

Title : **Development of Large Group Teaching Models**
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Abstract

The objectives of this study were to develop and evaluate a large group teaching model of Calculus 1 at Suranaree University of Technology; to examine the students' opinion on the model; and to investigate the association of the background, studying behaviors, and opinions of students between students who passed and did not pass the final examination in Calculus 1. The population consisted of all 1,159 students of Suranaree University of Technology who registered in Calculus 1 in the first trimester of 1998 and a sample of 550 students was randomly selected from this population. The sample data were collected from the students' achievement test scores, the participation in the course activities, and the opinions on the teaching procedures, learning behaviors and other aspects by using questionnaires. The descriptive statistics were used to analyze the general data of students. The Chi-square test was applied to infer the association of the background, studying behaviors, and students' opinions between students who passed and did not pass the final examination in Calculus 1.

The results of the study were summarized as follows:

1. The activities used in the large group teaching model developed consisted of the placement test, the scheduled lectures according to the teaching plan, arranged small study groups, tutorial classes by teaching assistants, group assignments, consulting services, and the midterm and final examinations.

2. The model developed was evaluated by comparing the students' achievements in the final examination to that in 1996 and 1997. The number of D⁺, D and F grades dropped down from 53% in 1996 and 47% in 1997 to 27%, specifically the number of F grades dropped down from 27% in 1996 and 18% in 1997 to 8%. The class average went up to 2.15 while the class averages in 1996 and 1997 were 1.49 and 1.76 respectively.

3. The students opinions indicated that the useful factors supporting a large group teaching model were the teaching materials, the recorded teaching videos, studying in small arranged groups, and tutorial classes.

4. The Chi-square test at .05 level of significance inferred that students who passed and did not pass the final examination in Calculus 1 were associated to

- (1) background: genders, majors, admission schemes, high school grades, high school grades in mathematics and grade point average at Suranaree University of Technology;
- (2) studying behaviors: number of times of class attendance, following the instructor's advice, time for review in small study groups, number of times of tutorial class attendance, number of times for getting assistance from the instructor and teaching assistants, ability in solving the exercises and final examination results expectation;
- (3) the application of knowledge from high schools, the course contents, the teaching plan;
- (4) attitudes towards a large group teaching model: arrangements of tutorial classes, exercise practice in small study groups, the arrangements of students for the small study groups, and training techniques in the small study group;
- (5) the study skills training for knowing how to adjust and study at the university level.