KNOWLEDGE AND PERCEPTIONS OF VIRGINIA SECONDARY AGRICULTURE EDUCATORS TOWARD THE AGRICULTURAL TECHNOLOGY PROGRAM AT VIRGINIA TECH

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Abstract

Identifying knowledge and perceptions toward a postsecondary agriculture program can benefit the secondary agriculture educator, their students, and the postsecondary program. Agriculture educators need to be aware of post-high school options available to their students. This awareness is the key to meeting the needs of students with varying educational interests and abilities. The purpose of this study was to identify secondary agriculture educators' knowledge and perceptions of the Agricultural Technology (AT) Program at Virginia Tech and identify how AT administrators can increase awareness of the AT Program. Results indicate that secondary agriculture educators felt strongly that the AT Program curriculum would contribute to a students' success in the agriculture industry. Educators also indicated that they recommended the AT Program to their students, but encouraged students academically qualified to pursue the bachelor of science degree instead of the AT associates degree. A mass mailing to every secondary agriculture education program was the most often identified means of learning about the AT Program. Having AT Program faculty visit secondary schools, attend FFA activities and career fairs was identified by educators as a means to increase awareness of the AT Program.

Introduction/Theoretical Framework

One may argue that the secondary agriculture educator can be the strongest advocate for university agriculture departments and programs. Secondary agriculture educators, university administration, and faculty must cultivate and maintain a relationship for many reasons. Reasons include: identifying the educator's knowledge of university curriculum; career opportunities for university graduates; the development of articulation agreements between secondary schools and universities; and to develop a strong recruiting link between high schools and university programs and departments of agriculture.

Assessing an individual's knowledge base and perceptions is a key to building and maintaining a strong relationship between secondary educators and university administration and faculty. Perceptions refer to an individual's current appraisal of an object or program (Hinkson & Keith, 2000). May (1969) concludes that people base their perceptions on past experience and knowledge; therefore, if a person has limited knowledge and experience about a topic, then they cannot accurately perceive it. According to Bryson (1988), effective assessment should provide several benefits to an organization: "among the most important is that it produces information vital to the organization's survival and prosperity" (p. 120). Birnbaum (1988, p. 42) states "understanding the environment is critical, because organizations have vital continuing and mutual transactions with elements outside their boundaries." In the case of this study, the organization is the Agricultural Technology (AT) Program at Virginia Tech and the outside elements are all secondary agriculture educators in Virginia.

Two-year certificate and/or associate degree programs provide educational opportunities to students who are not interested in or academically prepared to earn a bachelors degree. Gray and Herr

(1996, p. 3) believe that "students unlikely to earn a bachelors degree need other ways to win." They also argue that four-year institutions could better serve students from the bottom two thirds of their high school class by setting up programs that offer two-year associate degrees in technical areas. According to Gray (2000, p. 2) "by the mid-1990s at least one in three university graduates were underemployed." At the same time, the nation's economy was generating record numbers of unfilled positions in high-skill jobs (Gray, 2000). Stanfield (as cited in Boesel, 1999, p .4) stated that "many of those who obtain a bachelor's degree discover it doesn't live up to its advertising." Gray (2000, p. 5) argues that "a new goal is needed for teens: postsecondary success." He believes this goal can be achieved if every high school graduate develops a postsecondary plan with a high probability of success.

Every land-grant institution was created with the "industrial class" in mind (Herren & Hillison, 1996). One of the purposes of the land-grant institution is to serve the people of the state by traditional or non-traditional methods. One method of meeting the needs of the state is the inclusion of two-year programs (Kantrovich, 2000). If the needs of the people are not being met, then the land-grant mission is not being fulfilled (Morrill Land-Grant Act, 1862; National Association of State Universities and Land-Grant Colleges, 1995).

There are currently seventeen land-grant institutions with two-year agricultural programs and/or short courses. These programs provide an education for students interested in pursuing technical and mid-management level careers in the agricultural industry. Fall 2000 enrollments of two-year agriculture programs at 1862 land-grant institutions totaled 3,015 students according to the 2000 Food and Agricultural Education Information System (FAEIS) report (the latest data on file).

During the early 1980's, the agriculture and horticulture industries in Virginia saw a growing need for technically trained employees to meet increasing employment demands. Many agricultural related organizations, including the Virginia Farm Bureau Federation, assisted administrators and faculty of the College of Agriculture and Life Sciences at Virginia Tech in establishing the AT Program in 1987, with the first graduating class in the spring of 1989 (Kantrovich, 2000). The AT Program offers a two-year associate of agriculture degree with four option areas (agriculture business, animal agriculture, crop production, and landscape and turf management) that are recognized by the State Council of Higher Education in Virginia (SCHEV). Since the Program's inception, over 540 students have completed the degree and current enrollment is approximately 125 students.

According to the Bureau of Labor Statistics Occupational Outlook Handbook, projected job growth rates over the 1998-2008 period indicate a 33% increase in occupations requiring an associate degree. Occupations requiring at least a bachelor degree are projected to grow by approximately 22% (Department of Labor, 2000). According to Hermann and Malone (2001), 85.3% of the 1999-2000 graduating classes of Virginia Tech AT Program students were employed with an average salary of $25,750. This data is comparable with the 86.2% employment rate and an average mean salary of $26,719 for a Bachelor of Science degree candidate in the College of Agriculture and Life Sciences at Virginia Tech.

During the 2000 - 2001 academic year there were approximately 15,377 students enrolled in a secondary agriculture course(s) in one of the 220 secondary agriculture departments throughout Virginia. Administrators and faculty in the AT Program identified the importance of building a stronger relationship with the secondary agriculture educators in Virginia so as to meet the needs of high school students who aspired to pursue post secondary education in agriculture. Identifying the educators' knowledge and perceptions were the basis for this study.

Purpose and Objectives

The purpose of this study was to identify Virginia secondary agriculture educators' knowledge and perceptions of the Agricultural Technology Program at

Virginia Tech. Specific objectives of this study were to:

1. Identify the demographic profile (age, gender, years of teaching experience and geographical region of employment) of the respondents;
2. Identify educators' perceptions of the AT Program;
3. Identify how educators learned about the AT Program; and
4. Identify how Virginia Tech administration and faculty can increase awareness of the AT Program and better serve educators and students.

Procedures

This study used a descriptive survey design. The population for the study included all secondary agriculture educators currently teaching in Virginia during the 1999-2000 academic school year (N = 243). The Agricultural and Extension Education Department at Virginia Tech provided the list of names and addresses.

The researcher developed an instrument to fulfill the objectives of the study. The instrument was divided into the following four sections: 1) demographic characteristics including age, number of years teaching, gender and geographical location of their school; 2) secondary agriculture educators' perceptions of the AT Program based on responses to eight, five-point Likert-type scaled questions (5 = Strongly Agree, 4 = Agree, 3 = Neutral, 2 = Disagree, and 1 = Strongly Disagree); 3) how secondary agriculture educators learned about the AT Program based on five "yes" or "no" statements; and 4) respondents completion of two open-ended questions on how AT Program faculty and administration can increase teacher/student awareness. Face and content validity of the instrument were established by faculty in the Agricultural and Extension Education Department, the Director of the Agricultural Technology Program, and the Academic Dean in the College of Agriculture and Life Sciences at Virginia Tech. A pilot test was conducted using 15 randomly selected Virginia secondary agriculture educators attending the Virginia Association of Agricultural Educators annual conference. Instrument reliability for section two (eight scaled questions) was determined by calculating a Cronbach's alpha coefficient. The reliability was .75.

Data were collected via a questionnaire. A cover letter, number coded instrument, and self-addressed stamped envelope were mailed to the entire population. A second questionnaire packet was mailed to non-respondents approximately three weeks following the first mailing and a reminder letter was mailed to non-respondents approximately seven weeks after the first mailing. A total of 119 respondents returned the questionnaire resulting in a response rate of 49 %.

The researcher compared early and late respondents to control non-response error (Miller & Smith, 1983). A comparison of mean differences was calculated using a *t*-test on the eight-scaled questions (section two) between the two response groups. Results indicated no significant difference between groups; therefore, it was concluded that the data represent the target population.

The Statistical Package for the Social Sciences (SPSS) 10.0 for windows was used to analyze the data. Descriptive statistics including percentages, means, standard deviations, and frequencies were used to describe the populations' perceptions. One-way analysis of variance (ANOVA) by age and years teaching experience was conducted on the scaled questions (section two) to determine if bias (a preference or impartial judgment) existed among respondents.

Findings

Objective One: Demographic Characteristics of Secondary Agriculture Educators

As indicated in Table 1, 36% percent of the educators were 35-44 years of age; 28% were 45-54 years of age. Sixty-seven percent of the educators were male. Thirty-four percent of the educators reported 21-30 years of teaching followed by 30% with 1-5

Table 1
Demographic Characteristics of Secondary Agriculture Educators

Characteristic		*n*	Percentage
Gender	Female	37	32.5
	Male	77	67.5
Age	Younger than 25	12	10.5
	25-34	22	19.3
	35-44	41	36
	45-54	33	28.9
	55-64	6	5.3
Years of teaching experience	1-5	33	29.2
	6-10	9	8.0
	11-15	11	9.7
	16-20	20	17.7
	21-25	19	16.8
	26-30	14	12.4
	31-35	7	6.2
Geographical region of employment	Appalachian	29	24.4
	Central	18	15.1
	Eastern	7	5.9
	Northern	33	27.7
	Southside	32	26.9

years of teaching. Approximately 78% of the respondents represent three of the five geographical areas: Southside, Northern and Appalachian.

Objective Two: *Agriculture Educators' Perceptions of the Agricultural Technology Program*

Agriculture educators were asked to rate eight statements using the following scale: Strongly Disagree (*M* = 1.0-1.49), Disagree (*M* = 1.50-2.49), Neutral (*M* = 2.50-3.49), Agree (*M* = 3.50-4.49), and Strongly Agree (*M* = 4.50-5.0). As indicated in Table 2, educators felt that if their students were academically qualified to pursue a Bachelor of Science degree they would encourage them to do so instead of applying to the AT Program (*M* = 4.08). Educators agreed (*M* = 4.0) that their students' perceptions of the AT Program were positive and that the AT Programs curriculum would contribute to a student's success in the agriculture industry (*M* = 3.62). Eleven of the 119 respondents were either first year teachers and/or unfamiliar with the AT Program; therefore, they didn't answer the statements in Table 2.

The one-way ANOVA results proved no sample bias due to age of the respondents, but did however indicate (significant at the .05 level) that educators who had less than 10 years teaching experience (*n* = 35) were less optimistic regarding the following statements: 1) parents' perceptions of the AT Program are positive; and 2) students' perceptions of the AT Program are positive, in comparison to educators with greater than 10 years teaching experience.

Table 2
Agriculture Educators' Perceptions of the Agricultural Technology Program

Statement	*n*	*M*	*SD*
If my students are academically qualified to pursue a Bachelors of Science degree I will encourage them to pursue it instead of the Associates degree	108	4.08	.87
Parents' perceptions of the AT Program are positive	108	4.00	.60
Students' perceptions of the AT Program are positive	108	4.00	.58
The AT Program associates degree is as valuable to some of my students as the bachelor of science degree	108	3.94	.94
Curriculum in AT Program will contribute to a student's success in the agriculture industry	108	3.65	.62
I recommend the AT Program to parents of my students	107	3.63	.69
The AT Program offers a valuable educational experience for students interested in agriculture	108	3.62	.60
I recommend the AT Program to my students	107	3.53	.61

Note. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

Objective Three: How Did Educators Learn About the Program?

Educators identified a number of ways they have been informed about the Program as shown in Table 3. Nearly 60 % of the secondary educators indicated that the Annual AT Program mailing to their respective schools informed them of the AT Program. Secondary educators also learned about the AT Program from fellow educators and the annual College of Agriculture and Life Sciences Fall Open House.

Table 3
Ways in Which Educators Were Informed of the Program (n=111)

	Yes		No	
Statement	*f*	%	*f*	%
Learned about AT from fellow ag teacher	37	33.3	74	66.7
Learned about AT while attending VT	45	40.5	66	59.5
Learned about AT from an AT mailing	66	59.5	45	40.5
Learned about AT from a CALS open house	20	18.0	91	82.0
Viewed the "Fast Track to Success" video	7	6.3	104	93.7

Note. Respondents could have chosen more than one statement.

A small percentage of secondary educators indicated they had learned about the AT Program via the "Fast Track to Success" promotional video produced by the AT Program. However, the video had not been distributed to all secondary agriculture programs at the time of this study. A small number of respondents were either first year teachers and/or unfamiliar with the AT Program; therefore, they didn't complete the statements in Table 3.

Objective Four: How Can Program Administration and Faculty Increase Educator/Student Awareness and How Can the Program Better Serve You and Your Students?

To address this objective, educators were given two open-ended questions: 1) please give us ideas on how AT Program faculty and staff can make teachers and students more aware of the AT Program (See Table 4); and 2) how can AT Program faculty and staff better serve you and your students (See Table 5)? The researcher carefully reviewed the secondary educators' responses to the two questions. Some of the statements were similar in meaning and thus were grouped into one broad statement, as the researcher deemed appropriate.

Table 4
Ways in Which AT Faculty and Staff Can Make Teachers and Students More Aware of the AT Program

Statement	*F*
Visit schools	12
Attend FFA activities (local and state)	5
Attend career and college fairs	4
Better communication with schools	4
Send literature	4
Attend annual teachers convention	3
Send a video	3

Table 5
Ways in Which AT Faculty and Staff Can Better Serve Educators and Their Students

Statement	*F*
Diversify the AT curriculum	4
Enhance and expand the articulation program	3
Provide a list of occupations for AT graduates	3
Increase transferability from two-year to four-year programs	2
Share AT curriculum with educators	1

Conclusions/Recommendations/ Implications

As previously stated by Bryson (1988), assessment should provide information vital to an organizations survival and prosperity. Administrators and faculty in the AT Program identified the importance of building a stronger relationship with secondary agriculture educators in Virginia; and therefore, they saw the need to identify the educators' knowledge and perceptions of the Program. The following conclusions, recommendations, and implications are being made based upon the research findings.

Overall, the secondary educators either agreed or strongly agreed that the AT Program curriculum will contribute to a student's success in the agriculture industry and that the Program offers a valuable educational experience for students. Educators also felt that the associate of agriculture degree is as valuable to some of their students as a Bachelor of Science degree.

Although the educators did agree that parents' and students' perceptions of the AT Program are positive, the ANOVA results indicated that educators with less than 10 years teaching experience were less optimistic about the aforementioned statements. One may conclude that educators with less teaching experience may have less knowledge of or respect for the AT Program for one or more of the following reasons: 1) they may not have had a student(s) graduate from the Program; 2) are unfamiliar with current employment rates for two-year graduates in the agriculture industry; and 3) feel that a four-year degree is more important than a two-year degree.

As previously stated, Bureau of Labor statistics indicate job growth rates during the 1998 – 2008 period will increase at a higher percentage for two-year graduates in comparison to four-year graduates. According Hermann and Malone (2001), over 85% of the 1999-2000 graduating classes of AT Program students were employed with salaries comparable to four-year graduates in the College of Agriculture and Life Sciences at Virginia Tech.

Secondary agriculture educators need to be aware of current employment trends and salary ranges for graduates with two-year technical degrees so they can assist their students with making educational decisions beyond high school. Gray (2000) argues that many teens and their parents do not consider alternatives to a four-year degree. He suggests that schools should help parents and students make informed decisions regarding post-high school plans.

Administrators and faculty at postsecondary institutions should play a role in increasing the secondary educator's awareness of post-high school options for their students. According to results of this study, the AT Program administration must continue to send annual mailings to all educators (approximately 60% of the educators indicated that they were made aware of the Program via annual mailings). Another method of promoting the Program is for administrators and faculty to meet with undergraduate and graduate students who aspire to be secondary agriculture educators. This is currently an underutilized means of Program promotion (only 40% of the respondents indicated that they had learned about the Program while attending Virginia Tech). This small percentage may be due to the fact that the Program was started in 1987.

Although there was a small percentage of educators who answered the open-ended questions under objective number four, the majority of the respondents felt that Program faculty and/or staff need to visit their schools during the academic year (in the classroom, during FFA activities and college/career fairs). School visitations can be a means to building long-standing relationships with secondary educators and it gives their students an opportunity to speak with a representative from the institution. One downfall to this approach of Program promotion is travel and personnel expense. As many land-grant institutions are currently facing reduced operating budgets, it is difficult to secure university funding to support travel expenses and employee compensation. Funding from outside agencies (agribusiness councils, private industry, etc.) may need to be secured to support such travel.

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