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Abstract

The purpose of this descriptive study was to determine, as witnessed by cooperating teachers, what learning gaps student teachers brought to the student teaching experience “Supervision of student teachers during student teaching is a very important exercise in teacher training” (Thobega & Miller, 2008, p. 65)..Cooperating teachers spend 10 plus weeks observing student teachers of agricultural education in [state]. One may argue that the cooperating teacher is the best judge of success when looking at the student teacher. Cooperating teachers believed using computers and multimedia in classroom teaching was a strength student teachers possessed. The cooperating teachers felt that the major weaknesses included conducting parent-teacher conferences and adult programs. The findings of this study also indicate that the pre-service teachers need additional preparation in developing teaching skills in managing student behavior problems, motivating students to learn, teaching students to think critically and creatively, and conducting parent-teacher conferences.

Introduction

Arguably, the most important component of a teacher education program in career, technical, and agricultural education (CTAE) is the student teaching experience. “Researchers have argued that the student teaching ‘experience’ plays a significant role in the formation of attitudes and perceptions of preservice teachers regarding their roles and responsibilities as future practitioners” (Harlin, Edwards, & Briers, 2002, p. 72). “Supervision of student teachers during student teaching is a very important exercise in teacher training” (Thobega & Miller, 2008, p. 65). Edwards and Briers (2001) asked the following question: “Is there a more important component of the preservice professional development of the aspiring agriculture teacher than the student teaching experience?” (p. 30).

A number of studies in recent years have focused on the student teaching experience from multiple perspectives; that of the student teacher, the cooperating teacher, and the university supervisor (Baker & Malle, 1995; Borko & Mayfield, 1995; Edwards & Briers, 2001; Fritz & Miller, 2003; Graham, 2006; Thobega & Miller, 2008; and Veal & Rikard, 1998). Results have concluded that the cooperating teacher plays a major role in the success of the student teaching experience.

There has been a plethora of research and evaluation related to CTAE preparation programs at the university level and in-service needs of new and/or beginning teachers. Dobbins and Camp (2000) indicated a needed understanding in curriculum development, learning styles, technical areas, teaching methods, teaching techniques, and academic integration methods. Joerger’s (2002) categories of professional teaching competencies needed for success and survival were classroom management, leadership and SAE development, technical agriculture, and program design and maintenance. Furthermore, Joerger (2002) recommended that information regarding teacher needs be shared with teacher educators, state staff, and others involved in apprentice and in-service teacher training.

Dormody and Torres (2002) reported that the competency needing the most in-

service preparation for both beginning and tenured teachers was using computer technology in the classroom. Edwards and Briers (1999) and Peiter, Terry, & Cartmell (2003), who specifically studied newer teachers, also believed preparation was needed in computer-assisted instruction and implementing other new technologies. Edwards and Briers (2001) looked at the important elements of the student teaching experience through the eyes of the cooperating teacher. However, no research was found that has looked specifically at the needs of the CTAE student teacher from the perspective of the cooperating teacher.

Identifying learning gaps of student teachers can provide information as to how CTAE curriculum should be re-evaluated. However, the body of knowledge thus far has relied upon self-reports of student teachers or “soon to be teachers.” This study calls upon the experience and credibility of a group of professionals (cooperating teachers) who assist with teacher preparation by observing and instructing student teachers from the frontlines of pedagogical preparation.

For better or worse, many states are modifying curriculum, including CTAE, to increase student learning, to help improve high school graduation test scores, and to keep up with the changes in CTAE technology. Elbert and Baggett (2003) felt that the “curriculum has evolved from being agricultural production-based to one that is more applied science and technology-centered” (p. 105). According to *No Child Left Behind* (2004), teachers must be highly qualified to teach in their area. Therefore, changes have continually been made to university offerings in order to prepare upcoming teachers and to determine areas in which in-service training will be needed for current teachers.

CTAE teachers, especially new ones, face a variety of challenges. New teachers are responsible for classroom teaching duties, maintaining a laboratory, and supervising student occupational learning activities, among an array of other duties as assigned by their administrator(s). Many beginning and even some experienced teachers lack skills necessary to be successful in all of these areas. Halford (1998) summed it up best when he said, “Given comparisons to fields such as medicine and law, which recognize the needs of new professionals more fully, some observers have dubbed education as the profession that eats its young” (p. 34). “Indeed, the first three to five years of teaching are crucial in the development of competent and dedicated teachers. Many new teachers never recover from the initial experience of teaching..., consequently they leave the profession” (Peiter, et al., 2003, p. 180). Determining the areas in which student teachers need assistance should allow university personnel to prepare them for the student teaching process and the first years of teaching, thereby increasing the number of teachers that remain in the profession.

Harlin, Edwards, and Briers (2002) explained that “the student teaching ‘experience’ plays a significant role in the formation of attitudes and perceptions of preservice teachers regarding their roles and responsibilities as future practitioners” (p. 72). Many teachers often experience frustrations while teaching; however, these concerns and frustrations may be more intense during student teaching and the first year (Fritz & Miller, 2003). “Some examples of teaching concerns are: being supervised by the cooperating teacher or university supervisor, discipline problems, subject matter knowledge, and the learning process of students...” (Fritz & Miller, 2003, p. 49).

Baker and Malle (1995) stated that “Cooperating teacher evaluations of students provide meaningful information that is helpful in holistically evaluating student teachers”

(p. 51-52). Cooperating teachers work with the student teachers on a daily basis, give them advice through formal and informal conferences, assist them in honing their pedagogical skills, and serve as a role model (Borko & Mayfield, 1995). According to Thobega & Miller, (2008), “Cooperating teachers values, perceptions, and practices related to student teaching are important to student teacher supervision” (p. 66). Therefore, this study sought to determine the perceptions of cooperating teachers about agricultural student teachers’ abilities.

Theoretical Framework

The theoretical framework for this study is based on the theory espoused by Baker and Trussell (1981) as cited in Findlay (1992, p. 28) that the gap between theory and practice could be eliminated by reducing theory to what was needed to perfect the practice (teaching). The prospective teacher would then be trained (prepared) to reach competence in each of the tasks in order to cope with whatever situation may be encountered in the school.

An effective means of bridging the gap between theory and practice in teacher education programs is identifying professional development needs of CTAE educators through the application of a descriptive survey. For the purpose of the study, the authors chose the Borich Needs Assessment Model (Garton & Chung, 1996; Joerger, 2002; Layfield & Dobbins, 2002; Ricketts, Duncan, & Peake, 2006). Borich (1980) described a training need as a “discrepancy between an educational goal and trainee performance” (p. 1), and proposed that through discrepancy analysis, educational programs could be evaluated and training needs prioritized from a list of valid program competencies. Implementation of the model requires subjects of the educational program to review and rate the compiled competency statements according to relevance/importance and level of attainment. Evaluation of the data collected involves “determining *what should be* and *what is*, i.e., between what the teacher should be able to do and what the teacher can do” (Borich, 1980, p. 4).

An instrument based on the Borich model allows researchers to collect and analyze data representing teachers’ “perceived level of importance” and “perceived level of competence” of professional competencies that have been identified through research. The evaluation of this data can help to prioritize training needs of those completing the instrument and, in the case of collecting data from professionals in a given field, may serve to identify topics of most importance to that profession.

Researchers (Garton & Chung, 1997; Edwards & Briers, 1999; Joerger, 2002; and Duncan et al., 2005) have used different approaches to analyze data collected from instruments based on the Borich Needs Assessment Model using mean weighted discrepancy score (MWDS) rankings, as well as quadrant analysis to evaluate the data. They determined that an instrument based on the Borich model using MWDS rankings to be the best model for achieving the purpose of this study – identifying the educational needs of [State] apprentice teachers as observed by cooperating teachers.

Many new teachers have difficulty implementing activities required to teach students and help them learn. Motivating students to learn can be a difficult task and was found to be an area in which beginning teachers need training (Garton & Chung, 1996; Garton & Chung, 1997; Joerger, 2002; Mundt & Conners, 1999; Duncan, Ricketts, Peake, & Uessler, 2005; Kitchel, Cannon, & Duncan, 2010). Peiter et al. (2003)

determined that although additional assistance was needed, 23.8% of beginning teachers in the study had no one to assist them with motivating students. Studies have also indicated that student teachers express concerns about managing student behavior (Joerger, 2002; Mundt & Conners, 1999; Garton & Chung, 1996, Duncan, et al., 2005; Fritz and Miller, 2003). Getting students to think critically and creatively can be a challenge to teachers old and new. Duncan, et al. (2005) found that in that area, teachers need additional training as well. Teaching content using experiments is another area in which agriculture teachers have espoused needing assistance (Garton & Chung, 1997).

Elbert and Baggett (2003) and Duncan, et al. (2005) found that most agriculture teachers are not prepared to work with special needs populations, a major concern since “special needs students were found in an increasingly higher proportion in agricultural education courses” (Elbert & Baggett, p. 105).

Roberts and Dyer (2002) determined that it is essential for effective teachers to be able to determine student needs. Dormody and Torres (2002) determined that new teachers need training in comprehending how students learn, understanding how demographics affect various techniques used to meet student needs, and how to involve exceptional students in the instruction process.

Developing local adult education programs was one of the top five in-service needs of beginning and advanced agriculture teachers in South Carolina (Layfield and Dobbins, 2002). Joint State Staff in the study conducted by Garton and Chung (1996) felt that beginning teachers needed additional training in conducting adult programs, but the beginning teachers who were surveyed did not feel that they were in great need of development in that area.

The authors of this manuscript postulate that student teachers don't realize the importance of planning for a successful CTAE program; understand the educational needs of gifted and special needs students; conceptualize the long-term effects of successful FFA and SAE Programs; and identify and comprehend the educational needs of adult learners. The authors also postulate that “what should be” good teaching in CTAE is framed around the following areas of instruction and program management: understanding the needs of students, working with diverse populations, motivating students to learn and think critically, and successful classroom management. A further need for this study is based on the fact that previous research findings were based on self-reported results. Cooperating teachers' perceptions of student teachers' pedagogical competence is the foundation of this study because the cooperating teachers in this study have had many years of both classroom and student teacher mentoring experience. Therefore, the authors argue that this group of teachers is well suited to identify student teacher deficiencies.

Purpose and Objectives

The purpose of this study was to examine the overall programmatic needs of student agriculture teachers, as observed by cooperating teachers. The following specific objectives guided the study.

1. Identify the areas of pedagogy that cooperating teachers perceived as important to the success of student teachers;
2. Identify the strengths and weaknesses of student teachers' pedagogical skills; and

3. Determine areas of pedagogy which the university agricultural teacher education curriculum should be modified to meet student teacher needs.

Methods and Procedures

This study was conducted using descriptive design, and it incorporated survey research that asked participants to respond *ex post facto* (Campbell & Stanley, 1963) or after the fact. “Survey research studies large and small populations by selecting and studying samples ... to discover the relative incidence, distribution, and interrelations of sociological and psychological variables” (Kerlinger, 1964, p. 410). “Ex post facto...research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable” (p. 379).

The population of this study included all agricultural education cooperating teachers who were on a University of [state] approved list of student teacher sites in a large southern state (N=52). Sampling techniques were not utilized since the total population was used. Of the 52 who were sent surveys, 44 responded, yielding a response rate of 85%.

The average participant was male and had taught for 17 years (Table 1). The teachers had worked with an average of three student teachers during their career and the last time they had a student teacher was 2.12 years ago. The most common ways the cooperating teachers were prepared to teach was through a traditional undergraduate teacher education program, graduate program of one year beyond the bachelor’s degree, or combined undergraduate and graduate program. The average level of education of the cooperating teachers in this study was a master’s degree. The average enrollment of agriculture students at the cooperating teacher’s school was 183 and there were an average of 2.26 agriculture teachers at each of the schools.

Table 1
Demographics of Cooperating Teachers (N=44)

	<i>f</i>	<i>M</i>	<i>SD</i>
Years you have taught agricultural education?	44	17.16	9.04
Number of student teachers hosted?	41	3.27	3.24
Years since your last student teacher?	35	2.13	2.36
How were you prepared to teach? ¹	44	1.05	.21
Highest level of formal education? ²	44	2.39	.81
Estimated unduplicated enrollment	44	183.03	96.37
Number of teachers at your school	44	2.26	1.33

Note. ¹Teacher Preparation- 1 = traditional teacher preparation, 2 = non-traditional teacher preparation; ²Level of Education- 1 = Bachelors Degree, 2 = Masters Degree, 3 = Specialists Degree, 4 = Doctorate Degree

A modified version of the *Agriscience and Technology Educators Needs Assessment* (Duncan et al., 2005) was used to survey the teachers. This instrument was modeled after the Joerger (2002) model and the Garton and Chung (1996/1997)

instruments; both surveys were based on the Borich Needs Assessment Model (Borich, 1980). The items on the instrument were constructed with two Likert-type scales ranging from one to five, with one being not important, and five being very important. The areas surveyed on this instrument were technical agriculture, FFA/ leadership development/ SAE, teaching and learning, and program management. A panel of experts consisting of university faculty, graduate students, regional coordinators of CTAE, and agriculture teachers was used to determine the face and content validity of the instrument. After experts evaluated the instrument, several items were added to reflect agricultural education in [state].

The cooperating teachers took the modified version of the *Agriscience and Technology Educators Needs Assessment* (Duncan, et al., 2005). The surveys were mailed to the cooperating teachers in June (number of respondents = 27). A personal contact was made with the non-respondents at the [state] Summer Teachers Conference (number of respondents = 14). Next, a follow-up letter was sent in August, and another letter and survey mailed to the non-respondents in September (number of respondents = 3). Finally, an e-mail was sent to the non-respondents in October (number of respondents = 0). Of the 52 cooperating teachers that were sent surveys, 44 responded yielding a response rate of 85%.

Collected data was entered into Excel and SPSS 12.0TM. Cronbach's alpha was calculated to determine the reliability of importance ($\alpha=.87$) and competence ($\alpha=.90$) scales for the teaching and learning construct. The importance and competence scores were calculated by averaging the responses of the cooperating teachers for each competency. The importance and competence scores were then used to calculate the areas of deficiency for the students teachers by calculating a mean weighted discrepancy score (MWDS) for each item. The MWDS score was calculated by subtracting the competency score from the importance score and by multiplying that number times the mean importance rating for each competency (Borich, 1980; Joerger, 2002).

Findings

Areas of Pedagogy that Cooperating Teachers Perceived as Important

The top five most important competencies, according to cooperating teachers were motivating students to learn, managing student behavior problems, organizing and supervising teaching laboratories, teaching students to think critically and creatively, and teaching problem-solving and decision-making skills. The least important areas as determined by the cooperating teachers were conducting an adult program and developing performance-based assessment instruments (Table 2).

Table 2
Importance Level of Teaching and Learning Areas

	f^1	M^2	SD^3
Motivating students to learn	42	4.86	.35
Managing student behavior problems	42	4.83	.38
Organizing and supervising teaching laboratories	42	4.74	.45
Teaching students to think critically and creatively	42	4.74	.45
Teaching students problem-solving and decision-making skills	41	4.71	.56

Using computers in classroom teaching	43	4.62	.58
Using multimedia equipment in teaching	43	4.60	.62
Teaching learning disabled students	42	4.50	.63
Assessing and evaluating student performance	42	4.31	.72
Conducting parent-teacher conference	42	4.26	.73
Teaching using experiments	42	4.24	.79
Planning and conducting student field trips	42	4.17	.79
Developing performance-based assessment instruments	42	4.12	.89
Conducting an adult program	42	3.43	1.06

Note. ¹Number of respondents; ²Mean score from 1 to 5 scale with 1 being not important; 5 being very important; ³Standard deviation

Areas of Pedagogical Strength and Weaknesses of Student Teachers

The top five competence areas in teaching and learning were using computers in the classroom, using multimedia equipment in teaching, assessing and evaluating student performance, organizing and supervising teaching laboratories, and teaching problem-solving and decision-making skills. The lowest competencies were conducting parent-teacher conferences, conducting an adult program, and managing student behavior problems (Table 3).

Table 3

Student Teacher Competence Level of Teaching and Learning Areas

	<i>f</i> ¹	<i>M</i> ²	<i>SD</i> ³
Using computers in classroom teaching	37	4.32	.63
Using multimedia equipment in teaching	37	3.92	.80
Assessing and evaluating student performance	36	3.58	.87
Organizing and supervising teaching laboratories	36	3.56	.77
Teaching students problem-solving and decision-making skills	35	3.37	.69
Developing performance-based assessment instruments	37	3.35	1.01
Teaching using experiments	35	3.34	.91
Motivating students to learn	36	3.22	.99
Teaching students to think critically and creatively	37	3.22	.85
Teaching learning disabled students	36	3.19	.89
Planning and conducting student field trips	35	3.14	.97
Managing student behavior problems	37	2.92	.76
Conducting an adult program	36	2.75	1.05
Conducting parent-teacher conference	35	2.71	.96

Note. ¹Number of respondents; ²Mean score from 1 to 5 scale with 1 being not competent; 5 being very competent; ³Standard deviation

Areas of Pedagogical Need

The mean weighted discrepancy score (MWDS) determines the need of additional training for the student teacher using the cooperating teachers' perceived importance and the student teachers' competence in each area.

Training was found to be recommended in the following areas of teaching and learning as determined by the MWDS: managing student behavior problems, motivating students to learn, teaching students to think critically and creatively, conducting parent-teacher conferences, and teaching students problem-solving and decision-making skills (Table 4).

Table 4
Teaching and Learning Needs of Student Teachers

	MWDS ¹
Managing student behavior problems	9.26
Motivating students to learn	7.91
Teaching students to think critically and creatively	7.37
Conducting parent-teacher conference	6.77
Teaching students problem-solving and decision-making skills	6.51
Teaching learning disabled students	5.91
Organizing and supervising teaching laboratories	5.55
Planning and conducting student field trips	4.17
Teaching using experiments	3.99
Developing performance-based assessment instruments	3.66
Assessing and evaluating student performance	3.32
Using multimedia equipment in teaching	3.07
Conducting an adult program	2.45
Using computers in classroom teaching	1.54

Note. ¹Mean Weighted Discrepancy Score

Conclusions

Cooperating teachers felt that motivating students to learn and managing student behavior problems was of greatest importance. This finding supports the work of Garton and Chung (1996; 1997) and Mundt and Connors (1999) who found that new teachers also thought this was an important skill that needed to be developed. Edwards and Briers (2001) found similar results when looking at cooperating teachers' perceptions of the important elements of the student teaching experience. Having a discipline management plan used in a structured environment was the second highest element in the study by Edwards and Briers (2001).

The next highest area of teaching and learning, as determined by the [state] cooperating agriculture teachers, is organizing and supervising teaching laboratories. Maintaining safe, workable laboratories was also ranked high in importance by new teachers in studies by Garton and Chung (1996) and Mundt and Connors (1999).

After they had determined the level of importance in the different areas of agriculture surveyed, the cooperating teachers rated the ability, or competence, that the student teachers demonstrated. The area in which student teachers had the most knowledge was using computers in classroom teaching. This finding contradicted the research of Dormody and Torres (2002) and Garton and Chung (1997) but was supported by the study conducted by Joerger (2002). The next highest competency area for [state] student teachers as perceived by the cooperating teachers was using multimedia equipment in teaching.

An additional strength of the student teachers as identified by the cooperating teachers was assessing and evaluating student performance. Joerger (2002) and Garton and Chung (1997) found that the teachers they surveyed thought that they were somewhat competent in evaluating student performance as well, but Dormody and Torres (2002) found that at graduation, teachers felt inadequate in evaluating students.

The next area of teaching and learning in which cooperating teachers felt that student teachers were competent was organizing and supervising teaching laboratories, which was also supported by Joerger (2002). The next highest competency level was teaching problem-solving and decision-making skills.

The lowest competencies area for student teachers in [state] was conducting parent-teacher conferences; however, this was not an area of weakness for the beginning teachers in the aforementioned studies. According to the cooperating teachers, the second lowest competency area for the student teachers was conducting an adult program; these findings were supported by Joerger (2002) and Garton and Chung (1996) in which the teachers rated themselves as having little competence in the area. Since they have to be experienced, the weak areas should be incorporated into the student teaching experience and addressed in university courses and in the form of in-service training.

The mean weighted discrepancy score (MWDS) was used to determine the need of additional training for the student teacher using the cooperating teachers' perceived importance and the student teachers' competence of each area.

Training is recommended in the following areas of teaching and learning after looking at the MWDS: managing student behavior problems, motivating students to learn, teaching students to think critically and creatively, conducting parent-teacher conferences, and teaching students problem-solving and decision-making skills. Some agricultural education researchers (Layfield & Dobbins, 2002; Garton & Chung, 1997) have indicated that managing student behavior problems is not of major concern, but this study suggests as do others (Joerger, 2002; Duncan et al., 2005) that it is an area that should be addressed by the student teaching program and/or through professional development.

Dealing with student behavior, motivation, and critical thinking methodologies should be infused in all agricultural education courses at the University of [state]. Helping student teachers conduct parent-teacher conferences may be discussed in the curriculum, but student teaching may still be the first realistic place to practice this competency.

Recommendations

Cooperating teachers work with student teachers on a daily basis, give them advice, help them learn about the teaching process, and serve as a role model; therefore, this study sought the knowledge and wisdom that the cooperating teachers held about the student teachers' abilities. The cooperating teachers did not always rate the student teachers in ways that agreed with previous research, perhaps because either the cooperating teachers rated the student teachers on feelings rather than fact, or when teachers rated their own ability (as in many of the other studies), they tended to rank themselves higher in competency than someone else would rank them.

A CTAE student teacher preparation program may never be able to address all of the areas needed for student teachers in agricultural education, but it stands to reason that

it dedicate a considerable amount of time on issues that cooperating teachers (the most well-educated and successful teachers) feel are important.

The University of [State] teacher preparation program has initiated “for teachers” courses to improve the teacher education program. This concept involves developing content courses that are coupled with pedagogical competencies such as motivating students to learn, managing behavior, and teaching for critical thinking. Course titles at this time include *Horticulture for Teachers*, *Agriscience for Teachers*, *Technology for Teachers*, *Forestry for Teachers*, *Marine Science for Teachers*, and *Agricultural Mechanics for Teachers*. A primary recommendation that this particular study might offer is determining the pedagogical impact of these courses that are required of the student teachers.

In addition to the above recommendation, curriculum specialists in CTAE should also consider offering experiential opportunities in the areas of weakness identified by cooperating teachers (conducting parent-teacher conferences or conducting an adult education course). These opportunities could be infused into current teacher preparation courses. In fact, teaching appropriate student behavior, motivation, and critical thinking should be infused in all agricultural education courses. Students’ teaching efficacy in each of these areas should be determined as a result of each different agricultural education course and as a result of student teaching. Additional recommendations for further research include asking student teachers to rank their in-service needs to determine if their views are similar to the rankings of the cooperating teachers. Specifically, future research should survey program completers/beginning teachers who have completed agricultural education courses to determine their’ perceptions of the learning deficiencies in the curriculum.

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