

An Analysis of the Experimental Mathematics Curriculum in Elementary School

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The experimental curriculum for elementary mathematics had been implemented in Taiwan during the period between 1992 and 1997. Researchers studied students' learning processes and scholastic achievements to assess the effectiveness of the experimental mathematics curriculum. The main objectives of this study contain:

1. Investigate the differences in the effectiveness of mathematics learning between students following the experimental curriculum and those following the traditional curriculum in elementary school.
2. Conduct a follow-up study on the continuation of mathematics learning for those experimental students in middle school.
3. Compare the differences in achievement of mathematics learning between the experimental students and non-experimental students in middle school.

Five phases were carried out during this research. Phases I and II were conducted for students in their second semester of sixth grade. Three surveys were collected and analyzed, including Mathematical Learning and Experience Scale (MLES), Mathematics Attitude Scale (MAS), and Mathematical Problem-Solving Test (MPST). In phases III to V, the follow-up study was conducted for students in the first semester of the seventh grade and two mathematics classes were observed. During the period, open questionnaire about elementary and middle school mathematics learning experience was designed and math grades of the students were collected from three periodical test scores in math.

After one year follow-up study, findings were concluded as follows:

1. The experiment students had more positive attitude but less metacognition abilities than the control group students. However, habits of peer discussion, communication and cooperation learning were popular in experimental classes.
2. The students' scores in the problem-solving test were much better in the experimental group than in the control group. The study also indicated that learning effectiveness was dramatically different among experimental classes.
3. Observations in middle school showed that focus of the process-based experimental curriculum is substituted by focus of outcome-based teaching in middle school. The researchers found that a change in teaching style in the math teaching community is difficult and that requires teachers to change their perceptions of mathematical learning.
4. Comparing math achievement in middle school between experimental and control groups, it was found that the achievement of city students is well above the average while the achievement of students in the suburbs is below average.

In view of the above-mentioned conclusions, some suggestions are provided:

1. Establishing professional development programs are essential and should be considered at the earliest possible time.
2. Teachers should increase their flexibility to meet the systemic change in math-teaching classes.
3. A concrete research and development system should be developed to serve as a resource center for math teachers to produce a set of information on structural math concepts.