

The Academic Ability of Agricultural Education Graduates Compared with Other Agriculture, Education and University Graduates

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The issue of teacher competence has recently received much attention from those within as well as from those outside the education profession. Recent studies have questioned the abilities of teachers and of those who aspire to teach. Colleges and universities are moving to increase minimum requirements for admittance into teacher training programs, and many states now have various testing programs for teachers entering the profession.

Evidence suggests that historically teachers have not been drawn from that segment of the population with the greatest aptitude for academic ability. Studies completed during the 1940's, 1950's and 1960's consistently showed that students preparing to be teachers were less able academically than students preparing to enter other professions (Blum, 1947; Burnett & MacMann, 1966; Mitzel and Dubnick, 1961). Studies such as one by Weaver (1979) and one by Vance and Schlechty (1982) have indicated that teachers are currently being drawn from the least academically able college students. Studies also indicated that of those who enter teaching, those who continue to teach are less academically able than those who do not continue to teach (Schlechty & Vance, 1983).

In light of recent concern of the academic ability of teachers in general, the academic ability of vocational agriculture teachers may also be in question. Are the most talented students in agriculture seeking or being recruited to the teaching profession, or do the best students elect to seek other career opportunities? If a disproportionate share of teachers is being drawn from the bottom quarter of graduating high school and college students as the National Commission on Excellence in Education (1983) suggested, then the speculation is easily made that the quality of vocational agriculture programs will reflect the quality of teachers. McCoy and Mortensen (1983) reported that agricultural education graduates of The Pennsylvania State University who entered teaching earned higher grades than those who did not teach.

Purpose and Objectives

The purpose of this study was to determine if the academic ability of agricultural education graduates was significantly different than the academic ability of other College of Agriculture, College of Education and all University graduates. The objectives of this study centered around accepted measures of academic ability, including performance in specific areas of instruction common to all subjects in the study, and were as follows:

1. Describe agricultural education graduates, other agriculture graduates, secondary education graduates and university graduates on their cumulative grade point average (GPA), high school GPA, high school percentile rank, ACT English, ACT math and ACT composite scores, GPA in coursework in the humanities and social sciences and GPA in coursework relative to the content area of their specialties.

2. Determine if significant differences existed between the groups on each measure of academic ability.

Procedures

The study included four populations in which all subjects were graduates of The Ohio State University, each holding traditional four-year Bachelor degrees, between the Summer Quarter of 1978 and the Spring Quarter of 1983. Each of three of these populations was represented by a random sample of students stratified by year. Stratification was necessary to provide for certain analyses not reported herein. The size of each sample was calculated using Cochran's (1977) formula for determining sample size.

The first population of 249 agricultural education graduates was represented by a sample of 105 graduates with a Bachelor of Science in Agriculture and a major in agricultural education. The second population of 2237 agriculture graduates was represented by a sample of 160 graduates with a Bachelor of Science in Agriculture and majors in areas other than agricultural education. A sample of 155 graduates with majors in the College of Education which culminated in secondary school teaching certificates represented the third population of 1338 secondary education graduates. The fourth population was comprised of all 31,494 graduates of The Ohio State University who received four-year degrees during the period of interest. It should be noted that the first three populations were actually sub-populations of the university population.

Data for each subject in the three sample groups were collected from the records offices of the College of Agriculture and the College of Education on each characteristic of interest. Data for the University population were obtained in the form of population statistics from the Office of Planning Studies to be used as comparison data.

Descriptive statistics were utilized to address specific objectives of the study. Analysis of variance was utilized to determine if significant differences existed between sample groups. The alpha level was set a priori at .05, and the Scheffe procedure was utilized. To compare the population with the sample groups, 95% confidence intervals were constructed around the sample means, which were then compared with the population means to determine if the population means were within the upper and lower limits of the confidence intervals.

Because data were obtained for all individual subjects, non-response error was not considered a problem. The 95% confidence intervals were utilized to alleviate the potential error inherent in comparing sub-populations with a larger population.

Findings and Conclusions

Previous evidence indicated that individuals who aspired to teach were less academically able than other college students (Weaver, 1979; Vance & Schlichty, 1982; National Commission on Excellence, 1983). The data reported herein do not support that evidence, particularly for agricultural education graduates when compared with other agriculture or university graduates. The most meaningful comparisons may be made on the assumption that had agricultural education graduates chosen another degree emphasis, most would likely have chosen another agriculture major rather than another secondary education major.

Agricultural education graduates were not found to be significantly different from other agriculture graduates on any of the variables of

interest (Table 1). This finding supports the assumption that agricultural education graduates are most like other agriculture graduates academically. When agricultural education graduates were compared with the total university population on the variables for which data were available, agricultural education graduates earned scores lower than university graduates only on the English portion of the ACT examination.

Agricultural education graduates earned scores on the English, math and composite portions of the ACT examination which were not significantly different from secondary education graduates. Neither the high school percentile ranks nor the high school grade point averages earned by agricultural education graduates was significantly different than that earned by secondary education graduates. Secondary education graduates did, however, earn significantly higher cumulative grade point averages as well as grade averages in courses in the humanities, social sciences and their specific content areas than did agricultural education graduates.

Both secondary education and other agriculture graduates were in degree programs which allowed them to accumulate greater proportions of their programs in their content areas of specialization. Animal science students concentrated their studies in animal science courses and social science education students concentrated their studies in social science courses, as examples. Agricultural education students were unable to concentrate courses in any of the areas such as humanities, social sciences or an agricultural area because their program is more general in nature. This design difference in the programs of the major areas may have put agricultural education graduates at a disadvantage when compared with the other groups since they did not have the opportunity to develop equal expertise and, consequently, corresponding grade averages as their counterparts in the other majors.

These findings indicate that agricultural education graduates held scores on several accepted measures of academic ability which were not significantly different from those earned by all university graduates and other agriculture graduates. Further, while they may not earn grades that are as high as secondary education graduates in coursework while at the university, their performance in high school and on the ACT examinations are clear indications that they are as academically able as secondary education graduates to do so.

Recommendations

The reason for the grade disparity between agricultural education and secondary education graduates was not an objective of this study; it should be an objective for future study. Why do agricultural education graduates perform as well as other agriculture and university graduates on many measures of academic ability, but do not score as well as secondary education graduates on measures related to performance in collegiate coursework?

A study by Miller (Wardlow, 1984b) found that faculty in the College of Agriculture held agricultural education majors in "lower regard" than other agriculture majors. These data indicate that they are not unequal in academic ability. Why does this perception exist, particularly when agricultural education and other agriculture graduates performed equally well in their content related coursework? This question implies a problem of image associated with the major which should be the concern of all agriculture educators.

Table 1

Comparison of Means for Each Group on Each Variable of Interest

Academic Measure	University Population		Agricultural Education		Other Agriculture		Secondary Education		F-Value
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Cumulative GPA	2.87	.48	2.81	.44	2.72 ^b	.46	2.96 ^b	.42	12.14
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High School Percentile Rank	76.12	20.50	78.45	16.87	74.87	17.77	74.85	20.04	1.48
High School GPA	(Not Available)		3.20	.47	3.11	.49	3.13	.55	1.03
Humanities GPA	(Not Available)		2.74	.60	2.80	.77	2.96	.62	5.27
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Social Science GPA	(Not Available)		2.54	.68	2.66	.64	2.76	.65	3.61
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Content Area GPA	(Not Available)		2.76	.57	2.87	.52	3.01	.48	7.51
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ACT English Score	20.09	4.49	18.70 ^b	5.02	19.35 ^b	4.29	19.29 ^b	4.14	0.76
ACT Math Score	22.54	6.52	22.02	6.43	21.75	6.55	20.24 ^b	6.98	2.67
ACT Composite Score	22.25	4.78	21.33	5.04	21.72	4.53	20.96 ^b	4.63	0.96

^aConnected sample means are significantly different at alpha=.05. ^bUniversity mean is not within 95% C.I. of sample mean.

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