The overhead projector used by a student in group discussion

bulletin board will be constantly changing.

Dr. MacLean emphasized that evaluation will frequently occur during discussion with individual pupils in the child-centered approach. Samples of work can be retained for parent examination.

Dr. MacLean has visited classes where children cannot wait to get to school in the morning and have to be driven out at four o'clock. He believes enthusiasm is the greatest generator of ideas.

AN ABSTRACT OF A STUDY OF THE RELATIONSHIP BETWEEN SELECTED ACTIVITIES FOR TEACHER PREPARATION AND STUDENT ACHIEVEMENT IN GRADE IX MATHEMATICS

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Of interest to teachers, and to those groups concerned with the education of teachers, is a continuing assessment of the effectiveness of programs which are alleged to contribute to teacher effectiveness. As yet, conclusive answers to questions in this area appear to be far away. Mr. Johnson's research attempted to come to grips with certain aspects of this problem with reference to preparation for the teaching of a specific mathematics program. Some of his conclusions confirm, and some appear to contradict, other research findings in the same general problem area. Perhaps his most encouraging finding is the positive relationship between "teacher effectiveness" and participation in professional development activities.

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The purpose of this study was to survey a selected group of Alberta teachers of Grade IX mathematics, using *Seeing Through Mathematics III* as the primary text, to determine those activities most significantly related to competence. The activities surveyed were those which contribute to a teacher's: (1) academic qualifications, (2) inservice and professional development, (3) teaching experience. All of these were analyzed to determine their relation to teacher competence as measured by student achievement on a modern mathematics test.

The data regarding these teacher activities were collected by means of a questionnaire. The criterion measure of student achievement was a test designed by mathematics educators to test the specific objectives of the Grade IX mathematics course; therefore, it included cognitive domain items testing intellectual abilities and skills as well as knowledge. Students' IQ scores were used to control initial differences in ability among the students. Both the criterion and the covariate scores were mean scores for each teacher's students.

The general method of data analysis was multiple linear regression, using an analysis of covariance design, which was performed on the IBM 360. The teacher predictor variables were included individually with the covariate in full regression models. These were compared with a restricted model which included only the covariate as the predictor. The comparison was used as a measure of prediction efficiency of the particular teacher activity.

The findings indicate that knowledge of the number of years of teaching experience and knowledge of the number of relevant professional development activities in which a teacher has participated contribute toward the efficiency of prediction of criterion scores in a significantly positive way. Knowledge of the number of years of teacher training for which the teacher was being paid and knowledge of the total number of years which a teacher has taught *Seeing Through Mathematics I* or *II* did not significantly improve efficiency of prediction at the level chosen; however, they were close enough to merit consideration. Knowledge of the number of modern mathematics courses taken by a teacher was negatively related to student achievement. Detailed analysis of this phenomenon indicated that other variables studied were peculiarly distributed. Knowledge of other variables in this study did not lead to significant increases in efficiency of prediction of criterion scores.

Questionnaire results indicate that the teachers were well experienced, particularly in the teaching of *Seeing Through Mathematics I* or *II*, that they were active professionally, and that they were well trained.

Years of teaching experience and number of professional development activities are shown to be significantly related to teacher competence; years of training and experience with other courses in a series have been shown to make some contribution. In view of further possible revisions and changes, this study indicates that educators contemplating the updating and upgrading of junior high school mathematics curricula should be concerned with these particular teaching activities.