

**SCAFFOLDING AS A TEACHING STRATEGY TO ENHANCE
MATHEMATICS LEARNING IN THE CLASSROOM.**

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ABSTRACT

This report presents the findings of a research study, entitled ‘Scaffolding as a teaching strategy to enhance the teaching and learning of mathematics in the classroom’, which examined ways in which the participating teachers learned to teach mathematics effectively using scaffolding and the different types of scaffolding interactions between teachers and students that were most productive for mathematics learning.

The study was predominately qualitative and was guided by a naturalistic inquiry and an action research philosophy. Two mathematics teachers and two Form Four classes of students from a secondary school in Samarahan Division of Sarawak participated in the study. The data collection period spanned eight months, from early March to the middle of October in the year 2004. A total of 58 mathematics lessons were videotaped. The researchers also took running records of the interactions in the classrooms. The informal discussions between the researchers and the teachers to resolve the dilemmas encountered by the teachers in the classrooms, and the interviews with the teachers and some of the students were audio taped.

A framework was developed to analyze the data collected, which involved a preliminary analysis to identify ‘activity’, ‘scaffolding’ and ‘student achievement’ as the three main categories of interest. Segments of the tapes falling under these categories were transcribed and grouped under these categories. This was followed by piecemeal analyses done on the segments of transcribed tapes, which were guided by

CHAPTER 1

INTRODUCTION

1.0 Introduction

In the last few decades, there had been an upsurge of interest in instructions that focus on the social aspect of teaching and learning. Educators realize that the social context of teaching and learning has the potential to enhance the construction process of mathematical meanings in students. On one hand, teaching could be viewed as an activity in which teachers act as guides for students' constructive processes towards, not only the taken-as-shared mathematical meanings, but also the mathematical ways of knowing. On the other hand, learning could also be viewed as an active, constructive activity in which students wrestle through barriers that arise as they participate in the mathematical practices in the classrooms. Such a view emphasizes that the teaching and learning process is interactive in nature and involves the implicit and explicit negotiation of mathematical meanings (Cobb, Yackel and wood, 1992).

So, how should the social context be incorporated into the mathematical practices in the classroom? One of the crucial aspects to focus on is dialogue. How teachers and students talk with one another constitutes in large measure such practices. According to Freire (1972)

'Without dialogue, there is no communication and without communication, there can be no true education.' (p. 65)

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

Until recently, education was primarily a process of the transmission of knowledge. We believed that there was a fixed knowledge base that existed 'out there' and could be discovered by anybody observing the world with his senses piece by piece. Hence, learning was perceived to proceed along a fixed preconceived plan. The mathematics teacher, as the authority in knowledge, was to 'fill' students with rules and skills to decode texts and obtain meanings. This was followed by 'drill and practice' for individual skills that led to the mastery of the knowledge, rules and skills by students.

The 21st century is characterized by advances in knowledge and technology. These advances call for a revamp in mathematics education which emphasizes on creative methods in the teaching and learning of mathematics that can foster problem-solving skills, higher-order thinking skills, independent learning, team work and communication skills. The mathematics education of yesterday will not suffice for this knowledge-based era.

Educators have been actively engaged in research on mathematics education. The findings are disseminated to schools that aid the effective teaching of mathematics. It is hoped that students will be engaged in more meaningful learning