

Pohronezny, K.L. 1981. Pers. Comm. Asst. Prof., IFAS, Dept. of Plant Pathology, Univ. of Fla., Gainesville, Fl.

Rabb, R. L., and F. E. Guthrie (eds.). 1970. **Concepts of Pest Management**. Proc. of a conference held at N.C. State Univ., Raleigh. 242 pp.

Resident Instruction Committee on Organization and Policy (RICOP) Plant Protection Survey. 1979. Unpublished survey of the land grant universities.

Schein, E. J. 1972. **Professional Education, Some New Directions**. McGraw-Hill Book Co., New York. 163 pp.

Sill, W. H. 1978. **The Plant Protection Discipline**. Allanheld, Osmon and Co., Montclair, N.H. 190 pp.

Smith, E. H., and D. Pimentel (eds.). 1978. **Pest Control Strategies**. Academic Press, New York. 334 pp.

Smith, R. F., J. L. Apple, and D. G. Bottrell. 1976. The origins of integrated pest management concepts

for agricultural crops. In J. L. Apple and R. F. Smith (eds.). **Integrated Pest Management**. Plenum Press, New York, pp. 1-16.

Strayer, J. R. 1980. **Teaching Pest Management and Plant Protection**. Proc. of a workshop on integrated pest management. IFAS, Univ. of Fla., Gainesville, pp. 133-153.

Swanson, B. E., and S. W. Tucker. 1978. Land lab experiences in Sierra Leone and Illinois. **Agr. Educ. Mag.** 50(1):199,203, 210.

Tammen, J. F., and F. A. Wood. 1977. Education for the practitioner. In J. F. Horsfall and E. B. Cowling (eds.). **Plant Disease: An Advanced Treatise**, Vol. I. Academic Press, New York, pp. 393-410.

Van Elswyk, M. 1980. In litt. Assistant Dean, Academic, School of Agriculture and Home Economics, California State Univ., Fresno.

Wallace, J.J. 1963. Student management of a laboratory farm. **J. Farm Econ.** 45(3):563-566.

A CASE STUDY

Ag Alumni Survey Depicts Undergraduate Educational Needs

Murn M. Nippo

Abstract

Almost 50 percent of graduates responding to an alumni survey have completed some form of post-baccalaureate study. Fifty-two percent are currently employed in a job related to their undergraduate field of study. Thirty-five percent of those not employed in their field are still looking. About one-half the respondents felt that job opportunities in their field are fair to good. Alumni recommended additional courses be added to existing programs. Examples are speech, business, internship opportunities, and more courses with laboratories and field work.

The United States is undergoing demographic change. With the baby boom generation through college and the number of elementary school students declining a predicted drop in college enrollments is justified for 1985-1995. Estimates of this decrease range from 5 to 15 percent. In view of this, many colleges may have difficulty in the near future attracting and retaining sufficient numbers of students.

To better understand and meet the needs of our students, the College of Resource Development elected to conduct an alumni survey. A review of the literature

showed no Ag Alumni surveys of the Northeast. A small scale survey was done by the College of Agriculture at Montana State University in 1979.¹

Today's college student is very career oriented, and students graduating in the 1980's can expect to find fewer jobs. The student is, in fact, facing a formidable task. The Federal Government predicts that the number of college graduates entering the labor force between 1980 and 1990 will exceed the number of traditional jobs by 3 million.² In agriculture specifically, the USDA survey "Graduates of Higher Education in the Food and Agriculture Sciences" predicts job shortages in a number of areas.³ Their projected estimates through 1985 of supply/demand for Ag graduates suggests shortages of jobs for media specialists and educators. In addition, supply approximates demand for agricultural production and management specialists.

Much of the effort in career development in agriculture has been accomplished through 4-H activities such as career camps.⁴ Current publications often ignore or minimize agriculture and resource use. Mayhew⁵ stated that most of the recommendations found in the contemporary literature either reiterate criticisms of the past, or offer no real help to those concerned with program development. Bentley⁶ has pointed out the need for strengthening land grant colleges "in research, teaching, and extension work so they can execute both current and future agricultural programs."

Nippo is associate professor of Animal and Veterinary Science at the College of Resource Development, University of Rhode Island, Kingston, RI 02881. Journal Article No. 2089, Rhode Island Agricultural Experiment Station.

The decade of the 1970's marked the rise of the field of career planning and counseling. Hoyt⁷ noted this rise, stating that colleges are more oriented to career education than any other aspect of our educational system, and feedback from former students is important in shaping curricula.

Taking these facts into account, the objectives of the survey were to:

1. Determine current employment.
2. Find the relationship between curriculum option (major) and employment.
3. Obtain alumni views on the effectiveness of their undergraduate training.
4. Use the survey as a start in opening lines of communication with our alumni.

Methods of Conducting Survey

A six page questionnaire was developed. Suggestions for survey questions were solicited from college faculty and staff. Although some questions used in the survey were open ended, they caused no undue difficulty in analyzing the results. A listing of all graduates of the College of Resource Development 1970-1979 was obtained from the URI Alumni Association. They also supplied mailing labels. A total of 1,440 surveys was mailed. Each survey packet contained a cover letter that stressed the importance of the project, asked for the help of the individual, and offered a chance to win a prize in a drawing as an inducement to respond. The packet also contained a stamped-business reply envelope for return. Residents who did not return the survey were contacted by telephone 90 days later and asked to fill it out. The telephone call was used only as a reminder: no pressure tactics were used, nor were people asked why they had not returned the survey.

Results and Discussion

Of the 1,440 surveys mailed, 403 (27.98%) were returned completed. Less than one percent were returned by postal authorities, indicating that the mailing list was up-to-date. The follow up telephone calls did not generate an appreciable number of returns, and this would not be recommended as standard procedure in subsequent surveys. A follow up postal card mailed out a week after the survey is probably more desirable.

The number of respondents by undergraduate major is shown in Table 1.

The terms animal science, plant science, and nutrition and dietetics are self explanatory. Most Natural Resources majors studied forestry and/or wildlife management.

Table 1. Distribution of Survey Respondents By Undergraduate Major

Major	Number of Students
Animal Science	49
Plant Science	98
Nutrition and Dietetics	110
Natural Resources	146
Total	403

Table 2. Percent of Respondents That Obtained Additional Preparation After Completing Their Undergraduate Studies

Major	Academic	Professional	Training
	In Field	In Field	In Field
Animal Science	25	22	4
Plant Science	24	0	19
Nutrition & Dietetics	39	1	45
Natural Resources	23	0	11

Eighty-two (20.34%) of the respondents transferred to URI from other institutions. This percentage was the same for all four majors, so no subject area is attracting more transfers.

Alumni were asked several questions about additional training undertaken after graduation. The results are shown in Table 2.

The terms "academic" refer to Masters and Doctoral Degrees, "Professional" to veterinary school, medical school, law school. "Training" refers to other types of preparation including military and company programs and dietetic internships. Twenty-eight percent of all graduates had post-graduate academic training. The large number of animal science students (22%) with professional training resulted from veterinary school admissions. Graduates in nutrition and dietetics showed the highest percentages of additional academic preparation and further training in their field since a dietitian must serve an internship to become registered, and the professional demands the Masters degree to gain professional advancement.

Table 3 shows the number of graduates working in a job directly associated with their undergraduate major.

Table 3. Percentage of Graduates Currently Employed In a Job Associated With Their Undergraduate Major

Major	Percent Employed
Animal Science	47
Plant Science	50
Nutrition & Dietetics	69
Natural Resources	43

This ranges from a low of 43% of natural resources graduates employed to a high of 69% of the nutrition and dietetics graduates. If graduates were not employed in a job directly associated with their major they were asked if they were still attempting to find employment in their field. Replying in the affirmative were 39% of the animal science graduates, 31% of the plant science graduates, 28% of the nutrition and dietetics graduates, and 32% of the natural resources graduates. Therefore, about two-thirds of the graduates who found other employment were no longer "looking". Table 4 shows the reasons that graduates took non-curriculum related jobs.

Sixty percent of the graduates who took other employment did so for economic reasons, or job availability. This is probably due to an unwillingness of graduates to leave their home state. About 20% of the graduates changed their actual career preference after graduation, and chose not to work in a curriculum

Table 4. Principal Reasons For Taking a Non Curriculum Related Job (Percent of Graduates Replying To Question).

Reason	Animal Science	Plant Science	Nutrition & Dietetics	Natural Resources
Economic	33	24	23	29
Job Availability	33	31	25	36
Location	8	12	10	8
Change in Career Preference	8	19	28	20
Other	18	14	14	7

related job because another career interested them more.

Overall, 53% of the graduates listed employment availability in their field of study as fair to good (Table 5). This number was highest in nutrition and dietetics due to the regional demand for dietitians, and lowest in the natural resources subcategory of wildlife management. In his study of graduates of agriculture at Montana State University, Clayton⁸ stated graduates were generally satisfied with their overall education in terms of employment. This study suggests that the University of Rhode Island and the Ag College need to put more emphasis on the breadth of employment opportunities and on job finding strategies.

In light of these findings, a number of questions were asked about courses that graduates found helpful in their current jobs.

Of courses taken outside the College of Resource Development, speech (Table 6) was considered most useful. Speech is required for graduation, but its importance will be emphasized to our current students. Graduates also recognized the importance of business courses and strongly recommended that more business courses be available to undergraduate majors. The graduates' strongest suggestion was to add computer science courses to our curricula and make computer science an important part of our undergraduate programs. Graduates in all majors stated that more laboratory courses would have been helpful. Graduates in the animal and plant sciences wanted labs with more practical "hands on" experience. Animal Science graduates also wanted more physiology labs. Respondents in natural resources specifically wanted more labs in wildlife management.

Seventy percent of the respondents stated that an undergraduate internship would have been of significant value. We have now provided for internships in plant science, animal science, and nutrition and dietetics.

Table 5. Current Availability of Jobs In Graduate's Field of Study on a National Basis (percent replying in each category).

Job Availability	Animal Science	Plant Science	Nutrition & Dietetics	Natural Resources
Good	33%	20%	37%	23%
Fair	20%	34%	47%	30%
Poor	31%	27%	9%	33%
Don't Know	14%	15%	5%	11%
No Response	2%	4%	2%	3%

Alumni were also asked what courses should be eliminated. Only one subject, philosophy, was strongly criticized. In the University's new general education program, philosophy is no longer a requirement.

In response to a question on oral and written skills, 41% of the respondents stated that their undergraduate program needed more emphasis in communication to meet their current needs. Students should be advised of the importance of communication skills, but additional courses should not be required. Graduates generally felt there should be more required courses and fewer elective courses.

Table 6. Courses Taken Outside The College Especially Helpful In Current Job^a

Animal Science	Plant Science	Nutrition & Dietetics	Natural Resources
Speech	Business	Speech	Speech
Business	Speech	Management	Chemistry
Statistics	Chemistry	Personnel	Writing

^a In order of importance

Recognizing the need to recruit new students to maintain enrollments, we asked our alumni how they first became aware of URI. College brochures, friends, and high school counselors and URI students and parents had the greatest impact.

Students actually selected URI as their college of choice for four major reasons:

1. URI had the specific program wanted - 35.4%
2. URI's reputation - 16.2%
3. Wanted to go away to school - 15.6%
4. Wanted to stay in Rhode Island - 12.6%
5. Other - 20.2%

It appears that recruiting efforts should be based on institutional reputation and publicizing programs. High school counselors are a key in recruiting, but our students are apparently our own best recruiters. Thus it might be wise to start peer recruiting in state high schools.

The best evidence of the job we are doing is that 90.9% of the respondents said they would recommend the College of Resource Development to a college age student.

An alumni survey can be used to ask numerous questions. Through this survey, we have compiled an alumni speakers list, evaluated our advising quality, and added to our mailing list for College publications. Other data from the survey will not be reported here since it is strictly of interest "in house."

Conclusions

We have found the survey results useful. The results have already led to curriculum changes and are being used in recruiting efforts. The results have also given us a better idea of the kind of job we are doing in advising and instruction. Individual survey forms are available to the academic departments in the College for further use. The form also contained space for comments or suggestions. These were sometimes amusing

and frequently helpful; we recommended that any survey of this kind have space for anecdotal comments.

Our findings suggest that the College of Resource Development should survey its students periodically. While many of the results of this survey are not directly applicable to other institutions, the survey methodology and kinds of questions are. We recommend that other institutions which want information on recruitment, retention, employment, and curriculum evaluation conduct similar surveys. Copies of our survey form are available from the author upon request.

Literature Cited

¹Clayton, Roger B. 1979. A Follow up of 1969, 71, 73, 75, 77 Graduates of the College of Agriculture at Montana State University, M.S. Thesis. Montana State University, Bozeman.

²Occupational Outlook Handbook. 1980. U.S. Department of Labor, Bureau of Labor Statistics.

³Graduates of Higher Education in the Food and Agricultural Sciences: An Analysis of Supply/Demand Relationships. 1980. U.S. Department of Agriculture, Miscellaneous Publication Number 1385.

⁴Scherer, C. and L. Gearhart. 1978. Career Counseling in Agriculture. Extension Review. 49:8.

⁵Mayhew, L. B. 1977. Reform in Graduate and Professional Education. Jassey-Bass Publishing Company, San Francisco.

⁶Bentley, O. G. 1977. Extending our commitments, A challenge to U.S. agricultural universities. J. of Animal Science. 45:1488.

⁷Hoyt, K. B. 1974. Career Education. Olympus Publishing Company, Salt Lake City.

⁸Clayton, op. cit.

Student Preference To Learning Styles

James A. D'Albro

Abstract

An instructor-developed survey was used to sample student preference to learning styles. The results indicate that students have a high interest in styles such as taking field trips, individualized instruction, and attending workshops. Other learning styles were of less interest. It appears that, whatever the learning style, students prefer an active learning environment.

Introduction

Many thoughts come to mind as to ways students learn. Also, the learning styles of students may or may not be in accord with the teaching styles of the instructor. With these thoughts in mind, certain questions may be asked. What are the various ways in which students seem to learn best? Do students vary by ethnic background in ways by which they learn? If the learning styles of students were known before instruction starts, could instruction be improved by varying the teaching styles of the particular instructor? Although other questions may come to mind, these few illustrate the need to look more closely at the learning-teaching styles of an instructional program.

The objective of this study centered around the learning styles of students at the California Polytechnic State University.

The objectives were:

1. To survey the learning styles of a sampling of students at the California Polytechnic State University,
2. to determine if there are common styles of learning which students use, and
3. to determine if ethnic backgrounds favor one learning style over another.

Procedures

In order to meet the objectives of the study, the following procedures were used. Instructors at the California Polytechnic State University, who were willing to assist in a survey, were asked to take the survey to their respective class and have it completed in the last ten minutes of class. As a result of this method of instructor participation, 140 students responded to the survey. These students were enrolled in Animal Science, Ornamental Horticulture, Physics, Geography, Social Sciences, History, Crop Science, Soil Science, and Biological Sciences.

All data for this study were obtained from the Personal Interest Survey. The Personal Interest Survey was an instructor-made survey and was based on the Likert scale (2).

The results were hand tabulated. All results were recorded as a frequency of response to each item on the interest survey. Frequencies were converted to a percent, and the percentages were used as a basis to determine the relative interest in each type of learning style as asked in the survey items.

Results and Discussion

Limitations of Study

This study had the following limitations. These limitations should be kept in mind when reading the findings of the study.

1. The sampling was generally small.
2. The numbers of students by ethnic background were very small but similar to the distribution on campus. Since the ethnic distribution may not be generalizable, it is not reported here.

D'Albro is a professor of Ornamental Horticulture at the California Polytechnic State University, San Luis Obispo, CA.