting the cooperating teachers' perception of student teacher preparedness rating from their perceived importance rating. Next, each cooperating teacher's weighted discrepancy score (WDS) was calculated by multiplying the mean importance rating by the discrepancy score for each of the characteristics of effective agricultural teachers. Lastly, a MWDS was calculated for each characteristic by dividing the sum of the weighted discrepancy scores by the total number of observations. The data was then exported into Microsoft Excel, where the 32 characteristics of effective agricultural teachers were ranked by their associated MWDS. According to Borich (1980), the "discrepancies ranked in descending order of priority provide the framework for deciding what parts of the program to modify or revise" (p. 39). The items with the largest MWDS were considered to be the areas of greatest training needs, and areas with low, or negative MWDS were interpreted as areas with low or no need for training. The MWDS were assessed based on their rank and orientation to zero (i.e., positive MWDS = some level of training need; negative MWDS = no training need); real (i.e., true) limits were not used in the analysis of this objective.

The third and final objective sought to identify additional characteristics required for effective agricultural teachers, based on the perceptions of the cooperating teachers. The additional

characteristics put forth by the cooperating teachers were coded separately by members of the research team before a collaborative discussion of the items was held. The characteristics were organized based on the prefigured categories of effective agriculture teachers posited by Roberts and Dyer (2004). A frequency count of the additional characteristics was constructed to display their alignment with the prefigured categories (e.g., FFA, SAE, Program Planning, Professionalism, and Instruction).

Results and Findings

The first objective sought to determine the cooperating teachers' perceptions of student teacher preparedness and importance of the characteristics of effective agricultural teachers. Belonging to the *personal qualities* category, the cooperating teachers perceived "is motivated" (M = 5.00, SD = .00) and "is honest, moral, and ethical" (M = 5.00, SD = .00) to be the most important characteristics for student teachers. Of the 32 effective teaching roles presented to the cooperating teachers, 27 were noted to be *very important* (real limits 4.5 - 5.5) and five were indicated as *important* (real limits 3.5 - 4.5). The effective teaching roles considered to be very important belonged to all eight categories, but the roles which were indicated to be important all belonged to the *instruction* category. The teaching role with the lowest indicated importance was "is knowledgeable of teaching and learning theory*"* (M = 3.95, SD = .76; see Table 1).

Table 1

Cooperating Teachers' Perceived Importance of Effective Teacher Roles and Perceived Preparedness of Student Teachers in Fulfilling Roles, by Category (n = *20)*

	Importance		Preparedness	
Category/Characteristic	*M*	*SD*	*M*	*SD*
Personal Qualities				
Is motivated	5.00	0.00	3.90	1.34
Is honest, moral, and ethical	5.00	0.00	4.60	0.68
Is enthusiastic	4.95	0.22	3.85	1.19
Is well organized; has excellent time management skills	4.90	0.31	3.90	1.07
Cares for students	4.90	0.31	4.45	0.67
Is resourceful	4.85	0.37	3.95	1.10
Is self-confident	4.84	0.37	3.50	1.32
Has an understanding and supportive spouse/family	4.80	0.52	4.40	0.78
Is open-minded	4.80	0.41	4.15	0.93
Community Relations				
Establishes and maintains good community relations	4.95	0.22	3.75	1.02
Works well with parents	4.90	0.31	3.95	0.83
Works well with alumni and advisory groups	4.89	0.31	3.90	0.79
Marketing				
Maintains an effective public relations program	4.80	0.41	3.90	0.79
Works well with other teachers and administrators in his/her school	4.80	0.41	4.10	0.91
Effectively recruits new students	4.65	0.67	3.50	1.36
Professionalism/Professional Growth				
Displays a positive/professional image	4.90	0.45	4.05	0.76

Enjoys teaching and exhibits a positive attitude towards the teaching profession	4.82	0.37	3.75	1.41
Takes actions to prevent burnout and to re-energize himself/herself	4.80	0.41	3.70	1.03
Improves professionally by seeking opportunities for continued learning	4.75	0.44	4.00	0.92
Puts in extra hours; is dedicated to doing a good job	4.75	0.44	3.55	1.15
FFA				
Has a sound knowledge of FFA, actively advises the FFA chapter, and effectively prepares students for CDEs and other FFA activities	4.85	0.49	3.55	1.15
Instruction				
Is capable of solving problems and handling many different tasks at the same time	4.80	0.52	3.50	1.20
Effectively determines students' needs	4.50	0.61	3.60	0.99
Uses a variety of teaching techniques	4.35	0.75	3.75	1.07
Is innovative; uses technology in the classroom; adapts well to change	4.30	0.57	3.65	1.00
Has excellent knowledge of the subject matter	4.20	0.83	3.80	0.96
Incorporates science and other areas of the school curriculum into the agriculture program	4.10	0.79	3.50	1.31
Is knowledgeable of teaching and learning theory	3.95	0.76	3.70	0.92
Program Planning/Management				
Effectively manages finances, grants, and special projects	4.74	0.55	3.30	0.98
Effectively manages, operates and evaluates the agriculture program on a continuous basis	4.68	0.47	3.55	1.05
Effectively manages, maintains, and improves laboratories	4.68	0.47	3.45	1.31
SAE				
Has a sound SAE knowledge, actively supervises, and encourages SAE projects	4.75	0.64	3.35	0.93

Note. Importance scale (Real Limits): 1 = *Not Important* (RL = 0-1.5), 2= *Of little importance* (RL = 1.5-2.5), 3 = *Somewhat Important* (RL = 2.5-3.5), 4 = *Important* (RL = 3.5-4.5), 5 = *Very Important* (RL = 4.5-5.5); Preparedness scale (Real Limits): 1 = *Not Prepared* (RL = 0-1.5), 2 = *Poorly Prepared* (RL = 1.5-2.5), 3 = *Somewhat prepared* (RL = 2.5-3.5), 4 = *Prepared* (RL = 3.5-4.5), 5 = *Very Prepared* (RL = 4.5-5.5).

The cooperating teachers perceived the student teachers to be *Somewhat prepared* (real limits = 2.5 – 3.5) to *Very prepared* (real limits = 4.5 – 5.5) on all 32 roles of effective agricultural teachers. "Is honest, moral, and ethical" (M = 4.15, SD = .93) and "cares for students" (M = 4.45, SD = .67) were the two teaching roles which cooperating teachers indicated the highest perceived preparedness level of the student teachers. On the other hand, "effectively manages finances, grants, and special projects" (M = 3.30, SD = .98), an item from the *instruction* category, and "has a sound SAE knowledge, actively supervises, and encourages SAE projects" (M = 3.35, SD = .93), belonging to the *SAE* category, were the two items cooperating teachers perceived student teachers to be least prepared.

The second objective was to analyze cooperating teachers' perceptions of student teacher's level of preparedness in conjunction to their discerned levels of importance regarding the characteristics of effective agricultural teachers. The Borich (1980) Needs Assessment Model, was used to further delineate the discrepancies between the cooperating teacher's perceived importance of a characteristic needed for effective teaching and student teachers' preparedness.

The characteristics of an effective agricultural teacher with the highest reported mean weighted discrepancies scores (MWDS) were: "Effectively manages finances, grants, and special projects" (MWDS = 6.85, Category = *program planning / management*), "Has a sound SAE knowledge, actively supervises, and encourages SAE projects" (MWDS = 6.67, Category = *SAE*), *"*Is self-confident" (MWDS = 6.47, Category = *personal qualities*), and "Is capable of solving problems and handling many different tasks at the same time" (MWDS = 6.25, Category = *instruction*; see Table 2).

Table 2

The Preparedness of Texas Tech University Student Teachers as Perceived by Cooperating Teachers Using the Borich Needs Assessment Model (n = *20*)

Rk.[a]	Teaching Characteristics	Cat.[b]	Imp. Level[c]	Prep. Level[d]	MWDS[e]
1.	Effectively manages finances, grants, and special projects	7	4.74	3.30	6.85
2.	Has a sound SAE knowledge, actively supervises, and encourages SAE projects	8	4.75	3.35	6.67
3.	Is self-confident	1	4.84	3.50	6.47
4.	Is capable of solving problems and handling many different tasks at the same time	6	4.80	3.50	6.25
5.	Effectively manages, maintains, and improves laboratories	7	4.68	3.45	5.87
6.	Puts in extra hours; is dedicated to doing a good job	4	4.75	3.55	5.76
7.	Has a sound knowledge of FFA, actively advises the FFA chapter, and effectively prepares students for CDEs and other FFA activities	5	4.85	3.65	5.68
8.	Establishes and maintains good community relations	2	4.95	3.75	5.67
9.	Effectively recruits new students	3	4.65	3.50	5.47
10.	Effectively manages, operates and evaluates the agricultural program on a continuous basis	7	4.68	3.55	5.43
11.	Takes actions to prevent burnout and to re-energize himself/herself	4	4.80	3.70	5.25
12.	Is enthusiastic	1	4.95	3.85	5.24
13.	Is motivated	1	5.00	3.90	5.23
14.	Enjoys teaching and exhibits a positive attitude towards the teaching profession	4	4.82	3.75	5.22
15.	Is well organized; has excellent time management skills	1	4.90	3.90	4.75
16.	Works well with alumni and advisory groups	2	3.90	3.90	4.73
17.	Works well with parents	2	4.90	3.95	4.53
18.	Effectively determines students' needs	6	4.50	3.60	4.30

19.	Is resourceful	1	4.85	3.95	4.29
20.	Maintains an effective public relations program	3	4.80	3.90	4.24
21.	Displays a positive/professional image	4	4.90	4.05	4.08
22.	Improves professionally by seeking opportunities for continued learning	4	4.75	4.00	3.58
23.	Works well with other teachers and administrators in his/her school	3	4.80	4.10	3.33
24.	Is innovative; uses technology in the classroom; adapts well to change	6	4.30	3.65	3.17
25.	Is open-minded	1	4.80	4.15	3.15
26.	Uses a variety of teaching techniques	6	4.35	3.75	2.92
27.	Incorporates science and other areas of the school curriculum into the agricultural program	6	4.10	3.50	2.91
28.	Cares for students	1	4.90	4.45	2.13
29.	Has excellent knowledge of the subject matter	6	4.20	3.80	2.03
30.	Has an understanding and supportive spouse/family	1	4.80	4.40	1.98
31.	Is honest, moral, and ethical	1	5.00	4.15	1.86
32.	Is knowledgeable of teaching and learning theory	6	3.95	3.70	1.25

Note. [a]Rk. = Rank; [b]Cat. = effective teacher categories, Categories (1 = *personal qualities*; 2 = *community relations*; 3 = *marketing*; 4 = *professionalism/professional growth*; 5 = *FFA*; 6 = *instruction*; 7 = *program planning*; 8 = *SAE*); Importance scale (Real Limits): 1 = *Not Important* (RL = 0-1.5), 2 = *Of little importance* (RL = 1.5-2.5), 3 = *Somewhat Important* (RL = 2.5-3.5), 4 = *Important* (RL = 3.5-4.5), 5 = *Very Important* (RL = 4.5-5.5); Preparedness scale (Real Limits): 1 = *Not Prepared* (RL = 0-1.5), 2 = *Poorly Prepared* (RL = 1.5-2.5), 3 = *Somewhat prepared* (RL = 2.5-3.5), 4 = *Prepared* (RL = 3.5-4.5), 5 = *Very Prepared* (RL = 4.5-5.5); [e]MWDS = Mean Weighted Discrepancy Score.

The characteristics with the nine lowest MWDS were from the categories of *instruction* and *personal qualities*. These lowest-ranking characteristics included: "Is knowledgeable of teaching and learning theory" (MWDS = 1.25, Category = *instruction*), "Is honest, moral, and ethical" (MWDS = 1.86, Category = *personal qualities*), "Has an understanding and supportive spouse/family" (MWDS = 1.98, Category = *personal qualities*), "Has excellent knowledge of the subject matter" (MWDS = 2.03, Category = *instruction*), and "Cares for students" (MWDS = 2.13, Category = *personal qualities*). While these characteristics constituted the lowest areas of concern, a discrepancy was reported for all 32 characteristics of effective agricultural teachers.

The final section of the instrument provided cooperating teachers with an opportunity to identify additional characteristics required for effective agricultural teachers. Five common trends were identified by the cooperating teachers (see Table 3).

Table 3

*Additional Identified Characteristics (*n = *20)*

General Comments	*f*
FFA	10
SAE	6
Program Planning	4
Professionalism	4
Instruction	4

The cooperating teachers' most common response pertained to aspects of FFA (f = 10). This section included characteristics relating to Leadership Development Events (LDE), Career Development Events (CDE), scholarship applications, and proficiency award applications. The second trend, SAE, received six comments on the preparation level of student teachers. Comments included a need for a, "deeper understanding of SAE", "understanding of livestock projects", and "understand the structure, political nature, and focus of SAE involvement". Program planning, Professionalism, and Instruction each received an equal number of comments (f = 4). The comments received for program planning were in regard to "proper planning of chapter functions, program of activities, monthly meetings and fundraising", "plan and develop a long-term vision for what a program should look like", "purchase order systems, travel forms, and handling money and budgets", and "study school finance and how to balance budgets and how to use activity funds in appropriate ways". Professionalism comments discussed the choice of clothing of student teachers, dedication to the job outside of a 40-hour work week, and the rapport with school administration and students (f = 4). The last grouping of comments related to instruction (f = 4). Specially, cooperating teachers felt that student teachers needed a stronger content knowledge in areas of woodworking, welding, general agricultural shop lessons, floral design, classroom management, and working with students with special needs.

Conclusions, Implications, and Recommendations

The purpose of this study was to assess the Texas Tech University Agricultural Education Program, by evaluating cooperating teachers' perceptions of the preparedness of Texas Tech University student teachers. Gauging the preparedness of student teachers will allow teacher educators at Texas Tech University to assess the augmentations made to the teacher education curriculum. Based on Cruickshank's (1984) model of preservice teacher education, the cooperating teachers play an integral role in the teacher preparation process, and constitute an explanatory variable for the graduates' abilities (outcome variable).

Objective 1

The cooperating teachers showed strong agreement with the importance of the characteristics of effective teaching for student teachers. Characteristics belonging to the *Public Relations* category were collectively ranked highest on importance among other categories. This may imply that the ability to garner support within the community is essential to secondary agricultural programs. This notion is supported by Roberts et al. (2007) assertion that "maintaining effective school and *community relations* is a proficiency requisite of successful agricultural science teachers" (p. 10). The remaining categories were identified as being either important or very important, confirming the perpetual relevance of Roberts and Dyer's (2004) characteristics of effective agricultural teachers. Moreover, the cooperating teachers' indication of importance for items belonging to the *instruction* category adds credence to Roberts et al.'s (2007) indication that "successful agricultural science teachers are competent in instructional knowledge, instructional skills, and instructional attributes" (p. 10).

The cooperating teachers perceived the student teachers to be *somewhat prepared* on the 32 characteristics of effective agriculture teachers, with the top four-ranked characteristics belonging to the *personal qualities* category. The cooperating teachers' assessments of preparedness might suggest the pre-service teachers have been adequately prepared for student teaching and subsequent teaching jobs in the profession. Granted, some characteristics (e.g., effectively manages finances, grants, and special projects and effectively recruits new students) received mediocre assessments of preparedness. These areas of lower perceived preparedness

coincide with previous findings. For example, Touchstone (2015) reported program funding and recruiting students were program areas of concern for beginning teachers in Idaho.

It is implied the above-mentioned skills are best developed at field placement sites. Although none of the characteristics were rated below the somewhat prepared threshold, an effort should be made by Texas Tech University faculty and cooperating teachers to create structured opportunities for student teachers to develop these skills. The extended field placement added to the curriculum needs to be more purposeful in developing skills outside of regular classroom interactions.

Objective 2

The second objective sought to analyze cooperating teachers' perceptions of student teacher's level of preparedness in conjunction to importance of characteristics of effective agricultural teachers. The largest reported discrepancies between the cooperating teachers' perceived importance of the characteristics and perceived preparedness of student teachers were within the categories of *program planning/management* (e.g., Effectively manages finances, grants, and special projects, MWDS = 6.85), *SAE* (e.g., Has a sound SAE knowledge, actively supervises, and encourages SAE projects, MWDS = 6.67), and *personal qualities* (e.g., Is self-confident, MWDS = 6.47).

With an exception of one characteristic, "is capable of solving problems and handling many different tasks at the same time" (MWDS = 6.25), the items belonging to the *instruction* category were among the characteristics with the lowest MWDS. Torres and Ulmer (2007) found that pre-service teachers involved in their student teaching experience spend a majority of their time "planning for instruction, teaching, and teaching-related activities" (p. 10). Edwards and Briers (2001) further indicated instruction is perceived to be the most important aspect of the student teaching experience. It is implied the additional methodology courses added to the teacher preparation curriculum have provided an adequate foundation for the pre-service teachers' development in classroom and laboratory instruction. This finding provides support for Ballantyne's (2006) proclamation that pedagogical content knowledge prepares pre-service teachers for their future roles.

The importance commonly placed on the area of instruction prompts the question: are the pre-service teachers' deficiencies in areas such as *SAE* and *program planning/management* due to the heightened focus on classroom and laboratory teaching? If so, what augmentations can be made to the student teacher program at Texas Tech University to ensure pre-service teachers encounter experiences in these areas? Moreover, what additional materials should be included in Texas Tech University pre-service courses to supplement the teachers' preparedness?

The findings of this study related to the needs of agricultural science teachers are not anomalies and are similar to the training needs identified in past studies (Duncan, Ricketts, Peake, & Uesseler, 2006; Edwards & Briers, 1999; Garton & Chung, 1997; Joerger, 2002; Sorensen, Lambert, & McKim, 2014). Equivalent to the cooperating teachers' notion of the need for SAE training, former studies reported the need for training on managing record books (Sorensen et al., 2014) and developing SAE opportunities for students (Duncan et al., 2006; Garton & Chung, 1997). Germane to deficiencies in *program planning/management*, previous studies reported training needs pertaining to the acquisition of funding (Sorensen et al., 2014), public relations (Duncan et al., 2006; Edwards & Briers, 1999), and the development of advisory committees (Joerger, 2002).

Regardless of the commonality of the above-mentioned training needs amongst pre-service agricultural science teachers, the faculty of Texas Tech University need to evaluate viable options for supplementing pre-service teachers' knowledge of SAE programs. Several paths can be taken to bolster pre-service teachers' competence in these areas, such as modifying existing curriculum to draw focus on these aspects, or add more structure within the extended field placements and student teaching semester to assist in the development of these characteristics.

Objective 3

The additional comments provided by the cooperating teachers indicated that student teachers' needed more training on various aspects related to FFA, SAE, program planning, professionalism, and instruction. Among the comments provided by the cooperating teachers, comments pertaining to aspects of FFA (e.g., LDE, CDE, and scholarship applications) were most abundant. The indication of training needs in this area align with needs reported in prior research. Specifically, training CDE teams (Duncan et al., 2006; Sorensen et al., 2014), preparing FFA degree and proficiency award applications (Duncan et al., 2006; Edwards & Briers, 1999; Garton & Chung, 1997; Sorensen et al., 2014), and using advisory committees to promote FFA programs (Joerger, 2002) were reported as FFA affiliated training needs of agricultural science teachers. The indication of FFA training needs is a cause for concern for the Texas Tech University Agricultural Education Program, due to the recent merger of the SAE and FFA courses. The teacher educators at Texas Tech University should consider if a stand-alone FFA course is necessary to address the training needs.

As a part of the Texas Tech University agricultural education curriculum reformation, student teaching placements only occur within the spring semester. Although, student teaching experiences within this semester incorporate important aspects (e.g., livestock shows, career development events, fundraisers) of teaching agriculture, some aspects (e.g., Leadership Development Events) of the total agricultural education program are only conducted in the Fall. In fact, some of the additional comments provided by the cooperating teachers pertained to Fall specific events. It is important that the Texas Tech University teacher educators consider these areas of deficit and develop strategies to supplement the student teachers' knowledge on fall-specific events and experiences.

Limitations

This study was limited by the number of graduates within the Interdisciplinary Agriculture with Teacher Certification program at Texas Tech University. The relatively small number of graduates restricted the number of cooperating teachers capable of providing feedback on the preparedness of Texas Tech University student teachers. Additionally, student teachers from the two graduating classes were placed within the same school districts, minimizing the sample size. A purposive sampling method was used because of the small sample size. The findings are limited to the teacher preparation program at Texas Tech University and care should be taken when attempting to generalize the findings beyond the Department.

Recommendations for Practice

The results of the study reflect some need to adjust the curriculum within the Texas Tech University Department of Agricultural Education and Communications. These adjustments should be made to the curriculum to better prepare graduates. The cooperating teachers reported the student teachers needed more preparation in Program Planning/Management, SAE, and FFA. Additionally, field placements need to be more structured with specific outlined goals for pre-service teachers to

gain skills which cannot be taught within a university setting. The cooperating teachers need support in providing these specific outlined goals. Moreover, it is essential to provide additional education for cooperating teachers regarding the goals and expectations of the program. An open dialogue between the teacher educators at Texas Tech University and cooperating teachers will assist the teacher educators to understand the parameters of a given placement, and will allow the cooperating teachers to understand the vision of the Texas Tech University teacher preparation program. During these discussions, teacher educators should express the need for student teachers to participate in a variety of experiences (e.g., SAE programs and FFA activities) outside of classroom instruction. Immersing pre-service teachers in activities such as coordinating travel, balancing the departmental budget, engaging in husbandry practices, or conducting FFA degree checks will provide them with a holistic and authentic learning experience—expanding the student teaching experience beyond classroom and laboratory instruction.

Recommendations for Research

Roberts et al. (2007) recommended reevaluating the list of characteristics to appraise if the diversification of students enrolling within secondary agricultural education programs will alter identified characteristics. Therefore, the characteristics needed by effective agricultural science teacher at Texas Tech University should be re-evaluated over time. The replications of this evaluation will allow Texas Tech University teacher educators to evaluate differences in needs based on the diversifications of the students enrolled in the teacher preparation program.

Based on the general system theory, change is an innate part of a system and requires periodic assessments to evaluate the current state of the program. In essence, this program evaluation should be viewed as a formative assessment and future program evaluations of the agricultural education teacher preparation program at Texas Tech University should include a holistic assessment of all program components (e.g., curriculum, field-based experiences, or pre-service students) and environmental influences. Along with the assessment of new pre-service teachers who enter the program, program evaluations in the future should re-evaluate the preparedness of the student teachers assessed in this study. According to Cruickshank (1984) "the benefits of the program for graduates can be short or long-term" (p. 46). Short-term benefits might include the skills, attitudes and knowledge of the graduates; long-term benefits could provide insight on the programs' effects on "graduates' abilities to bring about pupil learning and satisfaction" (Cruickshank, 1984, p. 46). Therefore, subsequent assessments should be conducted on the long-term benefits of the program, and curriculum modifications.

The focus of this study was to evaluate the curriculum changes made in the Texas Tech University Department of Agricultural Education and Communications and determine the areas of teacher preparation training needs as perceived by cooperating teachers. Although Texas Tech University teacher educators have a strong influence on the learning experiences of the pre-service teachers, the cooperating teachers constitute an intricate piece of the pre-service educational process (Jones et al., 2014). Ultimately cooperating teachers have a strong influence on the student teachers and how the student teaching experience is carried out. Therefore, research is needed to determine how cooperating teacher decide what experiences student teacher are involved in and which experiences they don't get to encounter.

It is also important to consider other explanatory variables (i.e., teacher educators, teacher education students, context of teacher education and instruction and organization for instruction) included in the Model to Guide Inquiry in Preservice Teacher Education (Cruickshank, 1984), when assessing the short and long-term impacts of the Texas Tech University teacher preparation program. Examining other explanatory variables in Cruickshank's model will provide a holistic

perspective of the impacts the curriculum modifications. Another concern revolves around the genesis and development of *personal qualities*. Roberts and Dyer (2004) questioned whether these qualities could be developed through teacher preparation curriculum, or are they prerequisites for teacher preparation program admission. To further investigate this quandary, a longitudinal study, which assesses pre-service teachers' *personal qualities*, should be conducted on pre-service teachers over a four-year period.

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