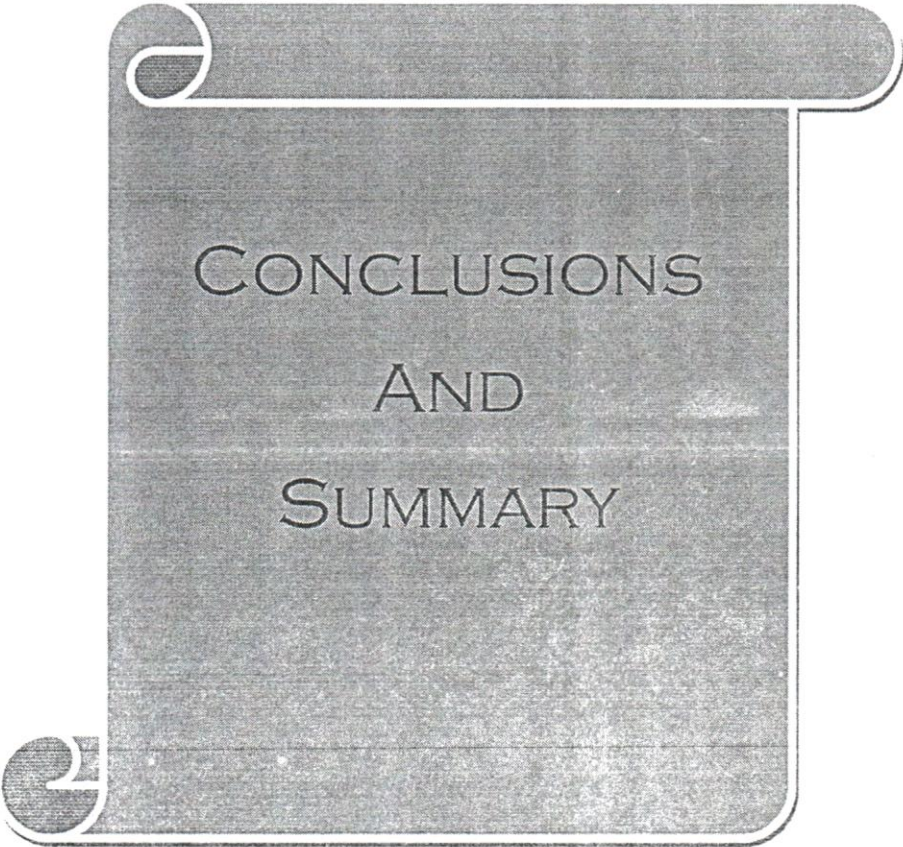


CHAPTER-5



CONCLUSIONS
AND
SUMMARY

CHAPTER V

RESULTS, IMPLICATIONS, AND RECOMMENDATIONS

5.1 Introduction

This final chapter recaps the study, examines the results of the analyses, and uses the results to address the research questions. This chapter also presents concluding remarks and discusses implications from the study and recommendations for future research.

The Study

The purpose of this study was to document the decision by a school district to adopt an innovative middle school mathematics curriculum and to investigate the three year effects of CMP and examine the subsequent impact on student achievement for various subgroups of the population. Quantitative data were collected from student records in order to compare the achievement of CMP students over a three- year period.

These data were also analyzed to examine the achievement gap between students as well as male and female students who had completed.

Major Findings: Quantitative

The quantitative analyses addressed four research questions:

1. Is there a significant difference in mathematics achievement among students who have had CMP for one, two, or three years as measured by the TCAP?

2. Is there a significant difference in mathematics achievement between students after one, two, or three years of CMP as measured by the TCAP?
3. Is there a significant difference in the mathematics achievement of students according to their identified socioeconomic status after one, two or three years of CMP as measured by the TCAP?
4. Is there a significant difference between the mathematics achievement of male and female students after one, two, or three years of CMP as measured by the TCAP?

The results of the quantitative analyses can be summarized in the following major findings. These findings are based on student achievement data as measured by the TCAP:

1. Students in CMP for three years performed better on the TCAP than did students completing CMP for one or two years.
2. Students in CMP for one year performed similar to students completing CMP for two years.
3. Non African American students performed better than African American students after completing one, two, and three years of CMP.
4. African American students completing CMP for three years performed

slightly better when compared to Non African American students than did African American students completing one or two years of CMP when compared to Non African Americans completing the same.

5. The socioeconomic status of individual students was not recorded by this district during the time of the study.

6. There was an achievement gap between male and female students after completing one and two years of CMP.

7. The achievement gap between male and female students after completing two years of CMP shrank when compared to the first year of completion and after completing three years of CMP there was no significant difference noted between male and female students.

Mathematics scores for this district on the TCAP had been stagnant for the past several years. The area of problem solving was especially troublesome. Problem Solving test scores continued to decline despite specific attempts to improve them by the curriculum specialist. Mathematics test scores for this district started to climb after the adoption of CMP. After comparing the total battery mathematics test scores a significant difference was found in mathematics achievement of students completing three years of CMP when compared to students completing one and two years. Curriculum alone was not a significant predictor of the mathematics achievement of middle school students by ethnic group. However, CMP was a positive factor for African American students even though it was not significant.

The analysis of the performance of African American and Non African American students yielded disappointing yet promising results in terms of reducing the mathematics achievement gap. There was still a significant difference between the achievement of African American students and Non African American students but the gap size was slightly smaller after three years of CMP.

After comparing the total battery mathematics test scores of male and female students no significant difference was found in the mathematics achievement of students completing three years of CMP. These results were promising in terms of reducing the mathematics achievement gap between male and female students in the middle grades.

The researcher notes that it is difficult to interpret what test scores like the TCAP provide really means in relationship to the curriculum. And the score alone does not reflect what kind of instruction the student has received or the conditions that a child brings to the classroom. Therefore, test scores such as the ones used in this study should be used cautiously.

To bring consistency and quality to the instruction that students receive, standards were introduced. The standards developed by this district were heavily aligned with the NCTM standards. They were systematically introduced at the elementary, middle, and high school levels by lead teachers located in each school within this district. It is assumed the instruction in CMP classrooms in this study was standardized in practice and consistent with pedagogy and content outlined by the NCTM standards. It is also important to

note that the previous mathematics learning experiences that the students brought to their classrooms were assumed to be similar. Most of the students in the study had a minimum of four or five years of traditional mathematics content and pedagogy and a maximum of three or four years of reform mathematics content and pedagogy. Most of these students were in their final year of elementary when this school district first introduced reform mathematics in elementary and middle school levels. Therefore, it is difficult to determine if the effects of CMP were minimized due to their previous experiences in traditional mathematics (Clarkson, 2001).

Reform in Middle School Mathematics

The major purpose of the NCTM standards is to raise the mathematics achievement of all students. Standards based curricula like CMP integrate “new” pedagogy to teach “new” mathematics content to all middle school students. Historically, the middle school curriculum had a heavy emphasis on arithmetic skills from elementary schools, which were taught through procedural instruction (National Advisory Committee on Mathematical Education, 1975 as cited by Clarkson, 2001). The NCTM standards also state that the teaching, learning, and assessing of mathematics should shift from rote memorization to conceptual understanding and reasoning. The demands in the CMP classrooms in this study were consistent with the beliefs of the mathematics educational community as outlined in the standards.

The data suggest that there are aspects of CMP that are effective in middle school classrooms and most of these can best be described as increasing the opportunity to learn. Professional development opportunities for teachers of

CMP are important to recognize. Professional development experiences are an important part of successful implementation of curricular reform. Reform in middle school mathematics is extremely important because of the huge numbers of middle school teachers who were trained as generalists and are serving as mathematics teachers with little or no formal education beyond general college mathematics though with the No Child Left Behind legislature teachers are now being required to have special training in a specific subject area. These professional development experiences provided the teachers in this study with more mathematics content knowledge and also prepared teachers to implement the CMP lessons. These teachers and in turn the students seemed to benefit from the professional development experiences. Teacher and student benefits are definitely reasons CMP should continue to be implemented in this school district.

Educational Implications

“Achievement in mathematics is often used as an indicator of ‘how much’ mathematics someone knows or possesses” (Secada, 1992). “Knowing mathematics” is defined as having the ability to identify the “basic concepts and procedures of the discipline” (National Council of Teachers of Mathematics, 1989). In reform mathematics like CMP, students are not simply asked to repeat basic facts or computational procedures. “Knowing mathematics” in reform mathematics curricula like CMP, means having a conceptual understanding of mathematics that enables the student to access a variety of strategies in order to solve a “worthwhile” problem. Traditional

standardized testing alone does not always demonstrate “knowing mathematics.” (Clarkson, 2001).

This study employed quantitative methodology. This analysis created comparable evidence of the CMP experience. Gradual changes on students’ test scores should be expected because these scores also reflect what has happened in previous grades according to Grissmer’s (2000) analysis of the mathematics data from the 1990, 1992, 1996, NAEP assessment. Continuing to monitor the mathematics progress of the students in this study through high school would generate better data over time to determine if CMP makes a difference in mathematics achievement.

Additionally, when school districts are considering reform mathematics for their students, it would be valuable for the decision makers to have prior knowledge of the misalignment of the curriculum to traditional standardized testing. The result of the misalignment may indicate little significant change in student achievement based on the students’ standardized test scores. Using additional assessments that align with the reform mathematics content may provide students with the opportunity to demonstrate the depth of their mathematical knowledge that is currently not measured with the traditional standardized test. Decision makers in this district definitely should continue using CMP and in fact while monitoring student progress should prepare to adopt an updated version of the Program. However, the researcher would recommend to future districts considering adopting CMP or any other reform curricula to phase in the material over a two to three year period. This will allow for gradual acceptance and perhaps less of a dramatic adjustment for

To determine the relationship between achievement motivation and gender also achievement motivation among various groups, the test of significance of difference between means was used.

Findings:

- i) A significant difference between boys are higher as compared to girls.
- ii) No significant difference among students belonging to general and other Disadvantaged groups was found in achievement motivation. An Exception was found in case of urban general boys and urban disadvantaged boys.
- iii) A significant difference between boys and girls studying in urban area was found in achievement motivation. Girls showed high degree of achievement motivation.
- iv) The result of the study indicates that nature of the sample shows 65% students are having average achievement motivation, 33% having high Achievement motivation, 2% are having low achievement motivation.

students, teachers, parents, and administrators shifting from traditional to reform mathematics.

Recommendations for Future Research

Middle school mathematics studies like this one can inform potential studies that examine the long term effects of reform in relationship to future mathematics course retention and achievement. Eventually, the future workforce will be the deciding factor of the success of the present day mathematics reform. The following study ideas for additional research are suggested:

1. Compare the achievement of students from various levels of CMP completion by socioeconomic status.
2. Compare the achievement of students from traditional middle school mathematics to the achievement of students from reform mathematics in middle school.
3. Compare the achievement of students from elementary mathematics from this same school district as they complete four years of a reform curriculum.
4. Continue this study with the same population as they proceed through high school mathematics courses.

In conclusion it is the belief of the researcher, possibility to learn summarizes the whole principle of CMP. Professional development opportunities provided teachers with more mathematics content and current mathematics knowledge. CMP classrooms provided students with a more hands on real life approach to learning mathematics.

This study contributes to the body of knowledge on reform mathematics and the achievement of middle school students and hopefully will also serve as a catalyst for continuing research in mathematics education.

Summary

In this chapter brief summary of main features of the study are given:

Statement of the Problem:

A statement of the problem is “Effect of using mathematics kit on achievement level and attitude towards mathematics of class 8th standard students”.

Objectives:

- i) To study the nature of the achievement motivation of VIII standard students.
- ii) To find out the difference in the achievement motivation between girls and boys students.
- iii) To find out the difference in the achievement motivation among the students belonging to general and other disadvantaged groups.

Hypothesis:

- i) There is significant difference in the achievement motivation Between student studying in the school.
- ii) There is a Significant difference in the Achievement motivation among students belonging to general and other disadvantaged groups.
- iii) There is no significant differences in the achievement motivation between the girls and boys studying in the school.

Sample:

The present study used random, incidental sampling for investigation. The Sample was drawn from students of class VIII of st. mary convent School near Bhopal. The total number of students was 50.

Tools and Techniques:

To study the achievement of pupils, Achievement test and attitude towards mathematics questionnaire was used.