

THESIS TITLE : THE DEVELOPMENT OF MATHEMATICS ACHIEVEMENT AND  
VERBAL-PROBLEM SOLVING ABILITIES OF PRATHOM SUKSA II  
STUDENTS WITH THE EMPHASIS ON THE DEVELOPMENT OF  
LANGUAGE EXPERIENCES

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#### ABSTRACT

The purposes of the present study were 1) to develop teaching and learning activities in Mathematics on the topic of multiplication and division for Grade II students using a teaching model which emphasized the development of language experiences; 2) to develop learning achievement in mathematics on the topic of multiplication and division of Grade II students who were taught through the method emphasizing the development of language experiences and to attain a learning achievement mean of at least 65 percent; and 3) to develop verbal problem solving abilities in multiplication and division of Grade II students with an achievement mean of at least 65 percent.

The population used in the study comprised of 32 Grade II students in Fai Phayanaka School under the Jurisdiction of Phu Khieu District Education Office, Chaiyaphume Province, during the first semester of the 1997 school year.

The instruments used in the study comprised of 1) experimental tool which was comprised of 30 lesson plans in mathematics with the emphasis on the development of language experiences, 2) evaluation apparatus to assess the efficiency of the model which included a criterion-referenced learning achievement test and a verbal-problem solving abilities test; and 3) data collection apparatus for feedback purpose which included a form to record teaching-learning activities, a form to record the students' learning experiences, drills, quizzes and portfolio.

The study was an action research. There were four spirals involved. The data obtained from observation, interviews, field notes, quizzes and drills which had been kept in the portfolio were analyzed by means of content analysis, arithmetics mean, standard deviation, frequency and percentage for the purpose of readjusting the teaching-learning activities for a higher efficiency in the next spirals.

The results of the study:

1. The development of an effective teaching model which emphasized the development of language experiences was completed. The model contained aims and principles for the learners to have a good knowledge and understanding of mathematical concept, to be able to relate mathematics with experiences in daily life, to be capable of solving the verbal problems owing to a good understanding of the structure of the problem, to foster mutual assistance for learning, to create a learning environment that contributes to the growth of knowledge and a good understanding of the concept and the abilities to do the verbal-problem solving. This teaching model which emphasized the development of language experiences was made up of four major steps, i.e. the introduction, the presentation, the conclusion and the evaluation. In the first step of introduction the teacher announced the behavioral objectives and reviewed the learners' previous

knowledge of the subject. The presentatoin step was divided fruther into two substeps of (1) the presentation of the lesson to the class and (2) the small-group study. In the first substep for language development the students were exposed to four classes of language for the purpose of originating learning concept. The first of four classes was the child's language. The student were allowed to talk freely about their experiences in daily life, about what they had read in a story book and things they had seen from a picture. The students were also encoranged to develop their language abilities by participating the role playing. The second was a material language in which the students used the language along with their treatment of stimulatives and semi-stimulatives. The third, the mathematical language, introduced the concise vocabularies which were directly related to the concepts the student had already learned. The fourth was the symbolic language in in which the student used symbols instead of mathematic language. There were three development stage in each class of language, i.e. the modelling, the creating and the sharing. When the student had gone through all the four language development processes, they were asked to do supplementary short activities or games. In the small-group study substep the students studied the content /task cards, activity cards and key cards. In the conclusion step the students were asked to make a conclusion on their idias and the concepts they had learned. The last step, the evaluation, called for the teacher to assisgned the students to do skill drills for homework.

2. The students who were taught under the model which emphasized the development language experiences made an achievement mean of 79.60% which was in agreement with the research objective of at least 65%.

3. The students who were taught under the model had attianed a verbal problem solving abilities mean of 82.87% which was in agreement with the research objective of at least 65%.