

## **Where do Secondary Vocational Agriculture Teachers Acquire Professional Agricultural Education Competencies?**

**Henry J. Findlay, Associate Professor  
Tuskegee University**

Various federal enactments in 1963, 1968, and 1976, for vocational education have brought about numerous structural changes and innovations in vocational agriculture education programs and in the ways in which the teacher develops and implements these programs (U.S. Office of Education, 1965; Phipps, 1980). Consequently, there are many additional competencies that secondary vocational agriculture education teachers must possess in order to plan and implement successful program offerings (King & Miller, 1985).

Findlay & Drake (1989) reported that secondary vocational agriculture teachers were less competent in conducting activities involving adult education, and school and community relations. A search of the literature shows that no studies have been conducted to determine the methods or settings where secondary vocational agriculture teachers are acquiring their professional competencies. Therefore, the present methods by which teachers acquire professional competencies may not be the most appropriate methods for preparing them to perform their professional work role effectively.

Baker and Trussell (1981) suggested that competencies to be demonstrated by students should derive from explicit conceptions of the teachers' roles. They also stated that the gap between theory and practice could be eliminated by reducing theory to what was needed to perfect the practice. The prospective teacher would then be trained to reach competence in each of the tasks in order to cope with whatever situation may be encountered in the school of the real world. These views corroborate the theory of "connectionism" -- law of effect and law of practice as propounded by Thorndike (1913), and serve as the theoretical framework for this study.

### **Purpose and Objectives**

The purpose of the study was to identify the methods by which secondary vocational agriculture teachers acquired selected professional agricultural education competencies. The specific objectives of the study were:

- To identify the methods by which the teachers acquired their present professional agricultural education competencies in each of seven competency areas.
- To identify the perceived levels of competence possessed by the teachers in each area.
- To determine if significant differences existed in the perceived levels of competence in each area by four methods of acquisition.

### **Methodology**

The research method was ex post facto. The population (N=1120) consisted of all the high school vocational agriculture teachers in Alabama, Florida, and Georgia, as determined from the Agriculture Teachers' Directories for the respective states. A formula

which took into account the desired levels of confidence and accuracy in the results was utilized to determine the sample size (N=560) (Krejcie and Morgan, 1970).

A two-part modified questionnaire (Rawls & Fatunsin, 1985) was adopted, pilot tested and used to collect data pertaining to the objectives formulated for the research. The instrument was assessed for content validity by agricultural teacher educators at two Alabama land grant universities. The questionnaire consisted of 50 professional agricultural education competencies, divided into seven areas, based on factor analysis techniques with varimax rotations. The factors and number of items in each factor were: program planning, 13; leadership skills, 5; guidance and counseling, 8; teaching techniques, 9; supervised agricultural experience, 7; adult education, 4; and school and community relations, 4. These seven areas were used as the dependent variables in the study. Reliability coefficients (alpha) ranged from .78 for the adult education competency area to .94 for the program planning area.

The independent variables utilized in the study were the seven methods of acquisition: college courses, student teaching, laboratory experience in college, workshops/seminars, colleagues on the job, professional meetings, and home study. Because of small cell frequencies, the following methods were combined for the purpose of chi-square analysis; methods two and three were classified as "student teaching/laboratory experience," and methods four, five and six were categorized as "on-the-job training." Methods one and seven remained separate and unchanged.

The final questionnaire was mailed to a random sample of 560 high school agriculture teachers in the three states. A postcard follow-up reminder was mailed ten days later and a follow-up questionnaire was mailed to the nonresponding teachers three weeks after the initial mailings.

The teachers were asked to indicate in which of seven given methods they perceived themselves as having acquired each of the 50 professional agricultural education competencies. Also, the teachers were asked to indicate on a rating scale of 1-5 their perceived levels of competence in each of the 50 competencies. The scale ranged from 1 = low, 3 = average and 5 = high level of competence.

Three hundred and twenty-four (324) or 57.8% usable questionnaires were returned. A nonresponse bias procedure, the early/late response approach as described by Goode and Hatt (1952), was used to determine nonresponse bias. Results indicated that there were no significant differences between early and late respondents. Descriptive statistics were used to analyze the data. Chi-square statistics were used to determine if significant differences existed between the perceived levels of competence and methods of acquisition. An alpha level of .05 was set a priori.

## Findings

Data in Table 1 reveals the distribution of the respondents on the methods of acquiring the professional competencies in the seven competency areas. The data revealed that the teachers perceived themselves as having acquired the majority of the competency areas through college courses, on-the-job activities, and through home-study. The only exception was in the leadership skills area where less than 10% of the teachers felt that they had acquired this competency area in college courses. Overall, the data showed that student teaching and laboratory experience in college were the least likely methods for acquiring the competencies in the seven competency areas studied.

**Table 1. Distribution of Respondents Regarding Methods of Acquisition of the Seven Competency Areas**

Competency areas <sup>a</sup>	Methods of Acquisition <sup>b</sup>			
	College Courses	Student Teaching/ Laboratory Exp.	On-the-job Training	Home Study
Program planning	121 <sup>c</sup> 37.3 <sup>d</sup>	29 9.5	100 30.9	71 21.9
Leadership skills	30 9.3	79 24.4	132 40.7	71 21.9
Guidance and counseling	95 29.3	30 9.3	107 33.0	89 27.5
Teaching techniques	132 36.1	37 11.4	92 28.4	76 23.5
Supervised agricultural experience	102 31.5	39 12.0	99 30.6	75 23.1
Adult education	106 32.7	43 10.5	96 29.63	80 24.7
School and community relations	71 21.9	32 9.9	120 37.03	101 31.2

<sup>a</sup>Dependent variables, <sup>b</sup>Independent variables, <sup>c</sup>Number (N), <sup>d</sup>Percent

Presented in Table 2 are item means, standard deviations and ranks for the competencies in each of seven competency areas. The data revealed that the teachers perceived themselves as having higher levels of competence in the program planning, teaching techniques, and guidance and counseling areas, and lower levels in leadership, adult education, supervised agriculture experience, and school and community relations competency areas.

**Table 2. Item Means, Standard Deviations, and Ranks for Levels of Competence for the Seven Competency Areas**

Competency area	Levels of competence		
	Mean*	SD	Rank
Program planning	38.74	6.46	1
Teaching techniques	29.98	4.95	2
Guidance & counseling	28.91	5.22	3
Supervised agricultural experience	23.01	4.73	4
Leadership skills	17.39	3.82	5
School and community relations	13.30	2.62	6
Adult education	11.73	2.99	7

\*Based on scale of 1 to 5.

Responses of the teachers were also compared to determine if statistically significant difference ( $p < .05$ ) existed between the levels of competence and methods of acquisition. The seven competency areas, the resultant chi-square values and the probability of the chi-square values for those competencies where significant differences were observed are described below.

#### Program Planning Competency Area

In the program planning competency area, there were statistically significant differences on three of the 13 program planning competencies. The competencies were: organizing advisory committees for vocational agriculture education programs ( $X^2=25.79$ ,  $p < .05$ ), using philosophy and principles of agribusiness education in program development and implementation ( $X^2=17.84$ ,  $p < .006$ ), and applying state standards in developing local vocational agribusiness programs ( $X^2=14.78$ ,  $p < .022$ ). A majority (62.3%) of the teachers indicated that they had acquired these competencies in college courses and/or on the job, and possessed a high level of competence in them.

#### Leadership Competency Area

In the leadership competency area, there were statistically significant differences on two of the five leadership competencies. The competencies were: preparing and involving students in FFA proficiency awards ( $X^2=13.67$ ,  $p < .033$ ), and participating in FFA meetings as advisor ( $X^2=12.76$ ,  $p < .046$ ). Over 40% of the teachers indicated that they had acquired these two competencies on the job and possessed a high level of competence in them.

#### Guidance and Counseling Competency Area

In the guidance and counseling competency area, there were no statistically significant differences on the eight guidance competencies. Over 62% of the teachers indicated that they acquired these competencies on the job, and possessed an average level of competence in them with the exception of the competency "utilizing standardized tests to ascertain students abilities, interests and needs." Respondents indicated that they acquired this competency in college courses and possessed a low level of competence in it.

#### Teaching Techniques Competency Area

Statistically significant differences were observed on two of the nine teaching techniques competencies. They were: developing and writing general objectives for vocational agricultural education program offerings ( $X^2=15.56$ ,  $p < .016$ ), and conducting brainstorming sessions as a method of teaching vocational agriculture subject matter ( $X^2=13.60$ ,  $p < .034$ ). Overall, 55.3% of the teachers acquired eight of the competencies through college courses. The teachers indicated that they had acquired the competency "developing a system of classroom discipline" through home-study, and that they possessed a high level of competence in it.

#### Supervised Agricultural Experience Competency Area

Regarding the supervised agricultural experience competency area, the data revealed that there were statistically significant differences on one of the seven competencies: "making annual evaluation of students' supervised agricultural experience programs" ( $X^2=15.31$ ,  $p < .018$ ). Over 85% of the teachers indicated that they had acquired all seven

competencies through on-the-job experience and possessed a high level of competence in them.

### Adult Education Competency Area

In the adult education competency area, statistically significant difference existed between the methods of acquisition and the levels of competence on the competency "organizing and implementing young and adult farm leadership programs" ( $X^2=29.30$ ,  $p<.001$ ). Almost one-third of the teachers perceived that they had acquired this competency through college courses but possessed a low level of competence.

### School and Community Relations Competency Area

There were no statistically significant differences between the methods of acquisition and levels of competence in the school and community relations competency area. Generally, the teachers perceived themselves as having acquired the four competencies through on-the-job experiences and through home-study. They felt that they were less competent in "serving as consultant in the community when problems related to agriculture arise."

## **Conclusions, Recommendations and Implications**

The findings on methods of acquisition of professional agricultural education competencies revealed that secondary vocational agriculture teachers in three southern states perceived themselves as having acquired the majority of the competencies in seven competency areas through college courses, on-the-job experiences, and home-study. Based on the theory of practice, prior to the study, it was envisioned that student teaching and laboratory experience in college would be the predominant methods of acquisition. The findings of this study did not support this expectation. It may be necessary to examine the competencies that preservice agricultural education teachers are expected to acquire during the student teaching and laboratory experience in college to determine if the student teachers are being provided with the appropriate opportunity to acquire them.

The findings revealed that the teachers possessed higher levels of competence in the skills that were acquired during college courses, on-the-job, and home-study, than in student teaching/laboratory experience settings. A similar trend was observed in the program planning and teaching techniques competency areas. Significant differences were also observed between the levels of competence and methods of acquisition on several competencies in five of the seven competency areas.

This study has provided some evidence that certain methods by which teachers acquire professional agricultural education competencies may be more effective than others in terms of developing higher levels of competence. Because the dominant methods of acquisition seem to impact less than might have been expected, the scope of the research should provide some thought for restructuring the ways in which secondary vocational agriculture teachers are prepared, assessed and certified in the states involved in this study. For example, those persons in decision-making positions should communicate specifically to agriculture teacher educators, cooperating teachers, student teachers, and college supervisors the agreed-upon competencies that student teachers are expected to acquire during field-based experiences. This would provide more congruence among these persons who are involved in assessing the competence of preservice agricultural education teachers.

The findings of this study should be useful to teacher educators, supervisors, and all those who should be concerned about the orientation and activation of program

improvement in high school vocational agriculture as well as agriculture teacher education programs.

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