Teacher ⟶ Student

Providing Feedback To Students

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Abstract

Research has shown that providing students with individualized feedback promotes learning but requires considerable time. A study comparing the effectiveness, feasibility, and amount of faculty time required to provide alternative forms of feedback to undergraduate agricultural students at Purdue University was conducted. Students were randomly assigned to received either written or cassette audio tape recorded feedback in four agricultural education classes. Students had a more favorable attitude toward tape recorded feedback and performed as well as students who received written feedback. Less faculty time was required to provide audio tape feedback.

How would you react to the following episodes?

A cattleman entered several bulls in the university sponsored bull performance test. At the end of the test the cattleman was told his bulls placed 6th but was not told their rate of gain nor feed efficiency.

A seed corn breeder gave several bushels of his newest hybrid to the university for use in their test plots. He was later told the corn did well but was not given information about yield, standability, or insect resistance.

A swine breeder entered two of his barrows in a university sponsored carcass contest. After the contest he was told the carcasses were not as good as the others. A contest official said he should improve his breeding program. No one gave the swine breeder data about the carcass length, backfat, or dressing percentage of his barrows.

The reaction of most people to these situations is that detailed information about the livestock or corn should be provided to the growers. The growers need to know what is desirable about their products and what needs to be improved. Before progress can be made some type of feedback is needed.

The same principle should apply to students enrolled in our agricultural classes. Whenever students hand in research papers, problems, or other types of assignments, they should be given detailed feedback about what is right or wrong with the work instead of just a letter grade.

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Research on Feedback

Various researchers have examined the practice of giving individual feedback to students. Page (1958) in an experimental study involving 74 high school teachers, and 2, 139 students found that students who received extensive written comments on their assignments had significantly better grades on subsequent assignments than did students who received only a letter grade or a few written comments on their work.

Lesner (1967) found that elementary students (N=965) who received written teacher comments on corrected spelling tests showed significantly more gains on subsequent spelling tests than those who received no comments.

After reviewing twelve studies on providing student feedback, Stewart and White (1976) concluded that providing individualized feedback was most effective at the college level.

The research findings which indicate students benefit from individualized feedback suggest more of this type of feedback should be used. However, providing individualized feedback presents problems.

Problems in Providing Feedback

The university professor today is beset with conflicting demands for his time. His students expect good teaching, personal consultation, and careful examination and evaluation of their work. The univeristy expects him to conduct research, write journal articles, and engage in other scholarly activities. All of these activities are time consuming.

Wise use of faculty time is becoming increasingly more important. Weldy (1974) implied that educators may not be using time properly when he wrote, "Leaders in business and industry have become more concerned about . . . use of time than have educational administrators."

Teaching classes, advising students, conducting research, and evaluating students' work requires considerable time. Several studies (Keene, 1971; University of Minnesota, 1970; University of Michigan, 1970; Clark, 1968; Gerstl, 1959; Wiche, 1961; McElhaney, 1959) have revealed that university faculty members work 53-60 hours per week, with a high preponderance at 55-57 hours.

Students are becoming concerned about the amount of time spent by professors conducting research instead of working with students. An editorial in **The Purdue Exponent** on April 27, 1976, called for more emphasis on students and less on research. Its author argues that ". . . the university is designed to instruct students rather than place professors in the national spotlight for their accomplishments in the area of research."

A study comparing professors and graduate teaching associates conducted at a Big Ten University by G. Moore and B. Moore (1976) found that university undergraduate students believed professors did not take as much time to work with them or evaluate their work as carefully as graduate teaching associates.

Students would like more individual feedback, but the fact remains that providing feedback requires time. Stewart and White (1976, p. 499) write, ". . . while comments may have some positive effect. . . the size of this effect may actually be quite small, especially when one considers the amount of time which a teacher would expend to write comments on papers in the personalized manner which seems to be most effective." Methods of providing individualized feedback are needed which will be educationally sound but will require less faculty time.

Alternative Methods of Individualized Feedback

In a presentation to the American Educational Research Association Higgins (1973) maintained that contributions to the design of effective instruction could be generated by comparing various methods of providing instructional feedback. A review of the literature on feedback reveals several methods of providing individualized feedback that may be effective and also utilize faculty time more effectively.

One method of providing individualized feedback that has potential is audio cassette tapes. Early in this decade Miller (1973) writing in **Engineering Education** suggested using audio cassette tapes in a wide variety of educational endeavors. Two years later, Hurst (1975) writing in the same journal reported that using cassettes to provide feedback to students improved student report writing. Kahrs (1974) was enthusiastic about the use of audio cassette tapes to provide feedback in college physical education classes. Evans and Behrens (1966) found providing tape recorded feedback was useful in journalism class and recommended its use on assignments such as research reports.

A combination of tape recorded feedback and written comments has been used in a basic field crops course at the University of Illinois (Everly, Burger, and Steele, 1970). Students were required to complete an original research project and then write a report on their findings. Before the report was given to the crops instructor it was critiqued by an English Counselor. The counselor, using a cassette tape, provided suggestions for improvement. Marks on the paper reinforced the spoken comments. This procedure resulted in high quality research reports. Students were generally favorable to this procedure. The English counselors reported that marking a paper and taping a critique took slightly longer than required for conventional grading but took less time than if detailed written notes were given to each student.

Using cassette tapes to provide feedback is a simple procedure. As the professor reads a student's paper, he can speak his comments into a cassette tape recorder. Since speaking is faster and easier than writing, time should be saved while the extensiveness of the comments are increased. Cassette tape feedback could be used with a wide variety of assignments.

An added bonus of using verbal feedback on written assignments is the increase of "personal attention" a professor can give a student by speaking directly to him, sharing his thoughts, giving encouragement along with criticism. Directional comments can be shared in more depth which may eliminate the need for further explanation before improvement can begin.

Comparing Written Feedback With Taped Feedback

To determine the effectiveness, feasibility, and amount of faculty time involved in providing two methods of individualized feedback a research study was funded by Purdue Univeristy. Specifically, the study compared two methods of providing individualized feedback on written assignments - the traditional written comments and audio tape recorded comments. The amount of faculty time required for implementation, the effects of such feedback on student achievement, and the reaction of students to each type of feedback was compared.

Methodology

Population. Students in agricultural education classes at Purdue University were used in this study. The classes involved were two 200 level introduction to teaching vocational agriculture courses with 50 students and two 400 level methods of teaching agriculture classes with 31 students. The study was conducted during the 1976-77 school year.

Design of the Study. The design of the study can be described as Campbell and Stanley's (1973) experimental design 6, posttest-only control group design. The design is illustrated as follows:

$$R \quad X_1 \quad O_1$$
$$R \quad X_2 \quad O_2$$

Students within each class in this study were randomly assigned to one of the two treatment groups at the start of the semester. The treatments were:

X1 - Audio recorded feedback on assignments

X2 - Written feedback on assignments

Students in treatment group one received audio feedback on assignments. There were two types of assignments: students in the 200 level classes read and critiqued three journal articles of their choice from **Agricultural Education.** Each critique was 2-3 pages long. Critiques were handed in at two week intervals. In the 400 level classes students handed in detailed lesson plans at weekly intervals. Each lesson plan was on some phase of agriculture such as livestock selection, farm management, forages, and welding. The lesson plans contained objectives, procedures for teaching, and the actual subject matter information written out in detail. The average plan was 5-7 pages long.

As each assignment was read the instructor recorded his comments on cassette tapes. Suggestions were provided for improving the lesson plans or critiques. Most of

the comments were substantive. such as clarification of points and suggested additions or deletions of material. Some comments were provided on spelling. sentence and paragraph structure. and organization of the assignment. Both positive and not-so-positive comments were given.

Students in the experimental group were assigned a numbered cassette tape which was turned in with each written assignment. Cassette tape players were available for students' use in the education workroom and the library. At the end of the semester, tapes were collected for use the following semester. Students in group two received traditional written comments.

Three different dependent variables were examined. (1) Student achievement as determined by comparing the initial and final assignment grade of the students (1,2). (2) The amount of faculty time required in providing each type of feedback. (3) Students' attitudes as measured using a ten item Likert-type instrument developed for this study. The instrument had moderate correlation between items and an alpha reliability of .69. A five point range was used for the responses.

Findings

Student Attitudes. Students who received tape recorded feedback were more pleased with the manner in which they received feedback than were students who received written feedback. The mean attitude score of 39 students who received taped feedback was 37.64, and the mean attitude score of 38 students who received written feedback was 33.23. This difference in attitude scores is significant at the .05 probability level using an independent sample t-test. (t=2.20, df=76, p=.031).

Examination of the response to individual items on the instrument (see Table 1) tended to verify that tape recorded feedback is more personalized and provides more indepth feedback to students than does written feedback. Students who received tape recorded feedback perceived the instructor to be more interested in their progress than did the students who received writen feedback (Item 10). Students who received tape recorded feedback believed they had a clearer understanding of what needed to be improved on their assignments (Item 9). Students who received written comments believed they could have turned in better assignments if the feedback method had been different (Item 7). The only drawback to tape recorded feedback according to the students was that it was not as convenient as written feedback (Item 8).

Faculty Time Usage. Slightly less time was required to provide tape recorded feedback. The total amount of time required to provide tape recorded feedback to 43 students was 873 minutes for an average of 20.3 minutes per student. The time required to provide written feedback to 37 students was 866 minutes for an average of 23.4 minutes per student. A savings of 3 minutes per student was realized by using tape recorded feedback. As the level of the class increased so did the amount of time saved by using taped feedback. In the 400 level classes a savings of ten minutes per student was realized using tape recorded feedback. No statistical analysis was performed on this data due to the variation in group sizes and variation in group assignments.

Student Achievement. There was basically no difference in student achievement according to the type of feedback received. The students who were in the written feedback group had a mean score of 83.78 (out of a possible 100) on their first assignment whereas the group receiving tape recorded feedback had a mean score of 83.64 on the same assignment. The mean score of the written feedback group on the final assignment was 90.33 and the tape recorded feedback group had a mean score of 91.72 (see Table 3). Analysis of Covariance using the first score as the covariate revealed no statistically significant difference between the two methods of providing feedback (F=.45, df=1,75, p > .05); however, there was a significant difference between the first and last scores (F=5.73, df=1,75, p < .05). This indicates that feedback improves student performance on later assignments. Both written and tape recorded feedback promoted student learning.

Discussion

In light of the findings, it appears providing students with individualized feedback via audio cassette tapes is a viable procedure, especially in upper level courses. A savings of faculty time was realized by using tape recorded feedback, particularly in upper level classes. Using tape recorded feedback instead of written feed-

Table 1. Students' Reaction to Type of Feedback on Assignments.

Statement	Tape (N=39)	Written (N=38)
1. The manner in which fedback was provided on my assignments was dumb.	4.03a	3.71
2. I would like to have more of the type of feedback I received on the assignments in other courses.	3.56	3.45
3. I had trouble understanding what needed to be improved on my assignments.	3.18	3.26
4. The feedback on the assignments was helpful.	3.67	3.61
5. Not enough feedback was provided on the assignments.	3.10	2.97
6. I liked the manner in which I received feedback.	3.90	3.37*
7. I could have turned in better assginments if the manner in which I received feedback had been different.	3.67	3.21*
8. The manner in which I received feedback on my assignment was inconvenient.	3.31	3.87*
9. I had a clear understanding of what needed to be changed in order to improve on my assignments.	3.90	3.26*
10. The manner in which I received feedback indicated that the instructor was interested in my progress.	4.08	3.47*
Total Attitude Scoreb	37.64	33.23*

a The scoring was Agree = 5. Agree = 4. Undecided = 3. Disagree = 2. and Strongly Disagree = 1. However, Items 1, 3, 5, 7 and 8 were written as negative items; therefore, the scoring of these items was reversed. A high score is desirable.

b Alpha reliability for this instrument is .69.

* p < .05

Table 2. Teacher Time Required to Provide Feedback on Assignments.

Class	Group Size	Feedback Type	Total Feedback Time in Minutes	Mean Feedback Time in Minutes
AGED 240	12	Written	102	8.50
AGED 240b	11	Written	135	12.27
AGED 440*	6	Written	179	29.83
AGED 440**	8	Written	450	56.25
Sub-total	37		866	23.41
AGED 240a	14	Tape	100	7.14
AGED 240b	13	Tape	205	15.77
AGED 440*	7	Tape	187	26.71
AGED 440**	9	Tape	381	42.33
Sub-total	43		873	20.30

* Fall
** Spring

Table 3. Student Achievement According to Feedback Groups

Feedback Group	Mean Score on First Assignment	SD	Mean Score on Last Assignment	SD	Difference in Scores
Written (N=40)	83.78	10.61	90.33	9.71	6.55
Tape (N=39)	83.64	10.83	91.72	7.90	8.08

back would save some faculty time which could be used for professional or personal activities.

In this study there was no significant difference between written feedback and tape recorded feedback in improving student performance. Either method seems as good as the other in improving student performance. The important point is that both types of individualized instructional feedback helped students improve.

Students had a more positive attitude toward tape recorded feedback than written feedback. Some educators believe students will perform better in a class if their attitudes are favorable toward the class. If this is true then individualized tape recorded feedback should be helpful in developing positive attitudes.

The review of literature and results of this study suggest that audio feedback via cassette tapes can be used on a variety of assignments. Assignments which require higher levels of thinking such as themes, research papers, management plans, blueprints, critiques, and lesson plans appear to lend themselves readily to this type of feedback. Cassette feedback could also be used with problem solving assignments.

Providing students with individualized instructional feedback via cassette tape should be considered by more professors. The students like it, faculty time is saved, and most importantly — students learn.

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