Internship Program Provides Hands-on Learning

R. Grant Seals
and Rena Armstrong

Abstract

For over a decade the number of urban or non-farm students pursuing coursework in agriculture has steadily increased nationwide. One problem arising from this increase is the lack of practical or hands-on experience in agricultural procedures. Limited emphasis on such procedures in laboratory sessions of coursework is not adequate. A partial solution to the need for practical experience is student internships. These may be offered through cooperators in the farming or ranching business. An alternative being pursued by the University of Nevada College of Agriculture is to utilize a University ranch to provide hands-on experiences for students. Students are enrolled for one credit for a one week stay at the ranch where they participate in various practical facets of agriculture. The program has had excellent results as viewed by student participants and is deemed a viable part of any improvement program for students who need practical courses in agriculture. The basic framework for a university-sponsored one credit, one week internship is presented. The internship, conducted three times a year, is well adapted to a typical land grant agricultural faculty where most individuals have a 25% or less teaching appointment.

Introduction

The number of non-farm and women students in agriculture has been increasing for a number of years. Along with this increase has developed a need to expose such students to farm or ranch techniques and practices.

Elkins and Lybecker (5) reported that the number of non-farm students in an introductory field crops course increased from 20% in 1966 to 60% in 1975. Cessna (4) showed that internships lead to jobs, an assertion which LaPrad (6) agreed was a big factor in the growth of internship programs at Michigan State University. Both Cessna (4) and LaPrad (6) reported that 56% of their interns were offered jobs by the firms which had hosted the student's internships. Cessna (4) showed that 87% of the students who had participated in internships found employment in the same general career area as their internships. He quotes W. R. Thomas, Associate Dean at Colorado State, who says, "A large share of the student concern about the relevance of their education can be attributed to their campus isolation. In fact, most students lack the experience of the work-a-day world that would show them how courses can be relevant."

Vorst (10) states that urban agricultural students need to become familiar with the practical side of agriculture. Burger and Brandenburg (2) found that 65% of the colleges surveyed experienced problems in supplying urban students with the necessary farm experience to qualify them for many positions. Elkins and Lybecker (5) found that nearly 37% of the students surveyed in an introductory field crops course at Southern Illinois University felt that practical experience would be beneficial. There seems to be widespread agreement that practical work experience or experiential programs, a term used by Thomas (9), are necessary and beneficial, especially to non-farm students.

But are non-farm students really disadvantaged? Vorst (10) asserts that urban agricultural students need to become familiar with the practical side of agriculture. Burger and Brandenburg (3) reported that about 40% of the students surveyed felt disadvantaged when taking an agronomy course with students who have had farm experience. However, Anderson and Akin's study (1) did not support the view that urban students are greatly disadvantaged. Elkins and Lybecker (5) in fact found that grades in an introductory field crops course did not differ significantly between farm and non-farm students.

Mayer (7) recommends maximizing the use of existing university or college resources in providing practical training for non-farm students.

Although not reflected in course grades, the feeling that practical experience is necessary and beneficial to non-farm or limited-farm experience students is virtually universal among most students and faculty of agricultural colleges.

The Max C. Fleischmann College of Agriculture has maintained for several years a curricula mechanism for students in its undergraduate divisions to enroll in internship programs. Course numbers ending in the digits 16 are reserved for enrollment in internships. For example, in the Division of Agricultural and Resource Economics, a student may enroll in AREc 316 or 416 for variable credit up to a maximum of three credits of internship. Usually the internship is connected to stu-

Seals is professor and former associate dean, Max C. Fleischmann College of Agriculture, and former Dean of Agriculture and Home Economics at Florida A & M University. Armstrong is instructor and junior animal scientist in the Division of Animal Science, Max C. Fleischmann College of Agriculture, University of Nevada, Reno, NV 89557-0007.

dent summer employment approved by the faculty of the division. A survey during the 1979-80 period revealed that up to 60 students in the senior class (typical size 110 to 120 students) had internship-type experiences during the summer of 1979. Grades were given on an satisfactory/unsatisfactory (s/u) basis.

In 1979 the College of Agriculture requested that resident instruction formulate a program of instruction which would utilize the S Bar S Ranch. This ranch was a gift to the College in 1968 and the provisions of the gift required that it be used for research and teaching in agriculture. Much of the first decade of ownership by the College was dedicated to capital improvement of the facility. The senior author had participated in RICOP Summer Work Conferences at which internships were discussed, and he participated in the landmark study by RICOP in 1977 (9). The authors had received comments from students who had graduated over the years concerning the dearth of hands-on experiences which agricultural students received at University of Nevada at Reno[a]. Our 1979 faculty retreat, incidentally held at S Bar S, discussed experiential programs in depth.

This paper briefly outlines a procedure for conduction a hands-on internship using joint appointment land grant college faculty and college farm resources.

Methods and Procedures

The S Bar S Ranch is located about five miles north of Wadsworth, NV, and 35 miles east-northeast of Reno. The ranch consists of over 300 acres of which 160 acres are cultivated. An animal population of about 100 is average, ranging from a low of 35 to a high of about 125. The facility can house some 50-60 persons in a war-surplus type dormitory with up to four students in one room, each of which is equipped with a bath. The building adjacent to it is equipped to serve food to a similar number of persons. The former large residence serves as a conference center.

At an early 1981 faculty meeting, it was proposed, through the concept shown in Table 1, that an internship program be devised which could be conducted at the S Bar S Ranch and available to all students in the college. All divisions were asked to submit a minimal list of tasks with which they felt a Nevada agricultural student should be familiar. In February and March, Division Heads met with the authors bi-weekly until a set of college-wide tasks were agreed upon (Table 2-3). This list became the basic curriculum for what was later to be called the S Bar S Hands-On Internship.

Further meetings defined the length and structure of the internship. It was decided to utilize a one week format with the day divided into modules (Table 4) of varying length. These modules were tailored to the requirements of the tasks as set by the Division and/or faculty who would be in charge of a certain set of tasks.

[a] Actually this varied greatly by the nature and philosophy of the Division concerned. Students are not always aware of the entire picture.

TABLE 1. Working Concept of an Internship Program at S Bar S Ranch

I. Development of a comprehensive list of agricultural tasks by each undergraduate division.
II. Develop a shorter more basic list suitable to students in Nevada.
III. Develop a skills performance screening test for freshmen and new students based on II above.
IV. Categorize students by their relative performance on the screening test.
V. Take students in groups of 10 - 15 for several days at S Bar S where prior arrangements have been made with S Bar S personnel by appropriate professors for appropriate demonstration animals, plants, equipment, or material.
VI. Have each student satisfactorily perform a minimum or a percentage of specified tasks in given categories or subcategories (i. e. seed bed preparation, animal care, tractors and equipment, etc).
VII. The appropriate professor would sign off on each category for each student.

In addition to the tasks, the students would be required to do the ranch chores in the early mornings and in the evenings. The internships would be held three times per year: the week before classes begin in the Spring and Fall, and the week after classes end in the Spring. This arrangement allows students to keep any summer job commitments and the faculty to attend to their research commitments. While a longer term was desirable, particularly from the standpoint of the students needs, the average faculty teaching appointment of 25% on an academic year basis precludes staffing an internship of two weeks or longer. The number of participants was limited to 20 students per internship to insure that each student has a chance to perform each task. The curriculum varies depending on the season of the year. Students register for one credit of internship at a level determined by the instructor. The internship has two primary instructors, one the director of the program and junior author of this paper. The second instructor is an employee of the S Bar S Ranch with a degree and experience in agricultural education. Each division sends one to three instructors as the situation dictates to cover their particular module. Volunteer students were requested for the first internship held in

TABLE 2. Task Areas Delineated for the S Bar S Internship and the Number of Tasks Per Area

Task Area	Number of Tasks
Beekeeping	5
Carpentry	7
Cattle Management Skills	20
Facilities and Equipment Maintenance	6
Feeding and Nutrition	10*
Horse Handling	3
Implements	10
Maintain Records	4
Pesticide Application Equipment	6
Orient Oneself With and Interpret a Field Map	1
Seeds	4
Small Farm Equipment	9
Tractor Safety and Maintenance	10
Total	95

January of 1982. Even some ranch students were encouraged to attend to act as "controls" in terms of the relevancy of waht was being taught. The May, 1982, session was conducted on a volunteer basis, but a nominal fee of $15.00 was charged to commit the student.

Results

Table 1 served as a useful guide to development of the S Bar S Hands-On Internship. The Division of Agricultural and Industrial Mechanics (which includes agricultural education) furnished us a manual which delineated hundreds of agricultural tasks. We circulated the manual among Divisions to aid in compiling a comprehensive list. After each Division had done so to its satisfaction, a shorter list, which was still comprehensive but more manageable, was developed. Items III and IV in Table 1 have not been used at this time, but undoubtedly will prove necessary as more internships are held. At present, the satisfactory performance of the task is considered sufficient for student performance. Table 2 outlines the basic tasks as agreed upon.

The first internship was considered a pilot program because we felt that several of the initial ideas needed testing. Among them were the length of program, the size and number of the modules, and the appropriateness of the tasks. Two men and five women students attended the pilot S Bar S Hands-On Internship from Sunday afternoon January 17 to Friday afternoon January 22, 1982. One student was from Kenya. Two students, a man and a woman, grew up on ranches in Nevada and California. The farm or ranch experience of the others varied from no experience to summer experiences on relatives' farms or ranches. The students represented majors in agricultural education, animal science, agricultural economics, and pre-veterinary science. The nine students attending the second internship from May 23 to May 28, 1982 included three men and six women. The student from Kenya and two women were repeats. Two students had no farm or ranch experience. The others had intermittent experiences. This group was more representative of the clientele we had originally envisioned. In addition to the divisions represented in the pilot program, the following additional divisions were represented: plant, soil and water science, and renewable natural resources.

The pilot internship consisted of the following scheduled activities: fence building and repair, computer familiarity, hay moving and stacking, horse handling, cattle movement, inspection of cattle for good health and soundness, vaccination, deworming and dehorning of cattle, seed germination, application of insecticides and fungicides to seed, tractor safety, tractor driving, energy, beekeeping, range plants, maps and aerial photos reading, and pesticides. Alternative tasks scheduled in the event others could not be completed were sprinkler pipe repair, ag math calculations, roofing, concrete work, and record keeping. Although the schedule was made with winter weather in mind, the very cold weather with snow on the ground made such things as concrete work impossible. Five of the seven students rated the internship outstanding. Two rated it above average.

Some sample student comments were:

> Everything in this course furthered my knowledge and enhanced my experience in agriculture.
>
> I think that a short demonstration on pregnancy testing and artificial insemination would have been helpful —.
>
> The subjects covered were very practical and essential to a farm or ranch. They (the subjects covered) gave me more confidence in discussing and getting involved in many areas.
>
> It (the internship) provided an ag type environment for one who has never worked or has worked little on a ranch.

Instruction was given in time modules. The modules were taught by the two instructors in residence or by teams of professors from the various divisions depending on the areas being covered. To a question concerning the quality of the instructions, a sample of answers follows:

> Tractor safety and tractor driving were well presented and the computer lecture was good. The branding and dehorning were good.
>
> I think we should have spent even more time on range plants.

TABLE 3. Detail of Two Selected Task Areas

1. Feeding and Nutrition - 10 tasks outlined below
   - Provide proper amount and quality of water
   - Read and understand ingredients on a feed tag
   - Operate feed loading and moving equipment
   - Provide proper minerals for cattle
   - Place feed in feed bunks using hand and power equipment
   - Mix feeds for cattle
   - Determine quality of feeds
   - Determine pasture quality and amount
   - Set up and provide creep feeding
   - Determine feed needs of cattle.
2. Implements - 10 tasks outlined below
   - Identify different tillage tools
   - Determine time to plow
   - Adjust a plow, disk, and harrow
   - Prepare a desirable seedbed
   - Determine seeding rates
   - Calibrate and adjust planters and seeders for rate and depth
   - Identify and calibrate fertilizer applicators
   - Plant a crop
   - Identify and use forage harvesting equipment, i.e., mower, rake, swather, baler, bale wagon, etc.
   - Adjust and use a combine

TABLE 4. A Typical S Bar S Internship Modular Program for One Week

Time	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
6 AM			Feeding Cattle and Irrigation			
7			Breakfast			
8		Calibrate and Adjust Planters	Hay Movement and Stacking	Pesticide Application Equipment	Fence Building and	Farm Energy Conservation
9		and Seeders, and Fertilizer	(2 hrs.)	(2 hrs.)	Repair (4 hrs.)	(1 hr.)
10		Identify and Use Forage Harvesting	Horse Handling Safety and Beginning	Beekeeping (2 hrs.)		Tractor Safety (1 hr.)
11		Equipment (2 hrs.)	Riding (2 hrs.)			Tractor Driving (2 hrs.)
12 Noon				Lunch		
1 PM		Map Reading Aerial Photos	Tend Cattle Cattle Movement,	Seed Germination and	Tractor Maintenance	Review and Discussion
2	Leave for S Bar S	Range Plants (2 hrs.)	Inspection, Health, Vaccination, Deworming Dehorning (4 hrs.)	Preservation (4 hrs.)	(4 hrs.)	(4 hrs.)
3	Tour Facilities (2 hrs.)	Computer Application (2 hrs.)				
4						
5			Feeding Cattle and Irrigation			
						Depart for UNR
6				Dinner		
7		Computer Familiarization	Computer Familiarization	Slide-Talk Show on Semi-Circular	Movie on Inspection Deworming and	
		(2 hrs.)	(2 hrs.)	Corral Chutes (1 hr.)	Vaccination of Cattle (1 hr.)	
8				Computer Practice (1 hr.)	Computer Practice (1 hr.)	

The following are unsolicited miscellaneous comments from the students:

> Range plants should be required of all animal science majors.
>
> The person is tested by his/her performance in the various farm and ranch related tasks. I feel that is the only way a course like this can be evaluated fairly.
>
> There were enough students to make things work and not too many to get things confused and out of hand.
>
> The slide-talk shows which we saw at night were informal, but still educational.

A comment on an Apple II Computer which remained there several nights after the original instructional period:

> The computer was returned too soon.

Comments from the second internship group were similar in their enthusiasm for the course and the exposure it gave them.

We also solicited comments from the participating faculty members. Following is a sample:

> I think the short course is a good idea and is needed. Perhaps it should be a required course, at least for those without agricultural backgrounds. Two short courses for such students would be of inestimable value.
>
> We feel our natural resource students need such experiences particularly as some of their career work places them in direct contact with ranchers.

Discussion

When the first S Bar S Hands On Internship was announced in a single class in the early Fall of 1981, 21 students enthusiastically signed for the course. Since only 20 could be accommodated, it was not formally announced anymore. However, when mid-December

arrived and it was time to confirm attendance, there were only ten persons still interested. By the time the internship was conducted in the third week in January, only seven students attended. Similarly in early February when the second internship was announced, thirty-seven students signed for the course. We then decided to charge a small fee to be collected by May 1. But by May 1 only nine students had paid their fees. As this is being written fourteen had paid fees and attended the August course. This time, an earlier deadline for fee payment was instituted.

The students do not object to the financial obligation of one credit for the course plus a $15.00 use fee. The faculty do not object to the minimal demands placed on their time using the one week module-type approach. Students with little farm or ranch experience are very enthusiastic about the course.

When teaching any particular technique, faculty emphasize that it may be done several ways and that farmers usually prefer their own techniques which may vary from what is being taught.

In terms of the real value of the internship, we feel that a typical urban student should enroll at least twice **before** attempting an internship with a farmer or rancher. Equipment on farms is so expensive that even the most willing farmer is reluctant to have such a student begin with absolutely no exposure to farm procedures and techniques. The S Bar S Hands-On Internship is an appropriate vehicle to expose an urban student to some of the common techniques used on farms or ranches prior to interning on a farm or ranch.

The College is considering requiring 6 credits of internship for all students who do not pass an appropriate screening test such as that used by Mortenson (8). The S Bar S Internship could supply from one to three of those credits depending on the previous level of exposure of the student. This will probably be its real contribution to the development of the non-farm agricultural student.

Students need to be committed to attend the internship as far ahead as possible.

Summary and Conclusions

A one week one credit hands-on internship held on college ranch facilities capable of providing housing and meals has been described. Faculty teams of one to three persons are retained to instruct in convenient modules. The internship is held three times per year and can be manned by joint appointment faculty, a common arrangement at land grant colleges. The internship concentrates on basic ranch procedures with which non-farm students are not likely to be familiar. The arrangement allows for students to retain summer job commitments. Additional farm or ranch internship experience would be needed by any non-farm novice after completing one to two sessions, but this internship provides initial experiences which may be valued by farmers and ranchers who may hesitate to put novices on expensive equipment.

Note

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