

Developing Professional Interest Among Undergraduate Majors

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Introduction

Undergraduate students in colleges of agriculture tend to have a rather superficial understanding of their chosen profession. As undergraduates, they concentrate primarily on developing manipulative skills in the use of the "tools" of the profession without developing an appreciation for its respective problems and challenges.

What, then, can be done to develop a better understanding of a profession among undergraduate majors? One way of bringing undergraduate students into the mainstream of professional thought and activity is through their participation in the professional association's annual meeting. Thus, the question really becomes one of how to encourage their participation.

The purpose of this paper is to briefly explain and evaluate the use of contests as a means of encouraging student attendance and participation in the American Agricultural Economics Association (AAEA). The ultimate objective of this activity, of course, is to promote interest in and understanding of the profession of agricultural economics among undergraduate college students.¹

History of AAEA Student Activities

Comparatively speaking, the undergraduate student activities of the association are of relatively recent origin. While the Association's history dates back to the early part of this century (1910), it was not until 1948 that student sections became an official part of the parent association. The Association's constitution was amended to authorize student sections (chapters) in colleges and universities offering courses in agricultural economics, farm management, or allied fields. Last year there were 32 chartered chapters in the U.S. and Canada.

The amendment further authorized a national student organization. One function of this organization (Student Section-American Agricultural Economics Association) is to help coordinate student program activities (including the contests) during the Association's annual conference. In addition, the organization publishes periodic newsletters, coordinates regional meetings, and encourages activities to build and strengthen local chapters.

Interest and participation in student ac-

tivities has continued to grow. Debating was initiated in 1952, public speaking in 1955, and an essay contest in 1964. Last year, 22 chapters had entrants in the contests with a total of 68 students participating. While participants in the essay contest are not required to attend, many do. Attendance is a prerequisite, of course, for debate and public speaking contests. Winners are appropriately recognized and rewarded as a part of the Association's annual award program near the close of the conference.

An effort is made in program planning to minimize conflicts between sessions of the parent association and the debate and public speaking finals. Students are encouraged to participate in the general sessions of the association and, likewise, AAEA members are urged to attend student activities.

Perhaps this approach, i.e. the use of contests to encourage student participation, is unique only in that the contests are held in conjunction with the Association's annual conference. While other professional associations sponsor and encourage this type of activity among undergraduate students, it is often apart from the association's annual conference.

Benefits

Benefits accrue to both the student and the Association from making the undergraduate activities an integral part of the annual program. For the Association, this provides an opportunity for promoting interest in the profession among top student leaders. For the student, this type of activity provides the incentive for in-depth probing of economic problems relating to agriculture. Although debate topics are assigned, public speaking and essay topics are open choice, thus allowing individuals to pursue various areas of interest.

The interchange of ideas among students from the various schools can be both stimulating and informative. New ideas regarding curricular as well as extra-curricular activities are gained. All of this tends to build esprit de corps in the agricultural economics profession as well as in local student chapters.

Perhaps the greatest benefit accruing to the student, as a result of this participation

in the annual meeting, is being able to meet and associate with members of the profession. Students have an opportunity to identify and associate with leaders in the profession. They gain greater insight into the problems to which members of the profession are currently addressing themselves.

Evaluation

Any evaluation of the effectiveness of this approach in generating interest in the agricultural economics profession must of necessity be somewhat subjective. There is, however, some evidence to suggest that contests have been helpful in bringing the undergraduate student into the mainstream of professional interest and thinking. One measure of this is the number of past contest participants who are currently carving a niche for themselves in the profession. The continued support (financially and otherwise) of these activities by the Association can at least be interpreted as prima facie evidence that there is payoff from this type of activity.

Perhaps the effectiveness of this approach is best summarized by the chairman of the AAEA Student Affairs Committee in a recent report to the AAEA Executive Board. "We are happy to report that we are getting increasing numbers of undergraduate students who are not in competition coming to the annual meetings, attending both the Student Section activities and the AAEA activities. It is heartening to see the enthusiasm for our profession that attendance at our annual meeting generates in these undergraduate students . . .

"We ask quite a few agricultural economists to be judges for the preliminary rounds of the contests. Many of these comment to me about how much they enjoy this opportunity to see these bright young men in action. Most indicate to me that this job is more a privilege than a chore. I firmly believe that the Student Section activities build enthusiasm on the part of students for the profession; and on the part of our Association members, appreciation for the student participants who will soon be the backbone of our Association."²

¹ A stated objective of the AAEA.

² Robert W. Taylor, "Report of the Student Affairs Committee", *American Journal of Agricultural Economics*, 52:860, Dec. 1970

Illinois Course Evaluation Questionnaire Useful in Collecting Student Opinion

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The measurement of the effectiveness of instruction is a complex problem. It may be approached in various ways. The Illinois Course Evaluation Questionnaire is designed to collect evidence of only one

kind — student opinion, which appears to be the most relevant kind.

At the University of Illinois College of Agriculture this questionnaire has been used extensively to evaluate the UNIVEX

NET instructional system and the individual courses taught for this system.¹ It has had modest acceptance for on campus course evaluation by the instructors of the College, but it is widely used in other col-

leges of the University and by numerous other institutions.

The Illinois Course Evaluation Questionnaire (CEQ) is based on the premise that for a course to be effective it must have a large number of elements contributing to this effectiveness, such as the instructor, textbook, homework, course content, method of instruction, student interest, student attention, general student attitude towards the course, etc. Assuming that all of these elements can affect, directly or indirectly, student behavior in a course, and assuming that the students are the only ones who are constantly exposed to those elements, then the students appear to be the most logical evaluators of the quality and effectiveness of the course elements. In addition, student opinions should indicate areas of rapport, degrees of communication, or the existence of problems that describe and define the learning environment more concretely and objectively than other types of measurements.²

The instructor is only capable of influencing the learning situation to the degree that he is not restricted by elements outside of his control. Some of these outside elements would include scheduling, grouping, course content, curriculum or college requirements, and previous student opinions. It is possible that an instructor might teach certain content well, but opinions about his teaching effectiveness could be prejudiced by the attitudes toward the content of the course *per se*. Therefore, the Illinois Course Evaluation Questionnaire (CEQ) was developed to test these elements separately.

The following criteria were established for the CEQ and, based upon our experience, appear to have been successfully met:

1. Administration: The questionnaire can be administered by the instructor himself during regular class periods. Descriptive data can be collected by placing appropriate questions on the back of the one-page 8½ x 11 questionnaire. In order to get unbiased answers it is best to have a co-worker administer the questionnaire and let the responding students know that the instructor

will not see the replies until after final grades are given, and then, only as compiled statements or averages without any association with a student's name.

2. Time: It normally takes 15 minutes for a student to complete the questionnaire, somewhat longer if descriptive statements are requested. This is short enough to be acceptable to faculty in regular classes, but long enough to insure reliability and adequate measure of a wide sample of attitudes.

3. Content: Out of a pool of 1,000 items the content of the questionnaire was reduced to 50 items, which includes 22 negatively stated items that provide a check on careless student responses.

4. Scoring: Copies of the questionnaire are printed on a Digtex Answer Sheet. Each student responds by marking directly on his own answer sheet with a conventional graphic pencil. On each of the 50 items he indicates his agreement or disagreement on the 4-point scale: strongly agree (SA), agree (A), disagree (D), and strongly disagree (SD). Tabulation is completed by machine so the results can be determined promptly and accurately.

5. Reliability: The correlation between 22 negative and 22 positive items for a sample of 297 CEQ's was .849. A split-half reliability was computed with half the negative and half the positive items in each group; thus 25 items in each half. The result for the sample of 297 was .93. In addition, the Kuder-Richardson reliability formula 21 was computed separately for 16 different courses and averaged .91.³

6. Interpretation: Six subscales were developed by factor analyzing the CEQ's 50 items which appear to cover the basic course elements. The subscales are labeled as follows: (a) General Course Attitude, (b) Method of Instruction, (c) Course Content, (d) Interest and Attention, (e) Instructor, and (f) Other. Each of the subscales contains 8 unique items except for Other which contains 10 items. Based on the face validity of the CEQ and its high reliability, extremely low scores on a particular subscale should indicate "felt" problem areas in an instructor's teaching procedure. Stable high scores should point to an effective instructional program as viewed by students. All evidence to date, from more than 100,000 students and 400 different courses, indicates that the CEQ does indeed identify courses that are considered to be very good or very bad. Results for interpretation are received as a computer print-out which indicates each of the 50 specific item responses, their means and the norm decile. The print-out also indicates subscale total scores, means and norm decile. Normative data, expressed in deciles, is based upon the responses of the total normative population (all student responses). The normative data for the subscales is also reported by other breakdowns

which can include comparisons with other instructors of similar rank, others teaching a similar course level in the department, college or total university, as well as an all-university comparison.

The CEQ is not a complete diagnostic tool of teaching or instruction — no instrument can be. There are too many specific variables in a learning environment which can be scrutinized to measure or evaluate them all on a questionnaire, and some would be valuable in one setting and not in another.

The Research on student opinion questionnaires in general would seem to indicate that there is some reasonable relationship between teaching effectiveness and student judgments of this effectiveness. However, it is far from perfect; and for some questionnaires, the relationship appears nonexistent. Users of the CEQ are advised that: (1) The questionnaire collects some opinions only, it does not sample all opinions that may exist about a course, and (2) the opinions that develop about a course are developed through a variety of causes and not because of the instructor alone. It is recommended that the results of one semester sample be treated quite tentatively until validated by measures over two or more semesters.

Fourteen different universities and colleges have used the CEQ with satisfactory results. Details on how your institution might use the CEQ can be obtained from Measurement and Research Division, Office of Instructional Resources, University of Illinois, 307 Engineering Hall, Urbana, Ill. 61801.

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Teaching the Concept of Biological Variation in Introductory Life Science Courses¹

Elmer Gray²

In introductory life science courses, students are informed that living organisms have certain characteristics. Variation is not usually included as one of these characteristics, but perhaps should be.

Evidence of biological variation is omnipresent. Variation is the basis on which living organisms are divided into taxonomic groups such as kingdoms, classes, genera, etc. Variation is present within the smallest taxonomic unit. In cross-fertilizing populations variation tends to be high. Even for populations of organisms which reproduce through self-fertilization or asexually, one could ask the question, are there any two living organisms that are identical?

The significance of biological variation is almost incomprehensible. Without variation the situation would be monotonous. Since there would be no variability on which selection could operate, there would be no possibility of evolution. The impor-

tance of variation in domesticated animals and plants has been well established. Species and strains within species differ in many characteristics including such important traits as adaptability and productivity.

The purpose of this treatise is to develop a method of teaching the concept of biological variation in introductory life science courses. The degree of expression of a characteristic in an organism is controlled by the organism's genetic makeup and its environment. Variability in phenotypic expression of a characteristic among genetically different organisms when grown in different environments is determined by genetics, environment, and genetics X environment interactions. These components are equated with phenotypic variation as follows:

$$\begin{array}{ccccccc} \text{variation} & & \text{variation} & & \text{variation} & & \text{variation due} \\ \text{in} & = & \text{due to} & + & \text{due to} & + & \text{to genetics} \\ \text{phenotype} & & \text{genetics} & & \text{environment} & & \text{by environment} \\ & & & & & & \text{interaction} \end{array}$$