

Secondary Agriculture Student Awareness Of International Agriculture And Factors Influencing Student Awareness

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Within recent years, agricultural educators have become increasingly aware of the necessity to view the profession from a global perspective. Teachers are beginning to perceive themselves and their students as a part of the world community. International dependence on agricultural products and technical expertise, satellites, television, jet travel, worldwide employment opportunities, the Work Experience Abroad program, and the importance of international export markets have all served to create a better understanding of the globe beyond the boundaries of states and the nation.

The global dimension of agricultural education has evolved from only teaching prospective teachers those pedagogical skills needed to plan, teach, and evaluate local high school agriculture programs to include a thrust in international education (Welton, 1987). A review of the history of teacher education in agriculture reveals no formal reference to international education until the early 1970s. At that time, future responsibilities of the agricultural teacher were examined. In the document *Agricultural Education for the Seventies and Beyond* (1971), dealing with international education was identified as an emerging responsibility.

In the decade since agricultural education moved onto the global stage, a number of noteworthy events have occurred (Welton, 1987). In 1979, a nationwide assessment of teacher education activities in international agriculture was conducted by Thuemmel and Welton (1983). This study was conducted on behalf of the American Association of Agricultural Educators and served as the basis for Chapter 15 in *Teacher Education in Agriculture*. The AATEA modified its purposes to include the promotion of international agricultural education as a basic function of international agricultural development. The Association for International Agricultural and Extension Education was established in 1984 to provide a professional association and network of agricultural educators and extension personnel concerned with the advancement of agricultural education programs in developing countries. During the latter part of the past decade, a number of activities emerged to help make international agriculture instruction become a reality in the secondary classroom (Moss, 1988).

As the profession has advanced ideas and projects to internationalize the secondary curriculum, an assumption was made that students in these programs lacked knowledge about the world and international agriculture. In Kansas, evidence to support this proposition was not available. This study was designed to provide a data base about student awareness of international concepts and to provide information for formulating strategies for infusing international agriculture concepts into the secondary agriculture curriculum in Kansas.

Purpose and Objectives

The major purpose of this study was to assess student awareness of international agricultural concepts and to determine if any differences exist due to selected student characteristics. The research questions used to guide the study included:

What is the level of secondary agriculture student awareness of international agricultural concepts?

What are the differences in secondary agriculture student awareness of international agricultural concepts that may be explained by (a) student gender; (b) year in school and academic performance; and (c) agriculture student variables of FFA membership, semesters enrolled in agriculture, and semesters of supervised occupational experience.

Procedures

All 5,327 students enrolled in secondary agriculture programs in Kansas during the 1989-1990 school year were identified as the target population for this study. To attempt to control for sampling, selection and frame error, a cluster sample of five randomly selected schools from each of the seven Kansas FFA Districts was drawn from the 1989-90 Kansas State Department of Education Listing of 160 schools offering high school agriculture. From the 35 programs selected, 1,398 high school agriculture students were identified by their instructors. This sample was more than adequate when compared to Krejcie and Morgan's (1970) table for determining sample size from a given population.

The instrument was administered to all the agriculture students in the selected programs by their teacher during class time. An Agricultural Teachers' Procedure Sheet was provided to assure that a standardized set of instructions were followed when administering the questionnaire. The dependent variable was student awareness of selected international agricultural concepts. The instrument also quantified the independent variables of student characteristics. These characteristics were selected following a review of literature and consultation with agriculture teachers to determine the information that could be provided. The student variables included gender, year in school, grades, FFA membership, semesters as an agriculture student, and semesters with a supervised occupational experience. The instrument contained 30 multiple choice and 20 completion items designed to measure student awareness of international agricultural concepts in: (a) agricultural policy, (b) agricultural products, (c) geography, and (d) people and cultures. These four categories represent a summary of knowledge and understanding areas proposed by McCracken (1989) as potential instructional topics. The questionnaire was reviewed by a panel of experts and pilot tested. The data were collected during October and November, 1989. Kuder-Richardson 20 was used to estimate the instrument reliability and found to be .67 for the total instrument, .64 for agricultural products, .57 for agricultural policy, .58 for geography, and .48 for people and cultures.

The Statistical Analysis System (SAS) was used to analyze the data. Means and standard deviations were calculated to assess the level of student awareness about international agriculture. Analysis of variance procedures and correlations were used to assess if significant differences existed in student awareness about international agriculture due to selected student demographic variables.

An analysis was completed on data returned from 1008 students who responding to the instrument from a population of 1398 for a 72.1% response rate. A comparison of early and late responding schools, using a t-test, revealed that no significant differences existed in their responses to the instrument. According to Miller and Smith (1983), non-respondents tend to respond like late respondents. Therefore, no additional follow-up was conducted.

Results

Demographic data collected in relation to student characteristics provided the following insight into the population for this study, allowing for some missing data. A total of 151 females (15%) and 855 males (85%) responded to the instrument. There were 325 freshmen (32.4%), 264 sophomores (26.3%), 227 juniors (22.6%), and 188 seniors (18.7%). Approximately 15% reported grades of mostly A's, 43% mostly B's, 29% mostly C's, 3% mostly D's, and 10% were unsure of their grades. Semesters of enrollment in agriculture ranged from 24.3% (243) with one semester of enrollment to 2.2% (22) with eight semesters of enrollment. Student participation in supervised occupational experience ranged from 18.4% (176) with no participation, 28.6% with one semester of participation, to 1.2% (11) with eight semesters of participation. Approximately 86% (864) of the respondents were members of the FFA.

One purpose of this study was to assess current student awareness about international agriculture. Mean scores for each of the subscale categories on the instrument were calculated for the 1008 respondents. Mean scores for each subscale are as follows: agricultural products--6.10 of a possible 19 (32%), agricultural policy--4.50 of a possible 12 (38%), geography--4.62 of a possible 12 (39%), people and cultures--2.53 of a possible 7 (36%), and 17.75 of a possible 50 (36%), for the total score in the instrument.

The second objective of this study was to determine if selected student characteristics influenced their awareness about international agriculture. Analysis of variance procedures comparing gender with awareness of international agriculture found no statistically significant differences at the 0.05 alpha level.

Table 1 compares student self-reported grades in school with awareness about international agriculture. Student scores on all subscale categories were found to be significant at the .05 level. Students reporting grades of mostly A's scored significantly higher on all four subscale categories and total instrument score than all other students. Students reporting grades of mostly B's scored significantly different from all other students on all four subscale categories and total instrument score. Students reporting grades of mostly C's were significantly different from all other students on the total instrument score. Students reporting grades of mostly C's were not different from those reporting grades of mostly D's or those who did not know their grades for the subscale categories. Students reporting grades of mostly D's or those who did not know their grades were significantly different from all other students on the total instrument score.

A comparison of student year in school to student awareness about international agriculture is contained in Table 2. Freshmen awareness scores of international agriculture were found to be significantly lower than all other students on all four subscale categories and total instrument score. The sophomore awareness score for subscale category of people and cultures was also significantly different from all other students in that category. Sophomore scores were not significantly different from juniors and seniors for the subscale categories of agricultural products and geography. Sophomores scores were also not significantly different from juniors on the subscale category agricultural policy. Seniors awareness score for agricultural policy were significantly higher than all other student scores for that subscale category. Senior scores were not significantly different from juniors on any other of the subscale categories.

Table 1. Comparison of Student Self-Reported Grades in School to Subscale Scores about International Agriculture

| Subscale ¹ | Self-Reported Grades | | | | | f | p |
|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|--------|
| | A's | B's | C's | D's | Do Not Know | | |
| | \bar{X}/SD (n=147) | \bar{X}/SD (n=432) | \bar{X}/SD (n=296) | \bar{X}/SD (n=35) | \bar{X}/SD (n=98) | | |
| Ag Products ¹ | 6.88 ^A /2.27 | 6.23 ^B /2.18 | 5.85 ^C /2.17 | 5.34 ^C /1.95 | 5.42 ^C /2.41 | 9.25 | 0.0001 |
| Ag Policy ² | 5.75 ^A /1.81 | 4.72 ^B /1.87 | 4.01 ^C /9.80 | 3.54 ^C /1.69 | 3.63 ^C /1.52 | 32.98 | 0.0001 |
| Geography ³ | 5.87 ^A /2.29 | 4.83 ^B /2.26 | 4.18 ^C /2.01 | 3.57 ^C /1.75 | 3.56 ^C /2.20 | 23.99 | 0.0001 |
| People & Cultures ⁴ | 3.21 ^A /1.63 | 2.65 ^B /1.45 | 2.28 ^C /1.32 | 2.05 ^C /1.39 | 2.04 ^C /1.41 | 14.95 | 0.0001 |
| Total Score ⁵ | 21.65 ^A /5.95 | 18.37 ^B /5.60 | 16.32 ^C /5.15 | 14.51 ^D /4.42 | 14.65 ^D /5.55 | 35.78 | 0.0001 |

¹Subscale contained 19 items

²Subscale contained 12 items

³Subscale contained 12 items

⁴Subscale contained 7 items

⁵Total scale contained 50 items

⁶Different letters indicate significantly different means.

Table 2. Comparison of Student Year in School to Subscale Scores About International Agriculture

| Subscale ¹ | Year in School | | | | f | p |
|-----------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------|--------|
| | Fr. X̄/SD (n=325) | So. X̄/SD (n=264) | Jr. X̄/SD (n=227) | Sr. X̄/SD (n=188) | | |
| Ag Products | 5.38 ^{A2} /2.07 | 6.31 ^B /2.28 | 6.43 ^B /2.23 | 6.71 ^B /2.18 | 18.87 | 0.0001 |
| Ag Policy | 4.33 ^A /1.84 | 4.54 ^{AB} /2.09 | 4.42 ^{AB} /1.74 | 4.95 ^C /1.92 | 4.42 | 0.0042 |
| Geography | 4.19 ^A /2.20 | 4.66 ^B /2.22 | 4.92 ^B /2.35 | 5.00 ^B /2.23 | 7.10 | 0.0001 |
| People & Cultures | 2.14 ^A /1.33 | 2.55 ^B /1.38 | 2.80 ^C /1.51 | 2.90 ^C /1.62 | 14.81 | 0.0001 |
| Total Score | 16.03 ^A /5.35 | 18.02 ^B /6.00 | 18.52 ^C /5.66 | 19.50 ^C /5.94 | 17.29 | 0.0001 |

¹See Table 1 for explanation of subscale categories.

²Different letters indicate significantly different means.

A comparison of student FFA membership to the four subscale scores and total score about international agriculture awareness was made. No significant differences at the 0.05 alpha level were found.

Correlation coefficients were computed for semesters of student enrollment in agriculture, semesters of student participation in supervised occupational experience, and student year in school and are reported in Table 3. Significant relationships were found to exist for the variables semesters of student enrollment in agriculture, semesters of student participation in supervised occupational experience and student year in school and all subscale categories of agricultural products, agricultural policy, geography, people and cultures, and total score. Borg and Gall (1983) stated that correlation coefficients ranging from .20 to .35 show only slight relationships between variables even though these relationships may be statistically significant. Correlations at this level are of little value in practical prediction situations. The correlation coefficients that were found to be significant were within this range and were judged to have little practical significance. Thus, no additional analysis of data were deemed appropriate.

Table 3. Relationships Between Subscale Scores About International Agriculture and Selected Student Characteristics

| Subscale/Characteristics | r (n=1008) | p |
|------------------------------|---------------|--------|
| Agricultural Products | | |
| Year in School | 0.21 | 0.0001 |
| Semesters of Ag Ed | 0.22 | 0.0001 |
| Semesters of SOE | 0.24 | 0.0001 |
| Agricultural Policy | | |
| Year in School | 0.09 | 0.0027 |
| Semesters of Ag Ed | 0.08 | 0.0104 |
| Semesters of SOE | 0.10 | 0.0017 |
| Geography | | |
| Year in School | 0.14 | 0.0001 |
| Semesters of Ag Ed | 0.12 | 0.0001 |
| Semesters of SOE | 0.11 | 0.0002 |
| People & Cultures | | |
| Year in School | 0.20 | 0.0001 |
| Semesters of Ag Ed | 0.18 | 0.0001 |
| Semesters of SOE | 0.17 | 0.0001 |
| Total Score | | |
| Year in School | 0.21 | 0.0001 |
| Semesters of Ag Ed | 0.20 | 0.0001 |
| Semesters of SOE | 0.21 | 0.0001 |

Conclusions and Recommendations

Conclusions reached in considering the findings of this study were as follows: (a) High school agriculture student awareness about international agriculture in the areas of agricultural products, agricultural policy, geography, and people and cultures is limited; (b) agriculture students with higher grades possess more knowledge about international agriculture than their counterparts with lower self-reported grades; (c) student awareness about international agriculture increases as advancement is made to the next high school class; (d) the longer a student is a part of a high school agriculture program and involved with supervised occupational experience, awareness about international agriculture increases. This conclusion may have been compounded by history and maturation effects. Additional research should be conducted to clarify this point as none of the correlation coefficients revealed relationships that would contribute practical predictive information.

Considering facts and insights gathered in the course of the study, the following recommendations are offered: (a) Efforts to teach secondary agriculture students about international agriculture should be accelerated; (b) greater consideration should be given by teachers on ways to retain students in their program and to increase student involvement in supervised occupational experience as a means of increasing international agriculture awareness; (c) additional research should be conducted to determine the interaction of FFA membership, on student awareness about international agriculture; (d) further research should be conducted to identify specific international agriculture concepts that should be taught in secondary agriculture programs.

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