

## The Effects of Selected Program Effectiveness Elements on Student Satisfaction In Agricultural Education Programs

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While the primary focus of the effective schools' research continues to be the effect of schooling on student achievement, a secondary focus could well be the effect of various elements of the schooling process on student perceptions of their educational experience. In their review of the school effectiveness literature, Purkey and Smith (1982) discuss the theory that student achievement is influenced by factors referred to as social inputs, social structure and social climate. In other words, the composition of the student body, the environment of the classroom, and student/staff expectations and feelings about the school interact to create an effective or ineffective learning process. The placement of vocational programs within this structure requires the examination of elements of program effectiveness within the school setting. Given the increasing concern with the condition of vocational education and its role in secondary schools, vocational educators would do well to consider the effectiveness literature in their attempts to improve programs (Strickland & Burge, 1985).

### Purpose and Objectives

The purpose of this research was to determine those program elements which influence satisfaction with schooling among students enrolled within one service area of vocational education--agricultural education. Although the relation between student satisfaction and student achievement was not examined directly in this research, it was proposed that those factors which contributed positively or negatively to student satisfaction might also have similar effects on student achievement. Thus, the findings of this research serve as a base for further research on student achievement and development in agriculture programs.

Specifically, the objectives of this research were:

1. To identify and develop appropriate measures of program effectiveness based on findings from previous research on school effectiveness and on an ongoing evaluation program in one state;
2. To examine the effects of program elements on student satisfaction using multiple linear regression techniques; and
3. To compare these regression effects across several individual agriculture programs.

Since this research focuses on students' perceptions of their agriculture program, most school effectiveness elements are applicable except those in what Mackenzie (1983) calls the leadership dimension. The program dimensions identified for this study were: perceptions of instruction (INSTR), adequacy of program environment (ENVIR), and supplements to program process (SUPLM).

## Methods

### Data Collection

The student data for this study were collected through the 1984-85 administration of VEEVA (Vocational Education Evaluation in Virginia). According to the evaluation plan for VEEVA, one-fifth of all vocational programs in the state are evaluated each year such that all programs are evaluated within a given five-year period. Such constraints on the evaluation system do not allow random sampling of programs; consequently, purposive sampling is used to select samples for each year in a given five-year cycle. Each sample was developed to be representative of the state with regard to its range of geographic locations, types of communities, and concentrations of vocational enrollments.

The 1984-85 VEEVA sample included 32 school divisions. Each school division completes a series of surveys including the VEEVA Student Questionnaire. Senior high school students enrolled in upper-level vocational education courses were asked to complete the Student Questionnaire in the spring of 1984. Vocational instructors administered the questionnaire following uniform written instructions provided by the VEEVA staff. The total number of students surveyed was 13,220, with 654 of these students being enrolled in upper-level agriculture programs.

The VEEVA Student Questionnaire used in this evaluation effort has been in continuous use since 1980. The items on this questionnaire were developed based on state and national standards established to provide quality vocational education. The intent of the questionnaire is to allow students to rate their vocational programs with regard to instruction, physical facilities and other aspects of vocational training. The questionnaire was field tested in 1980-81 and has been revised only slightly since then to reword items using terms more familiar to students. The 13-item survey utilized a self-report format having the following Likert-type response categories: 1 = poor, 2 = fair, 3 = good and 4 = excellent. Content validity was determined by a panel of vocational teachers and university vocational faculty who screened the questions during the development stage.

### Data Analysis

In order to verify the primary constructs of program effectiveness measured via the VEEVA student questionnaire, student responses were factor analyzed using unweighted least squares factor extractions and a varimax rotation. This analysis confirmed the presence of three factors: satisfaction with instruction (INSTR), perceptions of program environment (ENVIR), and supplemental activities (SUPLM). To quantify each factor, individual student responses to the items which comprised that factor were summed and averaged, producing a set of mean scores representing the three factors. Table 1 presents the distribution of items to illustrate factor content and the reliability (Cronbach alpha) associated with each group of items. A corresponding alpha of .84 was obtained for the student survey instrument as a whole.

Multiple linear regression was used to determine the effects of the three program factors or elements (INSTR, ENVIR, SUPLM) on student satisfaction. A general functional model was used across two stages of analysis to allow comparison of regression effects at the overall vocational service area level and the individual program level. While the overall impact of program elements at the service level is informative in identifying areas of concern or potential, the differential composition of the separate agriculture program offerings requires examination at this level as well.

Table 1

Student Questionnaire Factors and Alpha Coefficients

Factors and Defining Items	Alpha
Factor 1--Satisfaction with Instruction (INSTR) Individual attention you received from teachers Teacher's description at beginning of school of work required for this course Your increase in knowledge about this vocational area Your increase in skills in this vocational area	.80
Factor 2--Perception of Program Environment (ENVIR) Tools and equipment for student use Up-to-date learning materials (books, guides, etc.) Condition of lab or work area Enough supplies (things that get used up, such as lumber, duplicating paper, welding rods)	.77
Factor 3--Supplemental Activities (SUPLM) Career counseling by teacher about jobs in this vocational area Interest and enthusiasm of students about their vocational organization (AIASA, DECA, FBLA, FFA, FHA/HERO, HOSA & VICA) Visits to your class by persons employed in jobs related to this course Career counseling by guidance counselors about different kinds of jobs	.66

The measure of student satisfaction (SAT) was derived using student responses to the survey item requesting students to rate their overall satisfaction with their agricultural program. This item was scaled in the same manner described above for the other survey items, with the mean score being used to operationalize this variable. Means and standard deviations for both the dependent and independent measures are presented in Table 2.

### Results

Results for the service level and program level analyses are presented in Table 3. For the overall service level model, statistically significant results were obtained for all three program elements. For agricultural business programs, instruction (INSTR) and supplemental activities (SUPLM) were significant elements of student satisfaction--supplemental activities having the stronger influence of the two. Instructional elements proved to be most important in contributing to student satisfaction in agricultural mechanics and agricultural production programs, with supplemental activities contributing comparatively less. Horticultural programs evidenced instructional (INSTR) and environmental (ENVIR) elements as having significant, positive effects on student satisfaction.

Table 2

Descriptive Statistics by Overall Service and Program Levels

Program Grouping	SAT	INSTR	ENV IR	SUPLM
Overall Service				
M	3.29	3.22	2.83	2.57
SD	0.73	0.57	0.74	0.66
N = 642				
Agricultural Business				
M	3.16	3.14	1.77	2.22
SD	0.51	0.46	0.71	0.53
N = 31				
Agricultural Mechanics				
M	3.36	3.28	3.08	2.72
SD	0.72	0.64	0.64	0.74
N = 106				
Agricultural Production				
M	3.28	3.19	2.74	2.59
SD	0.72	0.52	0.73	0.64
N = 321				
Horticulture				
M	3.28	3.24	3.03	2.51
SD	0.78	0.62	0.62	0.66
N = 184				

Table 3

Summary of Regression Results by Service Level and Individual Program

Program Grouping	INSTR	ENV IR	SUPLM	R	df
Overall Service	0.633**	0.077**	0.287**	0.53	642
Agricultural Business	0.347*	-0.011	0.568**	0.61	31
Agricultural Mechanics	0.678**	0.064	0.246**	0.68	105
Agricultural Production	0.558**	0.067	0.385**	0.49	320
Horticulture	0.734**	0.175*	0.104	0.54	185

\*Significant at  $p < 0.05$ . \*\*Significant at  $p < 0.01$ .

The explanatory power of these models proved to be acceptable in most cases. The functional form of the models appeared to be particularly appropriate for the agricultural mechanics programs and least appropriate for the agricultural production programs. Nevertheless, the multiple correlations for the separate models were high and showed relative goodness-of-fit for the purposes of this research.

## Discussion

For the overall service model, items concerned with instruction and student achievement (INSTR) appeared to have the greatest influence on student satisfaction. This finding agrees with previous research demonstrating that student-teacher interaction and reward for achievement are good indicators of student success (Bloom, 1976; Mackenzie, 1983). While the physical conditions and actual materials (ENVIR) used in programs were important to students, activities supplemental to instruction (SUPLM) were more influential. The latter finding may be indicative of the importance students place on activities related to career counseling and co-curricular activities in agriculture programs. This finding supports the notion that "vocational student organizations are integral to motivating students" (National Commission on Secondary Vocational Education, 1984).

Results for the program-level models differed somewhat and certainly qualified the findings obtained in the overall service model. For agricultural business, it was found that instruction and supplemental activities were significant elements of student satisfaction within this program. Unlike the overall service model, however, supplemental activities appeared to be more influential than instructional interaction. The effect of environmental factors was found to be non-significant. Results for this program area, however, may have been an artifact of the low number of respondents--a problem not shared among the remaining programs.

Agricultural mechanics and agricultural production programs more closely resembled the overall service model, but, like agricultural business, the environmental factors proved to be nonsignificant. Instructional elements related to student-teacher interaction and student achievement proved to be the most important in contributing to student satisfaction. Supplemental activities in the way of career counseling and co-curricular activities contributed comparatively less to student satisfaction, yet still proved to be a strong source of influence.

Horticultural programs differed most from the overall service model and the other individual program models in their results. A common finding was the priority of instructional activities in contributing significantly to positive perceptions of agricultural programs. However, items related to environmental factors proved to be the second most important element related to student perceptions. Supplemental activities were positive, but did not have a significant effect according to the results of this research. These findings may indicate that different types of students were attracted to horticulture programs or that there are differential effects of program elements across agricultural program areas.

While the results of this research are in agreement with that implied through the school effectiveness literature, two new aspects of effectiveness have been indicated. The introduction of co-curricular activities and guidance and counseling functions in this research reflects significant areas of influence that have been largely unexamined in previous school effectiveness research. While guidance and counseling activities may be viewed as supplemental to the immediate institutional focus, such activities and/or co-curricular organizations do affect students' overall satisfaction with the educational process. To the extent that these supplemental activities affect student satisfaction negatively, students' enthusiasm or interest in their program may be affected. This is certainly an area for further research.

A second area requiring more in-depth research concerns the determination of program effectiveness factors and their impact on student satisfaction across different programs in all areas of vocational education. Such research, including external activities and co-curricular organizations, would add greatly to the body of knowledge on school effectiveness, especially as it relates to vocational education. The implications for developing vocational programs based on a recognition of the differential effects of program elements might further help to understand student choice regarding enrollment in the different program areas of vocational education.

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