

**STUDENT'S RATIONALE FOR SELECTION OF
AGRICULTURALLY RELATED COURSES
IN HIGH SCHOOL
BY GENDER AND ETHNICITY**

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Abstract

The literature shows that a student's decision to enroll in agricultural education programs is affected by intrapersonal factors including interests, attitudes, and value systems, as well as perceptions of course content, pedagogical strategies, and career potential. Sociocultural factors, including gender and ethnicity, have also been shown to affect student attitudes, beliefs, and enrollment in agricultural courses is needed to facilitate recruitment and inform guidance counseling and curriculum development. Reasons tenth grade students use to enroll in agricultural courses were examined in twelve (12) geographically distributed pilot high schools in New York State participating in an Agricultural Technology Program. Students rated their agreement with twenty two (22) potential reasons for studying agriculture on a Likert type scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Comparisons were made by gender and ethnicity. This study showed that student's reasons for enrolling in agricultural courses could be categorized in five conceptual domains including preparatory for job and higher education, developmental skills, academic enhancement, response to social pressure, and participation in activity centered learning. Few gender or ethnic differences were identified. Implications of results on curriculum development, guidance counseling, and recruitment in agricultural education and Tech Prep programs were discussed.

This study helped clarify the rationale that students use in their selection of agriculturally related courses in high school and explored potential gender and ethnic differences. The findings were part of a comprehensive study of a statewide, federally funded Agricultural Technology Preparation Program. Tech Prep Programs were designed to improve vocational education and facilitate recruitment. New curricular innovations and guidance policies were part of the strategies that were envisioned. Results of this study helped facilitate achievement of these goals. Additionally, the study provided a model for analysis that could be used with other Technology Preparation Projects in Agricultural Education.

Student recruitment is not a new concern in agricultural education. Rossetti, Elliot, Price and McClay (1990) focused on this issue as a major problem and identified strategies to recruit students

into vocational education. Thompson and Russell (1993) emphasized the link between declining enrollment in agricultural education and a shortage of qualified individuals in the food and agricultural sciences. They recommended developing an understanding of student attitudes and beliefs about agricultural science to facilitate recruitment.

Agriculture teachers have been found to recognize the importance of recruitment and often play an important role in counseling students (Jackson, 1987). Similarly, Kotrlik, Harrison, and Wall (1986) found that agriculture teachers were often as influential as the guidance counselor in affecting student career decisions. However, in many schools it has been the guidance department that schedules students and has the administrative jurisdiction to place students in classes. Therefore, as Matulis and Osborne (1990) indicated, the support of guidance counselors is crucial to

enrollment in vocational education courses such as agricultural education. Guidance counselor support should be enhanced by an awareness of the extent of student interest in agriculturally related courses. Similarly, information on the rationale students use to enroll in agriculture is critical to the improvement of guidance practices.

Student interest may be affected by perceptions of agriculture including course content, pedagogical strategies, and career potential (Marshall, Herring & Briers, 1992; Thompson & Russell, 1993). Agricultural experience programs and FFA proficiency awards in the agriculture curriculum can also influence student career objectives in agriculture (Bowen & Doerfert, 1988; McGary, 1986).

Student misperceptions of the agricultural industry and agricultural career opportunities may negatively affect recruitment (Krueger & Riesenber, 1991). Many high school students, unaware of the range of agricultural careers, rate agricultural jobs low in terms of stability, a secure future, and earning power (Mallory & Sommer, 1986). Even the general public has a limited understanding of vocational agriculture and agricultural employment (Hoskey, 1988). An inadequate understanding of agriculture may hinder parents' ability to counsel their children in these areas.

Sociocultural factors have also been linked to student attitudes, beliefs, and enrollment in agricultural courses, and may differ by gender and ethnicity. For example, Bell and Fritz (1992) found that females face barriers to enrollment in agricultural courses including a lack of career information concerning nontraditional roles, inappropriate school counseling services, and lack of a supportive network. Similarly, Nichols and Nelson (1993) determined that Hispanic students face a number of barriers to participation in higher education based on family, cultural, and financial factors, and were more likely to have a negative perception of agriculture than students in other

ethnic groups. Talbert and Larke (1993) determined that minority students were underrepresented in introductory agriscience courses in Texas and identified African-American and Hispanic students as having more negative perceptions of agriculture than Caucasian students. Recruitment of non-traditional students is crucial to prepare them for a diverse and rapidly changing workplace and assure an adequate cadre of students in vocational programs such as agriculture (Thompson, 1994).

Beliefs and attitudes held about an issue or event are good predictors of intentions to participate in an educational program. Lam (1982) described intrapersonal reasons as potential barriers that influence students not to enroll in vocational education including attitudes, perceptions, images, motivation, career maturity, and value systems. Personal issues may also encourage enrollment in agriculture. For instance, Cano and Bankston (1992) determined that youth enroll in 4-H programs as a result of the influence of friends or relatives, or interest in the development of leadership skills and self-confidence. Activities, experiences, and youth development opportunities were also strong influences for participation in 4-H. Similarly, a desire to enhance personal identity or be involved with activities affect student enrollment in agriculture (Marshall, Herring, & Briers, 1992).

Theories of cognitive and social psychology (Ausubel, 1968; Bandura, 1986; Novak, 1977; Vygotsky, 1962) support the link between student attitudes and beliefs, and participation in agricultural or vocational programs. These theories depict knowledge as being constructed from the interplay between individuals and their experiences. The role of perception in interpreting experiences is emphasized. Perceptions of experience guide action. Perceptions therefore affect both what is learned and what actions are taken.

Application of these theories to Tech Prep suggest that educational and guidance counseling interventions that focus on student rationales for

enrolling in agricultural education could hold great promise for effective student recruitment and for providing an appropriate workforce for agriculturally related careers. This Technology Preparation Project examined the reasons tenth grade students enroll in high school agriculture programs. Results should be useful in assisting educational leaders to develop a continuum of instruction from high school through college. This will help students meet career goals; lead to effective counseling strategies; and enhance administrative decision making, curriculum development, guidance, and career counseling for Technology Preparation Initiatives.

Purpose and Objectives

The purpose of this investigation was to determine reasons that students enroll in agricultural education in high school in order to develop effective career counseling, student recruitment strategies, and student information materials for high school through college. The research objective were to:

1. Determine the reasons that tenth grade students would elect to study agricultural subjects.
2. Determine differences by gender and ethnicity in the perceptions of tenth grade students' reasons for studying agricultural subjects.
3. Identify recommendations for recruiting students and curriculum options that would attract a broad range of students to study agricultural education.

Methods

Population and Sample

Twelve geographically distributed pilot high schools and technical centers were selected as a stratified random sample from thirty eight (38) New York schools willing to participate in the study. The school selecting process was designed to identify schools that were representative of schools within the state in terms of high schools in urban and rural areas, schools, and technical centers (Boards of Cooperative Educational Services, typically referred to as BOCES). The selection panel to identify schools included representation from Deans of Agriculture in two-year colleges, the New York State Rural Schools Program, public school administrators, and the State Department of Education. All schools in the sample had a tenth grade cohort with the exception of one BOCES Center. Since one of the feeder schools in this BOCES was in the project, this technical center was represented in the data set.

The schools were contacted to solicit cooperation, identify school contact persons, and to determine the number of students in the tenth grade. Tenth grade students were selected as the sample because they would be the first class to enroll as juniors in a Technology Preparation Program. A packet of instruments was mailed to each contact person along with standardized instructions on how to administer the instrument to students. Surveys were collected after completion, resulting in a complete return rate without the need for a follow-up.

Instrumentation

The researchers developed a *Career and Educational Interest* instrument to address the research objectives. The instrument consisted of two separate forms: Form 1, Home and School and Form 2, Agriculture and Technology Preparations. The instruments and data collection procedures were field tested in five pilot schools to determine reliability for related subscales following the recommendation of Dillman (1978) and Fowler (1988). A total of one hundred and seventy two students participated in the initial field test.

Cronbach's alpha was used to assess subscale reliability. Field test alpha coefficients ranged from .58 to .98. For subscales below .70, questions were modified to achieve a higher reliability coefficient. Additionally, a panel of experts consisting of two and four year college faculty assessed content validity of the instruments. Based on pretest results the questionnaires were revised as necessary.

The revised instruments were submitted to a commercial vendor to convert to opscan format. This provided an easy to follow, self-contained booklet that had a professional appearance. It also transformed the instrument to machine readable form that could be quickly scanned to a data file. The final questionnaire consisted of Likert type scales using a strongly disagree to strongly agree scale and nominal level data.

A review of related literature assisted in the development of relevant subscales for reasons students enroll in agriculture courses. Subscales included reasons related to *preparatory* for job and higher education, *development skills*, *academic enhancement*, response to *social pressure* and participation in *activity centered learning*. Reliability was assessed using Cronbach's alpha. Subscale alpha coefficients for the final instrument were .75, .86, .93 and .85 respectively.

Data Source

Tenth grade students from each school completed the instrument based on the size of the tenth grade class. In schools with less than 300 students, all tenth grade students completed the instrument. In one larger school, a power of the test calculation was used to identify a representative, random sample. The school contact assigned each student a number to identify the research instruments and to assure respondent anonymity. Similarly, the schools were coded by

number. In the majority of schools, the same students completed both forms of the survey. However, two schools experienced difficulty with survey administration procedures. In these schools, a student completed either Form 1 or Form 2 but not both. In each case, questionnaire forms were distributed randomly to the student population and should not bias the results. A total of 927 respondents completed Form 1 and 925 respondents completed Form 2. Sampling procedures with this slight modification provided valid and reliable data for the study.

Data Analysis

Data were analyzed using SPSS/PC. Frequencies were obtained on all data. Scale results were summarized using means and standard deviations assuming interval level data. Comparisons of means of both scales and individual items were calculated using analysis of variance or t-test. An alpha level of .05 was established a priori.

Findings

Conceptual Domains for a Rationale to Study Agriculture

Reliability coefficients and factor analysis, in addition to a review of related literature, was used to establish five domains that contribute to a student self-identified rationale for studying agriculture in high school. The domains include *preparatory* for job and higher education, *developmental skills*, *academic enhancement*, response to *social pressure* and participation in *activity centered learning*.

Table 1. Reasons of Tenth Grade Students for Studying Agriculture in High School

	\bar{X}	S.D.	Alpha
<i>Activity Centered Learning</i>			.85
Have hands on learning activities	3.87	.89	
Gain work or coop experience	3.73	.97	
Have youth organization activities	3.50	.97	
Subscale Mean:	3.71		
<i>Development</i>			.86
Team work skill	3.73	.99	
Life skills	3.71	.98	
Leadership	3.24	1.11	
Citizenship	3.21	1.04	
Subscale Mean:	3.47		
<i>Academic Enhancement</i>			.82
Satisfy my interest	3.71	1.11	
Explore careers	3.67	.95	
Use my ability	3.65	.87	
Get a general education	3.48	.96	
Get college credit	3.45	.98	
Count as a second science in my sequence	3.20	.98	
Receive automatic college admissions to an agriculture program	3.14	1.01	
Escape foreign language requirement	2.84	1.23	
Subscale Mean:	3.40		
<i>Preparatory</i>			.75
A Job	3.58	1.10	
Two year college	3.25	1.12	
Four year college	3.22	1.20	
Subscale Mean:	3.34		
<i>Social Pressure</i>			.93
Be with my friends	2.76	1.14	
Satisfy my parents	2.51	1.10	
Satisfy my teachers	2.39	1.06	
Satisfy my guidance counselor	2.35	1.05	
Subscale Mean:	2.49		

Note. Based on Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

Reasons for Studying Agriculture in High School

Of the tenth grade students, 27.4% felt they would be interested in studying agriculturally

related subjects in high school. Those who indicated an interest in the subject rated their agreement and disagreement on a Likert-type scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree for 22 potential reasons to study agriculture.

The mean scores on the 22 items ranged from 2.5 to 3.9. Nine of the mean scores were 3.5 or higher as shown in Table 1. The most popular reasons, ranging from mean = 3.71 to mean = 3.87, were to "have hands on learning activities", to "gain work or co-op experience", to "satisfy interest" and to develop "teamwork skills" and "life skills". Traditional roles of the agricultural education curriculum such as prepare for a "job," and the emerging roles of "two year college" and "four year college" each received mean scores of 3.2 to 3.6. The lowest three rated items were satisfy my "guidance counselor," "teacher" and "my parents". These items had means of less than 2.6.

Gender Differences in Reasons to Study Agriculture

The t-test was used to compare the perceptions of male and female students. There were significant differences by gender on one subscale, the response to social pressure scale. Males were more likely ($p = .0001$) to study agriculture due to social pressure than females (mean = 10.74 and 9.24, respectively).

Although there were no significant differences in the development subscale, when individual items were compared, significant gender differences were identified for the items "Develop life skills" and "Develop teamwork skills". Females were more likely to study agriculture to develop life skills ($p = .0085$, mean = 3.87 and 3.62, respectively) than males. Males however, were more likely ($p = .0001$) to take agriculture to escape a language requirement than females (mean = 3.07 and mean = 2.59, respectively).

Ethnicity Differences in Reasons to Study Agriculture

Analysis of Variance compared the perceptions of African-American, Caucasian, American Indian or Alaskan Native, Asian or Pacific Islanders, and Hispanic students. There were no significant differences found for subscales or individual items within the scales with respect to ethnicity.

Conclusions

1. Students' self-described reasons for enrolling in agriculturally related subject matter can be categorized in conceptual domains that include *preparatory* for job and higher education, *developmental* skills, *academic enhancement*, response to *social pressure* and participation in *activity centered learning*. Collectively these, and other unidentified domains, contribute to a decision rationale to study related subject matter.
2. Within the conceptual domains, students indicated higher ratings for activity-centered learning, opportunity for work experience, to satisfy an interest, and to develop teamwork and life skills.
3. There were no significant ethnic difference in the reasons that students would study agriculturally related material with respect to preparation for job and higher education, developmental skills, academic preparation, response to social pressure, and activity oriented nature of the classroom; nor were there item differences within these conceptual domains.
4. Gender differences on reasons for studying agriculturally related material for the model utilized in this study were not significant, with a few exceptions:
 - a) Males responded to social pressure to enroll more so than

females. Perhaps gender bias discourages females in the school and social system as indicated by Bell and Fritz (1992).

- b) Males were more apt than females to study agriculture in order to escape a foreign language requirement, whereas females were more likely to enroll to develop team work and life skills.

Recommendations

1. Recruitment strategies should highlight the reasons most important to students, and, when individualized assessment instruments are administered, can lead to personalized counseling strategies.
2. The lack of gender and ethnic differences suggests that a comprehensive, single-focused recruitment strategy is appropriate, although there should be sensitivity to these areas.
3. Guidance counselors should be aware of the relative rating of reasons students use to study agriculturally related subjects and be prepared for effective counseling and career information service to students.
4. New curriculum options for studying agriculturally related subjects should consider the reasons that students identify for enrolling.
5. Additional qualitative study is needed to explain how students construct their rationale for enrolling in agriculturally related subjects. In addition, more research is needed to determine the explanatory/predictive power of this

model of a Student Rationale for Agricultural (SRAS). Related studies are needed to determine best strategies to interface with guidance counselors regarding student counseling for study in agriculturally related areas.

6. Further research also needs to be conducted to determine the role other significant individuals such as teachers, parents, and friends play in a student's decision to enroll in agriculture. Additional studies are also needed to determine strategies to enhance the understanding of these individuals in the field of agriculture.

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