

**e-INTEGRAL MAP AS AN INTERACTIVE PROCEDURAL
LEARNING TOOL**



BY:

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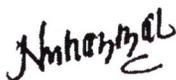
Dear Associate Prof. Dr,

FINAL RESEARCH REPORT ON “e-INTEGRAL MAP AS AN INTERACTIVE PROCEDURAL LEARNING TOOL”

With reference to the above matter, enclosed herewith are three (3) copies of the final research report entitled “e-INTEGRAL MAP as an Interactive Procedural Learning Tool” by the research team from UiTM Sarawak for your action.

Thank you.

Yours sincerely,



Nor Hazizah Binti Julaihi
Leader
Research Project

PROPOSED EXECUTIVE SUMMARY

In higher learning institutions, students have been learning Calculus conventionally from textbook or reference book which they perceived as abstract, confusing and cannot be imagined. Available books are too complicated for fast revision, too complex for identification of appropriate technique(s) to solve Calculus problems and fail to provide a thorough overview on the content learned. This study proposes e-Integral Map which provides an alternative way for the learners to learn Calculus interactively. This study attempts to investigate the effectiveness of using e-Integral Map in Calculus learning among higher learning institutions students. Students' understanding and students' feedback while and after using e-Integral Map are also investigated in this study. e-Integral Map provides a rich learning experience to cater the different abilities of students in learning Calculus. This study employs mixed methods research design in which quantitative procedures that involve the uses of questionnaires, pre test and post test, is the initial method of collecting data and follow-up by the collection of interview data to provide in-depth information of the quantitative findings. A total of 55 higher learning institution students will be selected by using the stratified random sampling method. The sample will be randomly assigned to treatment and control groups. Six respondents will then be interviewed to tackle the learning process and the experience of the students while using e-Integral map. The findings will then be analyzed. The expected outcomes from this study comprise an innovative and new teaching and learning method to assist students' in learning Calculus.

CHAPTER 1

INTRODUCTION

1.0 Background of the Study

Calculus is one of the most important components of mathematics that defines and deals with limits, derivatives and integrals of functions. It is often divided into two parts, namely *Differential Calculus* and *Integral Calculus*. Differential Calculus is concerned with the determination, properties and application of derivatives whereas Integral Calculus is concerned with the determination, properties and application of integrals.

Calculus is deeply integrated in every branch of modern sciences. For most students in mathematics, science or engineering programmes, Calculus is the entry-point to undergraduate and advanced mathematics courses. Calculus provides the mathematical background and foundation for many majors. In view of its importance in such a wide range of disciplines, there have been numerous studies on students' understanding of Calculus.

Suresh (2002) indicated that Calculus was one of the courses with 'high-failure rate' for engineering students besides physics and statistics. According to Douglass (1998), over a third or probably half of the students enrolled in Calculus course(s) each year failed to complete the course successfully. Chen et al. (2002)