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E-LEARNING SYSTEM FOR FORM 3 MATHEMATICS

PUVANESWARY A/P RAMAN

A thesis submitted in partial fulfillment of the requirements for the award of the degree of Bachelor of Science (Computer Science)

Faculty of Computer Science and Information System
University Technology of Malaysia

APRIL 2010
"I hereby declare that this report entitled "E-learning System for Form 3 Mathematics" is the result of my own research except as cited in the references. The report has not been accepted for any degree and is not currently submitted in candidature of any other degree."

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To my beloved mother and father,
Beloved siblings, for your love and caring.

To Dr. Halina for your wits, intelligence and guidance in life,
To Reva, Esvari, Ajar, Jenny, Farah, Dachu Akka, Bawani Connie Mol
for always being there.
ACKNOWLEDGEMENT

First and foremost, I would like to extend my heartfelt gratitude to my supervisor, Dr Halina Mohamed Dahlan for all the guidance and support that she has given me throughout the whole duration of completing this project.

Next, I would like to thank my parents and siblings who give me full moral support to complete my project. I also take this opportunity to thank my friends who help me and give full moral support throughout this project. Last but not least I would like to thank all mighty God who keep me healthy and give strength to complete my project.
In this new era, the usages of internet or web base system become popular and very important. Most of universities in Malaysia using web base system to conduct their lecture upload assignments and so on. So, the usages of E-learning become one of the important tools in students and lecturers daily life. This E-learning project specially developed for PMR students with the objective to expose themselves in online leaning. The student also can improve their traditional way of study to advance studying method by using web base system. This system is developed by using some software such as ASP.Net, VB.Net, Microsoft Visual Web Developer, Microsoft Project and Microsoft SQL Server. This E-learning system will help the student to improve their knowledge regarding the Mathematics subject and help them to score well in PMR.
ABSTRAK

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CHAPTER 1

INTRODUCTION

1.1 Introduction

The rate of growth of the internet and World Wide Web at the end of the 20\textsuperscript{th} century was astounding. People are using internet for all medium such as business, education, communication, marketing, entertainment, and also in maintaining information system. If we see, in education E-learning becomes more popular in this era. As a prove, in most of the universities in Malaysia are implementing E-learning system in process of delivering lecture. In this 20\textsuperscript{th} century most of the people are studying from home. Besides, E-learning also helps to reach our nation’s vision in 2020. Malaysia as a developing country must be advance in producing man power with IT knowledge.

The proposed project is E-learning System for Form 3 Mathematics. This E-learning system can help the students to study well and avoid getting bored. Most important purpose of this system is to expose the students with an effective learning and online learning. The students also can use this E-learning system as a reference when doing their homework. Mathematics subject mostly involve the step process to get answers, this e-learning can help the student to follow the flow of study.
Mathematics syllabus for secondary schools can help the student to be critical thinker, good in problem solving and also so essential work systematically. This chapter basically explain about the introduction of the project, background of study, statement of the problem, purpose of the study, objective of the project, scope of the project, and also significant of the proposed project.

1.2 Background of the Study

The school I have chosen for this project is Sekolah Menengah Kebangsaan Skudai. SMK Skudai still using the traditional method in teaching. The approach of traditional method of education has many weaknesses. It does not affect the students only, but also the teachers, school management and parents. The major weakness that we can be highlight here is, students get bored and felt asleep when their teachers are teaching. The teacher’s also facing problem to control the huge number of students in each class.

Meanwhile, the students also facing problem to communicate with their teacher when they at home. It becomes complicated for them to finish up their homework without guidance. Communication between teachers and students plays important role to achieve in academic. Perhaps, this mathematics subject needs more exercises and teachers guidance.

Moreover, the students do not have any expose towards online learning. They facing problem in future especially when they enter higher education. As we know IT knowledge is very important to achieve our nation’s vision 2020.
As I say before the traditional has many weaknesses, now we see how the teachers face problem by the traditional. Teachers have to meet 30 over student in each class, so they cannot concentrate or focus to every student. The teachers also have limited time and must follow the time table given by the school management. The time limitation make the teacher rush in delivering their lesson. The exercise given by teachers also very few and they follow or give exercise in the text book. The teachers are not able to give extra exercises to the students due to time limitation.

The school management face problem when teachers absent to school or attend any seminars. The flow of teaching process will be run out of the planning. This also can affect the achievement of the students in their exam. The management also has to find other teacher who can replace the class.

The parents cannot keep track with their children progress in education cause lack of the time. The parents will go to school 2 times a year to get their report card. So the parents cannot identify their children education level. Sometimes when the children back home they lie to their parents that they don’t have any home work. The parents have to believe since them not visiting their children every day.

1.3 Statement of Problem

According to background of study, the statement of problem for this study is whether E-learning System for Form 3 Mathematics can be developed in web base system for the purpose of increases the student’s achievements in academic? Besides, other problem also must be notice this study. They are:

i) Does the student can access the notes, quizzes, tutorial and also use discussion board?
ii) Does Taxonomy Bloom can help the student’s to achieve good result in Mathematics?

iii) Does the parent can overcome the problems in keep track on their children achievement?

1.4 Purpose of the Project

The main purpose to develop an E-learning system is to help the students expose with online education and most important is to solve their problem in understanding mathematics. This project also can help the student to improve their achievement in academic.

1.5 Objective of the Project

The objectives of E-learning system are,

i) To improve the traditional method of learning to e-learning system.

ii) To expose the students with online education such as e-notes, tutorial and take quiz.

iii) To provide an online evaluation on student performance towards objective questions.
1.6 **Scope of the Project**

This E-learning System for Form 3 Mathematics must be developed by a scope line. The scope of this project is:

i) Develop a prototype of E-learning System for Form 3 Mathematics according to PMR mathematics which has been fixed by our ministry of education.

ii) This project is web based systems were developing by using Microsoft Windows Vista operating system and client-server.

iii) Consists of 4 main aspects which are tutorial, quiz, notes and discussion board.

1.7 **Significant of the Project**

E-learning System for Form 3 Mathematics, can give more benefit for all the people involved in this system. The school management can evaluate the student progress in mathematics subject. The teachers can easily identify weak students and can give more tutorial.

The online learning system can overcome the traditional method were the student will give attention in academic. The student also can download note any time they wants to see the notes or do the tutorial. They also can evaluate their progress in the particular subject by doing quizzes. The students also will try to improve their self to get higher marks in class. As an additional they also can download some past year question. The communication between teachers and students become more flexible. Finally, this project will help the student to score well in PMR examination.
1.8 Conclusion

This chapter overall describe about the introduction to the project will be developing, background of study, statement of problem, purpose of study, objective of the project, scope of the project and significant of study. The next chapter will be continuing with literature review towards this project.
LITERATURE REVIEW

2.1 Introduction

Investigation on literature reviews most done before develop a system. It will guide us to go on with our system that can fulfill our scope, objective and purpose of the project. This chapter covers the literature reviews on management information system, learning, education, e-learning, taxonomy bloom in education and also the technologies. This chapter also discuss about the existing e-learning webs or system for further information.

2.2 Management Information System

The term management information system (MIS) can be misleading, as it does not accurately communicate the nature of the subject. Peter Keen, one of the leaders in this field, defines MIS as “the effective design, delivery, and use
information system in organizations.” This definition includes the word organization but does not include the word management.

Thus, the subject of MIS is broader than the words management information systems imply. Kroenke, Hatch (1994), alters the Keen definition as follows: MIS is the development and use effective information systems in organizations. The essence of Keen’s definition in unchanged: the word development replaces the word design and delivery and places emphasis on the term effective information systems. An information system is effective if it helps to accomplish the goals of the people and the organization that use it. Kroenke, Hatch (1994),

Lucey (2005) has define MIS as a system to convert data from internal and external sources into information and to communicate that information, in an appropriate form, to managers at all levels in all functions enable them to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible. Lucey (2005)

MIS is the combination of three concepts, which are management, information, and system. Management has become system-oriented and more sophisticated in management technique. Information is planned for and made available to managers as needed. System is a system of information ties planning and control by managers to operational systems of implementation. The purpose of an MIS is to raise the process of managing from the level of piecemeal spotty information, intuitive guesswork, and isolated problem solving to the level of systems insights, systems information, sophisticated data processing, and systems problem solving. Figure 2.1 presented the basic meaning of an MIS. (Robert G.Murdick, 1977)
2.2.1 The Relation between MIS and Operating Information System

The operating information systems are concerned with the transactions necessary to conduct the daily affairs of the business. The MIS is connected to the operating information system but does not monitor every transaction or detail. Rather MIS is for managers. It passes on summary information, selective reports for planning and control of operations, and exceptional circumstance reports for planning, controlling, and decision making appropriate to each level of management. (Robert G.Murdick, 1977)
Figure 2.2: MIS Related to Operating Information Systems

(Robert G. Murdick, 1977)
2.3 Introduction of Learning

Each student sees a learning situation from different viewpoint. Each student is a unique individual whose past experiences affect readiness to learn and understanding of the requirements involved. For example, an instructor may give two aviation maintenance students the assignment of learning certain inspection procedures. One student may learn quickly and be able competently present the assigned material. The combination of an aviation background and future goals may enable that student to realize the need and value of learning the procedures. A second student’s goal may only be to comply with the instructor’s assignment, and may result in only minimum preparation. The responses differ because each student ads in accordance with what he or she sees in the situation. (AVCFIbook-learning process, 2009)

Learning in schools can be seen as a process in which students develop knowledge and skills via the experiences. In order for students to learn effectively, teachers and school librarians need to provide the students with the right kinds of learning experiences so that the students become effective learners and acquire new knowledge.(E.Herring, 2004)

2.3.1 Definition of Learning

According to AVCFIbook learning can be defined as a change in behavior as a result of experience. This can be physical and overt, or it may involve complex intellectual or attitudinal changes which affect behavior in more subtle ways, in spite of numerous theories and contrasting views, psychologists generally agree on many common characteristics of learning. (AVCFIbook-learning process, 2009)
Lieberman (1999) provides a definition of learning as ‘a change in our capacity for behavior, as a result of particular kinds of experience’, and Schunk (2000) argues that: ‘Learning is an enduring change in behavior, or in the capacity to behave in given fashion, which results from practice or other forms of experience.’ (E.Herring, 2004)

2.3.2 Learning and the Internet

Much of what is written about the Internet relates either to technical aspects of internet access or to a variety of descriptions of the internet as a vast library or galaxy of information. While it is often implied that the internet, and particularly the web, can be tool that will enhance student learning, there are as yet few examples of actual research evidence linking use of the internet to student learning in schools. However there is evidence that the potential of the internet for learning is being recognized by government and educational authorities. For example, in the UK, the Department for Education and Skills (DfES, 2003) argues that ‘ICT makes a significant contribution to teaching and learning across all subjects and ages, inside and outside the curriculum’, and that the internet is a key part of ICT in schools. (E.Herring, 2004)

2.3.3 Learning Method

Learning methods are best articulated by answering the questions, "What is the purpose of education?" and "What are the best ways of achieving these purposes?". For much of prehistory, educational methods were largely informal, and consisted of children imitating or modeling their behavior on that of their elders,
learning through observation and play. In this sense, the children are the students, and the elder is the teacher; a teacher creates the course materials to be taught and then enforces it. Pedagogy is a different way by which a teacher can teach. It is the art or science of being a teacher, generally referring to strategies of instruction or style of instruction. Resources that help teachers teach better are typically a lesson plan, or practical skill involving learning and thinking skills. A curriculum is often set by the Government with precise standards. These standards can change frequently, depending on what the Government states. (Wikipedia, 2010)

2.3.3.1 Student Centered Learning

Kember(1997) described two broad orientations in teaching: the teacher centered/content oriented conception and the student centered/learning oriented conceptions. In a very useful breakdown of these orientations he supports many other authors’ views in relation to student-centered view including: that knowledge is constructed by students and that the lecturer is a facilitator of learning rather than a presenter of information.

Rogers(1983) identified the important precondition for student-centered learning as the need for: ‘a leader or person who is perceived as an authority figure in the situation, is sufficiently secure within herself/himself and in her/his relationship to others that she/he experiences an essential trust in the capacity of others to think for themselves, to learn for themselves’.

O’Sullivan(2003) described student-centered learning as a Western approach to learning and may not necessarily transfer to the developing countries, such as Namibia, where there are limited resources and different learning cultures. It can be equally hard at times to see how the approach can be economical in the large classes associated with many current University undergraduate courses.
2.3.3.2 Teacher Centered Learning

The teacher-centered approach is associated chiefly with the transmission of knowledge. McDonald (2002) clarified the definition by saying that the work of teachers depends upon the abilities, skills and efforts of their students. Student achievement is at the forefront of teacher centered curriculum, but teachers are driven to meet accountability standards and often sacrifice the needs of the students to ensure exposure to the standards. (McDonald, 2002)

Berliner (as cited in Scherer, 2001) distinguished between the expert and the novice teacher. He explained that expert teachers have case knowledge, knowledge of information stored in their memory banks that allows them to compare situations and respond accordingly. They have amassed a store of impromptu responses for capturing teachable moments. The issue, however, is whether those impromptu responses are a clear match for the learner who is having difficulty. Berliner emphasized that when teachers study one another's lessons, visit each others’ classes, and present case studies about hard-to-teach students, the quality of professional growth will improve. Teachers in a teacher-centered environment focus on making relationships with students that are anchored in intellectual explorations of selected materials. They focus more on content than on student processing. (Berliner, 2001)

2.4 Introduction of Education

According to Wikipedia education in its broadest sense is any act or experience that has a formative effect on the mind, character, or physical ability of an individual. In its technical sense education is the process by which society deliberately transmits its accumulated knowledge, skills and values from one generation to another through institutions. (Wikipedia, 2009)
In education, the student will be directed by the teachers. Those teachers who are specialized in their field teach only certain subject. There is also education in fields for those who want specific vocational skills, such as those required to be pilot. In addition there is an array of education possible at the informal level, with the internet, and in life experience. (Wikipedia, 2009)

Education in Malaysia is an ongoing effort towards further developing the potential of individuals in a holistic and integrated manner so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-being as well as being able to contribute to the betterment of the family, the society and the nation at large. (Wikipedia, 2009)

2.4.1 Definition of Education

Webster defines education as the process of educating or teaching. Educate is further defined as “to develop the knowledge, skill, or character of a person”. Thus, from these definitions, we might assume that the purpose of education is to develop the knowledge, skill, or character of students. (Webster, 2009)
2.4.2 Education System in Malaysia

Education in Malaysia may be obtained from government-sponsored schools, private schools, or through homeschooling. The education system is highly centralized, particularly for primary and secondary schools, with state and local governments having little say in the curriculum or other major aspects of education. As in other Asian countries such as Singapore and China, standardized tests are a common feature, contributing to the high numbers of school dropouts. (Wikipedia 2009)

Education in Malaysia broadly consists of a set of stages which includes:

i) Pre-schools
ii) Primary education
iii) Secondary education
iv) Tertiary education
v) Postgraduate

2.4.2.1 Pre-Schools

The first stage for children towards learning process is pre-schools. Pre-schools program is not universal and generally only affluent families can afford their children to private, for-profit pre-schools. There is no formal curriculum for pre-school in the government but they have formal mandatory training and certification for principals and teachers. (Wikipedia, 2009)
2.4.2.2 Primary Education

There are two main types of public schools in Malaysia which are national (Sekolah Kebangsaan in Malay, abbreviated as SK) and national-type (Sekolah Jenis Kebangsaan, abbreviated as SJK). National-type schools are further divided into Chinese national-type schools (Sekolah Jenis Kebangsaan Cina, SJK (C)) and Tamil national-type schools (Sekolah Jenis Kebangsaan Tamil, SJK(T)). (Wikipedia, 2009)

Primary education consists of six years education, referred to as Standard 1 to Standard 6. Standard 1 to Standard 3 are classified as Level One (Tahap Satu) while Standard 4 to Standard 6 are classified as Level Two (Tahap Dua). The student will attend the primary education at the age of 7 and ends at 12. (Wikipedia, 2009)

At the end of primary education, the students are required to undergo a standardized test known as the Ujian Pencapaian Sekolah Rendah (UPSR) or Primary School Evaluation Test. The subjects tested are Malay comprehension, written Malay, English, Science and Mathematics. The students at national-type schools are compulsory to take extra two paper were Chinese comprehension and written Chinese for SJK(C) and Tamil comprehension and written Tamil for SJK(T). (Wikipedia, 2009)

2.4.2.3 Secondary Education

Secondary schools are regarded extensions of the national schools. They study in five forms. Each form will take a year. Some students, however, will have to study in “Remove” before they can study in Form 1 because of the poor academic results, or simply choosing to do so, which possible in some schools. At the end of Form 3, the Penilaian Menengah Rendah (PMR, formerly known as Sijil Pelajaran Rendah(SRP) or Lower Certificate of Education(LCE)) or Lower Secondary
Evaluation is taken by students. Based on results and choice, they will be streamed into either the Science stream or Arts stream. The Science stream is generally more desirable. Students are allowed to shift to the Arts stream from Science stream, but rarely vice-versa. At the end of Form 5, students are required to take the *Sijil Pelajaran Malaysia* (SPM) or Malaysian Certificate of Education examination, before graduating from secondary school. (Wikipedia, 2009)

After graduate from secondary school the students can undertake pre-university studies such as Form 6 were the student will take the *Sijil Tinggi Persekolahan Malaysia* (STPM) or Malaysian Higher School Certificate examination, matriculation, A-Level Program or Diploma program. They also can do foundation studies in Science. (Wikipedia, 2009)

### 2.4.2.4 Tertiary Education

Tertiary education in public universities is heavily subsidized by the government. Applicants to public universities must have completed the Malaysia matriculation program or have an STPM grade or Diploma. The selection criteria are largely opaque as no strictly enforced defined guidelines exist. (Wikipedia, 2009)

### 2.4.2.5 Postgraduate Programs

Postgraduate degrees such as the Master of Business Administration (MBA) and the Doctor of Business Administration (DBA) are becoming popular and are offered by both universities and the private colleges. All public and most private universities in Malaysia offer Master of Science degrees either through coursework or research and Doctor of Philosophy degrees through research. (Wikipedia, 2009)
2.4.3 Kurikulum Bersepadu Sekolah Menengah (KBSM)

KBSM (Integrated Curriculum for Secondary Schools) is one of the curriculums in Malaysia Education System. KBSM encouraging principles such as General education for all students; Integration of intellectual, spiritual, emotional and physical aspects; Life-long education; enhancing the use of Bahasa Malaysia; Continuity between primary and secondary education. KBSM is a curriculum striving for producing a holistic curriculum for all students. The KBSM curriculum thus considers the fact that Malaysia is a developing multicultural country because of its strong value of integration it carries. (Subtlefortitude-wordpress, 2009)

2.4.4 Penilaian Menengah Rendah (PMR)

Penilaian Menengah Rendah (PMR) or Lower Secondary Evaluation is a Malaysia public examination taken by Form 3 students. It was formerly known as Lower Certificate of Education (LCE) and Sijil Rendah Pelajaran (SRP). The subjects in this exam include:

Mandatory/Core subjects are:

i) Bahasa Malaysia
ii) English
iii) Mathematics
iv) Science
v) Geography
vi) History
vii) Living Skills
viii) Islamic Studies (mandatory for Muslim students, optional for others)
For Living Skills, the subject is categorized into 4 elective groups where the students can choose any one. The elective groups are Technical Skills, Home Economics, Agricultural Science and Business and Entrepreneurship. They also can take any optional subject such as Arabic Language, Chinese Language, Tamil Language, Punjabi Language, Iban Language and now 2009 Kadazandusun Language. (Wikipedia, 2009)

Students are required to take at least 7 core subjects to a maximum of 9. Based on the result and individual interest, student will be streamed into Science or Arts streams, if technical schools then they have choice on Vocational or IT streams for following 2 years in the higher secondary education level. (Wikipedia, 2009)

2.5 Mathematics

‘The secondary school Mathematics curriculum as outlined in the syllabus has been designed to provide opportunities for pupils to acquire mathematical knowledge and skills and develop the higher order problem solving and decision making skills that they can apply in their everyday lives.’ (Dr.Sharifah Maimunah Syed Zin, 2003) Mathematics subject is one of the mandatory or core subject in all Malaysia examination especially in primary and secondary level of education. Students who will undergo PMR examination will take mathematics paper which is cover all Form1, Form2 and Form3 syllabus. This mathematics examination consists of two papers which are paper 1, objective questions and paper 2, subjective questions. Paper 1 consists of 40 questions and contributes 40% of marks and paper 2 consists of 20 questions and contributes 60% of marks. (Wikipedia, 2009)
2.6 Introduction of E-learning

According to Rosenberg (2001), E-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three fundamental criteria:

1) E-learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information. So important is this capability that it is fast becoming an absolute requirement of e-learning.

2) It is delivered to the end-user via a computer using standard Internet technology.

3) It focuses on the broadest view of learning—learning solutions that go beyond the traditional paradigms of training.

“E-learning spans distance, but distance learning’s broad definition also includes correspondence courses, one way television courses, or other approaches that don’t fit any of the above criteria. So we can say that e-learning is a form of distance learning, but distance learning is not e-learning.” (Rosenberg, 2001)

E-Learning referred to as Web-based training, is available anywhere, anytime. It is self-paced interactive instruction, presented over the Internet to browser-equipped learners. E-Learning courses span the spectrum from desktop applications to technical certification meeting the needs of today’s life-long learners. The e-Learning solution is empowering, engaging, effective and economical. It is the answer to today’s training challenges. (Newman, students-website, 2009)
2.6.1 Background of E-learning

Table 2.1: Background of E-learning (Newman, students-website, 2009)

<table>
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<td>As the web evolved, training providers began exploring how this new technology could improve training. The introduction of email, web browsers, HTML, media players and simple JAVA began to change the face of multimedia training. Basic mentoring via email, intranet computer based training (CBT) with text and simple graphics provided low quality delivery.</td>
<td>Technological advances including JAVA/IP network application, rich streaming media, high broadband access and advanced web site design are revolutionizing the training industry. Today, live instructor-led training (ILT) via the Web can be combined with real time mentoring, improved learner services and up to date engaging content, to create a highly effective multidimensional learning environment. These sophisticated training solutions provide even greater cost savings, higher quality learning experiences, and are setting the standard for the next wave of e-learning.</td>
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2.6.2 The meaning of “E” in E-learning

Rosenberg (2001) states that the letter e can be define as “electronic” but it just standard a standard definition and he offered several alternative meaning for the e letter:

i) e is for Experience. The business drivers for e-learning are about changing the character of the experience of learning in the corporation. A learner in an
e learning offering would have the options of time-shifting, place-shifting, granularization, simulation, and community support, to mention a few.

ii) e is for extended. With e-learning an organization should be able to offer an extension of learning option, moving from an event perspective to an ongoing process. The footprint of the e-learning experience would be larger in terms of time and would linger with the learner throughout their work life.

iii) E is for Expanded. The opportunity to expand training offerings beyond the limitations of the classroom in incredibly exciting.

2.6.3 Features of E-learning

According to World Wide Learn, 2009, E-learning brings with it new dimensions in education and enrich with unique features. The unique features of e-learning are listed below:

i) Learning is self-paced and gives students a chance to speed up or slow down as necessary

ii) Learning is self-directed, allowing students to choose content and tools appropriate to their differing interests, needs, and skill levels

iii) Accommodates multiple learning styles using a variety of delivery methods geared to different learners; more effective for certain learners

iv) 24/7 accessibility and allows larger number of people to attend the classes

v) Geographical barriers are eliminated, opening up broader education options

vi) Fosters greater student interaction and collaboration and also student/instructor contact

vii) Enhances computer and Internet skills
2.6.4 Benefits of E-learning

According to World Wide Learn, 2009 students will get more benefit by online learning. The students can emphasize their knowledge through e-learning. Those are the benefits of e-learning:

i) **Convenience and Portability**
   - Courses are accessible on your schedule
   - Online learning does not require physical attendance
   - Learning is self-paced
   - Unbound by time and place
   - Read materials online or download them for reading them later

ii) **Cost and Selection**
   - Choose from a wide range of courses to meet your needs
   - Degree, Vocational, and Certificate programs
   - Continuing Education
   - Individual courses
   - Wide range of prices to fit your budget

iii) **Flexibility**
   - Online learning accommodates your preferences and needs – it’s student centered
   - Choose instructor-led or self-study courses
   - Skip over material you already know and focus on topics you’d like to learn
   - Use the tools best suited to your learning styles

iv) **Higher Retention**
   - Online learning will draw you to topics you like and enjoy. Studies show that because of this and the variety of delivery methods used to reach different types of learners, retention is frequently better than in a traditional classroom

v) **Greater Collaboration**
   - Technology tools make collaboration among students much easier. Since many projects involve collaborative learning, the online
environment is far easier to work in since learners don’t have to be face-to-face.

vi) **Global Opportunities**
- The global learning community is at your fingertips with online learning. The technologies used give online instructional designers the ability to build in tools that take you to resources you may never see in a traditional classroom.

vii) **Builds community**
- The web enables people to build enduring communities of practice where they can come together to share knowledge and insight long after training program ends. This can be a tremendous motivator for organizational learning.

viii) **Messages are consistent or customized, depending on need**
- Everyone gets the same content, presented in the same way. Yet the programs can also be customized for different learning needs or different groups of people.

### 2.6.5 Disadvantage of E-learning

Besides advantage, e-learning also has its own disadvantage. The below lists is the disadvantage of E-learning:

i) **Access**
- The learners must able to access to computer and Internet. They also must have computer skills on word processing, Web browsers, Internet and E-mail. The learners cannot succeed their e-Learning the skills.
ii) **Software and Files**
   - Another disadvantage of E-learning is managing the computer files software comfort ability, and also learning the new software, including the E-learning. Many problems can occur when download notes and also any other materials. For new learner with beginner-level computer skills can sometimes seem complex for them to keep their files organize. This file may be can misplace or lost if the learner not good in organize files.

iii) **High Motivation**
   - The students must have to be highly motivated and responsible. E-learning requires time to complete any modules and also assignments. Those learners with low motivation may not complete the modules.

iv) **Isolation**
   - The students may feel isolated and unsupported while learning. Instructions are not always available to help the learner so learners need to have discipline to work independently without assistance. E-Learners may also become bored with no interaction (1stopbiztro.com)

### 2.7 Bloom’s Taxonomy

Thomas (1999) states that Bloom viewed learning in relation to the difficulty of tasks; his Taxonomy identified skills which grew in complexity according to the demand made on the students’ cognitive ability. In the taxonomy, level 1 is recognition, i.e. basic skills such as the ability to put names to objects and people and remember them, whereas level 4 is application, which is a more sophisticated learning skill such as the ability to manipulate existing knowledge to facilitate new learning. Other key elements of the Taxonomy include synthesis (level 6), the ability to create new knowledge by collecting a range of ideas and facts, and evaluation (level 7), the ability to judge the value or quality of ideas or activities. In relation to
information skills, Bloom’s Taxonomy of learning is a very apt model for teachers and school librarians because the focus is a developing the student’s ability to be a critical thinker. (E.Herring, 2004)

Taxonomy Bloom (Benjamin S.Bloom, 1956) consists of three domains of educational activities. Those three domains are cognitive domain, affective domain, and psychomotor domain.

2.7.1 Cognitive Domain

The cognitive domain involves knowledge and the development of intellectual skills. This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six major categories, which are listed starting from the simplest behavior to the most complex. (Benjamin S.Bloom, 1956)

i) **Knowledge** – Behavior and test situation that emphasize ways of remembering, either identify or remember the ideas, materials and phenomena.

ii) **Comprehension** – Understand the meaning, translation, interpolation, and interpretation of instructions and problems.

iii) **Application** – Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situation in the work place

iv) **Analysis** – Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences.

v) **Synthesis** – builds a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.
vi) **Evaluation** – Make judgments about the value of ideas or materials.

### 2.7.2 Affective Domain

The affective domain (Krathwohl, Bloom, Masia, 1973) includes the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations and attitudes. This affective domain consists of five major categories arranged from the simplest behavior to the most complex.

i) **Receiving Phenomena** – Awareness, willingness to hear, selected attention.

ii) **Responding to Phenomena** – Active participation on the part of the learners. Attends and reacts to a particular phenomenon.

iii) **Valuing** – The worth or value a person attaches to a particular object, phenomenon, or behavior.

iv) **Organization** – Organizes values into priorities by contrasting different values, resolving conflicts between them, and creating an unique value system.

v) **Internalizing values** – Has a value system that controls their behavior. The behavior is pervasive, consistent, predictable, and most importantly, characteristic of the learner.
2.7.3 Psychomotor Domain

The psychomotor domain (Simpson, 1972) includes physical movement, coordination and use of the motor-skill areas. Development of these skills requires practice and is measured in terms of speed, precision, distance, procedures, or techniques in execution. There are seven categories in psychomotor domain.

i) **Perception** – The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation.

ii) **Set** – Readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person’s response to different situations.

iii) **Guided Response** – The early stages in learning a complex skill that includes imitation and trial and error.

iv) **Mechanism** – This is the intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency.

v) **Complex Overt Response** – the skillful performance of motor acts that involve complex movement patterns.

vi) **Adaptation** – Skills are well developed and the individual can modify movement patterns to fit special requirements.

vii) **Origination** – Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills.

2.8 Investigation on exist E-learning System

An investigation has done to the exist system to identify the features that they applied in the web site. More than that, this investigation help to identify the
weakness of the system that can help me to overcome the weakness when developing
E-learning for Form 3 Mathematics.

2.8.1 E-learning Web Site (www.score-a.com.my)

Figure 2.3: Interface of Score A Programme (www.score-a.com.my)

An interview has been done with En. Buminathan, one of the programme
member to investigate about the process of this Score A programme. This score-A
programme is kind of E-Tuition, basically they have Score A Programme’s
Investment Package. The parents have to pay up to RM596 for 2 children and they
provides with 2 cards one for each children the children can use it up to 6 months.
They need to top up the card after the six months of usage. They have to activate the
card for the first time use. Each child access the website with one card and also with
their own username and password. The parents also have “parent login section”, they
need to login use their username and password. The purpose of parent login is for
view the student’s progress in their education, simply to view the report card.
The Score A has its own highlights in their website:

i) **Highly Interactive** – Attracts students to have initiative to do more revision

ii) **Immediate Marks Given** – Facilitates students to identify their mistakes

iii) **Time Management** – Students need to answer during the stipulated time given

iv) **eReport Card** – Parents can monitor their child’s educational progress anytime, anywhere

v) **SMS report** – Parents will be informed with regards to their child’s progress through real time SMS

vi) **Cross Referencing** – If students do not understand, they can click on the eNotes and explanation will be given

vii) **Study Plan** – Students can supervise their revision and study timetable from previous records

viii) **Number of tries** – Students can try a second and third time to get the correct answer

ix) **Motivational Quotes** – Develop student’s confidence with motivational quotes if they get the correct answers

x) **E-Dictionary** – Click to find out the meaning of words that they do not understand

xi) **Difficult levels** – Games Simulation – Student need to achieve 80 marks in order to move to a higher level

xii) ‘**Hot**’ Questions – Direct Smart Teachers. Not available from any bookstore

xiii) **Current Standards** – The contents are always up-dated to meet the current standards required

(Source: Kenshido International, 1997-2008)
2.8.2 E-learning Web Site (**www.tutor.com.my**)

This education portal was developed by *Utusan* Newspaper. This web site developed for the UPSR, PMR, SPM, STPM, and also Sekolah Bestari. This website provides *E-tuisyen*, *bank soalan*, for students and *bilik guru* for teachers. *E-tuisyen* provides online question for the students. The students can select their examination status and then select the subject to do the quizzes. The *bank soalan* provides collection of questions for every examination. The questions arranged according to the subjects. The student can access the question anytime and anywhere.

Besides that, they provide many modules for the teachers in “bilik guru”. The teachers can access the teaching plan that provide by UTUSAN education portal. They use as their reference to proceed their teaching in class. Other than that, these website also provide M&C teaching script. This script is for the teachers who teaching Mathematics and Science in English. The guide line provided is for Year 1 and Form 1 syllabus.
Moreover, this site also consist ETeMS, English for Teaching Mathematics and Science. This ETeMS consists of two important modules, which are Facilitators Modules and Teacher Module. The purpose of ETeMS is to make sure the teachers can deliver the syllabus efficient and in proper English.

2.8.3 E-learning Web Site (elearning.utm.my)

I also have done investigation on UTM e-learning website. The website is developed by UTM organization for university student for teaching and learning purpose. This web site consists of three main user the lecturer, the coordinator, and students.

The students will use the username and password to login to the page. Once they login into the home page they can view the list of subject that they take from the semester. When they click to the subject the student can view the weekly updates by
the lecturer. From there, they can download notes, tutorial, and also assignments. Further, they also can upload their assignments through E-learning.

The lecturers also have their own password and username to access the E-learning. They can use the leaning to update their lecture planning by week. Usually the lecturer will upload the notes, tutorial question, assignments, and sometimes the students carry marks. Even sometimes they will use to display announcements such change classroom and cancel the class.

Besides that, e-learning UTM also have some additional features such as student forum. The students can send share messages and their opinions regarding the particular subject through the forum. They also can link to other web pages like *siswa mail*, e-portfolio, library, aimsweb and UTMPAGE.

Figure 2.6: Interface of UTM E-Learning System (elearning.utm.my)
2.9 Technology

According to National Education of Engineering (17/08/2009), technology is the process by which humans modify nature to meet their needs and wants. Most of people, however, think of technology in terms of its artifacts: computers and software, aircraft, pesticides, water-treatment and microwave ovens, to name few. But technology is more than these tangible products. Technology is a product of engineering and science, the study of natural world. Science has two parts, a body of knowledge that has been accumulated over time and a process-scientific inquiry that generates knowledge about the natural world. Engineering also consists of a body of knowledge-in this case knowledge of the design and creation of human-made products and shapes a process for solving problems. Science aims to understand the “why” and “how” of nature, engineering seeks to shape the natural world to meet human needs and wants.

2.9.1 The Internet

The Internet, also called the NET, is a worldwide collection of networks that links millions of businesses, government agencies, educational institutions, and individuals. Through the Internet, society has access to global information and instant communications. Further, access to the Internet can occur anytime from a computer anywhere. Each of the networks on the Internet provides resources that add to the abundance of goods, services, and information accessible via the Internet. (Shelly,Cashman,Vermaat, 2008)

The Internet is now commonly used in most countries in the world although access is restricted in many parts of the world because of economic difficulties. The Internet has opened up many new and exciting possibilities for schools to
communicate and also for management or teaching purpose. Thus, the challenge for teachers and school librarians is how to make the best use of the various features of the internet in order to improve students’ education. (E.Herring, 2004)

2.9.2 History of the Internet

The Internet has its roots in a networking project started by the Pentagon’s Advanced Research Projects Agency (ARPA), an agency of the U.S Department of Defense. ARPA’s goal was to build a network that allowed scientists at different physical locations to share information and work together on military and scientific projects and could function even if part of the network were disabled or destroyed by a disaster such as a nuclear attack. That network, called ARPANET, became functional in September 1969, linking scientific and academic researchers across the United States. (Shelly,Cashman,Vermaat, 2008)

By 1984, ARPANET had more than 1,000 individual computers linked as hosts. In 1986, the National Science Foundation (NSF) connected its huge network of five super-computer centers, called NSFnet, to ARPANET. This configuration of complex networks and hosts became known as the Internet. (Shelly,Cashman,Vermaat, 2008)

Until 1995, NSFnet handled the bulk of the communications activity, or traffic, on the Internet. In 1995, NSFnet terminated its network on the Internet and resumed its status as a research network. Today, the Internet consists of many local, regional, national, and international networks. (Shelly,Cashman,Vermaat, 2008)
2.9.3 Hypertext Transfer Protocol (HTTP)

Wikipedia states that HTTP is an application-level protocol for distributed, collaborative, hypermedia information systems. Its use for retrieving inter-linked resources led to the establishment of the World Wide Web. HTTP is a request/response standard of a client and server. HTTP can be “implemented on top of any other protocol on the Internet, or on other network.” HTTP only can presume a reliable transport; any protocol that provides such guarantees can be used. (Wikipedia, 2009)

2.9.4 Web Browser

A Web Browser, or Browser, is application software that allows users to access and view Web pages. To browse the Web, we need a computer that is connected to the Internet and has a Web browser. The more widely used Web browsers for personal computers are Internet Explorer, Netscape, Firefox, Opera and Safari. (Shelly, Cashman, Vermaat, 2008)

2.9.5 The World Wide Web (WWW)

The World Wide Web actually is a service of the Internet. While Internet was developed in late 1960s, the World Wide Web emerged in the early 1990s. Since then, it has grown phenomenally to become one of the more widely used Internet services. The World Wide Web or Web consists of worldwide collection of electronic documents. Each electronic document on the Web is called Web page,
which can contain text, graphics, audio, and video. Additionally, Web pages usually have built-in connections to other documents. (Shelly, Cashman, Vermaat, 2008)

### 2.9.6 Hypertext Markup Language (HTML)

According to Wikipedia HTML is the predominant markup language for web pages. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists etc as well as for link, quotes and other items. It allows images and objects to be embedded and can be used to create interactive forms. It is written in the form of HTML elements consisting of “tags” surrounded by angle brackets within the web page content. It can include or can load scripts in languages such as JavaScript, which affect the behavior of HTML processors like Web browsers, and Cascading Style Sheets (CSS) to define the appearance and layout of text and other material. The use of CSS is encouraged over explicit presentational markup. (Wikipedia, 2009)

### 2.10 Conclusion

As a conclusion, this chapter helps a lot to discover the current system of the education in Malaysia. Further its cover the review of the current e-learning system as the reference to the proposed title. By doing this review I can identifies the features and differences between the e-learning and traditional method in education. Next chapter cover the research methodology that will be implemented to develop the E-learning System for Form 3 Mathematics.
CHAPTER 3

METHODOLOGY

3.1 Introduction

Methodology is a guideline for us to complete our project in perfect manner. There are many types of methodology we can use to complete a project. In this chapter I have done investigation on methodologies, so that I can select a suitable methodology to use for the proposed project. This chapter also includes the hardware and software specification. The justifications of chosen methodology, hardware and software are clearly stated in this chapter.

3.2 Investigations on Methodology

A prefect methodology can lead us towards succeed the project. I have discovered two type methodologies that can be use in this project. Those methodologies are waterfall and prototype. Anyway to complete this project I only can select one of the methodologies.
3.2.1 Waterfall Methodology

Waterfall approach assumes that each phases completed at one and once we move to next phases we cannot move back again the previous phases. The developer must complete the phase where he or she is so that they can look back towards the phase. This approach seems to be very complicate for a human being who is not perfect to do work without any mistakes. If we using the waterfall approach, we must have a rigid planning and final decision making at each step of the development project.

Source: Satzinger, Jackson and Burd, (2007)
3.2.2 Prototype-Based Methodology

Prototyping has many variants such as throwaway prototype and evolutionary prototype. Below are the descriptions:

i. Throwaway prototyping

The Throwaway or Rapid prototyping refers to the creation model that will be discarding rather than use in final system development. The developer just creates a simple model to visually show to the user how the final system will look like. The created model becomes the first form of the user requirement. Then the user can re-examine the model towards their expectation and clarify their requirement. After the requirements achieved, the prototype will thrown away. Throwaway prototype can be done quickly and the user can get their feedback quickly on their requirement. Finally we can say that this prototyping will discarded and final system will be developed by scratch.

ii. Evolutionary prototyping

Evolutionary prototyping or known as breadboard prototyping refers to the creation of a very robust prototype. The developer will build a part of system and send it to the user. The user can test the system and can send their comment or new features that can be added to the system. Easy to say the developer can rebuild and refined the system throughout the developing process. The developer can concentrate to the part of the system even thought he or she cannot understand the whole system. Evolutionary prototyping allows the developer to change the system or add features even after they passed through the design and requirement phases. We also easily can identify the user requirement and fulfill it. Evolutionary prototyping can help us to detect the weakness of the developing system and can be improved step-by-step.
3.3 The selected methodology

I have chosen evolutionary prototyping to develop the E-learning System for Form 3 Mathematics. There are several phases in this prototype:

i) Planning Phase

ii) Analysis Phase

iii) System Design Phase

iv) System Development Phase

v) Testing and Evaluation Phase

vi) Implementation Phase
3.3.1 Planning Phase

This phase is the first step towards developing the E-learning System for Form 3 Mathematics. In this phase the scope and objective of the project was decided. For further developing of proposed project we need to specify the scope and objective so that final system can fulfill the user requirement. Literature review also done in this phase, so that it helps to understand more about the proposed system. Investigation on exist system also done in this phase to overview the proposed system or can enhance the features of the system. Many techniques was used to discover this phase.

i) Interview

An interview has done with the school management to collect the school profile data. More details about the weaknesses of the exist system was discovered during talk with the Mathematics teacher and also student. The data about the syllabus also collected through the teachers for the development of the proposed system

ii) Book, Thesis and Website

Book and thesis was used as reference to learn more about the concepts. It was used as guideline to write literature review. Even, I can discover more clear view on the proposed system. By accessing the website, I can identify the syllabus of the subject that was using in Ministry of Education.

iii) Observation

An observation also done during the class hour, so that can identify the process of current system. The main objective of this observation if to identify the problem occurs by the implementation of the current system. Even, this observation helps to collect information of the user requirement for the proposed system.
3.3.2 Analysis Phase

The methodology of this project will be selected in this phase. The evolutionary prototyping was selected for the E-learning System for Form 3 Mathematics. This prototype was chosen because the proposed project will develop in a small scale and short period of time. The technique in this prototype can lead the project to fulfill the user requirement.

i) Analysis the user requirement to develop the E-learning for Form 3 mathematics. Identify the process that the students preferred so that they can improve their achievement or their progress in Mathematics.

ii) Analysis the current system at SMK Skudai to identify the teaching process of current system and discover the weaknesses.

iii) Specify the hardware and software that will use in system development.

3.3.3 System Design Phase

This phase is to design the logical model and physical model process. The design of the physical model must do carefully so that the user requirement can fulfilled. In this phase, we will design the user interface, database, input and output of the system, and also the process of the data flow. This phase is very important so that we can implement the user requirements very carefully and completely. This proposed consists of 3 main modules, which are admin, teacher and student module. Each module consists of sub modules for further access. The DFD diagram and ERD diagram will be drawn in this phase to over view the process of the system.
3.3.4 System Development Phase

The prototype of the proposed project will be developed in this phase. The physical process of the system will be continuing right after the system design. For further process of development, we need to prepare the hardware and install the software.

3.3.5 Testing and Evaluation Phase

The system will be tested and evaluated in this phase. From the testing we can identify the problem of the system, so that can be improved later. We as a developer can check or evaluate whether we achieve the user requirement and objectives of the proposed system. There are two type of testing, which are white box testing and black box testing. By using the black box testing we can identify the mistake of interface, the input data and also the process of store data in database. Besides, we need to do white box testing to identify the coding of the system, the database of the system and the process of each module in the system.

3.3.6 Implementation phase

This phase is the last step of the evolutionary prototyping. The complete system will be installed for the use of the user. The teachers and students can use the user manual to access the system. Inspection towards the system will be done throughout the implementation. The prototype can be change or enhance if the user
require for it. This implementation process can help us to fulfill other requirement of the school management SMK Skudai.

3.4 Justification of Methodology Selection

The following list is the reasons why the evolutionary prototype was chosen as a methodology for the development of the E-learning System for Form 3 Mathematics.

i) This project will be developed in small scale and less time frame, so this prototype can lead the flow of the project development in an easy scale. We can get higher commitment towards this project by using this prototyping.

ii) The users, who are less knowledge on the e-learning, cannot identify their requirement. This prototyping allow involvement of the users throughout the development so the techniques, in this prototyping can help them to identify their requirement easily and we can change the design or the flow of the system anytime by look back to the previous phase.

iii) The E-learning System for Form 3 Mathematics involves many changes throughout the development and may require high development cost. We can reduce the development cost by using the evolutionary prototyping.

iv) The system can be developed successfully and fulfill the user requirement because the frequent involvement of the users towards the development process. The user suggestion will be noted and improved throughout the process.

v) We also can reach the objective and scope of the project successfully.
3.5 Hardware and Software

The completion of the project will be done with a proper hardware and software. Hardware and software is one the requirement to develop a proper system. User can create report, design chart, and design web pages and so on by using software. Hardware will help to run the software properly and fast.

3.6 Specification of Hardware

Table 3.1: Specification of Hardware

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Type of Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel (R) Pentium (R) Dual CPU T2330 @ 1.60GHz</td>
</tr>
<tr>
<td>Hard disk</td>
<td>100 GB</td>
</tr>
<tr>
<td>Memory (RAM)</td>
<td>2038 MB @ 2GB</td>
</tr>
<tr>
<td>Input Device</td>
<td>Mouse and Keyboard</td>
</tr>
<tr>
<td>Output Device</td>
<td>Screen Size 14.1”</td>
</tr>
</tbody>
</table>

3.6.1 Justification of Hardware

Selection of hardware is very important to precede the project smoothly. Those are the reasons of hardware selection:
i) Intel (R) Pentium (R) Dual CPU T2330 @ 1.60GHz is a good choice of processor because the high processor makes sure the development process fast and efficient.

ii) Hard disk is one of the most important hardware to store data. I have chosen a large size of hard disk (100GB). The more space in hard disk, more data can be stored in. Installation process also need more space in hard disk.

iii) Memory (RAM) that I have chosen is 2GB. The high capacity of RAM will make the process of development faster. Sometimes the low capacity of RAM can make the activities slow.

iv) Keyboard and mouse is used to input data by the user.

v) Screen size 14.1” was chosen as output device.

3.7 Specification of Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Operating system will be used to develop the</td>
</tr>
<tr>
<td>Windows Vista Home</td>
<td>system</td>
</tr>
<tr>
<td>Basic</td>
<td></td>
</tr>
<tr>
<td>Microsoft Visual</td>
<td>One of the software for system development</td>
</tr>
<tr>
<td>Studio</td>
<td></td>
</tr>
<tr>
<td>ASP.NET</td>
<td>To develop an interactive website and easiness</td>
</tr>
<tr>
<td></td>
<td>of the software to develop website</td>
</tr>
<tr>
<td>Visual Basic.Net</td>
<td>The interaction between database and ASP.net</td>
</tr>
<tr>
<td>Web Browser–</td>
<td>Web browser that will be used for development</td>
</tr>
</tbody>
</table>
### 3.7.1 Justification of Software

i) **Operating System – Windows Vista Home Basic**
   This operating system is the most popular operating system in this era. In future this operating system will implement in all the organization. The features in this operating system are very user friendly. So they development of the system can be done more effective and easily.

ii) **Microsoft Visual Studio**
   Microsoft Visual Studio will be use to develop the proposed system. By using Microsoft Visual Studio the design can be view during the development process. At the same times the clear view can be seen when make any changes towards our design.

iii) **ASP.NET**
   ASP.NET was chosen because the development will be easy. ASP.NET consists of tool box, the set of controllers that drag and drop. The coding process can be edit and view through the design.

iv) **Visual Basic.NET**
   The interaction between database and ASP.NET is very important to make sure the process of data work smoothly. Visual Basic.Net helps the process done in proper way. The instruction in Visual Basic will lead the process in ASP.Net to complete the system development.
v) Web Browser – Internet Explorer

Internet explorer is the most familiar web browser among the user. The selection of web browser is important for development process to make sure the system run more compatible.

vi) SQL Server

SQL server use to develop the database. The features of the SQL server make the development of database more efficient. It can be used to store large data and keep more tables for each database. E-learning for Form 3 Mathematics involves large data to keep, for example students details, teachers detail and also the syllabus of Mathematics.

vii) Microsoft Project 2000

The compatible feature in this Microsoft can help to develop the proper Gantt chart.

3.8 Working Design/Gantt Chart

Gantt chart is one of the tools to planning working scale. This working planning help us to do our project on time and accurately. By using of good planning lead us to a good project. The working planning of this project can be referring in Appendix A.
3.9 Conclusion

As a conclusion, evolutionary prototyping was chosen as a methodology. Justifications of selected methodology also stated in this chapter. Next chapter is the early design of proposed system. This chapter includes the user profile, user requirements and also the early design of the system.
CHAPTER 4

INITIAL DESIGN AND ANALYSIS

4.1 Introduction

The main objective of this chapter is to describe the design and analysis of proposed system. This chapter also discuss about the analysis and design of current system. Basically it content of the background of organization, the model of current system, user needs, and all the related design of proposed system.

4.2 Analysis of Current System

As state in previous chapter an investigation have done at the organization to analyze the current system. From, the analysis have discovered the weaknesses of the current system, the exist model of teaching method and also learning method.
4.2.1 Background of the organization

Sekolah Menengah Kebangsaan Skudai was started build up in 1982 and starts operated in 1984 with the name of Sekolah Menengah Skudai. At the beginning, the school was consists of 2 blocks and two floor which contain 12 classrooms, office, teacher room, two science lab, sewing room, cooking room, library, prayer room, toilet and some store rooms. Other than that, the school also consist one block of the art workshop and canteen block.

The school start operated with 27 academic staffs, 6 non-academic staffs and 789 students. The principal of the school is Encik Osman bin Abdullah. The school was inaugurated by Yang Berhormat Datuk Seri Anwar Ibrahim, the Education Ministry of Malaysia at 11 September 1986.

Starting from 1985, some new blocks was build up because of the number student increasing. There was 2 block with 8 classrooms and another block with 2 floor, consist of 4 classrooms, 3 science lab and also some special rooms.

The number students keep on increasing year by year. At the academic year of 1992/93, there are 2938 students and 130 teachers and 16 non-academic staffs. But, from 1994 the numbers of students decrease due to the opening of new schools, which are SMK Taman Universiti 1 and 2, SMK Mutiara Rini 1 and 2 and also SMK Desa Skudai. At April 2001, this school was selected by Education Department of Johor to start class for Form Six students. At early stage, the class was started with 54 students in March. Most of the students are from the Skudai area. SMK Skudai was upgrade as “Sekolah Menengah Kawalan” by eliminating the remove classes in 2004. This is because the numbers of Form Six classes were increased.
4.2.1.1 Vision

“SMK Skudai menjadi sekolah cemerlang pada tahun 2010”

4.2.1.2 Mission

“SMK Skudai berusaha memperkembangkan potensi pelajar dalam bidang kurikulum, kokurikulum dan tinggi nilai akhlaknya”

4.2.1.3 Objective

Goal to achieve by year 2010:

i) 100% passing grade in STPM examination
ii) 90% passing grade in SPM examination
iii) 85% passing grade in PMR examination
iv) First runner up in MSSD athletic
v) Champion of the district in the games
vi) Champion of the district “Sekolah Harapan Negara”

4.2.1.4 Organization chart

The organization chart of SMK Skudai can be seen in Appendix B.
4.2.2 The Current System

SMK Skudai using traditional method in teaching and also learning process. Even though, the school has two computer lab but they don’t using the computer for teaching process. The same methods were the students will enter the class and the teacher will prepare the topic according to the syllabus given by government. After the teaching process the teacher will give some exercises to practice in class. The student can ask question if they have any doubt on the questions. If the time period finish the teacher leave and next teacher will enter the class and the same process will be repeated.

Figure 4.1: The structure of current system in SMK Skudai
4.2.2.1 The Problem of the Current System

The main problem of current system have stated in chapter 1. Basically the weaknesses in the current system of SMK Skudai are communication problem between teachers and students, the students also does not expose towards online learning. The teachers also have problem to give attention towards large number of students. The parents also cannot keep track with their child. Those are the some problems that have discuss from the initial analysis. Even the achievements of students also effected by those problems. More explanation about the problem stated clearly in section 1.2, chapter 1.

4.3 The User Requirements

Pn. Zuraidah Bt Saad is the senior teacher for Mathematics subject of SMK Skudai. According to her, she is heard about e-learning system but have not used before. She also said that she is not good in computer field but she hope this e-learning system can help the student to expose them self towards online learning. She also give some idea such as add some useful material for Mathematics beside (KBKK) Critical and creative thinking skills so that student can learn more.

4.4 Architecture of Proposed System

Initial design of proposed system is very important to clarify the process of the system. This initial design will help the development of the system as go on. The structured design has chosen to develop the E-learning System for Form 3
Mathematics. This structured design will explain the overall process of the proposed system. There are parts in the system design such as process design, module design, interface design and also the input and output specification. Below is the basic design of proposed system.

![Architecture of Proposed System](image)

**Figure 4.2: Architecture of Proposed System**

### 4.4.1 The Process Design

The process consists of the context diagram, data flow diagram (DFD) and the entity relationship diagram (ERD). The process design is the collection of the processes that will be implemented in E-learning System for Form 3 Mathematics. This design also explains the interaction processes between data entities and the process of accept inputs and produce outputs.
4.4.1.1 Context diagram

The context diagram shows the abstract view of the E-learning System for Form 3 Mathematics. This diagram will includes all the external agents and all the data flow of the system in one diagram. Context diagram explain the entire system of the E-learning System for Form 3 Mathematics in one process. The context diagram of the system can refer in Appendix C.

4.4.1.2 Data Flow Diagram (Diagram 0)

Diagram 0 or event-partitioned system model will describe all the processes involve in the E-learning System for Form 3 Mathematics. Basically, this diagram summarizes the entire system more clearly than context diagram. All the external agents and data flow in context diagram must include in diagram 0. The diagram 0 of the system can be referring in Appendix D.

4.4.1.3 Data Flow Diagram (Diagram 1)

Diagram 1 or level of abstraction were the diagram 0 will be break into a sub model that explain each process in each diagram. The processes in the system clearly explained in this diagram. The details of each process in the system are very important to understand the overall system. The diagram 1 of the system can be referring in Appendix E.
4.4.1.4 Entity Relationship Diagram (ERD)

ERD diagram is the relation diagram that describes all the relationship in the E-learning System for Form 3 Mathematics. All the attributes of the entity will state in this diagram. This system consists of 3 users which are administrator, teacher and students and 3 main modules which are notes, tutorial, and test. These are the main entity of the system and their attributes are the ERD diagram. Please refer Appendix F.

4.4.2 Module Design

The module design describes the modules in the E-learning System for Form 3 Mathematics. As mention before this system consists of three main users and each user have their own sub-module to access. The main module in this system is admin module, teacher module, and student module. The sub-module is register user, view user profile, update profile, view students result, notes, tutorial, and test. Figure 4.3, 4.4 and 4.5 show the hierarchy of the modules

a) Admin module

![Figure 4.3: Admin Module](image-url)
b) Teacher module

Figure 4.4: Teacher Module

Sub-module update
Sub-module notes
Sub-module tutorial
Sub-module quiz
Sub-module view student’s result

Teacher
Login

Sub-module view student list

Teacher module

Sub-module view

Student module

Sub-module view

Sub-module quiz
Sub-module tutorial
Sub-module update profile
Sub-module notes
Sub-module view result

Student
Login

Figure 4.5: Student Module
4.4.3 Interface Design

Interface design is the medium for the user and system. Interface design plays a main role to succeed any system. In this design will give a picture on how the interface of E-learning for Form 3 will look alike. Below are the figures of the system interface.

![E-Learning System for Form 3 Mathematics](image)

**Figure 4.6: The Home Page of Proposed System**

4.4.4 Input and Output Specification

Input and output design explains the specification of the input and output of the E-learning for Form 3 Mathematics. Basically as we know the input specification
is the data key in by user and output specification is the output data from the system according to input data.

### Table 4.1: Specification input and output

<table>
<thead>
<tr>
<th>Module</th>
<th>Input Specification</th>
<th>Output Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Registration</strong></td>
<td>Input the user information especially the user ID</td>
<td>Display the registration form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Display the succeed message</td>
</tr>
<tr>
<td><strong>Update profile</strong></td>
<td>Input the details of user for their profile</td>
<td>Display the update form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Display the succeed message.</td>
</tr>
<tr>
<td><strong>Quiz</strong></td>
<td>Input where the user answer question</td>
<td>Display the question for the user to answer.</td>
</tr>
<tr>
<td><strong>Tutorial</strong></td>
<td>The teacher will upload the tutorial for the student</td>
<td>When student select the module the tutorial will display</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The teacher will upload note for the student</td>
<td>Display the note for the student to access</td>
</tr>
<tr>
<td><strong>Check result</strong></td>
<td>Select the module</td>
<td>Display the students result</td>
</tr>
</tbody>
</table>
i) Input Design

![Image 1](image1.png)

**Figure 4.7:** The registration form of proposed system

ii) Output Design

![Image 2](image2.png)

**Figure 4.8:** The list of students by selected classroom
4.5 Conclusion

Basically this chapter explains the entire development of E-learning for Form 3 Mathematics in system design. System design consists of process design, module design, interface design and input and output specification. The interface design will improve later in a better interface. This system design can help to develop a system with good quality and meet the user requirement. Next chapter is the conclusion, summarize of entire proposed project.
CHAPTER 5

SYSTEM IMPLEMENTATION

5.1 Introduction

System implementation is one of the main processes in developing the E-learning System for Form 3 Mathematics. This chapter explains the software implementation, development of interface, development of database and the system programming. The system was developed according to the initial design that proposed in chapter 4.

5.2 Software Implementation

The correct software implementation is very important to make sure our system development success. The software that was used to develop E-learning System for Form 3 Mathematics is web browser ASP.Net to connect with server, Visual Basic 2008 to develop interface, SQL server 2005 to develop database and the last is Visual Basic.Net to develop programming coding.
5.3 Development of Interface

The success of a system can be seen through the easiness of user usage and attract towards the system. Main tool to attract and make the system easy is the interface of the system. As mentioned before in 5.2, Visual Basic 2008 was used to develop interface. The interface was divided into four which is the main page of the system, admin interface, teacher interface and student interface. Master page was used to make sure the consistency of the page and also the design of every page in the system.

5.3.1 Main Interface

The design of main page makes user to attract towards the system. The main page of E-learning System for Form 3 Mathematics consists of four sub-modules that contain of school history, philosophy, song and logo. This sub-module allows the visitor to explore the details of the school. This system divided the user into three which is admin, teacher and student. This page provides different links for each type of user to login into the system for further access. Please refer to APPENDIX G1, to view the interface.

5.3.2 Admin Interface

The administrator of this system must login first to access the main page of admin interface. Besides, this page also contains few sub-modules which are change password, register student, register teacher, student list, teacher list and student
result. Please refer to APPENDIX G2 to view the interface. Below list explain the task of each sub module.

i. **Register Student** – The admin can register the entire Form 3 student by their classroom and also with their personal details.

ii. **Register Teacher** – The mathematics teacher will registered under this sub-module by the assigned classroom.

iii. **Student List** – This link enable the admin to view list of student according to their respective classroom.

vi. **Teacher List** – Admin can view the entire authorized teachers list to use this system.

v. **Student Result** – Enable the admin to view the student results according to their respective classroom.

5.3.3 **Teacher Interface**

Basically this system only for Mathematic subject, so only the registered Mathematics teacher are enable to login and access other sub-modules provided. After the teacher login it will redirect the page to the home page of teacher. This page provide other sub- module links such as change password, edit profile, note, tutorial, quiz, student list and student result. Please refer to APPENDIX G3 to view the interface. Below is some of the sub-module list that explains the task of each sub-module.

i. **Edit Profile** – Every teacher individually can keep their personal information up to date through this sub-module.
ii. **Note** – The teachers can upload notes through this sub-module according to the respective classroom.

iii. **Tutorial** – Enable the teacher to upload tutorial for the student where they can practice doing exercise.

iv. **Quiz** – Teacher can upload question according to registered sub topic.

### 5.3.4 Student Interface

This interface only for form 3 student for the first attempt of login the admin will provide them with a password and username. The student can login using the password and username. If the login success, the student will redirect to the home page of student interface. This page provides them few sub-modules such as change password, edit profile, note, tutorial, quiz and the result. Please refer to APPENDIX G4 to view the interface. Below are the few lists of sub-modules that explain the task for the student.

i. **Note** – When they click this hyperlink the list of notes will display. The lists are appearing according to their respective classroom which assigned earlier.

ii. **Tutorial** – This module also display the list of tutorial. The student enables to download the tutorial and do the exercise provided and submit to their teacher. This tutorial helps the student to improve their skill in doing subjective question.

iii. **Quiz** – Quiz is in objective based. The student will take the quiz by online within the time period provided to them. They also must take the quiz before the due date.

iv. **Result** – This sub-module enable only he/she to view the result.
5.4 Development of Database

SQL Server 2005 was used to develop the database of the E-learning System for Form 3 Mathematics. This database enables to store all the data’s related to the system. The user can retrieve, edit and also delete data from the database. There are many tables was created which are student table, teacher table, note table, tutorial table and many more. Primary key will assigned for each table. Primary key is a unique attribute for each table. It will help us make connection between tables and also recognize the user or other entity uniquely. Please refer to APPENDIX H to view the list of few tables.

5.5 System Programming

Programming coding is very important to maintain the consistency and the work flow of a system. Here, the Visual Basic.Net was used to develop the programming code. Below list show few list of example code that used to develop the E-learning System for Form 3 Mathematics.
i. Module Login

Figure 5.1: Program code for login

```vbnet
Protected Sub btnLogin_Click(ByVal sender As Object, ByVal e As System.EventArgs) Handles btnLogin.Click
    Dim con As New System.Data.SqlClient.SqlConnection("Data Source=\SQLEXPRESS;AttachDbFilename=|DataDirectory|\ASPNETDB.MDF;Integrated Security=True;User Instance=True")
    Dim user As String
    Dim cmd As New System.Data.SqlClient.SqlCommand
    user = "SELECT Username FROM [Teacher] WHERE (((Username)="" & txtUsername.Text & ") AND (((Password)="" & txtPassword.Text & ")")"
    cmd = New System.Data.SqlClient.SqlCommand(user, con)
    con.Open()
    Dim dr As String = cmd.ExecuteScalar()
    If dr Is Nothing Then
        lblerror.Visible = True
        lblerror.Text = "Login fail. Check your password"
    Else
        Dim selectuser As String
        Dim cmd As New System.Data.SqlClient.SqlCommand
        selectuser = "SELECT Username FROM [Teacher] WHERE (((Username)="" & txtUsername.Text & ") AND (((Password)="" & txtPassword.Text & ")")"
        cmd = New System.Data.SqlClient.SqlCommand(selectuser, con)
        Dim AD As New System.Data.SqlClient.SqlDataAdapter
        Dim DS As New System.Data.Dataset
        AD = New System.Data.SqlClient.SqlDataAdapter(selectuser, con)
        DS = New System.Data.Dataset()
        Response.Write("Login Success")
        Session("Username") = txtUsername.Text
        Response.Redirect("teacher/teacherhome.aspx")
    End If
End Sub
```
ii. Module register user

```vbnet
Protected Sub btnStudent_Click(ByVal sender As Object, ByVal e As System.EventArgs)
Handles btnStudent.Click
    Dim con As New System.Data.SqlClient.SqlConnection("Data
Source=\SQLEXPRESS;AttachDbFilename=|DataDirectory|\ASPHETDB.MDF;Integrated
Security=True;User Instance=True")
    Dim strinsert As String
    Dim cmd As System.Data.SqlClient.SqlCommand
    strinsert = "INSERT INTO Student (Name, ICNum, RegNum, Address, Classroom, Sex,
    GuardianName, HPNumber, Username, Password, ConfirmPassword) VALUES (@Name, @ICNum,
    @RegNum, @Address, @Classroom, @Sex, @GuardianName, @HPNumber, @Username, @Password,
    @ConfirmPassword)"
    cmd = New System.Data.SqlClient.SqlCommand(strinsert, con)
    cmd.Open()
    cmd.Parameters.AddWithValue("@Name", txtName.Text)
    cmd.Parameters.AddWithValue("@ICNum", txtIC.Text)
    cmd.Parameters.AddWithValue("@RegNum", txtStudentnum.Text)
    cmd.Parameters.AddWithValue("@Address", txtAdd.Text)
    cmd.Parameters.AddWithValue("@Classroom", ddlClass.SelectedItem)
    cmd.Parameters.AddWithValue("@Sex", ddilSex.SelectedItem)
    cmd.Parameters.AddWithValue("@GuardianName", txtGuardian.Text)
    cmd.Parameters.AddWithValue("@HPNumber", txtContact.Text)
    cmd.Parameters.AddWithValue("@Username", txtUsername.Text)
    cmd.Parameters.AddWithValue("@Password", txtPassword.Text)
    cmd.Parameters.AddWithValue("@ConfirmPassword", txtConfirm.Text)

    cmd.ExecuteNonQuery()
    cmd.Parameters.Clear()
    con.Close()
    Response.Redirect("success.aspx")

End Sub
```

Figure 5.2: Program code for register user
iii. Module update Profile

```
<asp:SqlDataSource ID="SqlDataSource1" runat="server"
    ConnectionString="@ConnectionString"></asp:SqlDataSource>

UpdateCommand="UPDATE [Teacher] SET [Name] = @Name, [ICNum] = @ICNum, [Address] = @Address, [TelNum] = @TelNum, [Classroom] = @Classroom, [Sex] = @Sex WHERE [StaffNum] = @Original_StaffNum AND (([Name] = @Original_Name) OR ([Name] IS NULL AND @Original_Name IS NULL)) AND (([ICNum] = @Original_ICNum) OR ([ICNum] IS NULL AND @Original_ICNum IS NULL)) AND (([Address] = @Original_Address) OR ([Address] IS NULL AND @Original_Address IS NULL)) AND (([TelNum] = @Original_TelNum) OR ([TelNum] IS NULL AND @Original_TelNum IS NULL)) AND (([Classroom] = @Original_Classroom) OR ([Classroom] IS NULL AND @Original_Classroom IS NULL)) AND (([Sex] = @Original_Sex) OR ([Sex] IS NULL AND @Original_Sex IS NULL))">

<UpdateParameters>
    <asp:Parameter Name="@Name" Type="String" />
    <asp:Parameter Name="@ICNum" Type="String" />
    <asp:Parameter Name="@Address" Type="String" />
    <asp:Parameter Name="@TelNum" Type="String" />
    <asp:Parameter Name="@Classroom" Type="String" />
    <asp:Parameter Name="@Sex" Type="String" />
    <asp:Parameter Name="@Original_Name" Type="String" />
    <asp:Parameter Name="@Original_ICNum" Type="String" />
    <asp:Parameter Name="@Original_Address" Type="String" />
    <asp:Parameter Name="@Original_TelNum" Type="String" />
    <asp:Parameter Name="@Original_Classroom" Type="String" />
    <asp:Parameter Name="@Original_Sex" Type="String" />
</UpdateParameters
```

Figure 5.3: Program code for update profile
iv. **Module Upload Note**

```xml
<asp:SqlDataSource ID="InsertData" runat="server"
    ConflictDetection="CompareAllValues"
    ConnectionString="@ConnectionString $" />

InsertCommand="INSERT INTO [Note] ([Topic], [Classroom], [Description], [FileName], [FileBytes]) VALUES (@Topic, @Classroom, @Description, @FileName, @FileBytes)"

<InsertParameters>
    <asp:ControlParameter Name="Topic" ControlID="txtTopic"
        PropertyName="Text"/>
    <asp:ControlParameter Name="Classroom" ControlID="ddlClass"
        PropertyName="Text"/>
    <asp:ControlParameter Name="Description" ControlID="txtDesc"
        PropertyName="Text"/>
    <asp:ControlParameter Name="FileName" ControlID="upfile"
        PropertyName="FileName"/>
    <asp:ControlParameter Name="FileBytes" ControlID="upfile"
        PropertyName="FileBytes"/>
</InsertParameters>
</asp:SqlDataSource>
```

**Figure 5.4: Program code for upload notes**

v. **Check the format of file**

```
Protected Sub upbutton_Click(ByVal sender As Object, ByVal e As System.EventArgs)
Handles upbutton.Click
    If upfile.HasFile Then
        If CheckFileType(upfile.FileName) Then
            InsertData.Insert()
        End If
    End If
End Sub

Function CheckFileType(ByVal FileName As String) As Boolean
    Return Path.GetExtension(FileName).ToLower() = ".pptx"
End Function
```

**Figure 5.5: Program code for check format of file**
5.6 Conclusion

This chapter discusses about the implementation of the system. There are 4 main important sub-topics that describe the implementation of the system which is software implementation, development of interface, development of database and system programming.
6.1 Introduction

System testing is very important, so that we can identify the problem of the system, the process of the system, and also error in coding. This testing also helps us to make sure the system work smoothly. Besides, testing system evaluation help the user to test the system by them self. This chapter contains database testing, input testing, output testing and also user testing.

6.2 System Testing

System was tested in two type which are black box testing and white box testing. As mention before in chapter 3, 3.3.5 testing and evaluation phase, the black box testing we can identify the mistake of interface, the input data and also the process of store data in database. Else, white box testing allow us to identify the
coding of the system, the database of the system and the process of each module in the system. There are main three functions was tested which are:

i. Database testing
ii. Input Testing
iii. Output testing

6.2.1 Database Testing

Database testing was done to make sure all the entered data stored correctly into the database. During the testing the interface will display the messages such as successfully registered and also required data. The required data is very important to test because the tables created in database not allow null value to be stored. Figure 6.1 and Figure 6.2 show some of the result by database testing.

Figure 6.1: The success message display after data send to database

Quiz successfully registered!!! You may add more or can insert question.
6.2.2 Input Testing

Input testing helps to make sure the data inserted correctly and to avoid error during retrieve data from database. For example login attempt, invalid input and many more. Here we can test the data is same as we inserted in database, and also valid format that we set up before. Figure 6.3, Figure 6.4 and Figure 6.5 show the some of the result by input testing.
6.2.3 Output Testing

This output testing was done to make sure the system display the correct output as required by the user. For example list of students, notes and tutorial for the student and many more. Figure 6.6 and Figure 6.7 show some of the result by output testing.
Figure 6.6: Display of the student list by the selected classroom

Figure 6.7: Display of the Tutorial and the message box after click the link

6.3 User Testing

Through out the user testing we can identify weather we have reach the objective state in the Chapter 1. This testing was done with the cooperation of the user of the system. As mention in objective there are three main users who are
admin, teacher and student. They are required to test the system by enter data, retrieve data and also the understanding and clear instruction from the interface was observed. Please refer to APPENDIX I to view user manual.

6.4 Conclusion

This chapter discussed on how the testing and system evaluation was done. Further this chapter also provides some of the result by the testing. Testing and evaluation phase helps to discover the error occur in the coding and the consistency of the system. Next chapter gives the conclusion of the development of E-learning System for Form 3 Mathematics.
CHAPTER 7

CONCLUSION

7.1 Introduction

This chapter basically discuss about the conclusion of development system, E-learning System for Form 3 Mathematics. Moreover it also included the advantage, disadvantage and suggestion of the development system. As mention in Chapter 1 this system included four main modules which are e-notes, tutorial online quiz and discussion board or forum. Basically there are three user who are the admin, teacher and student.

As conclusion this system helps the student to improve their studies in Mathematics subject. The first and foremost this system has been improved the traditional teaching method of SMK Skudai into online learning. This system also becomes the first step to improve teaching method in secondary school. Besides, this system also developed due to the problem defined in Chapter 1.
7.2 Advantages of the System

There are many advantages of the E-learning System for Form 3 Mathematics such as:

i) The learning and teaching method of SMK Skudai has been improved into online.

ii) The quiz is online base and the reports are delivered at the minute quiz done according to level report and overall report.

iii) One coordinator will insert the quiz paper according to chapter in syllabus and the entire form 3 student will be evaluated in same manner.

iv) The notes and tutorial will be uploading by teacher according to their respective classroom.

v) This system is web base system so that the user can used anywhere and anytime.

7.3 Disadvantage of the System

Most of the system development consists of certain disadvantage due to time and cost of the development. As that this E-learning System for Form 3 Mathematics also consist its disadvantages such as:

i) This system only provided Form 3 Module and for Form 3 students only.

ii) Timing is not provided to complete each quiz.

iii) The report is not displayed in graph manner so that the admin can have clear picture on student progress.

iv) The parents can view their child progress when their children online. There is no specific login or page allows them to view their children report.

v) No equation editor included into this system. The coordinator need to do equation in MS Word then copy and paste into system.
7.4 Suggestion for Future

As mention above some of weaknesses of the system are discovered from the E-learning System for Form3 Mathematics. So for future development some of the suggestions are discovered due to the weaknesses such as:

i) As in literature review Form 3 Mathematics discover all Form 1 until Form 3 syllabus. So for future development the system must include Form 1 and Form 2 module as well.

ii) Timing period for the student as well quiz are started and to ended.

iii) Display report in graph manner to ease the user to analysis student progress.

iv) Provide personal login for the parents to view their children report.

v) Provide equation editor so that easy to create question.

7.5 Conclusion

As the overall conclusion of this chapter, hope this E-learning system can help the user to overcome their problem in teaching and learning process. Hopefully this system also can help the student improve their learning method and achieve good result in Mathematics subject. Besides, hope this system have reach the objective as proposed in Chapter 1.
REFERENCES


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APPENDIX A

GANTT CHART PSM 1 AND PSM 2
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Selection of topic and supervisor</td>
<td>14 days</td>
<td>Mon 7/6/05</td>
<td>Thu 7/20/05</td>
</tr>
<tr>
<td>2</td>
<td>Confirm supervisor and PSM talk</td>
<td>2 days</td>
<td>Mon 7/6/05</td>
<td>Tue 7/7/05</td>
</tr>
<tr>
<td>3</td>
<td>Selection of topic</td>
<td>7 days</td>
<td>Wed 7/8/05</td>
<td>Thu 7/15/05</td>
</tr>
<tr>
<td>4</td>
<td>Submit title of project</td>
<td>1 day</td>
<td>Fri 7/17/05</td>
<td>Fri 7/17/05</td>
</tr>
<tr>
<td>5</td>
<td>Interview and confirmation</td>
<td>2 days</td>
<td>Wed 7/22/05</td>
<td>Thu 7/23/05</td>
</tr>
<tr>
<td>6</td>
<td>Planning phase</td>
<td>13 days</td>
<td>Tue 7/22/05</td>
<td>Thu 8/4/05</td>
</tr>
<tr>
<td>7</td>
<td>Discuss with supervisor</td>
<td>1 day</td>
<td>Thu 7/30/05</td>
<td>Thu 7/30/05</td>
</tr>
<tr>
<td>8</td>
<td>Background of problem</td>
<td>1 day</td>
<td>Fri 8/6/05</td>
<td>Fri 8/6/05</td>
</tr>
<tr>
<td>9</td>
<td>Identify the objective and scope of the project</td>
<td>1 day</td>
<td>Fri 8/6/05</td>
<td>Fri 8/6/05</td>
</tr>
<tr>
<td>10</td>
<td>Start write Chapter 1</td>
<td>3 days</td>
<td>Mon 8/10/05</td>
<td>Wed 8/12/05</td>
</tr>
<tr>
<td>11</td>
<td>Submit to supervisor</td>
<td>1 day</td>
<td>Thu 8/13/05</td>
<td>Thu 8/13/05</td>
</tr>
<tr>
<td>12</td>
<td>Send proposal for write thesis in English</td>
<td>1 day</td>
<td>Fri 8/14/05</td>
<td>Fri 8/14/05</td>
</tr>
<tr>
<td>13</td>
<td>Analysis phase</td>
<td>10 days</td>
<td>Mon 8/17/05</td>
<td>Wed 9/9/05</td>
</tr>
<tr>
<td>14</td>
<td>Collect and analyze data</td>
<td>6 days</td>
<td>Mon 8/17/05</td>
<td>Mon 8/24/05</td>
</tr>
<tr>
<td>15</td>
<td>Analyze the existing system</td>
<td>1 day</td>
<td>Wed 8/26/05</td>
<td>Wed 8/26/05</td>
</tr>
<tr>
<td>16</td>
<td>Analyze the education system in Malaysia</td>
<td>1 day</td>
<td>Thu 8/27/05</td>
<td>Thu 8/27/05</td>
</tr>
<tr>
<td>17</td>
<td>Start write the Chapter 2</td>
<td>6 days</td>
<td>Mon 8/31/05</td>
<td>Mon 9/7/05</td>
</tr>
<tr>
<td>18</td>
<td>Edit Chapter 1</td>
<td>1 day</td>
<td>Tue 9/6/05</td>
<td>Tue 9/6/05</td>
</tr>
<tr>
<td>19</td>
<td>Submit Chapter 1 and 2 to supervisor</td>
<td>1 day</td>
<td>Wed 9/9/05</td>
<td>Wed 9/9/05</td>
</tr>
<tr>
<td>20</td>
<td>Preparation for Chapter 3</td>
<td>6 days</td>
<td>Fri 9/11/05</td>
<td>Fri 9/18/05</td>
</tr>
<tr>
<td>21</td>
<td>Analyze the type of Methodology</td>
<td>1 day</td>
<td>Fri 9/11/05</td>
<td>Fri 9/11/05</td>
</tr>
<tr>
<td>22</td>
<td>Start write Chapter 3</td>
<td>2 days</td>
<td>Tue 9/15/05</td>
<td>Wed 9/16/05</td>
</tr>
<tr>
<td>23</td>
<td>Submit to Lecturer</td>
<td>1 day</td>
<td>Fri 9/18/05</td>
<td>Fri 9/18/05</td>
</tr>
<tr>
<td>24</td>
<td>Design of the system</td>
<td>5 days</td>
<td>Mon 9/28/05</td>
<td>Fri 10/2/05</td>
</tr>
<tr>
<td>25</td>
<td>Analyze the existing system and design system</td>
<td>5 days</td>
<td>Mon 9/29/05</td>
<td>Wed 9/30/05</td>
</tr>
<tr>
<td>26</td>
<td>Write Chapter 4 and 5</td>
<td>2 days</td>
<td>Thu 10/1/05</td>
<td>Fri 10/2/05</td>
</tr>
<tr>
<td>27</td>
<td>Submit to supervisor</td>
<td>1 day</td>
<td>Fri 10/2/05</td>
<td>Fri 10/2/05</td>
</tr>
<tr>
<td>28</td>
<td>Prepare report and presentation</td>
<td>4 days</td>
<td>Fri 10/2/05</td>
<td>Wed 10/7/05</td>
</tr>
<tr>
<td>29</td>
<td>Prepare the first draft</td>
<td>1 day</td>
<td>Mon 10/5/05</td>
<td>Mon 10/5/05</td>
</tr>
<tr>
<td>30</td>
<td>Submit Draft</td>
<td>1 day</td>
<td>Wed 10/7/05</td>
<td>Wed 10/7/05</td>
</tr>
</tbody>
</table>
APPENDIX B

ORGANISATION CHART OF SMK SKUDAI
APPENDIX C

CONTEXT DIAGRAM
APPENDIX D

DATA FLOW DIAGRAM (DIAGRAM 0)
APPENDIX E

DATA FLOW DIAGRAM (DIAGRAM 1)
1.0 User Login

2.0 User Registration
3.0 Update User Profile
4.0 Access Notes

- 4.1 Access notes module
  - Insert Id, password
  - Display list of notes
  - Insert new set of notes
- 4.2 Add new set of notes
  - Notes information
- 4.3 Delete notes
  - Notes information
- 4.5 Notes selection
  - Display notes, download
  - D4 Notes file
- D4 Notes file
5.0 Access Tutorial

5.1 Access tutorial module
- Insert Id, password
- Display list of tutorial
- Insert new set of tutorial,

5.2 Add new set of tutorial
- Tutorial information

5.3 Delete Tutorial
- Tutorial information

D5 Tutorial file

Display tutorial
Download tutorial

5.5 Tutorial selection

D5 Tutorial file
6.0 Quiz Module

- Insert Id, password
- Display list of topic
- Insert new set of quiz
- Quiz information
- Quiz file
- Display quiz set, answer question
- Score record
- Select topic from the quiz list
- Update quiz module
- Quiz file
- Access quiz module
- Add new set of quiz
- Delete quiz
- Score file
APPENDIX F

ENTITY RELATIONSHIP DIAGRAM
APPENDIX G

INTERFACE OF E-LEARNING SYSTEM FOR FORM 3 MATHEMATICS
WELCOME TO SMK SKUDAI E-LEARNING

E-Learning system is one of the alternative sources for students and teachers in education. Basically this e-learning system helps the student to expose towards online learning. This online learning helps to enhance the network between teachers and students. This system is specially made for Form 3 students for Mathematics subjects.

APPENDIX G1: Main Page
APPENDIX G2: Home Page of Admin

As an administrator for this system, you will coordinate the user of this system. Your tasks is to register the user, click REGISTER TEACHER for register teacher and click REGISTER STUDENT for register student. Besides, you can delete the user or check the details of the user by view the TEACHER LIST and STUDENT LIST. You also can print report by click STUDENT RESULT. To protect your profile you may change up password more stronger just by click the hyperlink right down of this page.

CHANGE PASSWORD
APPENDIX G3: Home Page of Teacher

Hello teacher welcome to e-learning system. You may access this system to upload notes, upload tutorial and also upload online quiz for your student. You can go through all the activity by click the links provided at the left side of this page which is in white color. You can view student result by click the STUDENT RESULT. Dear teacher you also can change your password and edit your profile by click the hyperlinks right down of this page.
Hi student welcome to e-learning system. You may access this system to download notes, download tutorial and also take online quiz. You can go through all the activity by click the links provided at the left side of this page which is in white color. You can view your result right after take test quiz by click RESULT. Dear student you also can change your password and edit your profile by click the hyperlink right down of this page.
APPENDIX H

LIST OF TABLES IN DATABASE
### APPENDIX H1: Table Teacher

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Teacher name</td>
</tr>
<tr>
<td>ICNum</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Teacher IC number</td>
</tr>
<tr>
<td>StaffNum</td>
<td>nchar</td>
<td>10</td>
<td>Primary key</td>
<td>Teacher staff number</td>
</tr>
<tr>
<td>Address</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Teacher address</td>
</tr>
<tr>
<td>TelNum</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Teacher handphone number</td>
</tr>
<tr>
<td>Sex</td>
<td>nchar</td>
<td>10</td>
<td></td>
<td>Teacher gender</td>
</tr>
<tr>
<td>Username</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Teacher username use to login</td>
</tr>
<tr>
<td>Password</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Teacher password use to login</td>
</tr>
<tr>
<td>Confirm password</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Confirm password to make sure same as password entered</td>
</tr>
</tbody>
</table>

### APPENDIX H2: Table Student

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>student name</td>
</tr>
<tr>
<td>ICNum</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>student IC number</td>
</tr>
<tr>
<td>RegNum</td>
<td>nchar</td>
<td>10</td>
<td>Primary key</td>
<td>Student registration number</td>
</tr>
<tr>
<td>Address</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Student address</td>
</tr>
<tr>
<td>Classroom</td>
<td>nchar</td>
<td>10</td>
<td></td>
<td>Student classroom</td>
</tr>
<tr>
<td>Sex</td>
<td>nchar</td>
<td>10</td>
<td></td>
<td>Student gender</td>
</tr>
<tr>
<td>GuardianName</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Student’s guardian name</td>
</tr>
<tr>
<td>HPNum</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Guardian handphone number</td>
</tr>
<tr>
<td>Username</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Teacher username use to login</td>
</tr>
<tr>
<td>Password</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Teacher password use to login</td>
</tr>
<tr>
<td>Confirm password</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Confirm password to make sure same as password entered</td>
</tr>
</tbody>
</table>
### APPENDIX H3: Table Classroom for teacher

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Teacher name</td>
</tr>
<tr>
<td>classID</td>
<td>int</td>
<td>Auto Increment</td>
<td>Primary key</td>
<td>Classroom ID to differentiate each classroom</td>
</tr>
<tr>
<td>Classroom</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Classroom name assign for the teacher</td>
</tr>
</tbody>
</table>

### APPENDIX H4: Table Quiz

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>QuizID</td>
<td>int</td>
<td>Auto Increment</td>
<td>Primary key</td>
<td>QuizID to differentiate each Quiz</td>
</tr>
<tr>
<td>Topic</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Topic according to syllabus</td>
</tr>
<tr>
<td>Description</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Description of quiz</td>
</tr>
</tbody>
</table>

### APPENDIX H5: Table Tutorial

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TutorialID</td>
<td>Int</td>
<td>Auto Increment</td>
<td>Primary key</td>
<td>TutorialID to differentiate each Tutorial</td>
</tr>
<tr>
<td>Topic</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Topic according to syllabus</td>
</tr>
<tr>
<td>Classroom</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Tutorial for selected classroom only</td>
</tr>
<tr>
<td>Description</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Description of tutorial</td>
</tr>
<tr>
<td>FileName</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Name of the document uploading</td>
</tr>
<tr>
<td>PathWay</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>The path where the document stored</td>
</tr>
</tbody>
</table>
APPENDIX H6: Table Note

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NoteID</td>
<td>Int</td>
<td>Auto Increment</td>
<td>Primary key</td>
<td>NoteID to differentiate each Note</td>
</tr>
<tr>
<td>Topic</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Topic according to syllabus</td>
</tr>
<tr>
<td>Classroom</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Note for selected classroom only</td>
</tr>
<tr>
<td>Description</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Description of note</td>
</tr>
<tr>
<td>FileName</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Name of the document uploading</td>
</tr>
<tr>
<td>PathWay</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>The path where the document stored</td>
</tr>
</tbody>
</table>

APPENDIX H7: Table Score

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ScoreID</td>
<td>Int</td>
<td>Auto increment</td>
<td>Primary key</td>
<td>ScoreID to differentiate each Score for each student</td>
</tr>
<tr>
<td>RegNum</td>
<td>nchar</td>
<td>10</td>
<td>Foreign key</td>
<td>Student registration number</td>
</tr>
<tr>
<td>Username</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Student username use to recognize student</td>
</tr>
<tr>
<td>Name</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>student name</td>
</tr>
<tr>
<td>Classroom</td>
<td>nchar</td>
<td>10</td>
<td></td>
<td>Student classroom</td>
</tr>
<tr>
<td>QuizID</td>
<td>int</td>
<td>Auto Increment</td>
<td>Foreign key</td>
<td>QuizID to differentiate each Quiz</td>
</tr>
<tr>
<td>Topic</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Topic according to syllabus</td>
</tr>
<tr>
<td>DateTimeComplete</td>
<td>smalldatetim</td>
<td></td>
<td></td>
<td>Date and time the student complete the quiz</td>
</tr>
<tr>
<td>Score</td>
<td>float</td>
<td></td>
<td></td>
<td>Student score for the quiz</td>
</tr>
<tr>
<td>Status</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Status of the student by their score</td>
</tr>
<tr>
<td>Description</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Description of their result</td>
</tr>
</tbody>
</table>
APPENDIX H8: Table Question

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>QuestionID</td>
<td>Int</td>
<td>Auto</td>
<td>Primary key</td>
<td>QuestionID to differentiate each Question</td>
</tr>
<tr>
<td>QOrder</td>
<td>int</td>
<td></td>
<td></td>
<td>Number for the question by order</td>
</tr>
<tr>
<td>Level</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Level of question easy or difficult</td>
</tr>
<tr>
<td>Question</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Create question</td>
</tr>
<tr>
<td>AnsA</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>The answer option for A</td>
</tr>
<tr>
<td>AnsB</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>The answer option for B</td>
</tr>
<tr>
<td>AnsC</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>The answer option for C</td>
</tr>
<tr>
<td>AnsD</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>The answer option for D</td>
</tr>
<tr>
<td>CorrectAnswer</td>
<td>tinyint</td>
<td></td>
<td></td>
<td>Correct answer for the question</td>
</tr>
<tr>
<td>QuizID</td>
<td>int</td>
<td>Auto</td>
<td>Foreign key</td>
<td>QuizID to differentiate each Quiz</td>
</tr>
</tbody>
</table>

APPENDIX H9: Table Level

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Types</th>
<th>Size</th>
<th>Key</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegNum</td>
<td>nchar</td>
<td>10</td>
<td>foreign key</td>
<td>Registration number of student</td>
</tr>
<tr>
<td>Username</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Student username use to recognize student</td>
</tr>
<tr>
<td>QuizID</td>
<td>int</td>
<td>Auto</td>
<td>Foreign key</td>
<td>QuizID to differentiate each Quiz</td>
</tr>
<tr>
<td>QOrder</td>
<td>int</td>
<td></td>
<td></td>
<td>Number for the question by order</td>
</tr>
<tr>
<td>Level</td>
<td>nvarchar</td>
<td>50</td>
<td></td>
<td>Level of question easy or difficult</td>
</tr>
<tr>
<td>UserAnswer</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Answer by the student</td>
</tr>
<tr>
<td>Result</td>
<td>nvarchar</td>
<td>MAX</td>
<td></td>
<td>Result of each question</td>
</tr>
</tbody>
</table>
APPENDIX I

USER MANUAL
USER MANUAL

This user manual will guide the user of E-learning System for Form 3 Mathematics to use the system. It also explains the function of each sub-module for the user. This user manual divided into 3 sections such as Admin Module, Teacher Module and Student Module.
Figure II: Main Page of the system

Above figure is the main page of the E-learning System for Form 3 Mathematics. This allows the user to view the history of school, school philosophy, school song and explanation of the school logo. This function does not require user to login. Visitor also can view the profile of the school. Next, this contains 3 hyperlinks for the user to login, **ADMIN**, **TEACHER** and **STUDENT**. User must click the link to login into the system.
Admin Module

Administrator of this system must click the ADMIN login hyperlink to access more function. Below figure show you the login page for admin.

![Login page for admin](image)

**Figure I2: Login page for admin**

After login success you will redirect to admin home page as the Figure I3. This page provide sub-module such as home, register teacher, register student, teacher list student list and student result.
Figure I3: Admin Home Page

The indicator (a) shows you the list of sub-module provided as mention before. Below table explain the function of the each sub-module:

<table>
<thead>
<tr>
<th>Sub-module</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>The admin can view all the list of the sub-module and also can change password through the hyperlink below the page.</td>
</tr>
<tr>
<td>Register teacher</td>
<td>This module is to register teachers for mathematics subject and assign classroom for them</td>
</tr>
<tr>
<td>Register Student</td>
<td>Here the admin will register all the Form 3 student of SMK Skudai</td>
</tr>
<tr>
<td>Teacher list</td>
<td>This page displays the list of teacher and classroom that assign for each teacher. Admin responsible to delete the teacher and their classroom.</td>
</tr>
<tr>
<td>Student list</td>
<td>This page displays the list of student when the admin chose classroom. Admin responsible to delete the student.</td>
</tr>
<tr>
<td>Student result</td>
<td>Admin can view the result of quiz that the student taken by the quiz topic and the respective classroom.</td>
</tr>
</tbody>
</table>
i) **Register User**

Since the procedure to register teacher and student same, this only provide single guide to register user. Admin need to fill up the form to register user. Figure I5 and I6 show you the example to fill in the form. Once complete fill in click the button **CREATE USER**
Figure I6: Registration form for student

Successfully registered!!!!!!
To add more USER please click REGISTER STUDENT for add student or click REGISTER TEACHER for add teacher or you may continue with different task. Below table allow you to register class for teachers.

Please to be noted that this classroom registration only for teachers!!!!

Figure I7: Success message display after register teacher or student

Figure I7 display classroom registration for teacher. (a) indicates you to select teacher name and (b) indicates you to select classroom.
ii) View User List and Delete

The process to view teacher list is easy, you just have to click **TEACHER LIST** menu the list will display as Figure I8. To view student list you need to click **STUDENT LIST** menu. Next select classroom and click submit button, the list of student for the selected classroom will display as Figure I9.

![Figure I8: List of teachers](image1)

![Figure I9: List of students by selected classroom](image2)
iii) Student Result

You must click the STUDENT RESULT menu. Next, you must select topic and classroom to view result by topic and the student’s classroom. Then, click the SUBMIT button. You can click the PRINT RESULT button to print the report. Figure I11 shows the example of student result.
Teacher module

After teacher login into system you will redirect to teacher home page where all the sub-module or function as teacher will be display in this page. Besides, this page also provide hyperlink to CHANGE PASSWORD and EDIT PROFILE. Below figure shows you the home page.

Figure I12: Teacher home page
i) Update Profile

Figure I13: Page of edit profile

Figure I13 shows you the page after you click **EDIT PROFILE** menu. (a) indicates you to click the Edit button to update your profile. Figure I14 show you the update page.

Figure I14: Page of update profile
ii) Upload note and tutorial

Since the process to upload note and tutorial same this manual provide the Figure I15 shows you the page to upload note when you click NOTE menu from sub-module.

Indicator:

(a) - indicates to insert topic of the note.
(b) - indicates to select classroom
(c) - indicates to type description for the note uploading
(d) - click the button to browse document to upload
(e) - click to upload the file
(f) - click to delete the file
iii) Upload Quiz

There are few steps to upload quiz. Please read the manual carefully.

1) Register Quiz

Figure I16: Page to register quiz

Figure I16 Show the page to register quiz. Beside this allow you to insert question and also view the list of quizzes.

Indicators:
(a) – Insert topic according to syllabus
(b) – Insert description for the quiz
(c) – Click the REGISTER button to register the quiz
(d) – Click to add more quiz
(e) – Click this button to insert question the registered quiz
(f) – Click this button to view the list of registered quiz
Figure I17: Page to insert question

Figure I17 show you the page to insert question enter data as follow for the topic that you have registered. The topic provided at the drop down list is the registered quiz. Once complete insert data as follow please refer the indicator:

(a) – Select the correct answer according to the answer that you provide.
(b) – Click to submit the question
(c) – Click to add more question for the quiz
(d) – Click to upload easy tutorial for student. The process same as upload note
(e) – Click to upload difficult tutorial
(f) – Click to view question list
iv) Student Result

You must click the **STUDENT RESULT** menu. Next, you must select topic and classroom to view result by topic and the student’s classroom. Then, click the **SUBMIT** button. You can click the **PRINT RESULT** button to print the report.

![Screen capture of the E-Learning System for Form 3 Mathematics](image)

*Figure I18: The result of 3 Melur students by the taken quiz topic*
Student Module

Once you successfully login into system you will redirect to Student home page. This page contains sub-module such as HOME, NOTE, TUTORIAL, QUIZ, and RESULT. Figure I19 show you the homepage.
i) Update Profile

Figure I20: Page of edit profile

Figure I20 shows you the page after you click **EDIT PROFILE** menu. (a) indicates you to click the Edit button to update your profile. Figure I21 show you the update page.

Figure I21: Page of update profile
ii) Access Note and Tutorial

Since the process to upload note and tutorial same this manual provide the Figure I22 shows you the page to upload tutorial when you click TUTORIAL menu from sub-module.

![E-learning System for Form 3 Mathematics](image)

**Figure I22: Page of tutorial**

This page displays the list of tutorial that you can download. (a) indicates you to click the link to download the tutorial.
iii) Take Quiz

Figure I23 is the page display list of quizzes, you may choose topic that you want to take the quiz.

Figure I23: Display the list of quizzes

Next, click start button to start the quiz the page shown below.

Figure I24: Page to start quiz
The question will display after you select your answer click next button to proceed to next question example Figure I25. Then end button will display once the last question displayed example Figure I26.

Figure I25: Show the NEXT button

Figure I26: Show the END button
iv) Result

To view your results click the RESULT menu. You will redirect to the page as Figure I27.

![E-Learning System for Form 3 Mathematics](image)

**Figure I27:** Display result for your quizzes that you have taken