

the escalating potential of these institutions. They are helpful, also, in enabling one to make certain generalizations about the future.

### C. Conclusions Regarding the Future

As one reviews and reflects upon the past contributions of the traditionally black colleges and universities and as he surveys future prospects, several conclusions seem justified. These conclusions if responded to positively and creatively by all individuals, institutions, and agencies involved can suggest a brighter future for all our educational institutions and for all the people served by them. It seems fair to predict that the future of none of us can be maximally bright if unstinted efforts are not made to work for a bright future for all.

1. Undoubtedly the black or 1890 agricultural schools offer considerable and exciting potential for further contributions in the various phases of instruction and service, including international agricultural programs.

One can safely say in regard to the historic service of these schools that "never has so much been done for so many with so little," little in the way of resources and little in terms of professional support from established governmental agencies, local, state, and federal. In an era of increased resources, heightened professional stimulation and support, and expanding needs and opportunities the black agriculture schools should

be able to do more, not less.

2. The potential of black agriculture schools to contribute in international agriculture programs is heightened by several factors: non-white people; similarities of past experiences to those of people to be served; their geographic location; interest in the people to be served.

It would appear that in the future these institutions would be expected to take a greater role in the work to be done than ever before.

3. The potential of the 1890 schools can be increased substantially by more and more effective interinstitutional cooperation of various types and innovative linkages with other agencies.

4. Existing potential of 1890 schools has not been realized fully heretofore because of inadequate information and stimulation of the institutions by those governmental agencies funding training and service programs. It would appear that the start in this direction by government at both the state and federal levels will yield worthwhile results.

5. Unquestionably our nation must make greater use of the resources offered by the 1890 schools if maximum success in the total agricultural effort is to be achieved.

I believe firmly that positive, affirmative action by groups such as your own can hasten a brighter day of heightened effectiveness in the important profession of agriculture. It is my fervent hope that the future will prove this to be the case.

## KEEPING COURSE CONTENT CURRENT THE USE OF TELE-LECTURES IN TEACHING ANIMAL BEHAVIOR<sup>1</sup>

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The art of teaching occurs whenever the instructor and student(s) are communicating and working together, whether in the classroom, laboratory, office, hallway or informal meeting place. The classroom, fortunately, is rarely interrupted by important telephone calls, visitors, meetings, tours, etc., and the classroom can be a rewarding, exciting experience for student and teacher alike. That is, providing the ablest teachers stay in the classroom and that they are rewarded for consistency, for their ability to prompt decision-making action in their students and for teaching current material.

The following items are suggested as alternatives and possibilities for keeping courses up to date:

1. Prepare a new outline to be handed out at the first meeting of the class. Have the outline mimeographed as there will be plenty of time in the course to write on the chalkboard (blackboard). Discuss the grading scale briefly at this time and again when the first quiz or test is handed back to the students.
2. Arrange the class into significant chapters or sections. Some successful teachers that are still teaching have folders for each major subject to hold current and previous notes, pertinent reprints and new information to be incorporated into the lectures or discussions.
3. Early in the course, assign a research problem with different subjects each year. Make it clear about writing procedures and when the report will be due. One departure that meets with some approval from graduate and advanced undergraduate students is the problem-solving or the Harvard case study approach<sup>(3)</sup>. Many topics can carry this connotation and provide students with an opportunity to scrutinize records and actually do something. Certain problems can be assigned to two or more students.
4. Hand back exam papers at the next meeting of the class. As difficult as this may be to the professor in charge, it is helpful for students to go over the material at that time. Also, as the test is being discussed, new points of interest possibly not covered in lecture on the subject can be brought into focus. The test is a summary of material and proper discussion of it can be a springboard to the next examination. Also, have the examinations on file in the reference library.
5. Try something different or new each time the class is taught - a new movie, tape recordings, teaching aids<sup>(1)</sup>, field trips to local farms, handbooks, guest lecturers, etc.
6. A key educator is one who talks to people, borrows and injects ideas into his courses.
7. Rather than asking one's colleagues about teaching ability and current course content, administrators and senior staff should assist and visit classes and help younger staff members. Promote the great teachers since they provide the spark to motivate students.

8. Since colleges and universities are not always located near successful farms, techniques need to be developed to bring management tours into the classroom. Recently, the University of Illinois held their first farm management tour via Tele Net, the telephone network of the Illinois Cooperative Extension Service. (They were forced into this position since hog farmers have been reluctant to have their farms visited because the risk of spreading disease was too great). About 1,000 farmers gathered at the 21 participating Tele Net stations. A slide tour of two farms was narrated from the main campus at Urbana by members of the state staff and the two host farmers. During the noon hour, coordination teams at the Tele Net stations relayed the audience's questions to the specialist team. In the afternoon the specialists and host farmers answered the questions. Through an attitude scale form, a favorable response for this program was received from the audience and field staff<sup>(4)</sup>.

9. At an Annual Meeting of the American Society of Animal Sciences in the Teaching Section Meetings the subject of tele-lecturing (telephone lectures) was discussed in detail<sup>(2)</sup>.

In recent years tele-lectures were presented in the area of animal behavior with the following objectives:

- A. To provide special motivation in an emerging subject.
- B. To supplement an existing course with recent research and findings.
- C. To narrate slides and silent films on animal learning and social behavior.

The voices were amplified over loudspeakers and provisions were available for students, teachers and guests to talk directly with the lecturer. Slides, including a picture of the speaker with telephone in hand, were helpful in conveying the message.

Tele-lecturing provided the following advantages:

- A. Direct current source material.
- B. The lecturer uses a standard office telephone and speaks from his office or at home.
- C. Considerable savings in time and travel expenses (See Table 1).
- D. Educators were responsive to participate since travel time was not involved.
- E. Students were more prone to ask questions.

Limitations were as follows:

- A. Restricted use of the telephone for long time periods.
- B. Background noises were amplified over the public address system.
- C. Variation in quality of telephone connections.
- D. Some local telephone companies have difficulty in making early and final arrangements for tele-lecturing.
- E. Lecturer does not have eye contact with the audience.

From a teaching standpoint, changes in technology including new electronic switching systems and transmission of written and visual material over regular telephone lines should provide unprecedented telephone services for teaching.

Table 1 lists some 15 comparisons of estimated on-site travel lectures with tele-lecturing costs. Travel time alone averaged

<sup>1</sup> Presented at the Annual Meeting of the National Association of Colleges and Teachers of Agriculture, Middle Tennessee State University, Murfreesboro, Tennessee, June 15, 1972.

10.8 hours per invitation. Tele-lectures averaged one hour. Station to station telephone rates were low (\$332.00) and represented 13% of what total expenses would have been (\$2,472.90). The last two tele-lectures (1972) illustrate that telephone expenses now represent 8.5% of total estimated expenses. During the evolution of this teaching method, it has been interesting to observe how difficult it can be to obtain hourly station to station estimates. Also, at the time of billing, this hourly rate seems so unduly high for a telephone conversation that the institution may not be charged.

#### References

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TABLE 1. ESTIMATED COMPARISON OF 15 ON-SITE VISITS WITH TELE-LECTURES (1965-72)

Year	Location		Travel Time (Hr.) <sup>a</sup>	Air Travel <sup>b</sup>	Auto or Limousine Service <sup>c</sup>	Estimated Total Expenses <sup>d</sup>	Station to Station Telephone <sup>e</sup>
	Institution	Airport					
1965	Univ. of California, Berkeley, Cal.	San Francisco	12-1/2	\$234.90	\$5.00	\$ 253.90	\$ 32.70
1965	Univ. of California, Davis, Cal.	Sacramento	12-1/2	246.00	5.00	265.00	30.95
1965	Univ. of California, Davis, Cal.	Sacramento	12-1/2	246.00	5.00	265.00	33.05
1965	Univ. of Texas, Austin, Texas	Austin	15	137.00	5.00	156.00	24.35
1965	Yale University, New Haven, Conn.	New York	13-1/3	136.60	5.00	155.60	26.85
1965	Smithsonian Institute, Wash., D.C.	Wash., D.C.	8	106.00	5.00	125.00	23.38
1965	Oak Ridge National Laboratory, Tenn.	Knoxville	12	71.80	7.00 <sup>c</sup>	92.80	17.15
1965	North Carolina State Univ., Raleigh, N.C.	Raleigh	12	122.50	5.00	141.50	22.95
1965	Univ. of Wisconsin, Madison, Wis.	Madison	8	44.50	5.00	63.50	15.92
1965	Michigan State Univ., East Lansing, Mich.	Lansing	8	56.90	5.00	75.90	22.30 <sup>e</sup>
1965	Ball State University, Muncie, Ind.	Muncie	5	22.00	5.00	41.00	8.40 <sup>e</sup>
1965	Antioch College, Yellow Springs, Ohio	Dayton	7-1/3	39.70	5.00 <sup>c</sup>	58.70	10.00 <sup>e</sup>
1968	Washington State Univ., Pullman, Wash.	Pullman	14	290.00	5.00	315.00	24.50
1972	Oregon State Univ., Corvallis, Ore.	Corvallis	14	326.00	5.00	351.00	24.50
1972	Michigan State Univ., East Lansing	Lansing	8	88.00	5.00	113.00	15.20
TOTAL						\$2472.90 <sup>d</sup>	\$332.00

<sup>a</sup> Air, terminal and automobile time. Berkeley example: 8½ (air) + 2 (terminal) + 2 (car) = 12½ hr.

<sup>b</sup> Round trip, tourist rate to Purdue Airport.

<sup>c</sup> Minimum of two trips to and from airport. At Oak Ridge a 70 mile round trip by auto is involved and Antioch College a 50 mile round trip by ground travel must be considered.

<sup>d</sup> Air travel and auto expenses excluding travel time and honorarium to cover services rendered, slide preparation, postage, etc.

<sup>e</sup> Lectures were one hour with three exceptions. One laboratory exercise with Michigan State University took 93 minutes and two sessions utilized 45 minutes to narrate silent films at Ball State University and Antioch College on two occasions.

## MEETING THE NEEDS OF STUDENTS WITH IMPROVED BEHAVIORAL OBJECTIVES\*

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It would be difficult to find a college course without some kind of objectives for these are basic to organizing learning experiences. The problem is the kind of objectives being used; too many times they are directed toward the learning process. Objectives which begin with such phrases as, "to demonstrate to students . . ." or "to increase the students' abilities . . .," place the emphasis on the process of learning. A much more desirable objective is the one directed toward learning outcomes. This type of approach places the emphasis on the student and the goal he endeavors to attain.

An objective stated as a learning outcome may be reached through many learning experiences. Learning experiences based on objectives written as learning outcomes, are means to ends rather than ends themselves: objectives are tools used in the learning process to bring about the desired learning outcomes. Learning outcomes when considered as end products of instruction include knowledge, understanding, thinking skills, performance skills, communication skills, computational skills, social skills, interests, attitudes, or appreciations.

When stated as learning outcomes, objectives provide:

1. a guide for the instructor and a means of conveying his instructional intent to others
2. a guide for selecting subject matter, the teaching methods, and the materials to be used during instruction
3. a guide for constructing tests and other instruments for evaluating student achievement
4. a guide to the students for organizing their learning activities

It is evident that these four statements represent the proper function of objectives in any course.

Much has been written in the past 10 years in journals including the *NACTA Journal* about the use of behavioral objectives, with emphasis on what is commonly called the "Mager approach." (Mager, 1962). This approach to writing behavioral objectives requires that each objective identify a terminal behavior, define the behavior by describing the important conditions under which the behavior will be expected to occur, and specify the criteria of acceptable performance by describing how well the learner must perform to be considered acceptable. For example, the following might begin a list of behavioral objectives for a course to assist teachers in developing an ag machinery service program:

1. Defines ag machinery terminology.
2. Identifies the meaning of ag machinery terms when used in context.
3. Identifies ag machinery terms that are similar in meaning.

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