

**MOBILE MATHS COURSEWARE: PROBLEM SOLVING GUIDE FOR
PRIMARY SCHOOLS**

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DECLARATION

I hereby declare that this project report entitled

**MOBILE MATHS COURSEWARE: PROBLEM
SOLVING GUIDE FOR PRIMARY SCHOOLS**

is written by me and is my own effort and that no part has been plagiarized
without citations.

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DEDICATION

Specially dedicated to my beloved parents,
Che Ku Mohd bin Che Ku Ngah and Wan Hasimah binti Wan Ahmad

For my supervisor, Dr Sazilah binti Salam
(UTEM)

Lastly to my beloved friends who are encouraged, guided and inspired me. Without their patience, understanding, support and most of love, the completion of this work would not have been possible. Special thanks also to all that also contributed to complete this thesis.

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Thank you.

ABSTRACT

M-learning is a fast growing concept of learning. With the emergence of new tools and media, mobile content is suggested as a powerful means to increase knowledge via the exploration of interactivity, multimedia and 2D animation for creative edutainment and communication in the future. The title of the project is “Mobile Maths Courseware: Problem Solving Guide for Primary Schools”. The target users of this application are pupils of Level 1 primary school. There are three modules incorporated in the application; 1) addition, 2) multiplication and 3) quiz. This courseware is developed to complement existing learning system. The problem is that students cannot really tackle the problem-solving questions which are assigned by their teachers. One of the solutions for such common problem is by developing mobile learning courseware that plays as an additional tool in teaching and learning process. The learning technique that is used in the project is Accelerated Learning Technique. It guides the users or students to better understand and hence, answer the question correctly. The methodology used in this project is ADDIE Model. It comprises problem solving questions and students are required to solve them accordingly. Surveys among primary school teachers were carried out in order to retrieve their opinions on this courseware. The respondents consist of 50 teachers of Sekolah Kebangsaan Ayer Keroh, Melaka. The research found that ninety percent respondents agree that the students face difficulty when it comes to problem solving questions. This is probably due to the lack of student’s ability in understanding the questions. The result also showed that students do not understand mathematical terms in problem solving questions. The findings of this study are useful for Mathematics teachers to help primary school students to answer the questions better. After the project is being implemented, the testing will be performed to gain the feedback from the users.

ABSTRAK

Tajuk projek yang dibangunkan ialah “*Mobile Maths Courseware: Problem Solving Guide for Primary Schools*”. Pengguna bagi pembelajaran ini adalah pelajar tahap satu sekolah rendah. Tiga modul yang dibangunkan: 1) Penambahan, 2) Pendaraban dan 3) Quiz. Masalah utama adalah pelajar-pelajar tidak boleh menyelesaikan soalan berbentuk penyelesaian masalah yang diberikan oleh guru mereka. Untuk menyelesaikan masalah ini, projek pembelajaran melalui telefon dibangunkan sebagai alat tambahan dalam pembelajaran matematik. Teknik pembelajaran yang digunakan dalam projek ini adalah *Accelerated Learning Technique*. Ia akan membantu pengguna atau pelajar untuk memahami dan menjawab soalan. Metodologi yang digunakan dalam projek ini ialah Model ADDIE. Bahan pengajaran ini akan diuji kepada pelajar. Ia mengandungi soalan berbentuk penyelesaian masalah dan pelajar akan menyelesaikannya. Kajian soalan dikalangan guru-guru telah dijalankan untuk menilai mereka pendapat mereka dalam konteks ini. Responden seramai 50 orang guru dari Sekolah Kebangsaan Ayer Keroh, Melaka. Kajian mendapati sembilan puluh peratus responden bersetuju bahawa pelajar-pelajar menghadapi kesukaran ketika menjawab soalan-soalan berbentuk penyelesaian masalah. Ini adalah disebabkan oleh kurangnya kebolehan pelajar dalam memahami soalan penyelesaian masalah. Kajian juga mendapati bahawa pelajar-pelajar tidak memahami istilah-istilah matematik dalam soalan penyelesaian masalah. Kajian ini berguna untuk guru-guru Matematik dalam membantu pelajar sekolah rendah untuk menyelesaikan soalan penyelesaian masalah dengan lebih baik. Selepas projek berjaya disiapkan, pengujian akan dibuat untuk mendapatkan maklumbalas daripada pengguna.

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LIST OF ABBREVIATION

ADDIE	-	Analysis, Development, Design, Implementation and Evaluation model
BMP	-	Extension for the Bitmap image file format.
CD	-	Compact Disc
CD-ROM	-	CD-ROM
GSM	-	Global System for Mobile
GPRS	-	General Packet Radio Service
HCI	-	Human Computer Interaction
JPEG	-	Joint Photographic Experts Group
M-Learning	-	Mobile Learning
MLE	-	Mobile Learning Environment
MMS	-	Multimedia Messaging Service
LCMS	-	Learning Content Management System
PC	-	Personal Computer
PDA	-	Personal Digital Assistants
PSM	-	Projek Sarjana Muda
RFID	-	Radio Frequency Identification
SOAP	-	Simple Object Access Protocol
SMS	-	Short Message Service
UTeM	-	Universiti Teknikal Malaysia Melaka
UMTS	-	Universal Mobile Telecommunications System
WAP	-	Wireless Application Protocol
Wi-Fi	-	Wireless Fidelity
XML	-	Extensible Markup Language

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CHAPTER I

INTRODUCTION

1.1 Project Background

There are many different kinds of technology that can be classed as ‘mobile’. Mobile to most means ‘portable’ and ‘movable’. It also seems to implicate a ‘personal’ as opposed to ‘shared’ context of use, and the terms ‘mobile’ and ‘personal’ are often used but a device might be one without necessarily being the other. Mobile learning or m-learning means learning that is enhanced with mobile tools and mobile communication. Mobile learning is an exciting art of using mobile technologies to enhance the learning experience. Mobile phones can be blended to engage and motivate learners, any time and anywhere. Learning materials that are delivered on mobile phones may reach many people that can be hard to reach with any other media. Nowadays, we can see mobile phones are the most used mobile device among the students.

This has developed a mobile learning application called “Mobile Maths Courseware: Problem Solving Guide for Primary Schools”. It is a mathematics educational courseware. This is for primary school students. The report will detail out the description of all content, including graphics, text, audio and also animated graphic. The main has three modules. There are addition, multiplication and quiz. The user needs to choose which modules they want to learn. The problem is students cannot solve the problem solving type of question that given by their teacher. To solve this problem, mobile learning courseware is developed as an additional tool in learning mathematics.

Mobile learning technique that used in this project is Accelerated Learning Technique. It will guide the user or student to understand and answer the question. Three modules that have been developed in this project are addition, multiplication and quiz. In this project, it will introduce the basic of math for primary school. The question are provided to test whether the concepts and to test their ability to answer the questions. The questions are problem solving questions and students have to solve it. The question helps students understanding of math in a way that is both informative and entertaining where it is guided by multimedia elements. The organization that will use this application is primary school students, teachers and also their parents.

From this mobile project, multimedia skills can be applied. For example Adobe Flash CS3 is a main tool used for developing this project. Through the use of sound, graphics, text and also animation can create the feeling and the emotions of the user. It enhances them to understand the overview of the topic. Further explanation will be brief in the next section.

1.2 Problem Statements

Majority of students face difficulties when answering problem solving type of questions. They have difficulty solving mathematics word problems because they often cannot decide what to do to solve the problem. Most textbooks are not very helpful when it comes to teaching students how to solve math problems. They typically provide a four-step formula such as read the problem, decide what to do, compute, and check the answer.

The students do not understand mathematical keyword or clues frequently used in problem solving type of questions. Understanding the problem is at the core of reading the problem. To understand the problem, students need to be able to represent the problem, which provides the basis for deciding what to do to solve the problem. From early on, most students acquire the skills and strategies needed to