The Importance of Selected External Factors and Programmatic Components in Planning Vocational Agriculture Programs

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Vocational agriculture programs are experiencing a period of change. The provisions of the Carl Perkins Vocational Education Act and the economic crises that continue to plague federal and state governments are again forcing agricultural educators to reexamine where they should be going.

The national study of agricultural education being conducted by the National Academy of Science is attempting to determine what role vocational agriculture programs should play in the future. The study is a result of leaders in the United States Department of Education and the United States Department of Agriculture, as well as others in the agricultural education profession, realizing that an assessment is needed.

Rawls (1980) predicted changes in the vocational agriculture programs of the future when he listed seven factors that would bring about change in the 1980s. His list included pressures for accountability, changing teacher attitudes, population shifts and changing technology.

Through the years, several writers have questioned the impact that the program has had. Hammonds (1957) stated in 1942 that the profession had not succeeded in developing a purpose for vocational agriculture that could be agreed upon by the profession. Drake (1982) questioned the relative impact that secondary vocational agriculture programs have on the agricultural industry. Bowen (1986) stated that vocational agriculture programs must be modified to meet the needs of a changing agricultural industry.

The profession should determine the components that will be a part of changing vocational agriculture programs and should also ascertain the factors that will affect the manner in which changes in vocational agriculture programs are initiated. Newcomb (1986), in a speech to the National Workshop for State Leaders, stated that "Teacher educators can think and dream and have visions, but it is individuals in state departments and in local schools who hold the fate of programs of vocational agriculture in their hands" (p. 1).

Since vocational agriculture teachers are responsible for the end results of the program and, by design, must implement any changes in the delivery of the program, an appropriate first step is to ascertain their perceptions of the role that program components and external factors will play as programs are modified to meet the constantly changing needs of the agricultural industry. Through these teachers, changes in the vocational agriculture program desired by the leadership in the agricultural profession must be implemented. Even though vocational agriculture teachers may not be major elements of change in the fields of agriculture and education, documented knowledge of the perceptions held by teachers is an important precursor to programmatic change within the vocational agriculture program.

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Purpose and Objectives

This study was conducted to determine vocational agriculture teachers' perceptions of the role of selected external factors and programmatic components in planning vocational agriculture programs. The objectives were:

1. Determine vocational agriculture teachers' perceptions of the relative importance of selected program components to future vocational agriculture programs in their community.

2. Determine vocational agriculture teachers' perceptions of the relative importance of selected external factors to future vocational agriculture programs in their community.

3. Determine if these perceptions differ according to the levels of selected demographic variables. The variables were size of community (population), number of vocational agriculture teachers in the school, years of vocational agriculture teaching experience, and contract length.

Procedure

A closed-form questionnaire was developed based on a review of the literature. It was reviewed and revised by a team of agricultural teacher educators. The resulting instrument was reviewed by seven graduate students in agricultural education, including three active vocational agriculture teachers, and revisions were made based on their comments. The instrument was field tested with 15 teachers who had not been selected to participate in the study. Only minor modifications were indicated as needed by the field test.

Reliability estimates were calculated using Cronbach's alpha (Cronbach, 1951) for the two scales in the questionnaire and yielded the following estimates: Opinions of importance of selected program components scale, $\underline{r}$ = .91; Opinions of importance of selected external factors scale, $\underline{r}$ = .89. These alpha values indicate that the instrument possessed internal consistency.

The population consisted of all high school vocational agriculture teachers in the U.S. as listed in the Agriculture Teachers Directory (Henry, 1985). Cochran's sample size formula (Snedecor & Cochran, 1980) was used to select a sample size of 250 from which a return rate of 84.4% (211) was achieved after two mailouts and one phone follow-up. Analyses of variance were used to determine if the responses for the factors that resulted from the factor analysis differed among the three response waves. No differences were found, and the data were combined for further analyses.

The data were analyzed using descriptive statistics for Objectives 1 and 2. Factor analysis (Dillon & Goldstein, 1984) and inferential $\underline{t}$-tests were used to analyze the data relative to Objective 3. The alpha level was set at .01.

Findings

Importance of Selected Programmatic Components to Future Programs

The teachers in the sample were asked to rate 34 program components on a five-point Likert-type scale according to "how important you feel each of the following components will be to vocational agriculture programs in your community in the year 2000." The five-point scale ranged

from 1 = not important to 5 = extremely important. These components were reduced to eight principal factors using factor analysis. The eight factors and the individual items in each factor are presented in Table 1.

Supervised occupational experience (SOE) programs and agricultural mechanics were perceived as being the two most important components in insuring quality programs in the future. The SOE programs factor loading included four individual components: summer programs of vocational agriculture, SOEP supervision, placement SOEPs, and ownership SOEPs. The agricultural mechanics factor loading included five individual components: welding laboratories, woodworking laboratories, small gas engine laboratories, agricultural mechanics instruction, farm/agribusiness power and machinery laboratories, and electricity laboratories.

It is interesting to note that the specialty laboratories factor was the lowest rated component of the eight components derived from the factor analysis. This factor included greenhouses, other plant and soil science laboratories, meats/food processing laboratories, land laboratories, and computers laboratories.

Importance of Selected External Factors to Programs of the Future

The teachers were also asked to rate 29 factors on the same five-point scale used above according to "how important you feel each of the following factors will be in insuring quality vocational agriculture programs in your community for the year 2000." These external factors were reduced to eight principal factors using factor analysis. The eight factors and the individual items in each factor are presented in Table 2.

Teacher quality and retention was perceived as being the most important factor in insuring quality programs in the future. This factor loading included the five top-ranked individual factors plus one moderately ranked factor: teacher pay and benefits (#1), teacher professionalism (#2), retention of competent teachers in the profession (#3), quality of new vocational agriculture teachers (#4), leadership shown by individual vocational agriculture teachers (#5), and teacher certification requirements (#19).

Funding was perceived by the respondents as the second most important factor in insuring quality programs in the future. This factor loading included three individual factors: state funding, local school board funding and federal funding.

State and federal supervision of programs was perceived as a moderately important factor in insuring that programs of the future will be quality programs. However, when compared to other principal factors in the scale, state and federal supervision was ranked last out of eight factors. This factor contained two individual factors: state supervision of programs and national supervision of programs.

Differences in Perceptions According to Selected Variables

Program components. The eight factors derived from the factor analysis (see Table 1) were used as the dependent variables in inferential t-tests (using pooled variance). No significant differences existed in any of these factors by contract length (11.5-12 months vs. less than 11.5 months), number of teachers in the department (1 teacher vs. two or more teachers), or years vocational agriculture teaching experience (1-10 years vs. 11 or more years). Differences did exist by community size. Respondents from schools located in communities with

Table 1

Importance of Selected Components to Vocational Agriculture Programs in the Respondents' Local Community for the Year 2000 (n = 211)

Factors	Mean[a]	S.D.
Factor: Supervised Occupational Experience Programs	3.98	.67
Summer programs of vocational agriculture	4.14	.90
SOEP supervision	4.12	.79
Placement SOEPs (Co-op Training, Internships)	3.93	.90
Ownership SOEPs for vo-ag students	3.73	.89
Factor: Agricultural Mechanics	3.98	.69
Welding laboratories	4.18	.75
Woodworking laboratories	4.02	.89
Small gas engine laboratories	3.97	.83
Agricultural mechanics instruction	3.95	.87
Electricity laboratories	3.71	.99
Farm/agribusiness power and machinery laboratories	3.91	.90
Factor: Traditional Instructional Areas	3.96	.72
Agricultural record keeping instruction	4.30	.80
Farm/agribusiness management instruction	4.19	.97
Animal science instruction	3.69	.97
Agronomy instruction	3.67	.97
Factor: Specialized Instruction	3.89	.59
Leadership instruction	4.51	.69
Post-secondary programs (Junior colleges, vo-tech schools)	3.91	.98
Individualized instruction	3.88	.88
Competency-based instruction	3.78	.87
Adult education programs (in high schools)	3.40	1.10
Factor: Computers	3.82	.88
Computers for use in vo-ag program management	4.10	.96
Computers for instructional use	4.05	.92
Computers for use in managing FFA activities	3.31	1.09
Factor: Non-Traditional Instructional Areas	3.75	.75
Energy and natural resources instruction	3.92	.96
Agricultural supplies and services instruction	3.73	.97
Horticulture instruction	3.61	1.10
Factor: FFA	3.59	.78
FFA contests	3.70	.92
FFA proficiency awards program	3.55	.86
State/American Farmer Degree program	3.51	.92
Factor: Specialty Laboratories	3.58	.70
Greenhouses	3.91	.86
Other plant and soil science laboratories (besides greenhouses)	3.65	1.12
Meats or food processing laboratories	3.64	.91
Animal science laboratories	3.64	.95
Land laboratories	3.51	1.00
Vo-ag computers lab	3.05	1.21

[a]Not important = 1; slightly important = 2; moderately important = 3; very important = 4; extremely important = 5.

Table 2

Importance of Selected External Factors in Insuring Quality Programs for the Year 2000 (n = 211)

Factors	Mean[a]	S.D.
Factor: Teacher Quality and Retention	4.59	.38
Teacher pay and benefits	4.78	.44
Teacher professionalism	4.70	.50
Retention of component teachers in the profession	4.68	.54
Quality of new vo-ag teachers	4.64	.55
Leadership shown by individual vo-ag teachers	4.63	.54
Job opportunities for vo-ag program completers	4.58	.59
Teacher certification requirements	4.18	.78
Factor: Funding	4.56	.58
State funding	4.61	.63
Local school board funding	4.58	.67
Federal funding	4.50	.78
Factor: Public Image	4.42	.56
The perception of our program by others	4.63	.60
Agricultural awareness in junior high school	4.49	.64
Agricultural awareness in elementary schools	4.13	.81
Factor: Program Administration	4.38	.52
Publicity about vo-ag programs	4.58	.61
Recruitment of students into vo-ag programs	4.56	.63
Local supervision of programs	4.28	.76
Local advisory councils	4.11	.91
Factor: Teacher Preparation	4.19	.61
Inservice programs for vo-ag teachers conducted by state agriculture/agribusiness education staff	4.28	.78
Inservice programs for vo-ag teachers conducted by teacher education programs in agriculture	4.22	.76
Pre-service teacher education programs in agriculture	4.15	.79
Graduate degree programs in agricultural education	4.11	.77
Factor: Instructional materials development	3.99	.69
Instructional materials development	4.22	.75
Development of computer software for vo-ag programs	4.06	.88
Computer networks (such as Ag-Ed Network)	3.72	.96
Factor: Support for SOE Program	3.80	.76
Record-keeping for student awards and recognition	3.91	.84
School provided facilities for SOEPs	3.68	1.02
Factor: Instructional Supervision (state, federal)	3.33	.93
State supervision of programs	3.67	.94
National supervision of programs	2.99	1.14

[a]Not important = 1; slightly important = 2; moderately important = 3, very important = 4, extremely important = 5.

populations of 5,000 or more rated three factors (traditional instructional areas, non-traditional instructional areas, laboratories) higher than teachers from towns with populations below 5,000.

External factors. The eight factors derived from the factor analysis (see Table 2) were used as the dependent variables in inferential t-tests (using pooled variance). No significant differences existed in any of these factors by contract length, number of teachers in the department, or years vocational agriculture teaching experience. Differences did exist according to community size. Respondents from schools in communities with populations of 5,000 or more rated one factor (funding) higher than those teachers from towns with populations below 5,000.

Conclusions

In general, teachers support the continuation of program components that have existed historically rather than those that have been introduced in the relatively recent past. Teachers perceive that teacher quality and retention is the most important factor in insuring quality programs. Teachers' opinions of the factors that are important in insuring quality programs in the future do not differ according to contract length, years of vocational agriculture teaching experience, and number of teachers in the department.

Teachers in larger communities perceive that traditional instructional areas, non-traditional instructional areas, and specialty laboratories are of greater importance than teachers in smaller communities. Teachers in larger communities also perceive that state and federal funding is a more important factor than those in smaller communities.

Recommendations

Teacher educators should evaluate their programs to determine if they are being as effective as possible in their efforts to attract and retain quality teachers. State supervisors and teacher educators should work together to assist teachers in taking advantage of funding opportunities and other state/federal resources available to local vocational agriculture programs.

This study was conducted to determine vocational agriculture teachers' opinions of selected program components and factors in insuring quality programs for the future. Additional research should be conducted to secure the opinions of teacher educators, state supervisors, school administrators and others with knowledge of and an interest in the future of vocational agriculture programs so that a consensus may be reached as to how quality programs should be designed and maintained.

Implication

The findings of this study describe vocational agriculture teachers' perceptions of the importance of selected factors and program components within the vocational agriculture program. If these opinions do not coincide with the opinions of the leadership in agricultural education, then the leadership must take steps to modify the teachers' opinions.

(continued on p. 49)