

therefore, the instructor has a great deal of flexibility in the subject matter he wishes to present. He may emphasize topics in four different options. One is a botanical-morphological emphasis. Another is the growth and production area. A third alternative emphasizes crop processing and utilization, and the fourth deals with the relationship between plants and man's health and physical well-being. The extensive range of

material affords an opportunity for team teaching. Individuals interested in different aspects could concentrate their efforts in their areas of specialization. This paper also describes some advantages and disadvantages of relevant textbooks and points out advantages associated with short televised modules which were specifically developed for this course.

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## Preparing Graduate Students For Instructional Roles

M.G. Hale, L.D. Moore, and D.M. Orcutt

### Abstract

*An innovative, one credit course was used to introduce graduate students to activities in which they will be involved as teaching assistants and future instructors in higher education. Success of the experiment was related to the smallness of the group and free and open discussions in managed teaching-learning situations. A bibliography of appropriate readings on teaching is identified.*

Several articles and speeches have recently dealt with the instructional maladies prevalent on college and university campuses. One in particular on "Higher Education's Commitment to Instructional Development" by W. James Popham (24), strongly suggests that most administrative attempts to improve instruction are totally inadequate and often rhetorical rather than real. Popham suggests that professors lacking in instruction effectiveness be cycled through some university or college program designed to prepare the individual more adequately for an instructional role. The resultant improved instruction might lead to better student learning.

Popham's views are undoubtedly shared by many; however, we feel that as much or more emphasis should be placed on instructional development of potential faculty while they are graduate students. The preparation of the college or university teacher enabling him or her to use creativity to the fullest extent in teaching-learning situations has been neglected. An attempt to develop graduate students as future college teachers was undertaken in the Department of Plant Pathology and Physiology with the help of a teaching grant from the Special Academic Programs at Virginia Polytechnic Institute and State University.

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An experimental course, **Creativity and Innovation in Plant Physiology Instruction**, was conducted during the spring quarter of 1975. The course was designed to give graduate students some insight and confidence in handling teaching-learning situations in higher education and also to use their input for course revisions within the department.

### Participants And Course Methodology

Eight graduate students and three professors participated in the course. Four of the graduate students were Ph.D. students and four M.S. students. Four of the students were majoring in plant physiology and four in plant pathology. The professors were a plant pathologist with a strong physiological orientation and two plant physiologists. The course was conducted as much as possible as an open discussion with all three professors serving as managers of learning of specified lesson plans and all students serving as managers of learning in role-playing situations. Teaching aids used in lesson plans were left to the discretion of the manager of learning but with some design toward introducing a variety of aids. No written examinations were given in the course, which was pass-fail. Instead, evaluation of students was based on discussion, completion of assignments, and application of principles to revision of physiology core courses. Each session was evaluated by the students and faculty.

Three educational goals were expressed by the faculty involved and accepted by the students:

1. To prepare graduate teaching assistants (GTA's) for their role in instruction programs and as future faculty who may be involved in instruction.
2. To improve student learning by (a) enhancing the teaching effectiveness of faculty and GTA's and (b) improving and better coordinating course content.
3. To evaluate efficacy of the approach to course development and improvement.

## SUMMARY OF LESSON PLANS AND INTENT

### LESSON 1 - Developing Rapport With Students In The Classroom

The importance of establishing good rapport in a course and reasons for establishing good rapport relative to creating a learning atmosphere were emphasized. A list of student behaviorisms and a list of instructor behaviorisms were developed by recall of learning experiences. Those behavior patterns which help develop rapport were indicated and a discussion of how these could be reinforced was conducted.

Instead of distributing educational goals and behavior objectives during the initial class period, students were assigned a self instructional module on the development of behavioral objectives. Each student was asked to write behavioral objectives for a teaching-learning event of his choice from a prepared list to which student-suggested teaching-learning events were added to suit the needs of individuals.

### LESSON 2 - Developing Education Goals And Behavioral Objectives

A review of what educational goals and behavioral objectives are and why they are needed was conducted. The educational goals and behavioral objectives of the course as prepared by the instructors were discussed in detail and changed where necessary until all participants agreed. These became the contract between the students and instructors for the course and are listed as follows:

1. You will know when to use the didactic, heuristic, and philetic methods of teaching.
2. You will establish a set of criteria for evaluating and selecting subject matter to be included in a course. On the basis of criteria established, you will take a given body of knowledge and make decisions on what is important for the students to know.
3. You will make decisions on course and curriculum content.
4. You will draw up behavioral and educational goals for a learning event.
5. You will be able to develop rapport rapidly with students in a classroom or learning situation.
  - (a) You will develop a list of student behaviorisms which indicate rapport.
  - (b) You will develop a list of instructor behaviorisms which help develop rapport.
6. You will demonstrate confidence by making decisions and remaining flexible in a variety of teaching-learning situations.
7. You will make appropriate decisions in determining when time spent with individual students is no longer productive.
8. You will learn the use of role playing as a teaching device.

9. You will be familiar with methods of testing and evaluating student learning in a given learning situation.
10. You will be able to select the appropriate testing or evaluation methods for the situation.
11. You will develop a teaching philosophy.
12. You will provide a rationale which links your philosophy to your personality.
13. You will learn to smile even though you fail or are frustrated.

### LESSON 3 - Decision Making With Respect To Course And Curriculum Content

The students were forced to think through the mental processes used in formulating plans and making decisions relative to construction of a syllabus for their chosen teaching-learning event. Some aspects of decision making that were discussed included availability of resources, planning for alternatives, writing down the plan, revising the plan, implementing the plan, and evaluating the plan. Each student was then asked to formulate a lesson plan for his teaching-learning event using the principles outlined.

### LESSON 4 - Evaluation

The kinds of evaluation prevalent in the academic environment such as evaluation of courses, students, instruction, instructors; faculty, facilities, and subject matter were discussed. Other aspects such as why evaluation is necessary, what is needed for evaluating, when and how evaluation is most frequently used, the role of personal values on influencing evaluation, and problems associated with evaluation were considered. Uses of evaluation to enhance learning were outlined.

A reading assignment was made in Army Manual FM21-6 **Techniques of Military Instruction (7)**, a resource on testing and test preparation. Each student was then asked to prepare an evaluation activity for his teaching-learning event previously chosen.

### LESSON 5 — The Manager Of Learning

Knowledge, skills, and activities were listed as the ways in which people learn, and the manager of learning methodology was explained as a means of accomplishing learning in all three ways. The didactic, heuristic, philetic, and other teaching methodologies; criteria for selection of methods; and devices or tools available to the manager of learning to help attain his behavioral objectives were discussed. Each student was then asked to prepare a ten minute portion of his lesson plan to present to the class during the next period and apply the manager of learning concepts and methodologies.

### LESSON 6 - Putting It All Together-I

Each student gave a 10 minute oral portion of his lesson plan constructed for his teaching-learning event. At the end of the 10 minute period, the floor was opened for analysis and constructive suggestions for each pre-

sentation. The students were given evaluation sheets so that additional comments could be made which might not be brought out in an open discussion. Role playing on the part of students and faculty as the presentation was being made aided the presenter in self evaluation of his plan and approach to the situation.

#### **LESSON 7 - Putting It All Together-II**

The students concluded their lesson plan presentation and were given a final assignment to be prepared within the next two weeks. The assignment consisted of revising and reorganizing three plant physiology courses taught in the department (3040 Introductory Plant Physiology, 5050 Principles of Plant Physiology, and 5060 Plant Metabolism). Six of the eight students were assigned to work in pairs on single courses. The two remaining students, having had a majority of the graduate plant physiology courses in the department, were asked to give their overall assessment of the physiology program and how the 5000 level courses might be reorganized to help maintain and improve the quality and standards of the program. Students were encouraged to utilize concepts developed in the course in making recommendations and to use the course instructors as a resource. Detailed lesson plans were not part of this assignment. The approved syllabi currently on file were distributed to all course participants.

#### **LESSON 8 - Counseling**

Counseling and advising were contrasted. Points related to why and when counseling should be conducted were discussed. The importance of listening, understanding problems, dangers of giving advice, and the value of helping the counselee to make his own decisions were discussed as fundamentals of counseling. The complexities of counseling in relation to differences in people, different problems, and counseling experience were presented. Resources for professional help both on and off campus were listed.

#### **LESSONS 9 AND 10 - Final Exam**

A one hour session and a two hour session were held to allow the four groups of students to present written and oral suggestions relative to core course revision in plant physiology. Each group was given an opportunity to express revisions orally. Student-prepared syllabi with educational goals, behavioral objectives, and subject matter to be covered were handed out to all course participants. The floor was open for discussion. Evaluation of presentations was based on instructor judgment as to the effectiveness of utilization of principles and concepts presented during the course.

### **EVALUATION**

Instructor evaluation of student participants was accomplished by several written assignments. These were evaluated and suggestions were made for improvements. Additional evaluation of students during discussion sessions was made relative to participation, enthusiasm, and understanding of material presented. The ten minute presentation of part of a lesson plan was critiqued by both students and faculty. A final means of

evaluation was based on the student's ability to utilize principles and concepts presented in the course and application of these to subject matter reorganization, core course revisions, and writing of the behavioral objectives and educational goals.

At this time, it is too early to evaluate the effectiveness of this course relative to its usefulness in preparing GTA's for instructional roles. However, based on written and oral comments by students and observing student performance in the classroom, the course proved to be an enlightening experience for students and instructors. More critical evaluation will be obtained through actual classroom observations of the GTA's performing instructional duties in the 1975-76 and subsequent academic years. Further input will be obtained through student evaluations of GTA performance in their instructional roles.

### **CONCLUSIONS AND SUGGESTIONS FOR THE FUTURE**

The course was a success on several counts. It allowed a broad, though brief, coverage of many of the attributes and skills a college instructor needs to be competent and to be aware of possibilities for developing as a teaching faculty member. Not only did the graduate students learn, but the faculty learned along with them. All agreed the course should be established as an approved course for graduate students in the department. When taught next time, it was suggested that more emphasis be placed on evaluation of accomplishment of behavioral objectives, more on use of modules, and more on use of teaching aids in a classroom.

The second educational goal, that of improving courses, was accomplished to the extent that serious thought was given to alternatives in subject matter distribution and to developing behavioral objectives for core courses in plant physiology. When next taught, consideration will be given to core courses in plant pathology.

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# INTERNATIONAL AGRICULTURE

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## An International Agriculture Study Program in New Zealand

Wilbur P. Ball

### ABSTRACT

*International programs, such as the California State University program for agricultural students to study for ten months at Massey University and Lincoln College in New Zealand, help to internationalize instructional programs on our campuses in America. Students not only have a rewarding experience studying agriculture in another land but also have an opportunity to gain valuable cross-cultural and travel experiences that provide a better understanding of international agriculture in a changing world.*

Students majoring in agriculture at California State universities and colleges now have an opportunity to study agriculture in New Zealand as part of their regular Bachelor of Science degree programs. This new program is offered through the Universities' International Studies Program in cooperation with Massey University and Lincoln College in New Zealand.

The first group of ten agricultural students enrolled at California State University campuses at San Luis Obispo, Fresno, Pomona, and Humboldt recently completed study in New Zealand under this program. The students arrived in New Zealand in early February for the beginning of the academic year and returned to California during October of 1975. Each student was assigned to a New Zealand farm for one month prior to the beginning of classes to familiarize himself with new agricultural terms and techniques in addition to gaining valuable work experience.

### Host Institutions and Academic Programs

Massey University enrolls approximately 4,000 students and is located in North Island near the city of Palmerston North. The university has outstanding programs in animal science, pasture management, soil management, and food management. The animal science program is especially strong in sheep and dairy husbandry.

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