

al education. It also suggests that Indiana's farm workers will respond to the opportunity to learn directly from research and development staff.

Other forms of educational delivery may be useful in meeting the educational needs of Indiana's farm manpower. Non-credit adult education programs⁶ have documented success of weekend educational classes, topic specific audio and video self study programs, and other forms of delivery which met specific client needs. Agricultural education's clientele characteristics are changing. Educational delivery forms which better meet this new client's needs should be investigated.

SUMMARY

The study of farm manpower reported an increase in the number of part-time and hired farm manpower.

To meet the educational needs of farm production manpower, agricultural education program planners need continually to be aware of the trends of farm labor. The trends toward fewer full-time family farm workers, more full-time hired farm workers, and an increasing number of part-time farmers may require new approaches in college agricultural education programs. To meet the educational needs of a changing production agriculture labor force, it is recommended that 1) further efforts be directed toward determining the post-secondary education needs of each of the three groups of farm manpower, and 2) information about strategies or models which are effective in providing direct educational experiences for part-time and hired farm manpower should be developed.

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CURRICULA

Current Trends In Animal Science

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Abstract

Animal science curricula of 40 universities were examined and compared to curricula of 10 years before. Information was obtained from bulletins of 20 land grant and 20 non-land grant institutions. Decreases were noted in the number of hours required in animal science courses, natural sciences, mathematics, and general education. The decrease in the natural science and mathematics requirements averaged approximately 25 percent for all universities. The hours of electives increased; however, the total hours required for the bachelor's degree decreased from the total required in 1968.

A number of changes have occurred in the past ten years in characteristics of agricultural students. Two of the most dramatic changes have been the increase in the number of women students and the increase in the number of students without farm backgrounds. Chamberlain and his associates¹ at the University of Tennessee found that the freshman course in animal science consisted of 30 percent women and that 52 percent of the students had no farm background. In the freshman animal science course at Southwest Missouri State University the percentage of women increased from only four in 1972 to 29 in 1976⁵. By 1978, the percentage of women had increased to 33. The percentage of students without farm backgrounds increased from 29 in 1972 to 37 in 1976. In 1978 this figure was 36 percent.

Changes also have taken place in agriculture and the general society since the sixties. The population has increased, the number of farms and farmers has decreased, and the size of farms has increased. Methods of handling and processing agricultural products have undergone some changes, and revisions have occurred in government policies and programs. The purpose of this study was to determine if changes have taken place in animal science curricula in the past ten years to accompany the changes observed in the student population, agriculture, and society.

Sources of Information

The procedure for collecting data was similar to that used in the preparation of a similar report ten years ago⁴. Information was obtained from the current bulletins

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available in the library of Southwest Missouri State University. Curricula were examined from 20 land grant universities and 20 non-land grant universities. The institutions were chosen at random. If the curriculum of a particular university was not clearly defined as to requirements, the curriculum of another randomly chosen university was substituted. Credits at the various institutions were in terms of quarter hours or semester hours. Quarter hours of credit were converted to semester hour equivalents based upon the ratio of three quarter hours to two semester hours.

Comparison of Data

Table 1 summarizes the information collected in 1968 and in 1978. Changes appear to have occurred, some of which may be significant. The mean total number of hours required for a degree decreased from 133 in 1968 to 128 in 1978. The range of hours required for the two periods were 120-149 and 120-137, respectively. The change appears to have occurred in those institutions

that earlier had the larger total requirements. The 1968 data disagreed with that reported in 1968 by Hamilton². His survey included 32 institutions that were members of NACTA. The range of total hours required according to his survey was 124 to 146 with a mean of approximately 129 hours.

The standard deviation in total hours for the degree in the 1978 data was approximately ± 5 hours. No standard deviation was calculated for the 1968 data. Although a statistical analysis was not possible, the decrease from 133 to 128 hours merits consideration.

The total number of credits in animal science courses decreased by two or three semester hours from 1968 to 1978. The great amount of variation in requirements among institutions makes interpretation of trends difficult. The standard deviation for the 1978 data was ± 8 semester hours. The total hours of other agriculture courses remained about the same for the two periods. The total agriculture requirements at land grant universities decreased about four hours. There was essentially no change in the total hours of agriculture required at

Table 1. Comparisons of Typical Animal Science Baccalaureate Curricula in Land Grant and Non-Land Grant Universities in 1968 and 1978.

	1968				1978			
	Land Grant		Non-Land Grant		Land Grant		Non-Land Grant	
	Hrs	(%)*	Hrs	(%)	Hrs	(%)	Hrs	(%)
Number of Institutions	37		26		20		20	
Animal Science Courses								
Introductory Courses	4	(84)	6	(100)	4	(80)	4	(85)
Anatomy and Physiology (including Physiology of Reproduction)	7	(73)	4	(62)	5	(70)	5	(85)
Feeding and Nutrition	6	(76)	5	(100)	5	(95)	5	(100)
Breeding and Genetics	5	(97)	5	(100)	5	(90)	5	(95)
Production and Management Products	7	(62)	8	(77)	6	(65)	8	(80)
Judging, Products, Health, Other	5		8		4		7	
Total Animal Science	34		36		32		33	
Other Agriculture Courses								
Introductory Plant Course	3	(59)	3	(88)	3	(50)	3	(70)
Soils	4	(57)	3	(88)	3	(65)	6	(85)
Forage Crops		(27)	4	(50)		(25)	3	(50)
General and Agr. Economics	5	(78)	7	(88)	6	(70)	6	(95)
Agricultural Mechanics		(18)	4	(69)		(10)	4	(65)
Other including Electives	6		2		3		3	
Total Agriculture	51		59		47		58	
Natural Sciences and Math								
General Chemistry	9	(100)	8	(100)	6	(95)	7	(90)
Organic and Biological Chemistry	5	(81)	5	(89)	3	(70)	4	(60)
General Biology, Botany, Zoology	7	(100)	7	(100)	6	(90)	5	(85)
Other Biology	4		3		2		3	
Algebra or Gen. Mathematics	5	(70)	6	(92)	5	(70)	4	(75)
Other Mathematics and Physics	3		1		2			
Total	33		30		24		23	
General Education (excluding Science and Mathematics)								
English Composition	6	(100)	6	(100)	6	(90)	6	(100)
Speech	3	(73)	3	(81)	3	(55)	3	(80)
Social Science, Humanities	15	(100)	16	(100)	13	(95)	17	(95)
Physical Activities	5	(78)	4	(77)	3	(60)	3	(70)
Total	29		29		25		29	
Electives	20		14		32		18	
Total Hours for the Degree	133		132		128		128	

* Percent of institutions requiring each course or group of courses.

non-land grant institutions. These reductions in minimum requirements of agriculture courses are somewhat surprising in view of the fact that the agriculture background of students has been weakening.

Within the animal science requirements, the particular courses and number of hours of each changed very little. Non-land grant institutions seem to require more hours in production-oriented courses than do the land grant colleges, as was the situation in 1968. Curricula compare favorably with the minimum requirements recommended by the committee on Undergraduate Education in Animal Sciences in 1967³. The committee recommended that a core curriculum in animal science include an introductory course of three hours, six hours of nutrition, five hours of genetics and evaluation, three hours of physiology, two hours of products, and six hours of production and management courses.

The most surprising change that appears to have occurred in the past ten years is an eight-hour reduction in the hours of natural sciences and mathematics required. This represents a reduction of about 27 percent for land grant colleges and a 23 percent reduction for non-land grant institutions. A reduction was noticed in each of the areas of the natural sciences. In view of the more technical and scientific changes that have occurred in the agricultural industry recently, this reduction in science requirements is difficult to understand.

No changes in the general education requirements at non-land grant universities have occurred in the past ten years. However, a small decrease in the number of hours of social sciences, humanities and physical education required does appear to have occurred at land grant universities.

Due to the decreases in specific requirements in the major, in the sciences, and in general education as listed in the university bulletins, the number of elective hours has increased by about 50 percent. At Southwest Missouri State University we have observed that students choose courses in agriculture to fulfill many of their elective options. This may well be the situation at other universities. If students at the various universities choose electives in agriculture and the natural sciences, they may be prepared for today's agriculture better than what is suggested by this report.

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PCQs – Feedback For Instructional Improvement

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Abstract

The use of Post-Class Questionnaires (PCQs) enlists the students' help in the process of instructional improvement. A PCQ is an informal, easy to develop tool instructors can use to obtain immediate feedback from students. The PCQ can speed up the iterative process of instructional improvement by timely and direct communication.

Introduction

Improvement of instruction through development of new materials, use of different presentation techniques, and other mechanisms is often characterized as an iterative process. The instructor tries the new method or materials, evaluates their effectiveness, and makes modifications for improvement. This article deals with a tool which the author has found effective in obtaining feedback from students and which can be used in the maintenance and improvement of high-quality instruction. This simple tool, proposed by Davis et al., 1974, is called a Post-Class Questionnaire (PCQ).

Frequently feedback from the instructor to students regarding their performance is used to improve student learning. However, feedback from the student to the instructor is often given only at the end of the term, if at all. End of term evaluations can improve instruction, but this objective may be masked by comparison between instructors or courses. Key student comments on instructional efforts early in the course may be too late. Motivation for students to make constructive comments may be low since improvements will most likely not affect them, and the instructor's sincerity in accepting comments may be questioned.

Less formal questionnaires which have the specific objective of instructional improvement (PCQs), used on a regular basis throughout the term, can be much more productive.

What Is A PCQ?

A Post-Class Questionnaire is an informal questionnaire designed specifically to give the instructor immediate feedback from the student. It is not intended to evaluate the student's learning but rather to give the student the opportunity to assist in the improvement of instruction. Oftentimes the feedback can be used to make

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