

# WHAT'S NEW, DIFFERENT AND WORKING

(A SERIES OF CONTRIBUTED PAPERS)

## Increasing the Effectiveness of Teaching Through Efforts to Personalize the Teaching-Learning Experience

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Many teachers have long contended that the relationship between teacher and students should be "personalized." Such teachers hold the firm conviction that their efforts to know the students personally and individually enhance not only the joy of teaching but also its effectiveness. In an attempt to obtain objective evidence of the truth of the latter claim, two noncontemporary classes enrolled in a basic animal genetics course were compared.

Only the traditional "name and social security number" of each student in the first class were available to the instructor. Any other personal information he learned concerning individual students was gathered from random conversations with various students. Thus, such extra information varied in amount from student to student since there was nothing consistent or systematic in efforts to obtain it.

The second class, enrolled during the following academic quarter, experienced what the instructor calls a "Get Acquainted" procedure, which involves obtaining at the first class meeting considerable personal information concerning each student. This includes a polaroid photograph, major field of study, home town and county, background (urban or rural), kind and extent of farm and livestock experience, major animal species interest, marital status, names and ages of children and hobbies and other interests. The "personalization" objective is carefully explained to the students, and they are assured that the information obtained will be used only by the instructor for the purpose of getting acquainted with each student. Supplying the information is entirely optional, but no student has shown any reluctance to supply it during more than three years that the "Get Acquainted" procedure has been used.

Concentrated study of the personal information concerning students in classes with enrollments as large as sixty for no longer than one hour has permitted the instructor to know all of the students by name at the second class meeting. The photograph is the most helpful item in this identification phase of the "Get Acquainted" procedure, but the other items of personal information are more important and useful than the photograph in the subsequent process of becoming intimately acquainted with each student.

The question of possible difference in learning potential between the two classes was approached by examining various variables recorded for each student. Three variables showed appreciable correlation with final average grade in the course. These were grade on a "status" examination (called prerequisite examination by some instructors), grade point average (GPA) in mathematics courses and overall GPA. The nature of the subject matter of the course in question would make one anticipate that these three variables would be related to student performance in the course and might logically be considered indicators of learning potential. Instructors of other courses would undoubtedly find other variables of record to be correlated with student performance.

The class means for the four variables of interest are shown in Table 1, and product-moment correlations are shown in Table 2.

To obtain a measure of student performance which would be somewhat free of the effects of differences in learning potential as reflected by differences in variables designated  $X_1$ ,  $X_2$ , and  $X_3$ , the following multiple linear regression equation was constructed. The equation is based on within-class regression since corresponding correlations and variances in the two classes were

Table 1  
MEANS AND STANDARD ERRORS

	Number of Students	$X_1$ (Grade on Status Exam,)	$X_2$ (Math. GPA)	$X_3$ (Overall GPA)	Y (Final Avg. Grade)
Class 1	31	60.26 ± 3.09	2.70 ± 0.12	2.85 ± 0.09	78.81 ± 2.13
Class 2	35	55.57 ± 3.05	2.57 ± 0.11	2.75 ± 0.08	78.09 ± 1.84
Pooled	66	57.77 ± 3.08	2.63 ± 0.12	2.79 ± 0.08	78.42 ± 1.98

Table 2  
CORRELATIONS

		$X_2$	$X_3$	Y
$X_1$	Class 1	0.7392	0.5982	0.7918
	Class 2	0.6779	0.6097	0.7563
	Pooled	0.7058	0.6037	0.7715
$X_2$	Class 1		0.8394	0.5943
	Class 2		0.8589	0.5593
	Pooled		0.8494	0.5766
$X_3$	Class 1			0.4334
	Class 2			0.5755
	Pooled			0.5042

labeled "homogeneous" on the basis of appropriate statistical tests.

$\hat{Y}_i = 47.49 + 0.4666 X_{1i} + 0.5089 X_{2i} + 0.9504 X_{3i}$  where  $\hat{Y}_i$  = estimate of  $Y_i$ , final average course grade of  $i^{\text{th}}$  student

$X_{1i}$  = status examination grade of  $i^{\text{th}}$  student

$X_{2i}$  = GPA of  $i^{\text{th}}$  student in mathematics courses

$X_{3i}$  = overall GPA of  $i^{\text{th}}$  student

The two class means of final average grades adjusted for the regression described by the above equation were 79.93 and 75.23 for class 2 and class 1, respectively, class 2 being the one experiencing the "Get Acquainted" procedure. These two means are significantly ( $P < 0.01$ ) different from one another, according to a simple t test.

$$t = \frac{79.93 - 75.23}{\sqrt{\frac{51.7953}{31} + \frac{51.7953}{35}}}$$

$$= 2.65$$

In the above calculation of t, the value, 51.7953, is the pooled within-class variance of adjusted final course grades.

Since the instruction and grading of the two classes were done by the same person with as little difference from class to class as possible, it can be concluded that the apparently greater success of students in class 2 was largely a consequence of the "Get Acquainted" procedure which was the only known and planned difference between the ways in which the two classes were conducted. While it may be argued that it is impossible for one to instruct and grade two different classes in exactly the same manner, it seems that any differences in these respects between the two classes in question here would have been random ones and as likely to favor class 1 as to favor class 2.

It is surely not necessary to convince most experienced teachers that personalizing instruction is desirable, but the study described here should help convince some of those who now hold a contrary opinion. This example of objective evaluation of a

teaching procedure may suggest to other teachers the possibility of objectively assessing the effectiveness of other teaching procedures which may not be widely believed to be effective, as is apparently the case with personalization procedures.

Of course, subjective considerations will certainly be involved in making the final decision as to whether or not to continue a procedure. Such matters as extra expenditure of time, labor and money the procedure requires and student and instructor attitudes toward it cannot be ignored. Using the "Get Acquainted" procedure described here costs about \$0.25 per student and about three extra man hours of labor per class. Also, there is no time for instruction during the first class period. With respect to

attitudes toward the procedure, it is overwhelmingly successful. The instructor in the present case found that it made teaching infinitely more enjoyable and satisfying, and thirty of the students in class 2 indicated on an anonymous questionnaire that their opinion of the procedure was very good, believing that it increased their motivation to learn; four held a good opinion and one failed to answer the question concerning his opinion of the procedure.

The ultimate objective of any teacher should be neither "innovation for its own sake" nor "objectivity for its own sake" but should be "unceasing effort to increase the effectiveness of the teaching-learning experience by whatever means can be found."

## The Centralia College of Agricultural Technology

### "Farm Analysis Project" \*

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The Centralia College of Agricultural Technology, under the direction of the Ontario Ministry of Agriculture and Food was established in 1967. The College offers two year diploma courses in Agricultural Business Management, Animal Health Technology and Home Economics.

#### Method

When the College was established it was decided not to include a demonstration farm in conjunction with the College but rather to solicit the support of cooperator farms in the community and to utilize these farms as field laboratories for instructional purposes. In this way, principles presented in the classroom could be applied to real farm situations before the students graduate from Centralia College.

This approach also permits a modified elective system, since students are assigned to farms in groups of five according to their main interest (dairy, beef, swine, poultry, mixed farming, etc.). The students are required to do a complete and in-depth study of all the physical and economic factors of the farm business — soils, crops, livestock, machinery, buildings, labour, credit, records, etc. The eventual requirement of the students after the present farm operation has been analyzed is to make and defend recommendations which will maximize farm profitability.

The farms normally are located within a radius of twenty miles from the campus and within easy driving distance. The College has had no difficulty in obtaining cooperators for the project. Each cooperator receives a 500 dollar retainer fee to offset any inconvenience that may occur during the calendar year study of his farm business. Several farmers have indicated that the 500 dollar retainer should have been paid to the College for the detailed study and recommendations they received at the conclusion of the study.

Approximately fifty-five different farms have been studied to date, with each farm being used only once. The farms are not selected on the basis of size, net farm income or appearance. They are not necessarily the biggest or the best farms in the area. Rather, they are farms on which there is something to see and an operator who is willing to cooperate to the fullest extent by giving all of the required information and doing whatever is necessary to provide a meaningful learning experience for the students.

Names of potential project farms are obtained from our enrollment lists at short courses, the County Extension Offices and our own extension contacts. Many potential project farms are recommended by past and present project farmers. The program is now well enough known and respected in the community that

some farmers have asked if their farms can be used as project farms.

The farmers are asked to sign a contract with the Ontario Ministry of Agriculture and Food. This contract states that should any misfortune during the project result in injury of students, livestock, crops, equipment, etc., then Centralia College and not the farmer is liable. The contract also states that the farmer will receive \$500 for allowing the Farm Analysis Project to take place on his farm.

#### Project Personnel

One staff member is responsible for the coordination of the Farm Analysis Project and he relies quite heavily on assistance and advice from everyone on the Agricultural staff. In effect, it is a team effort, with many individuals making some contribution.

Most of the members of the Agricultural Business Management staff are directly involved as tutors responsible for one or two groups of students. The tutors are responsible for coordinating the efforts and activities of their individual groups as well as advising and directing them through the project.

Every member of the Agricultural Business Management staff and the Animal Health Technology staff serves as a resource person whether or not he is directly involved as a group tutor.

The list of outside resource people would include members of the various Branches of the Ministry of Agriculture and Food, bankers and members of other lending institutions, lawyers, real estate and insurance men, accountants, leaders and authorities from the agricultural business sector, the project farmers and other farmers in the community.

The students are introduced to the Farm Analysis Project during their first term. The project is outlined and explained to them by the staff members and a volunteer group of senior students. The students then select the type of farm operation they wish to study and are assigned to farms in groups of five under the guidance of a staff tutor.

They are interested in collecting a comprehensive record of all farm business matters. They are concerned with livestock production systems, cropping programs and farm management. The students do not become directly involved in the operation of the farm.

In order for them to get the maximum benefit from the Farm Analysis Project, it is necessary for them to have access to the detailed information of the farm business. This information is treated in the strictest confidence by the students and tutors.

During their second and third terms, the group will spend the equivalent of one-half day per week at the farm studying the