

reasons why students with higher ACT scores and HSP are majoring in C rather than in A. In our study, A graduates were found to have starting salaries significantly below the mean of AB and C graduates.

By far, more C graduates thought their major better prepared them for their vocation. Agriculture graduates ranked a high second in their response to this question while AB and B graduates thought their major least prepared them for their present employment. Note the consistent image portrayed by the responses of the graduates to the following three questions.

1. Was your first job following graduation directly related to your major?
2. Is your present position directly related to your major?
3. How well did your major prepare you for your present employment?

Results indicate AB and B graduates rated their job preparation the lowest and fewer AB and B graduates either currently have a position directly related to their major or had a first job directly related to their major compared to A and C graduates.

### Summary

In this study B and C graduates were found to have higher HSP and ACT scores than either A or AB graduates suggesting that academically stronger students are entering the B and C fields. Responses to the post graduation questionnaire found more C ► A ► AB ► B graduates hold positions directly related to their major. In addition C graduates also perceived themselves to be better trained for their vocation than did AB or B graduates. Starting salaries were higher for C graduates than for AB graduates and were higher for AB graduates than for either A or B graduates. Even so, A graduates perceived themselves to be better prepared for their vocation than did AB or B graduates. Chemistry graduates were observed to have changed positions less often than other graduates.

This study suggests that if colleges of Agriculture are going to increase their enrollments, the private sector may first have to respond by increasing starting salaries. In addition, as a means of increasing enrollments and enhancing the academic capability of students in Agriculture curricula, recruitment efforts should encourage participation of students with an interest in chemistry and biology. However, because of meager employment opportunities associated with biology following graduation, recruiting strategies should be more successful if targeted towards students interested in biology. In this study academically superior students were considered to be those with higher ACT scores and higher high school percentile ranks. The use of the phrase "academically superior" raises the question, however, as to whether these students are really academically superior or "do they simply have better academic preparation?" This study also raises the questions, "do students majoring in Biology or Chemistry receive better preparation at the

high school level?" Are they receiving a more challenging high school curriculum than students majoring in Agriculture? These are necessary questions which should be addressed in future studies.

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## Use of the Feedback Approach In Teaching Agricultural Courses With Small Enrollments

Gregory K. Pompelli

Given the continuing decline in enrollment in many agricultural courses and departments around the nation, new interest needs to be placed on using and adapting teaching methods that can most effectively reach students in courses with limited enrollment (Manderscheid). The following paper discusses several observations about the use of one possible method known as the Feedback Approach (Osterman, 1979). As such, this paper concerns the adaptation of the feedback approach for use in a class with less than ten students, as well as the application of the approach.

It is generally accepted the use of a standard lecture approach in classes with small enrollments places a number of serious constraints on the instructor's ability to convey the information to the students (Gage and Berliner, Osterman 1980). First, students are placed in a passive learning situation. For the most part, they are "fed" information by the instructor. Another weakness of the lecture approach is that it lacks a mechanism for students to interact with the instructor or other students. Thus, questions and discussions about complex issues or related material do not become part of the classroom instruction.

If all students were of equal ability and learned at similar rates, these problems might not be as damaging to the teaching process. Unfortunately, even in small classes the learning skill levels of students varies. Furthermore, even when the abilities of students are similar each student is likely to have a preferred learning style. Lectures often effectively negate one of the major advantages of a small class, which is the opportunity to present material on a nearly one-to-one basis.

### Involves Learning Styles

The feedback approach, however, is designed to apply techniques that involve each of the four major "learning styles" (Osterman, 1980). These techniques

Pompelli is an assistant professor in the Department of Agricultural Economics and Rural Sociology at the University of Tennessee, Knoxville, TN 37901-1071.

include activities that interest students who learn best in a lecture format; activities that work best for students who prefer open discussions; activities that can be used by students who learn best by demonstration; and activities for students who learn best through self-discovery (Gottko and Osterman). Where possible, the course material is presented using techniques geared to each learning style. Thus, the main advantage of this approach is that it gives students a number of ways in which to view the material.

In theory the feedback approach employs a set of handouts for each topic or class that detail the material to be covered, and tasks that the students need to address outside the classroom. Given the ever present constraint on time in the classroom these outside activities offer added flexibility. In general, the study guide is the key to understanding each topic covered in the course. The study guide includes a cover page that provides an overview for the topic; a procedural section that outlines the tasks students need to do to prepare for class; and an introduction section that covers the central theme of the topic and presents an opportunity for students to begin thinking about the topic. In addition, the handout includes an objectives section that presents a set of goals related to the topic; a pre-test page raises questions that students need to address prior to class and should be able to answer after attending the class. A lecture outline is also provided for each class meeting. The last five sections of the feedback handout include a discussion section that offers questions that students may want to raise among themselves during their in-class group discussion period; a discussion feedback page that addresses that section's questions; a post-test page that students can use for self review after class; and finally a cool-down page that offers additional tasks for students (Gatch and Osterman).

The composition of each handout may vary according to the material being covered, but in any form it is a critical part of the feedback approach. It is the tool that helps motivate the students' interests in the topic, and it is the tool that initially presents the material in ways that appeal to all students. Each section may not be useful to each student, but students should find some part of the overall handout beneficial.

### **Three-Part Classroom Format**

An important feature of the feedback method, and one that distinguishes it from other classroom formats, is that each class period is split into three parts. The first part is used by the instructor to cover new material; the second is used by the students for the class discussion; and the third is used to recap new material as well as the student discussions. The group discussion is promoted by the use of the discussion section questions that each student receives as part of the study packet.

The lecture section gives the instructor the opportunity to present the material. The feedback handout helps guide students through the material, and

the discussion section gives each student the opportunity to address in-class questions prior to class. The in-class discussion provides an important path for interaction among the students and the instructor.

The use of the discussion section in the middle of class is also designed to help break the monotony of the lecture. The break also may be used to reinforce concepts introduced during the lecture.

The final part of the class provides an opportunity to summarize the lecture and the discussion, to return the focus of the students back onto the topic, especially if it has been displaced by other issues during the discussion.

Although the feedback approach has been used since 1974 (Osterman, 1980), the success of its application in courses with small enrollments is uncertain. Nonetheless, the approach offers the opportunity to develop courses that are sufficiently flexible to meet the needs of the students without placing instructors at the disadvantage of relying solely on lectures. In addition, it is designed to encourage participation in class discussions, as well as greater interaction in the classroom.

Certainly, the feedback approach's main advantage is its flexibility. Nonetheless, the uncertainty surrounding the amount of material to be covered during term, as well as the amount of material to be covered in any single class period places some constraints on this approach. In practice it offers a number of alternative ways to present the difficult material. However, it is difficult to develop complete sets of handouts for each topic covered.

### **Handout Dilemma**

The desire to prepare complete sets of handouts diminished greatly in the small class setting when it became apparent that each learning type was not represented in the class. In a larger class every learning style might be represented. However, in a small class certain styles may not be present. Thus, time spent developing activities for unused learning styles is reduced to the "if I have time" level of importance. The result, then, is that the initial handouts start out more or less complete, but the latter handouts end-up tailored to the students in the course. However, it is expected that as the course is repeated the handouts would grow to include activities for all learning styles.

While the handouts vary, the preparation of such handouts provided a good template for organizing the material in the course. It also allows for a number of ways to be used to present the material. Some topics that do not lend themselves to classroom presentations could be experienced by the students prior to class so that the discussion of the topic could move more smoothly.

The use of the split class periods served a number of useful purposes. First, it breaks the monotony of standard lectures. Second, it serves as an easy reminder during the class that learning is a team effort. The students over time recognizes the need to be prepared.

and it gave them a chance to use the material prior to examinations. Finally, the split classroom periods generally opens the opportunity for students to interact and participate without appearing overly aggressive.

Furthermore, the opportunity to present the subject matter during class gives the students all the more reason to use the handouts as a study tool. The split class periods also adds time flexibility in the length of time allotted to lecture, discussion, etc. The discussion period concerning the questions from the handout also gives the instructor some indication about where the students might need more clarification on a topic.

### Student Reaction

The level of preparation varies among the students as well as from day to day for each student. Initially, the small number of students puts extra pressure on some of the students to get the discussion going. In order to involve all the students written discussion question answers were requested. For the most part, the written answers provided the necessary incentive to get the quieter students to participate in the discussion.

The level of detail provided in each handout raised some concerns among the students. Just as there are different learning styles, there also appeared to be different tolerances for repetition of topic material. This problem diminished as the handouts were trimmed to serve the learning styles in the class.

Handouts usually cover whole topics and therefore they contained a great number of readings and questions. Often students disregard or set aside the handouts until they have either more time or the inclination to tackle the tasks. In other cases, the handouts were heavily gleaned to get the things they wanted out of them.

### Conclusion

From an instructor's perspective, the preparation of the handouts is the greatest drawback to the approach. It takes a great deal of time to prepare each handout as outlined by Gottko and Osterman. For a small number of students this requirement may deter its adoption.

In addition, too much information or the inclusion of too many ways of covering the same material discourages some of the students. Thus, the handouts need to be revised and updated to improve their effectiveness. Nonetheless, with revision even problem handouts can also become useful learning tools.

The split class periods helped to keep the students actively involved in the class. They did not feel harassed during the discussion period because they knew it was expected and they knew the topic questions beforehand. Given the small class this helped to improve the interaction among the students.

While the use of the feedback approach in small classes has a number of drawbacks, its flexibility helps to overcome most of these problems. Combined with the split class periods it provides a number of good ways for adapting the material to fit the abilities and

the needs of the students. At the same time, it provides a setting for the students to become actively involved in learning the material.

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## PRELIMINARY EVALUATION

### American Long-Term Agricultural Education by Tunisian Students

D.E. Johnson, M. Ben Dhiaf  
and J.S. Tiedeman

#### Abstract

*A survey of Tunisians who have graduated from agricultural universities in the United States reveals that students believe that the education they received was relevant and appropriate for the agricultural work that needs to be done in Tunisia. They were well prepared by the Tunisian school systems and felt the level of difficulty of courses to be equal to American universities. Tunisian students believed that their American advisors understood their special needs and requirements and effectively guided their programs. Students generally indicated that their graduate research would not have been possible in Tunisia because of lack of equipment and facilities. A large majority of former students believe that educational programs are a good expenditure of assistance money and should be continued.*

#### Introduction

Since its founding in 1956 the Republic of Tunisia has had a strong commitment to education. At the time of Independence literacy was 15% and some 225,000 students were in primary grades. Secondary schools had 30,000 students, while colleges and universities were training about 2,000.

A major effort was undertaken to increase the availability of education to Tunisians. By 1970 the Ministry of Education received approximately 25% of

Johnson is an assistant professor in the Department of Rangeland Resources, Oregon State University, Corvallis, Oregon 97331 U.S.A., Ben Dhiaf is Regional Director, Office of Livestock and Pastures, Cite Layouni, Kairouan, Tunisia and Tiedeman is an associate professor Department of Natural Resource Sciences, Washington State University, Pullman, Washington 99164 U.S.A.