Teacher Preparation and In-Service Needs Associated With Management of the Total Program of Agricultural Education in Georgia

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Abstract

The purpose of this descriptive census study was to survey agriculture teachers (N = 348) in Georgia to determine perceived level of importance, competence, and pre-service/in-service training needs for a set of non-instructional, agriculture teacher competencies, specifically associated with duties related to managing the "total program" of agricultural education. Sixty one percent of the teachers (n = 212) completed a modified version of Joerger's (2002) Minnesota Beginning Agricultural Education Teacher In-service Programming Needs Assessment instrument, which was based on Borich's (1980) Needs Assessment Model. Mean and Standard Deviation were calculated to indicate teachers' perceived level of importance and competence for each professional competency, while Mean Weighted Discrepancy Scores were calculated to represent in-service and pre-service needs. Teachers considered all of the non-instructional competencies needed for managing the total program of agricultural education important. They also considered themselves at least somewhat competent in each of the competencies. According to the Georgia agriculture teachers in this study, the most important training need for either pre-service teacher education or professional development was advising students about post-secondary education in agriculture. Other highly rated pre-service/in-service training needs included preparing FFA proficiency award applications and FFA degree applications, developing an effective public relations program, and developing Supervised Agricultural Experience (SAE) opportunities for students.

Introduction

Improving university agricultural teacher education curricula and statewide continuing education programs calls for a thorough needs assessment of current practitioners of the "agriculture teaching" trade. As students, teachers, schools, curricula, legislation, and times change, providers of teacher education training must also re-evaluate the content they distribute to pre-service and in-service agriculture teachers. In fact, the Committee on Agricultural Education in Secondary Schools Board on Agriculture of the National Research Council (1988) stated, "Teacher preparation and in-service education programs must be revised and expanded to develop more competent teachers, … in and about agriculture" (p. 7). Determining what and how to revise and expand for teacher preparation and in-service education is the challenge. Fortunately, some researchers (Dormody & Torres, 2000; Layfield & Dobbins, 2002; Garton & Chung, 1996, 1997) have been successful at determining teacher preparation and in-service needs in their respective states. These researchers recommended that other states replicate the pre-service and in-service needs studies to determine the specific needs of agriculture teachers.

Researchers have investigated a cadre of constructs related to pre-service and in-service needs of agriculture teachers. Dobbins and Camp (2000) indicated a needed understanding in curriculum development, learning styles, technical areas, teaching methods, teaching techniques, and academic integration methods. Edwards and Briers (1999) evaluated the competencies of facilitating student learning in classroom and laboratory settings, facilitating student learning in leadership and personal growth, facilitating student learning in student agricultural experiences, and facilitating teacher competencies related to student services, program management, personal roles and relationships, and planning and managing educational tools. 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. Roberts and Dyer (2002) conducted a Delphi study of agricultural education experts to determine the characteristics of an effective agriculture teacher. The Roberts and Dyer study categorized effective teaching characteristics into instruction, FFA, SAE, community relations, marketing, professionalism/professional growth, program planning/management, and personal qualities. To date, most studies have attempted to describe all of the necessary teaching competencies for teachers of agriculture. This study evaluated pre-service and in-service needs of teachers associated with the non-instructional planning and management of the total program of agricultural education.

Conceptual Framework

There is more to teaching agriculture than content and pedagogical process. According to espoused theories of other agricultural education researchers (Edwards & Briers, 1999; Garton & Chung, 1996; Greiman, Walker, & Birkenholz, 2002; Joerger, 2002; Layfield & Dobbins, 2002; Mundt & Connors, 1999; Peiter, Terry, & Cartmell, 2003; Roberts & Dyer, 2002) interested in pre-service and in-service needs of secondary

agriculture teachers, teaching competency need areas may include (a) planning and managing the FFA program, (b) preparing students for participation in leadership and career development events (CDEs), (c) preparing FFA degree applications, (d) preparing proficiency awards, (e) completing other reports, (f) developing an effective public relations program, (g) managing an advisory committee, (h) managing an adult program, (i) developing and updating curricula, (j) organizing fundraising activities, (k) managing students' SAEs, (l) and building support for the agricultural education program. The framework for this study specifically draws on the work of Borich (1980), Garton and Chung (1996, 1997), and Joerger (2002).

This study surveyed agriculture teachers in the state of Georgia to determine perceived level of importance, competence, and pre-service/in-service training needs for a set of agriculture teacher competencies, specifically associated with the above duties related to managing the "total program" of agricultural education. Ensuing paragraphs detail the findings of other researchers seeking to provide more effective pre-service and in-service training for agriculture teachers.

Teachers receive little program management assistance in many areas related to agricultural education from their respective school districts (Greiman et al., 2002). According to a Delphi study of outstanding teachers, managing the overall activities of the local FFA chapter was the top training need, and thus should be addressed (Mundt & Connors, 1999). Edwards and Briers (1999), Joerger (2002), and Peiter et al. (2003) found that planning and managing the work of an FFA program is a major in-service need.

Preparing students for participation in Career Development Events (CDEs) is another area for which teachers perceive they need more training. From organizing and planning for FFA officer elections to training for the next floriculture event, researchers have (Edwards & Briers, 1999; Peiter et al., 2003) reported that preparing students for participation in CDEs was a major in-service need. The effective teacher Delphi of Roberts and Dyer (2002) concurred; they believed that the ability to prepare students to be successful in CDEs was crucial.

Preparing FFA degree applications has been reported to be a highly rated in-service need of beginning teachers (Garton & Chung, 1996; Layfield & Dobbins, 2002; Peiter et al., 2003). Additionally, preparing FFA proficiency awards was reported as a need area and major concern for beginning teachers in Missouri (Garton & Chung, 1996), Minnesota (Joerger, 2002), South Carolina (Layfield & Dobbins, 2002), and Oklahoma (Peiter et al., 2003). However, when teachers of all experience levels were evaluated, the findings varied (Washburn, King, Garton, & Harbstreit, 2001). Washburn, et al. found that preparing degree applications and proficiency awards was ranked 1st in Kansas, but 22nd in Missouri as a training need.

FFA degree applications and proficiency awards are not the only forms of paperwork for agriculture teachers. Teachers are inundated with reports in the name of local, state, and federal accountability. Completing reports was the highest rated in-

service need of beginning teachers in Missouri (Garton & Chung, 1996). Garton and Chung (1997) determined completing reports for local and state administrators was the most pressing issue in their study. Layfield and Dobbins (2004) agreed that training related to completing reports for local, state, and federal accountability was needed.

Agriculture teachers also have to promote their total program of agricultural education. Developing an effective public relations program was a highly rated in-service need of both beginning and experienced teachers, according to Garton and Chung (1996) and Layfield and Dobbins (2002). Additionally, state agricultural education staff believed that training to help teachers develop an effective public relations program was an important need (Garton & Chung).

Advisory committees help agriculture teachers plan their program, but teachers rarely receive training in managing those committees. Unlike teachers, state agricultural education staff in Missouri believed training, which taught prospective and future teachers how to utilize a local advisory committee, was also one of the top in-service needs of agricultural education teachers (Garton & Chung, 1996). Still, teachers in other states identified in-service training in advisory committee management as an important need (Joerger, 2002; Layfield & Dobbins, 2002).

In some states, adult education is still an important part of the total program of agricultural education. According to the literature, adult education was another area in which teachers need more training (Findlay & Drake, 1989; Garton & Chung, 1996; Layfield & Dobbins, 2002). State joint staff in Missouri listed management of the adult program as an important in-service need for that state; however, beginning agriculture teachers in Missouri did not rate this as important as the state staff (Garton & Chung, 1996). Researchers (Findlay & Drake, 1989; Layfield & Dobbins, 2002) have reported that agriculture teachers in Alabama, Florida, Georgia, and South Carolina indicated a competency deficiency in managing the adult program.

In their undergraduate teacher preparation program, agriculture teachers received one course, maybe two which addressed developing agricultural education curricula in their undergraduate/graduate program. However, developing and updating curricula continues to be a training need for teachers. Edwards' and Briers' (1999) study found that implementing new curricula is a major in-service need. Peiter et al. (2003) determined that new teachers needed to know how to offer a variety of courses to attract students, and how to modify curricula to meet changes in technology. Washburn et al. (2001) found that teachers of agriculture believe that modifying the curricula to meet changes in technology and to attract and retain quality students were of utmost importance.

Agricultural education faculty and state directors continue to tout the importance of agriculture teachers maintaining a SAE program for all students, but teachers persist in their struggle with this competency. Layfield and Dobbins (2002) determined that beginning teachers perceived that they needed help becoming acquainted with strategies for developing SAE opportunities for students. South Carolina teachers (Layfield & Dobbins, 2002) also felt

they needed in-service assistance with learning how to supervise SAE programs. Peiter et al. (2003) listed selection of SAE projects, supervision of projects, and livestock show procedures as areas where new teachers could use help.

Studies have also indicated that teachers need help developing personal and monetary support for their agricultural education program. Mundt and Connors (1999) and Joerger (2002) indicated that building support from faculty, counselors, and administrators in the school, as well as parents, organizations, and other adult groups in the community, was a major concern needing to be addressed by in-service. According to Peiter et al. (2003), the support-building skill of improving the image of the program was another area where teachers could use help. Additionally, Layfield and Dobbins (2002) and Peiter et al. (2003) discovered that teachers needed help with organizing fundraising activities for the local FFA Chapter.

Purpose and Objectives

The purpose of this descriptive study was to survey agriculture teachers in the state of Georgia to determine perceived level of importance, competence, and pre-service/in-service training needs for a set of non-instructional, agriculture teacher competencies, specifically those associated with duties related to managing the "total program" of agricultural education. Specific objectives of this study were the following:

1. Describe the demographic characteristics of Georgia agriculture teachers.
2. Describe the perceived level of importance Georgia agriculture teachers placed on competencies associated with managing the total program of agricultural education.
3. Describe the perceived level of competence Georgia agriculture teachers had for competencies associated with managing the total program of agricultural education.
4. Describe the perceived pre-service and in-service needs of Georgia agriculture teachers.

Procedures

The population of this descriptive study included the 348 middle school and/or high school agriculture teachers employed during the 2004-2005 school year in the state of Georgia. Surveys were distributed and collected at the Georgia Vocational Agriculture Teachers Conference, regional agriculture teacher meetings, and via an online version of the instrument.

A modified version of the *Minnesota Beginning Agricultural Education Teacher In-service Programming Needs Assessment* (Joerger, 2002) was used to survey the teachers. This instrument was modeled after the 1996/1997 Garton and Chung instrument, which was based on the Borich Needs Assessment Model (Borich, 1980). This study combined the FFA/leadership development/SAE category with the program management category of Joerger (2002) to create a set of items which depicted the non-

instructional competencies of agriculture teachers associated with managing the total program of agricultural education. A panel of experts consisting of four University of Georgia faculty, two graduate students, three regional coordinators of agricultural education, and four agriculture teachers were used to determine the face and content validity of the instrument. Cronbach's alpha was calculated to determine the reliability of importance ($\alpha = 0.94$) and competence ($\alpha = 0.94$) scales. The 27 items of the instrument were constructed with two Likert-type scales ranging from one to five that measured teachers' perceptions of the importance of the competencies as well as their level of competence in each of the competencies.

The data collected were entered into SPSS 12.0™. Mean and standard deviation were calculated to determine the competencies that teachers perceived to be important. Additionally, mean and standard deviation scores were calculated to determine the competencies in which teachers perceived themselves to be competent. In order to determine the in-service and pre-service needs of Georgia agriculture teachers, a mean weighted discrepancy score (MWDS) was calculated. 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). MWDS was calculated because it provides a more valid picture of needs than directly asking teachers or future teachers for a ranking (Edwards & Briers, 1999).

There were 212 respondents out of 348 middle school and/or high school agriculture teachers in the population, yielding a response rate of 61%. To address non-response early respondents ($n = 121$) were compared to late respondents ($n = 91$) using an independent samples t-test. Lindner, Murphy, and Briers (2001) and Miller and Smith (1983) reported that responses of late respondents are often similar to non-respondents, and reasoned that if there is not a difference between early respondents and late respondents, then there is little need to pursue additional efforts to increase responses from non-respondents. With the exception of one item on the competence scale, no other significant differences were found between early and late respondents. The one item within the competence scale, "Utilizes alumni and/or young farmer affiliate" was significantly different when early ($M = 3.27$, $SD = 1.16$) respondents were compared to late ($M = 3.61$, $SD = 0.984$) respondents, $t\ (206) = -2.21$, $p < 0.05$, $d = 0.35$.

Findings

Georgia agriculture teachers are mostly male (74.5%), and were represented by each age category (Table 1). Fifty-two percent of the agriculture teachers had 11 years teaching experience or less, and thirty-five percent of agriculture teachers had five or less than five years of teaching experience. All of the respondents had at least a Bachelor's degree and over half (57.6%) held at least one graduate degree.

Table 1. *Selected Teacher Demographics*

Characteristics		f	%
Gender	Male	158	74.5
	Female	54	25.5
Age	Less than 25	29	13.7
	25 to 34	60	28.3
	35 to 44	51	24.1
	45 to 54	58	27.4
	55 to 64	16	7.5
	More than 65	2	0.9
Teaching Experience	Less than 5 years	74	34.9
	6 to 10 years	36	17.0
	11 to 15 years	26	12.3
	16 to 20 years	20	9.4
	21 to 35 years	26	12.3
	26 to 30 years	25	11.8
	More than 30 years	5	2.4
Highest Degree Earned	Bachelors	90	42.5
	Masters	78	36.8
	Specialist	32	15.1
	Doctorate	12	5.7

Teachers considered all of the competencies needed for managing the agricultural education program to be important. According to these teachers, the most important competency was conducting local FFA chapter activities (M = 4.70, SD = 0.49), followed by developing an effective public relations program (M = 4.63, SD = 0.59) and developing relationships with fellow teachers and administrators (M = 4.60, SD = 0.58). According to Table 2, organizing fundraising activities for the local FFA chapter (M = 4.59, SD = 0.55) and supervising students' SAE programs (M = 4.58, SD = 0.58) complete the top five list of most important competencies. Table 2 lists teachers' perceived level of importance for each competency.

Table 2. *Agriculture Teachers' Perceived Level of Importance for Selected Competencies (N = 212)*

Professional Competency	*M*	*SD*
Conducting local FFA chapter activities	4.70	0.49
Developing an effective public relations program	4.63	0.59
Developing relationships with fellow teachers and administrators	4.60	0.58
Organizing fundraising activities for the local FFA chapter	4.59	0.55
Supervising students' SAE programs	4.58	0.58
Developing SAE opportunities for students	4.55	0.60
Preparing FFA CDE teams	4.54	0.59
Integrating life skills into curriculum	4.53	0.67
Evaluating the local agriculture program	4.46	0.63
Planning banquets	4.43	0.63
Ability to use the local advisory committee to acquire resources to sustain the local program and FFA chapter	4.42	0.64
Teaching record keeping skills	4.42	0.66
Establishing a program advisory committee	4.42	0.70
Providing guidance to students interested in post-secondary education in the food, fiber and natural resource industries	4.41	0.65
Determining the content that should be taught in specific courses	4.40	0.62
Completing reports for local and state administrators	4.39	0.68
Teaching about public issues related to agriculture	4.37	0.65
Preparing FFA degree applications	4.35	0.66
Embedding graduation standards in the agriculture curriculum	4.32	0.73
Coordinating activities with local agricultural organizations/agencies	4.31	0.76
Preparing FFA proficiency award applications	4.29	0.69
Locating and selecting student references and materials	4.26	0.64
Providing career exploration activities in agriculture	4.22	0.72
Utilizing a local alumni or young farmer affiliate	4.20	0.89
Conducting assessments to determine the courses that should be taught	4.10	0.77
Developing a variety of curriculum-based School-to-Work activities	3.98	0.84
Establishing and organizing an agricultural co-op/internship	3.94	0.91

Note. 1 = "Not important"… 5 = "Very important."

Teachers considered themselves at least somewhat competent in each of the non-instructional competencies related to managing a total program of agricultural education. They believed that they were most competent at developing relationships with fellow teachers and administrators ($M = 4.20$, $SD = 0.77$). Teachers also considered themselves competent conductors of local FFA chapter activities ($M = 4.14$, $SD = 0.73$); competent planners of FFA banquets ($M = 4.05$, $SD = 0.82$); competent report completers ($M = 3.97$, $SD = 0.82$); as well as competent fundraisers for the local FFA chapter ($M = 3.96$, $SD = 0.82$). Teachers expressed that they were least competent at establishing and organizing an agricultural co-op/internship ($M = 3.05$, $SD = 1.05$), developing a variety of curriculum-based School-to-Work activities ($M = 3.12$, $SD = 0.99$), and preparing FFA proficiency awards ($M = 3.28$, $SD = 1.02$) and degree applications ($M = 3.36$, $SD = 0.97$).

Table 3. *Agriculture Teachers' Perceived Level of Competence for Total Agricultural Education Program Competencies (N = 212)*

Professional Competency	*M*	*SD*
Developing relationships with fellow teachers and administrators	4.20	0.77
Conducting local FFA chapter activities	4.14	0.73
Planning banquets	4.05	0.82
Completing reports for local and state administrators	3.97	0.82
Organizing fundraising activities for the local FFA chapter	3.96	0.82
Supervising students' SAE programs	3.95	0.76
Integrating life skills into curriculum	3.95	0.78
Preparing FFA CDE teams	3.85	0.77
Determining the content that should be taught in specific courses	3.82	0.76
Establishing a program advisory committee	3.82	0.95
Evaluating the local agriculture program	3.80	0.85
Developing SAE opportunities for students	3.78	0.79
Developing an effective public relations program	3.73	0.83
Locating and selecting student references and materials	3.70	0.79
Teaching about public issues related to agriculture	3.67	0.83
Coordinating activities with local agricultural organizations/agencies	3.64	0.83
Teaching record keeping skills	3.64	0.81
Providing guidance to students interested in post-secondary education in the food, fiber and natural resource industries	3.61	0.84
Ability to use the local advisory committee to acquire resources to sustain the local program and FFA chapter	3.58	0.96
Embedding graduation standards in the agriculture curriculum	3.49	0.91
Conducting assessments to determine the courses that should be taught	3.47	0.92
Providing career exploration activities in agriculture	3.44	0.88
Utilizing a local alumni or young farmer affiliate	3.41	1.10
Preparing FFA degree applications	3.36	0.97
Preparing FFA proficiency award applications	3.28	1.02
Developing a variety of curriculum-based School-to-Work activities	3.12	0.99
Establishing and organizing an agricultural co-op/internship	3.06	1.05

Note. 1 = "Not competent"…5 = "Very competent."

Pre-service/in-service need is represented by the MWDS. The MWDS score was calculated by subtracting the competency score from the importance score and by multiplying that number by the mean importance rating for each competency (Borich, 1980; Joerger, 2002). The highest rated pre-service/in-service training need was that of providing guidance to students interested in post-secondary education in the field of agriculture. Teachers also indicated a need for pre-service/in-service training in preparing FFA proficiency awards (2nd highest need) and degree applications (3rd highest need). Rounding out the five most important needs were training in developing an effective public relations program and developing SAE opportunities for students. Table 4 lists competencies in descending order from most needed to least needed per MWDS.

Table 4. *Pre-service and In-service Training Needs of Agriculture Teachers (N = 212)*

	MWDS[1]
Providing guidance to students interested in post-secondary education in the food, fiber and natural resource industries	4.40
Preparing FFA proficiency award applications	4.21
Preparing FFA degree applications	4.21
Developing an effective public relations program	4.13
Developing SAE opportunities for students	4.10
Ability to use the local advisory committee to acquire resources to sustain the local program and FFA chapter	3.67
Embedding graduation standards in the agriculture curriculum	3.49
Utilizing a local alumni or young farmer affiliate	3.41
Establishing and organizing an agricultural co-op/internship	3.39
Teaching record keeping skills	3.36
Developing a variety of curriculum-based School-to-Work activities	3.34
Providing career exploration activities in agriculture	3.20
Teaching about public issues related to agriculture	2.97
Preparing FFA CDE teams	2.89
Evaluating the local agriculture program	2.88
Supervising students' SAE programs	2.85
Coordinating activities with local agricultural organizations/agencies	2.84
Organizing fundraising activities for the local FFA chapter	2.75
Conducting assessments to determine the courses that should be taught	2.55
Integrating life skills into curriculum	2.55
Establishing a program advisory committee	2.52
Conducting local FFA chapter activities	2.48
Determining the content that should be taught in specific courses	2.41
Locating and selecting student references and materials	2.35
Developing relationships with fellow teachers and administrators	1.80
Completing reports for local and state administrators	1.72
Planning banquets	1.57

Note. [1]Mean Weighted Discrepancy Score

Conclusions

Georgia agriculture teachers are mostly male and well educated, and a large majority of participants had no more than 11 years of experience. Teachers considered all of the non-instructional competencies needed for managing the total program of agricultural education to be important. Most important to teachers was conducting local FFA chapter activities. Teachers considered themselves at least somewhat competent in each of the competencies related to managing a total program of agricultural education. Teachers reported highest levels of competence for developing relationships with fellow teachers and administrators, conducting local FFA chapter activities, planning banquets, completing reports, and organizing fundraising activities. They perceived themselves to be least competent at preparing FFA degree and proficiency award applications,

developing curriculum-based school-to-work activities, and establishing and organizing an agricultural co-op/internship.

According to the Georgia agriculture teachers in this study, the most important training need for either pre-service teacher education or professional development was advising students about post-secondary education in agriculture. The researchers of this study found no other studies indicating such a high need for training to help teachers aid students in making decisions about studying agriculture at the post-secondary level. Teachers' responses indicate that more pre-service and in-service training opportunities are needed to help them aid students in preparing FFA proficiency award applications and FFA degree applications. Garton and Chung (1996), Layfield and Dobbins (2002), Joerger (2002), and Peiter et al. (2003) determined that teachers in their respective states needed training related to preparing FFA proficiency awards and degree applications as well. Similar to this study, other agricultural education researchers have also found that developing an effective public relations program (Garton & Chung, 1996; Layfield & Dobbins, 2002) and developing SAE opportunities for students (Layfield & Dobbins; Peiter, et al., 2003) were important training needs.

Implications and Recommendations

With the number of middle school and high school agricultural education positions on the rise, the large number of teachers who have no more than 11 years experience directly indicates a need for re-evaluating the pre-service agricultural education program and the professional development opportunities offered by the Georgia Department of Agricultural Education. Recommendations are specific to and appropriate for agricultural education in Georgia, but other states may also benefit from the recommendations that follow.

According to this study, the most important pre-service/in-service need is training that provides guidance to students interested in post-secondary education in the food, fiber and natural resource industries. This competency should be addressed in university teacher preparation curricula in Georgia. Faculty should invite post-secondary recruiters from all state institutions offering majors related to agriculture to end-of-student teaching seminars and/or other agricultural education courses. Pre-service teachers should be challenged to develop a complete understanding of agricultural opportunities in higher education prior to leaving their respective post-secondary institutions. Additionally, professional development programs should be regularly offered to current teachers, programs which detail the post-secondary agricultural opportunities. Future research should identify items that should be shared with students, especially those which concern education opportunities at the post-secondary level.

Given the findings of this study and those of other researchers (Garton &Chung, 1996; Layfield & Dobbins, 2002; Joerger, 2002; Peiter et al., 2003) Georgia agricultural education faculty need to modify curricula to more effectively educate students on how to complete the FFA proficiency awards and degree applications. Additionally, "State departments, university faculty, and National FFA Organization officials should conduct

workshops or other in-service activities" to assist current teachers with completing FFA proficiency awards and degree applications (Clark & Scanlon, 1996, p. 15). Upon completion of additional and appropriate training, future, longitudinal research should be used to monitor teachers' and students' competencies associated with completing FFA proficiency awards and degree applications.

In addition to this study, similar findings (Garton & Chung, 1996; Layfield & Dobbins, 2002) help make the case that perhaps universities with access to agricultural communications faculty, students, and resources may be capable of helping pre-service and in-service agriculture teachers more fully develop their ability to develop a strong public relations program. Pre-service courses of study could include an agricultural communications course that addresses public relations skills and abilities. Conceivably, agricultural communications faculty could assist agricultural education faculty and state staff with professional development opportunities which address this need.

Again, developing SAE opportunities for students (Layfield & Dobbins; Peiter, et al., 2003) is found to be an important need. Teacher education faculty in Georgia ought to infuse agricultural education courses with specific strategies and examples of SAE opportunities for students. Distributing specific techniques and examples of SAE opportunities for current teachers would also assist with this in-service need. Workshops at the summer teachers' conference, disseminated ideas over the state agricultural education listserv, or possibly even a Website that shares SAE opportunities with teachers may all be viable options for providing teachers additional help in developing SAE opportunities for students.

References

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *The Journal of Teacher Education, 31*(3), 39-42.

Clark, R. W., & Scanlon, D. C. (1996). The effects of teacher attitudes and related factors on FFA proficiency awards won above the federation level. *Journal of Agricultural Education, 37*(2), 8-16.

Dobbins, T. R., & Camp, W. G. (2000). Clinical experiences for agricultural teacher education programs in North Carolina, South Carolina, and Virginia. *Proceedings of the 27th Annual National Agricultural Education Research Conference*. 543-555.

Dormody, T. J., & Torres, R. M. (2002). A follow-up study of agricultural education program graduates on teaching competencies. *Journal of Agricultural Education, 43*(4), 33-45.

Edwards, M.C., & Briers, G.E. (1999). Assessing the in-service needs of entry-phase agriculture teachers in Texas: A discrepancy model versus direct assessment. *Journal of Agricultural Education, 40*(3), 40-49.

Findlay, H. J., & Drake, B. (1989). Influence of selected experience on perceived levels of competence of secondary vocational agriculture teachers. *Journal of Agricultural Education, 30*(3), 46-53.

Garton, B.L., & Chung, N. (1996). The in-service needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education, 37*(3), 52-58.

Garton, B.L., & Chung, N. (1997). An assessment of the in-service needs of beginning teachers of agriculture using two assessment models. *Journal of Agricultural Education, 38*(3), 51-58.

Greiman, B. C., Walker, W. D., & Birkenholz, R. J. (2002). The induction of novice teachers: A study of first-year agriculture teachers in Missouri. *Proceedings of the 29th National Agricultural Research Conference.* Retrieved July 16, 2004 from: http://aaaeonline.ifas.ufl.edu/NAERC/2002/naercfiles/NAERC/Induction%20Greiman-Walker-Birkenholz.pdf.

Joerger, R.M. (2002). A comparison of the inservice education needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of Agricultural Education, 43*(3), 11-24.

Layfield, K.D., & Dobbins, T.R. (2002). In-service needs and perceived competencies of South Carolina agricultural educators. *Journal of Agricultural Education, 43*(4), 46-55.

Linder, R. L., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-54.

Miller, L. E., & Smith, K. L. (1983). Handling nonresponse issues. *Journal of Extension, 21*, 45-50.

Mundt, J.P., & Connors, J. J. (1999). Problems and challenges associated with the first years of teaching agriculture: A framework for preservice and in-service education [Electronic version]. *Journal of Agricultural Education, 40*(1), 38-48.

Peiter, R. L., Terry, R., Jr., & Cartmell, D.D. II. (2003). Mentoring first year agricultural education teachers. *Journal of Southern Agricultural Education Research, 53*(1), 171-181.

National Research Council. (1988). *Understanding agriculture: New directions for education.* Washington, DC: National Academy Press.

Roberts, T.G., & Dyer, J.E. (2002). Characteristics of effective agriculture teachers. *Proceedings of the 29th National Agricultural Research Conf.* Retrieved July 16, 2004, from:

http://aaaeonline.ifas.ufl.edu/NAERC/2002/naercfiles/NAERC/Characteristics%20Roberts-Dyer.pdf.

Washburn, S. G., King, B. O., Garton, B. L., & Harbstreit, S. R. (2001). A comparison of the professional development needs of Kansas and Missouri Teachers of Agriculture. *Proceedings of the 28th Annual National Agricultural Education Research Conference*. 396-409.