Interactive Learning Module of Ekonomi Rumah Tangga (ERT)

For Secondary School (iLMERT)

by

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Dissertation submitted in partial fulfilment of

the requirements for the

Bachelor of Technology (Hons)

(Business Information System)

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Universiti Teknologi PETRONAS

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CERTIFICATION OF APPROVAL

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Approved by,

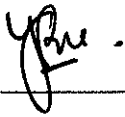_____
(Mr Faizal Bin Ahmad Fadzil)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

September 2011

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CERTIFICATION OF ORIGINALITY

ii

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgement, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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NUR LIYANA BINTI MOHAMED NOOR ROSLI

ABSTRACT

Interactive Learning Module for Ekonomi Rumah Tangga (iLMERT) is a module that was developed with the intention to enhance the current learning module used by the students and teachers. By developing this module, it is highly hope that the learning process will be easier and the students will manage to understand the syllabus within short time.

This dissertation will focus on the planning, designing and developing the module. The module was developed using Adobe Flash Builder and will be embedded into CD-ROM. The main language used in this module is Bahasa Melayu as this subject is taught using the language.

iLMERT will act as additional materials for students and teachers in the learning process. Besides that, it will also help to instill interest among students to learn this subject while adapting to the new learning environment. This interactive module will help them to understand more about the syllabus and help them during the revision process. As this project will be developed in limited time frame, it will only cover few topics from the current syllabus.

ACKNOWLEDGEMENTS

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CHAPTER 1

INTRODUCTION

INTRODUCTION

1.1   BACKGROUND OF STUDY

This project focuses on developing an interactive learning module that can be used by teachers and students in the process of teaching and learning. The multimedia materials have been included in curriculum at smart schools to enhance the teaching and learning environment (Chee, 2000; Ismail, 2001).

Ekonomi Rumah Tangga (ERT) is a major subject that being offered in technical stream for Form 4 and Form 5 students. After conducted a research on interactive module, it is proven that ERT have not involved in any interactive module. Among other popular subjects that have involved with interactive learning are mathematics, science, physics and chemistry.

ERT is not only useful for the school students, but it also useful for teenagers or housemaid as the syllabus is focusing on home science. The syllabus is divided into 3 main categories which are Pemakanan (Food), Pakaian (Clothing) and Keluarga dan Isi Rumah (Family & Household).

The module will only covers few chapters from the syllabus due to time constrain. The final product of this project will be a multimedia module that will be embedded in a CD-ROM which is handy and easy to use.

1.2   PROBLEM STATEMENT

ERT has been taught as an elective subject for Form One to Form Three. While for Form Four and Form Five, ERT is being offered as one of the major subject in the technical stream. Since its introduction, there's no interactive learning tools' being offered in the market.

ERT is basically a simple subject and easy to score but due to laziness of the students and unattractive learning tools, the subject become a boring subject and been taken by granted by students. Besides that, the use of text book and handouts are outdated as most of the other subjects are using interactive learning tools as their learning medium.

Unlike other subjects such as mathematics, biology, chemistry and many more, ERT didn't have any interactive learning tools or materials to be used for the teaching & learning session. Furthermore, most of the school that offered ERT to their students only provides one or two teachers to teach the subject; which is insufficient to cater for the total number of students.

1.3   OBJECTIVES AND SCOPE OF STUDY

The objective of this project is to model, design and develop an interactive learning module for secondary school students for ERT. This is to attract the students to enjoy the learning process of ERT instead of the traditional way using the text book.

The purpose of developing this module amongst others includes:
- To create awareness about the importance of this subject,
- To make the learning process more fun and easy to adapt; and,
- To transfer knowledge efficiently using multimedia.

This project covers selected chapters from the current syllabus. The project will focuses in developing an interactive learning tool for the teachers and students to use during in-class teaching and learning session. It can also be used for revision by the students at home.

The module will be developed by using Adobe Flash Builder. The outcome of the development will be evaluated, tested and validated and benchmark against similar module that available in the market.

1.4   SIGNIFICANCE OF THE PROJECT

Considering this issue, there is a need to create new approach to educate and transfer the knowledge of ERT with students and teachers. Thus, to liaise with the rapid development of information technology, there should be a new approach to educate the students using interactive module. Although the module will only be embedded in CD-ROM, it is consider interactive by revising the location of the selected school. Besides that, ERT is usually been offered to vocational schools or schools in rural area which doesn't have stable internet connection. This module is done with the intention to educate the students about ERT, create awareness of the importance of learning this subject and enhance the current learning method that being used by the teachers and students.

Moreover, this module also will be beneficial not only to the students who enroll for ERT but also for others such as housewife and teenagers as most of the syllabuses are related to daily life.

1.5 THE RELEVANCY OF THE PROJECT

"Interactive Learning Module for Ekonomi Rumah Tangga (ERT) for Secondary School Students (iLMERT)" is suggested to be developed as a mean to educate students that by using multimedia, the subject will be more attractive and enjoyable to learn. It will also reduce the burden of teachers to handle big classes.

By integrating all the information that need to be conveyed to students which has been transfer by the teachers through a classical way before which is using textbook, the module should be interactive and can attract others to use it as a medium for education.

1.6 FEASIBILITY OF THE PROJECT WITHIN THE SCOPE AND TIME FRAME

The target market for this module is the Form Four and Form Five students and ERT teachers. Although it focused to a small market compared to other subjects, there is still a need in this subject. The competition from other types if interactive learning will be very minimal as currently there's no interactive learning module offered for ERT. The author needs to collect and gather data from the students and teachers. Then, the author need to come out with a design and integrates all information into the module to be developed.

According to the timeline, the Final Year Project 2 needs to be completed within 14 weeks of the semester starting from 26th September 2011. In the other hand, the timeline given is sufficient to finish this project because the research and data gathering phase had been done in Final Year Project 1 during semester January 2011 while the module development phase is focused in Final Year Project 2 during semester September 2011 end at January 2012.

Within the timeline given, it is feasible enough for developer to fully gather all the information and data collected in FYP/1 to be as the sources on how to design the module in FYP/2. Basically, development in FYP/1 is targeting on showing the main content and functions needed out of the module. Future works could be done since the time allocated for FYP/2 is too short to fully prepare a module that will include all data needed including aesthetic value of the module such as user interface (UI).

CHAPTER 2

LITERATURE REVIEW

LITERATURE REVIEW

2.1   INTRODUCTION

This literature review will produce an overview of the traditional way of
learning for ERT, the usage of multimedia in learning process and the
advantages of using multimedia. This review integrates few journals or books
that had been published from many trusted publisher. This literature review
aims to give overview about ERT and relate with the method used in the
learning process of this subject by the students and teachers.

2.1.1   TRADITIONAL WAY OF LEARNING
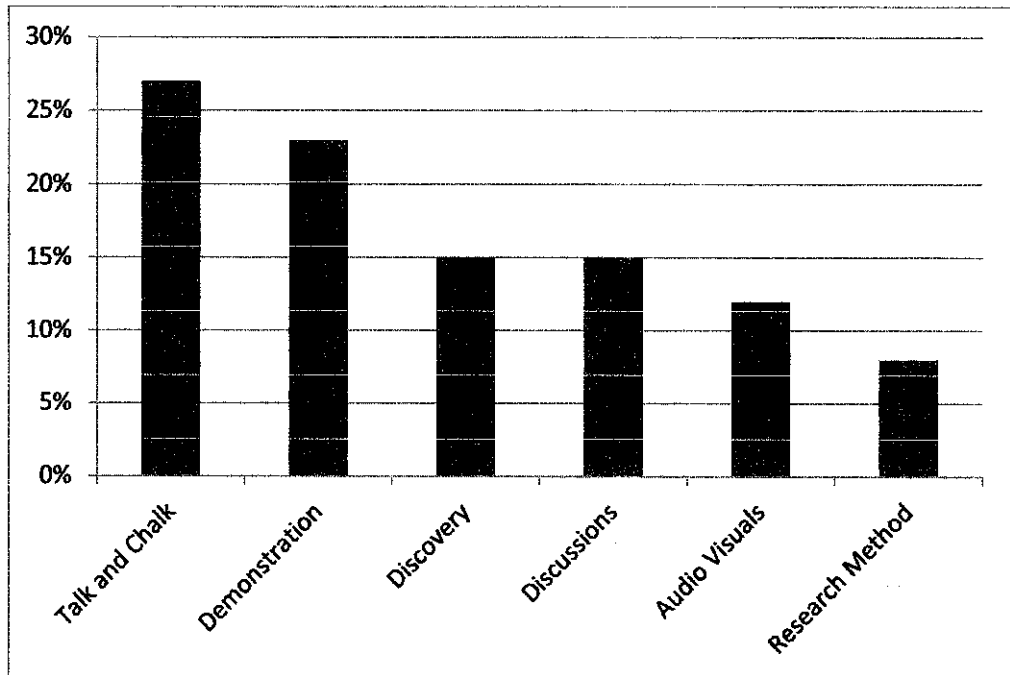
FIGURE 1: TEACHING METHODS USED BY TEACHERS

Based on the survey by Mahendrenath Motah (2007) for his research, 50% of the teachers prefer to use the traditional way of teaching. Out of the 50%, 27% still prefer the use of talk and chalk in delivering their lecture. This is because they still think that the traditional method is still applicable and need to maintain especially in the rural area. But recently, the usage of textbook in schools have becoming a topic among everyone; not only teachers and parents but also among the students. This is because the current world is changing towards interactive learning or e-learning.

Although the traditional way of teaching and learning using textbook, whiteboard and exercise book is easier and helpful; but the students have shown their lack of interest and demand for more interesting way of learning. Besides that, the revolution of information and communication technology (ICT) has produce generations which prefer to use various types of digital media as a way for learning and communicating between each other (Tapscot, 1998).

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During the implementation of the traditional way of teaching and learning, the teachers will use their limited resources to teach the students using 'chalk-and-talk' method or using additional resources such as overhead projector. This will sometimes creates a distance between the teachers, students and the content as the teacher will control the environment and give a bit of space for students to be involved. Thus, students will obediently listen to the teachers; although they don't really understand the syllabus. Most of the students are actually afraid to ask their teacher and expressing their opinion regarding the situation. This will make the students to feel bored and will ignore or loss focuses to learn the subject.

2.1.2   THE USAGE OF MULTIMEDIA IN LEARNING PROCESS

Most of the traditional way focuses on facts that will only be remembered by the students and hard to be understood clearly. The usage of computer and multimedia can be used to add color to the subject and deliver high quality of understanding among the students (Abtar Kaur, 1999). This has been supported by Vaughan (1998), that interactive learning will attract students to be focus in class and it is easier to be understood compared to the traditional way of learning.

Multimedia; defined by Wikipedia; is media and content that uses a combination of different content forms. For Richard Mayer, Professor of Psychology at the University of California, Santa Barbara, defined multimedia as the presentation of content that relies in both text and graphics. It can also be relates to the definition by Fenrich (2007) saying that multimedia is the exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics, and test resources to develop effective presentations on an affordable desktop computer. The definition has been refurnished by Neo,M., and K.Neo (2001), which defines multimedia as the combination of various digital media

types, such as text, images, sound, and video, into an integrated multisensory interactive application or presentation to convey a message or information to an audience.

In Terengganu, the government has begun to implement the usage of e-book as the substitute of textbook for students in Standard 4 until Standard 6. This is because the combination of using multimedia and delivering information will provide a fun and energetic environment for learning. Multimedia will help to supplement the presenter; teachers; to gain attention among the audience; the students (Lindstrom, 1994). Thus, the implementation should include secondary schools students.

"Multimedia is an excellent alternative for the traditional teaching and learning method. Thus, the students will have the opportunity to fully develop themselves by exploring and learn by themselves without the help of anyone else. "(Tway, 1995). With the help of multimedia, the teaching and learning process will become more fun and enjoyable by both teachers and students.

2.1.3   ADVANTAGES   AND   DISADVANTAGES   OF   USING MULTIMEDIA

The usage of computer in whatever industry and background might bring any advantages and disadvantages. One advantage of using multimedia in learning module is that the module or subject will look better. Although if the module contains limited number of images, it will still create a better look compared to the textbook. It will give relief from the screens of text and stimulates the eyes to capture the images. Although the module will contain texts, it will be different from the textbook as it will have more color and the students will be attracted to the design.

Although multimedia gives many advantages, it still has its disadvantages. It will be costly to completely change the traditional classroom to a multimedia friendly classroom. Besides that, the teachers and students will also need to have a little knowledge on how to use the multimedia.

CHAPTER 3

METHODOLOGY

METHODOLOGY

3.1   RESEARCH METHODOLOGY

The project will be using Throwaway Prototyping that is falls under the rapid application development (RAD) based methodology. Throwaway prototyping based methodology is similar to prototyping methodology with difference that it will be done at different phase of system development life cycle (SDLC).

Throwaway prototyping is basically intended to help users to visualize how the module looks after it being built. This type of methodology is also known as Dummy (mock-up) prototype as it will be a presentation before implementing the real finish module. The phases of this methodology are based on system development life cycles which consist of 4 phase which are planning, analysis, design and implementation. As for throwaway prototype, it will relies on few design prototypes during the analysis and design phases before continue with the implementation phase.
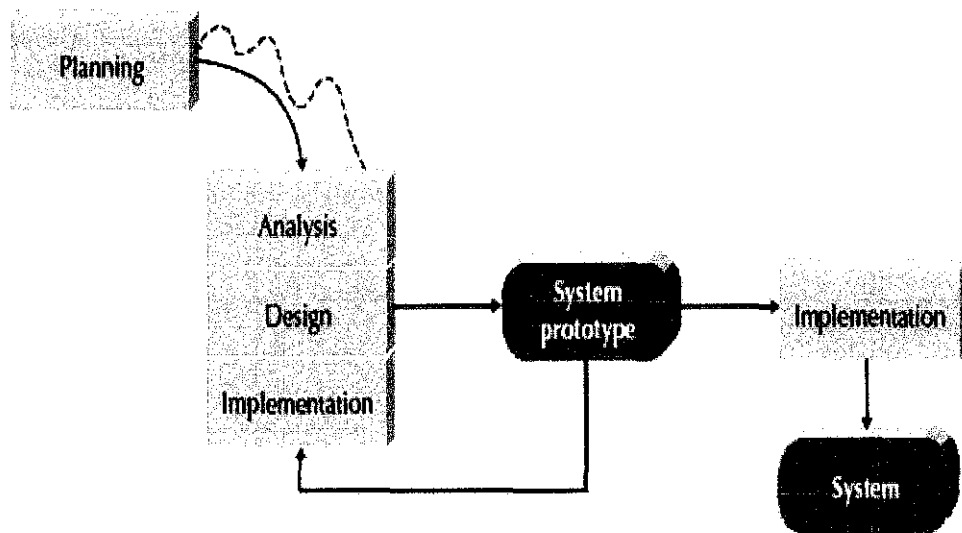
FIGURE 2: RAPID APPLICATION DEVELOPMENT METHODOLOGIES

The advantage of using this type of methodology is that it will deliver the complete system within a short time period. This is because it is easier to build dummy prototype rather than working prototype compared to other methods. The developed module will be evaluated and future enhancements will be done if needed. Besides that, it also useful for the developer and the end-user as it will get the feedback from end-user to avoid misinterpretations or unnecessary features before the module is fully developed. The speed of the development and the potential to identity missing features at early stage help to make this methodology a cost effective approach.

3.1.1   PLANNING

In the planning phase, a detailed background studies has been done to identify the major problem statement for this project. Data collections have been conducted in order to gain sufficient information that related to this project. Few trips to SMK St Bernadette's Convent, Batu Gajah have been done to have sessions with the teachers and students which are the users to explore the ideas and conducted a survey. Besides giving them a questionnaire, an informal interview also been done. The result of the trip was the agreement between the developer and the users that the end module will be tested out at the school. Besides that, a rough design on how the module will look like has also been produced to make sure that the users understand how the module will look like. For this project, it can be said that the planning phase has been done during FYP/1.

3.1.2   ANALYSIS

During the analysis phase, a survey has been conducted to get the feedback from the students. A survey form consist of few questions has been distributed to a class of Form 4 students (35 students) and the results been collected and analyze.

The first question is the likeliness of the current textbook. Out of 35 students, 20 of them answered that they don't really like the current textbook. After collecting the result, few students have been asked randomly and most of them answered that the current textbook is not interesting enough although the book contains pictures and colorful pages.
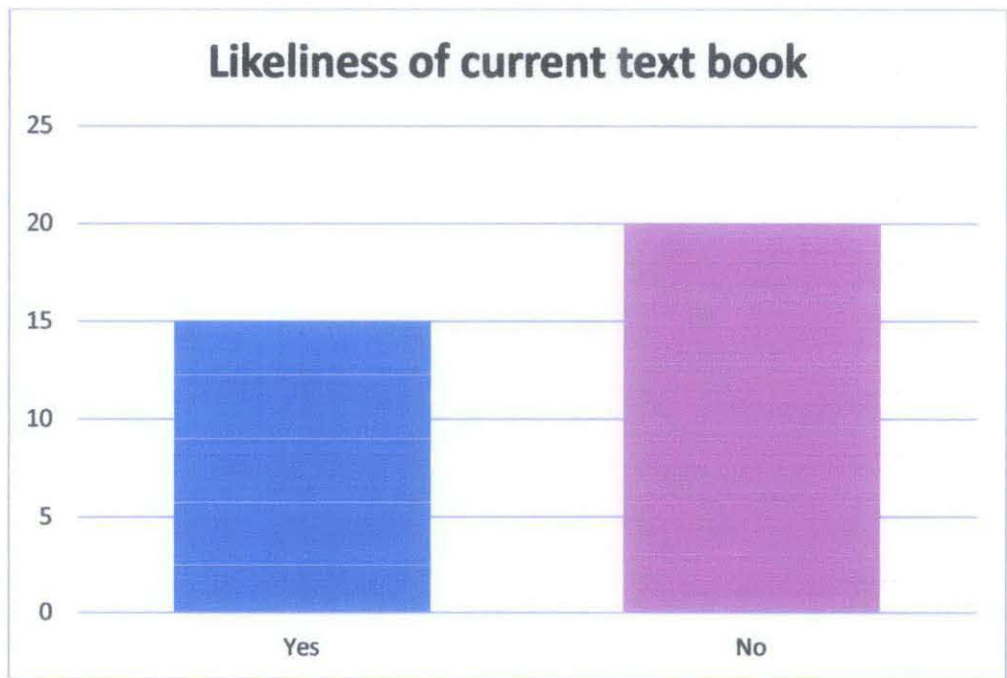
FIGURE 1: LIKENESS OF CURRENT TEXT BOOK

The second question is whether the students have additional learning materials beside the textbook and notes given by the teacher. 28 students answered no and they depend only on the textbook. 7 of them responded that they have additional material besides the textbook and notes given. The students own few books from Pelangi Publication and Cerdik Publication. Although they have additional materials but they said that the materials didn't really help them as it is not interactive enough.
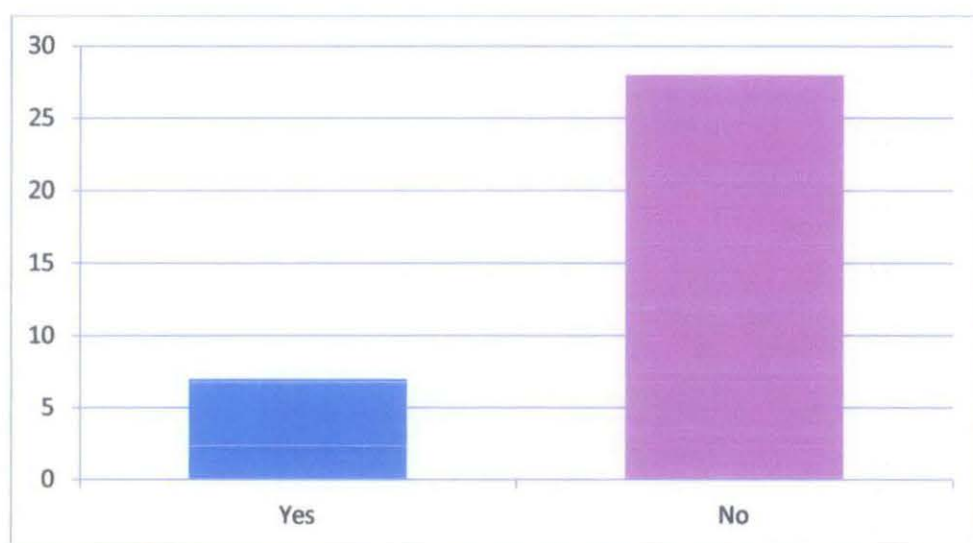
FIGURE 2: NUMBER OF STUDENTS HAS ADDITIONAL MATERIALS

The third question is whether they prefer to opt for interactive learning or not. Out of 35 students, 74% of them which is 26 students answered that they prefer to opt for interactive learning from the normal traditional method. This shows that the students are excited to use a new method in the learning process. Few students have been asked randomly and majority of them answered that the normal traditional method is quite boring and they welcomed any new method in the learning process.

Prefer for interactive learning

26%

74%

Yes
No
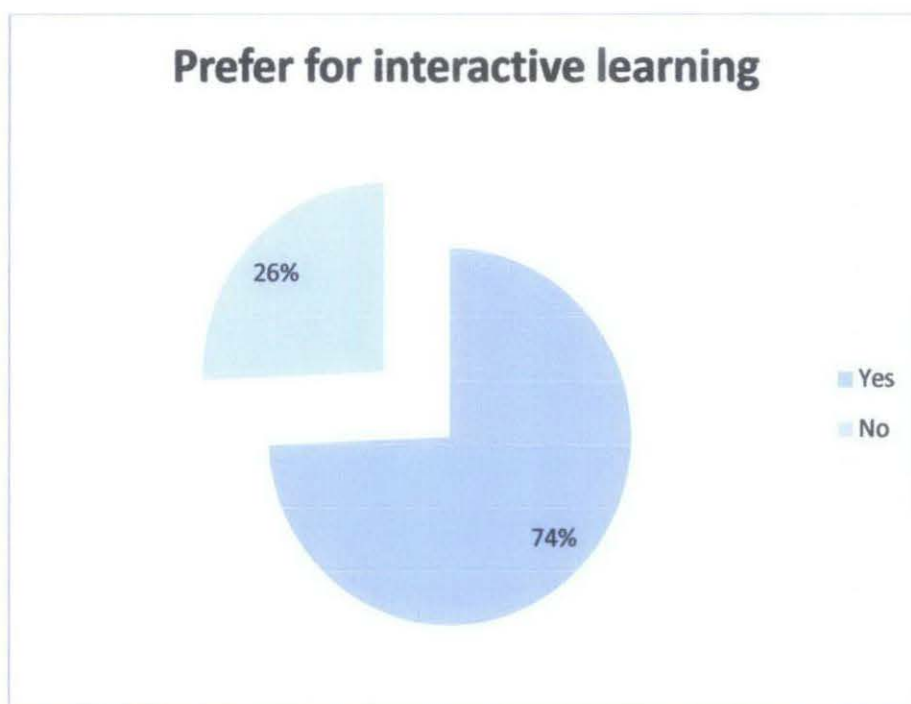
FIGURE 3: PERCENTAGE OF STUDENTS PREFER INTERACTIVE LEARNING

Although they excited to opt to interactive learning, but some of the topic might not be suitable to use the new method. It is because some of the topic need to be demonstrates by the teacher for better understanding but it still can be converted as interactive learning module for revision.

For the fourth question, the students were asked to pick the topics that they think suitable to be implemented into the interactive learning module. As expected and been told by the teacher, most of the students choose subtopics of the Food and Nutrition chapter. Each student was allowed to choose more than one subtopics. Most of the students picked subtopics from the Food & Nutrition chapter as the chapter is quite difficult.

Food & Nutrition

FIGURE 4: SUBTOPICS OF FOOD & NUTRITION

Out of 35 students, 22 of them choose subtopic 'Pencernaan dan Penyerapan' as the topic that they want to be converted into interactive learning. This is because this topic is about the digestion and students might have difficulties to imagine the process flow. Most of the students have learnt the similar topic in Science subject but not in depth. A flash video showing how the process flow will be very interesting and it can attract students to master the topic.

The second highest with 20 votes from the students, subtopic 'Prinsip Memasak' or Cooking Principles is the choice of the students to be one of the subtopic to be included in ilmERT. Because this involved both theory and practical, the students' feels bored when studying for this subtopic. The least pick is for 'Pemilihan Makanan' or Food Selection. This is because the subtopic involved practical practice.

For the Clothing chapter, 24% of the students which is equal to 19 students choose the subtopic of 'Membuat Pakaian' or sewing the cloth as one of their preferred topic to be included in ilmERT. By a random interview on how they want this subtopic to be converted into interactive learning, they told that they want it to be like a tutorial. They prefer a step by step video showing the entire basic step on how to sew the cloth.

Figure 5: SUBTOPICS OF CLOTHING

Besides that, the students also voted for 'Pemilihan Pakaian' or Cloth Selection to be included in ilmERT. This chapter is basically on how to choose suitable cloth according to your body figure and occasion. To make it more interesting for this subtopic, a fashion show video will be included.

For the Family and Household chapter, the students are interested for subtopic 'Pengurusan Keluarga' or Family Management. 19 of them pick up the subtopic while only 9 choose subtopic 'Tempat Kediaman & Teknologi' or Household and Technology.
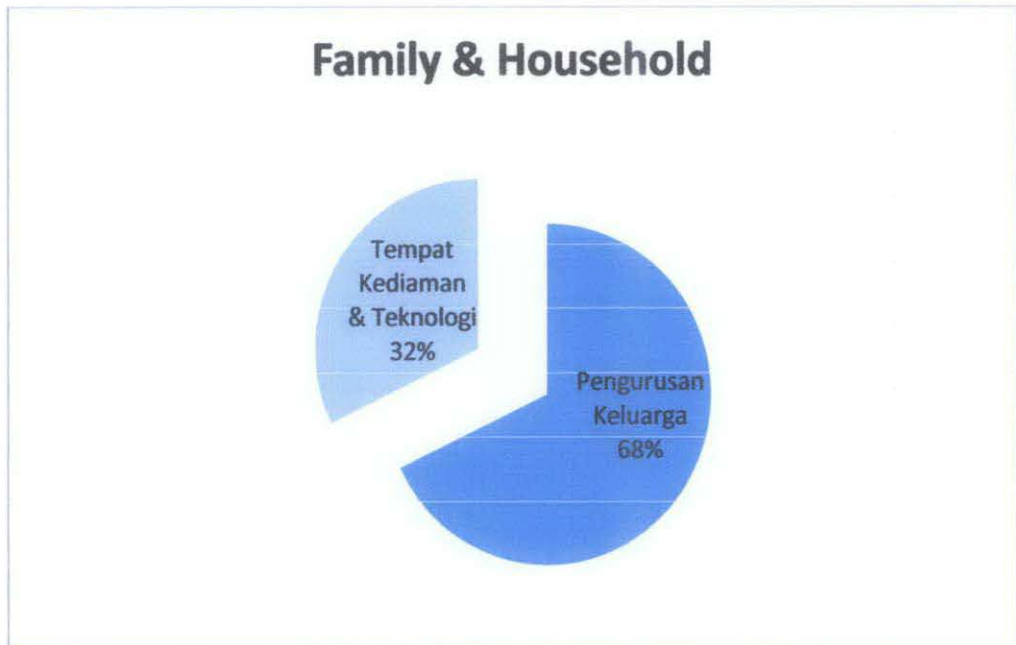
FIGURE 6: SUBTOPICS OF FAMILY & HOUSEHOLD

As a conclusion, ilmERT will be focusing on Food and Nutrition chapter as the chapter is popular among the students and have the highest votes to be included in ilmERT. Five subtopic which are 'Makanan & Pemakanan', 'Prinsip Memasak', 'Diet', 'Pencernaan & Penyerapan' and 'Pengurusan Sajian' will be included in ilmERT. For the future enhancement, other subtopics from other chapter will be included.

3.1.3 DESIGN

The design phase is the main focused in this Final Year Project 2 (FYP/2) where author will basically focus on designing the module. In design phase, few prototypes has been developed and tested in selected school. A detail prototype has been developed after all feedback has been collected. This courseware will be using Bahasa Melayu as this subject was taught in Bahasa Melayu.

3.1.4 IMPLEMENTATION

The implementation phase amongst others focuses on the development of the module. It starts with designing the main page of the module and later on to design the other sub-pages for the module. After designing all pages, the next step will be writing codes for each function.

The finish module will be implemented in selected schools to be used during teaching and learning process. The result of the usage will be recorded for future enhancement. If the respond from the teachers and students are overwhelming, the module will be given to other schools and a detailed proposal will be given to Jabatan Pendidikan Negeri (JPN) to distribute the module to all related schools around Perak.

3.2   PROJECT ACTIVITIES

The activities that had been done for this project includes meetings with prospective user to get their comment and ideas about this module. They also involved in designing the module especially on the interface and the content.

Since FYP/1, author had dealt with Ms. Norizan Hamid, ERT teacher at SMK ST Bernadette's Convent to get her feedback and suggestions regarding this module. She was very optimist about the module and very helpful along the way in completing this module by helping in providing some references that can help in term of preparing what are the functions needed.

Author had also dealt with Ms. Zakiyah Salleh, an ERT teacher at SMK Raja Permaisuri Bainun to get more suggestions on this module. The reasons why both teachers are from different schools are because SMK St Bernadette's Convent is a normal secondary school and located in rural area. While for SMK Raja Permaisuri Bainun, it is a boarding school and located in town.

3.3   KEY MILESTONES

There are few important dates that were taken into high attention. The important dates are amongst other:

- Submission of Progress Report – Week 7 (November 8, 2011)
- Pre- Engineering Design Exhibition (EDX) – Week 10 (November 30, 2011)
- Dissertation – Week 11 (December 7, 2011)
- Viva Presentation – Week 13 (December 21, 2011)
- Final Dissertation and Technical Report Submission – Week 14 (December 28, 2011)

The project submission and project milestone is based according to FYP/2 Timeline provided by the course coordinator. Provided below is the Gantt chart for the project

3.4 GANTT CHART

No	Activities	Sep	October				November				Disember				
		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
1	Presentation and Interview with selected parties	███	███	███	███	███	███								
2	Progress Report							███							
3	Programming and Prototyping					▓▓▓	▓▓▓	▓▓▓	▓▓▓	▓▓▓					
4	Pre-EDX										███				
5	Dissertation											███			
6	Viva Presentation												███		
7	Final Dissertation													███	
8	Submit Technical Report														███

███ Done	▓▓▓ Progressing	███ To be done
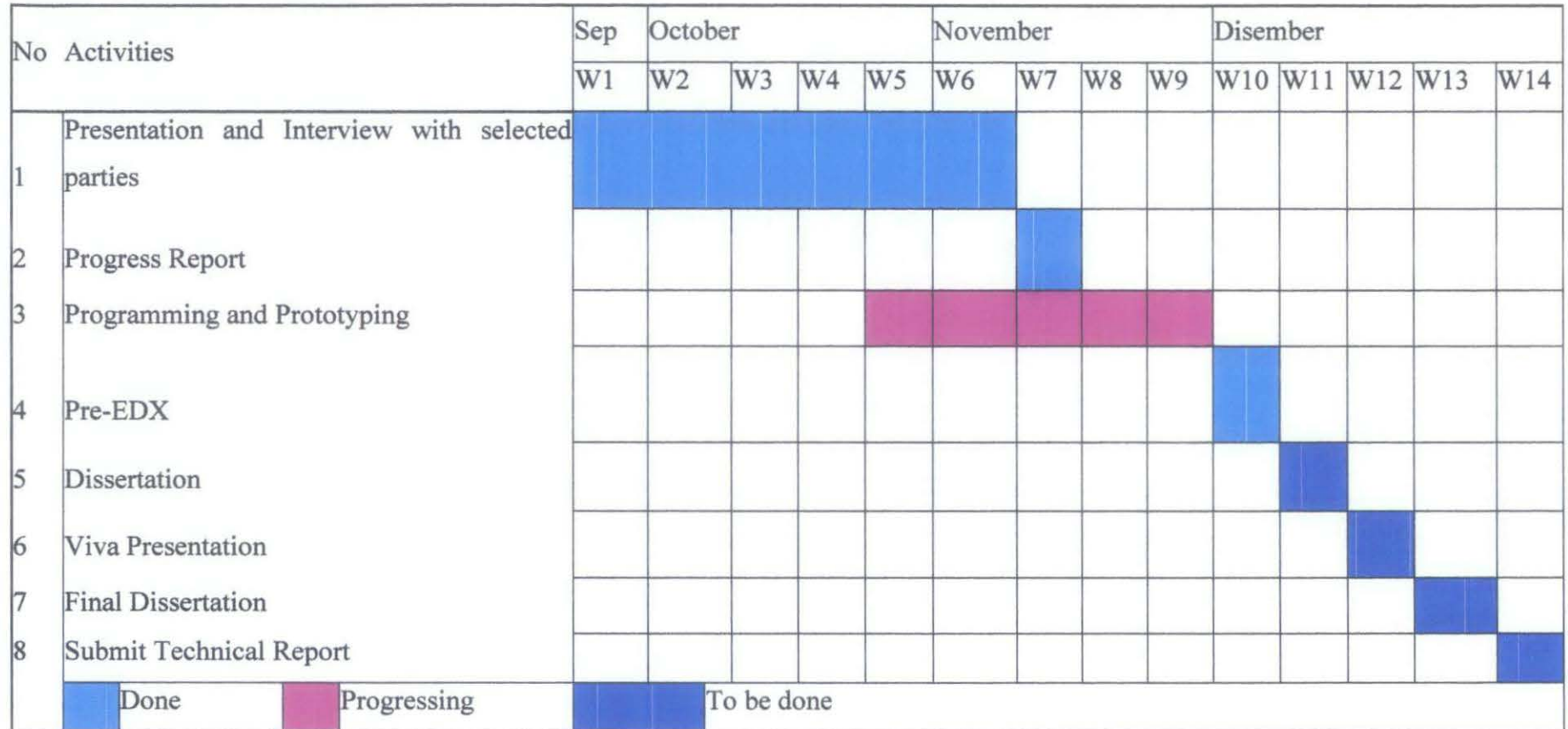
3.5   TOOLS REQUIRED

Hardware:

- Computer

- Printer

- Scanner

Software:

- Adobe Flash Builder

- Windows Movie Maker

- Adobe Photoshop

CHAPTER 4

RESULTS AND DISCUSSION

RESULTS AND DISCUSSION

4.1   USER NEEDS ASSESSMENT AND ANALYSIS

The user needs assessment process was carried out through interviews with the parties which involve directly with the usage of the module. Author has been interviewed two ERT teachers and few students. They are;

- Ms. Norizan Hamid (ERT Teacher, SMK St Bernadette's Convent)
- Ms. Zakiyah Salleh (ERT Teacher, SMK Raja Permaisuri Bainun)
- Miss Norain Abdul Halim (Student, SMK St Bernadette's Convent)
- Miss Nur Sakinah Abdul Latiff (Student, SMK St Bernadette's Convent)
- Miss Siti Aminah Mazlan (Student, SMK Raja Permaisuri Bainun)

The reason why these people were interviewed was because they will be the user of this module. Their opinions related to the module are being used in order to enhance the module.

The first person that the author interviewed was Ms. Norizan Hamid. She has worked as ERT teacher for the past 25 years. Her knowledge and experiences gives a lot of input in order to develop a module that can be accepted by the students. She has been dealing with various kind of students and said that the

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students in rural area are the ones that need to be focus at. This is because, they usually love the subject especially when it comes to cooking but for other chapter, they sometimes ignore it. She said that she always have hard time to explain the concepts to the students as the additional materials are limited.

For Ms. Zakiyah, the situation is similar with Ms. Norizan. But she's dealing with boarding school students that are easy to handle and always excited to learn new chapter. Although the students are well capable to conduct study groups, she still has hard time to explain some chapters to the students without additional materials.

As for the students, Ain, Sakinah and Aminah, they said that they are excited to start using the module as it will be more attractive and able to capture their attention during revision.

4.2   EXPERIMENTATION AND MODELLING

After developing the module, tests were carried out. The reason why the module needed to be tested is to gather as much data as possible regarding few important elements.

Interfaces:

The elements of interfaces cover User Interfaces (UI) aspects of the application such as the attractiveness of the module interfaces.

Functionality:

This aspect test on all of the functionalities provided in the module especially the buttons that are available in the module.

Choices of color:

This is one of the aspect under User Interfaces (UI) element which it test whether the choices of color for this module meets the user satisfactory level. This is the most important aspect as it will attract the user and maintain their attention.

Icon used:

This element gathers the date from user whether the icon used (e.g. button, pictures etc.) meet the satisfaction of user.

4.3   PROTOTYPE

4.3.1   INTERFACES

Students will be given 3 options to choose on the first screen. It is Tingkatan 4(Form 4), Tingkatan 5 (Form 5) or Ujian (Test). Tingkatan 4 and Tingkatan 5 will cover all chapters of Form 4 and Form 5 syllabus notes respectively including quiz for every chapter. An overall test for all chapters will be included in the Ujian section.

Pembelajaran Interaktif Ekonomi Rumah Tangga

| Tingkatan 4 | Sukatan Pelajaran Untuk Tingkatan 4 |

| Tingkatan 5 | Sukatan Pelajaran Untuk Tingkatan 5 |

| Ujian | Ujian meliputi sukatan pelajaran Tingkatan 4 & 5 |
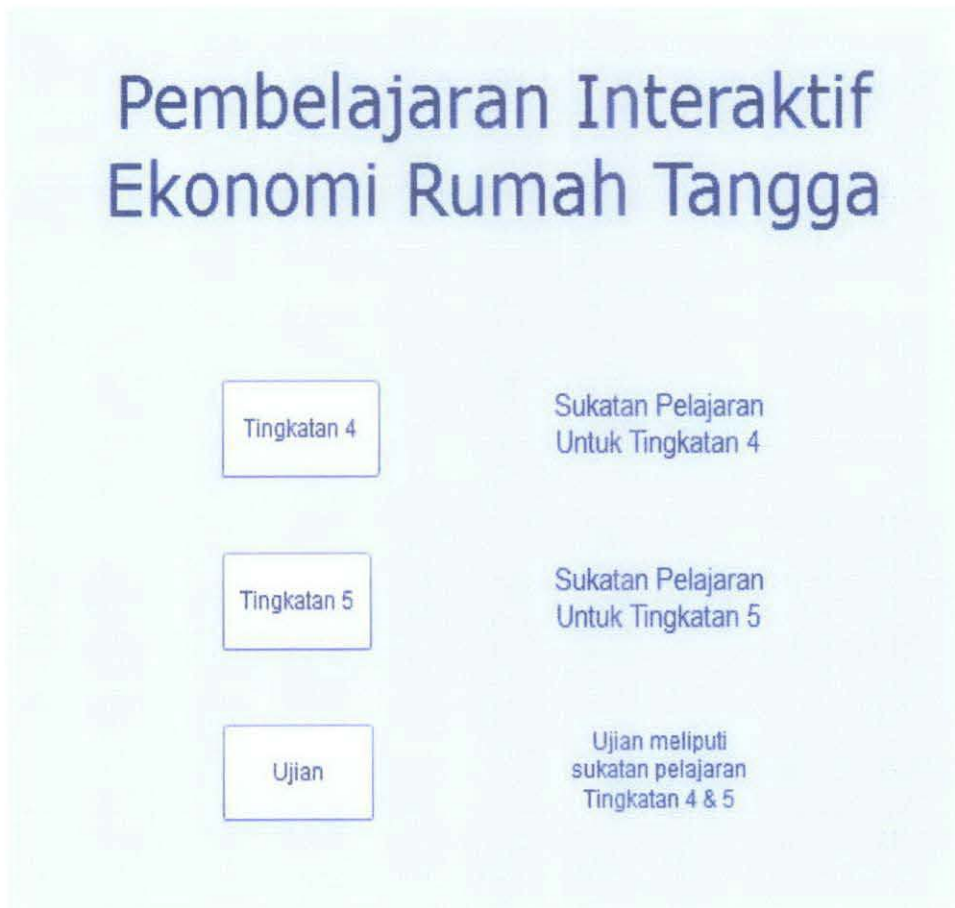
FIGURE 7: MAIN PAGE OF THE MODULE

Assume the student choose Tingkatan 4. She will be directed to Tingkatan 4 screen which will lead to a selection page of all chapters.

FIGURE 8: FORM 4 MAIN SCREEN

It will then proceed to the chapter selection menu. This is where the user will need to choose which chapter / topic that they wanted to precede.

FIGURE 9: CHOICE OF CHAPTER

For example, if user Makanan dan Pemakanan, it will lead to the notes for Makanan dan Pemakanan.
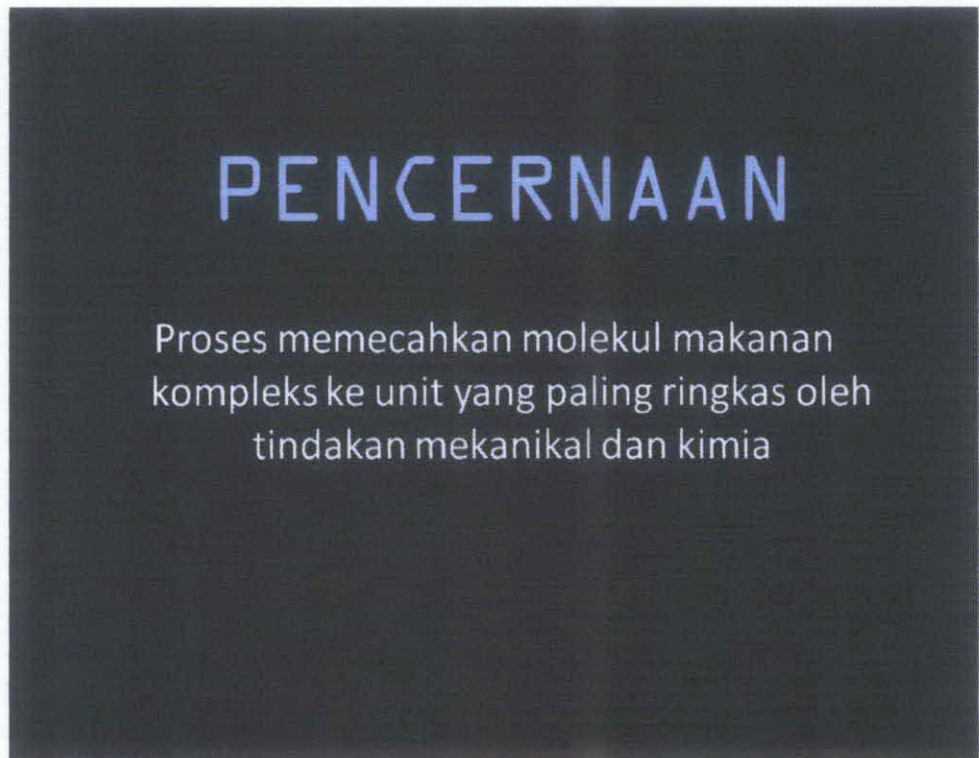
FIGURE 10: MAKANAN DAN PEMAKANAN NOTES

FIGURE 11: MAKANAN DAN PEMAKANAN NOTES

Hasil akhir pencernaan

- Protein → Asid Amino
- Karbohidrat → •Glukosa •Galaktosa •Fruktosa
- Lemak → Asid lemak + gliserol
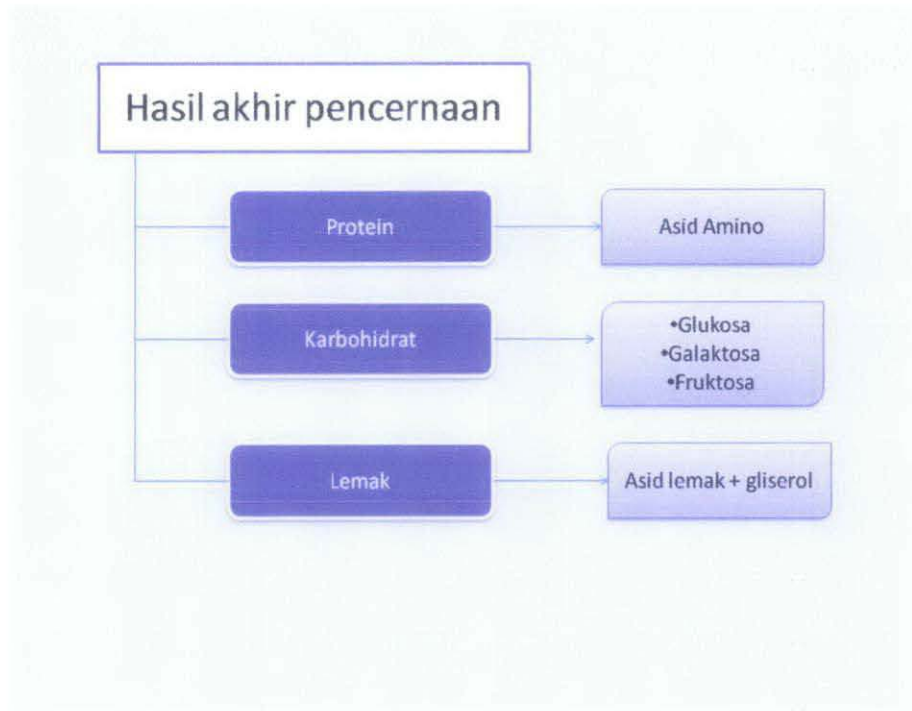
By selecting Ujian, it will lead the user to the test questions. It will require user to select which level they want to choose.

UJIAN

Tingkatan 4   Tingkatan 5   Peperiksaan

Menu Utama

FIGURE 12: QUESTIONS SCREEN

MAKANAN & PEMAKANAN

Peranan Makanan	Diet	Pencernaan & Penyerapan
Faktor-faktor Diet	Perancangan Menu	Pemilihan Menu

Menu Tajuk   Menu Utama

FIGURE 13: SUBTOPIC FOR CHAPTER

Makanan & Pemakanan

1.   Kumpulan – kumpulan berikut perlu banyak mengambil protein

- ○ Bayi (1-13 tahun)
- ○ Remaja lelaki (16 – 19 tahun)
- ○ Ibu mengandung
- ○ Ibu menyusukan anak

2.   Kumpulan yang perlu mengambil ferum yang lebih ialah

- ○ Kanak-kanak
- ○ Ibu Mengandung
- ○ Remaja Perempuan
- ○ Remaja Lelaki

Seterusnya   Menu Ujian

FIGURE 14: EXAMPLE OF THE QUESTIONS

4.4   PROJECT DELIVERABLES

The deliverables of this project includes the submission of few reports from the beginning of the project in Final Year Project 1 (FYP/1) that were submitted in January Semester 2011 and the other remaining reports submitted in Final year Project 2 (FYP/2) in September Semester 2011. The reports among others include:

- FYP/1 Extended Proposal (submitted in January Semester)
- FYP/1 Proposal Defense (presented to Supervisor and External Examiner in January Semester)
- FYP/1 Interim Report (submitted to Supervisor and External Examiner)
- FYP/2 Progress Report (submitted to Supervisor)
- FYP/2 Pre-EDX (presented with prototype and posters to External Examiners)
- FYP/2 Dissertation (to be submitted to External Examiner and Supervisor)
- FYP/2 Viva (to be presented to Supervisor and External Examiner)

This project delivered all of the required deliverables including the posters and the prototype for the project.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

CONCLUSION AND RECOMMENDATION

As a conclusion, this system could be considered as 70% completed because it has successfully produced the prototype as per being planned and according to the schedule of the project timeline.

This project has developed an interactive learning module (iLMERT) that will be used as a learning tool for ERT subject for Form 4 and Form 5 students. The module has been developed by using Adobe Flash Builer as it will be a flash-based module which will be installed in a CD-ROM. The CD-ROM will be distribute to the students by attach it to the textbook. By fully using iLMERT, the learning process will be much more fun and easy to adapt. It can also help to transfer the knowledge efficiently by using multimedia in the learning process.

This learning module will only be developed for few chapters due to the time constraint. iLMERT will be tested in selected schools to get their feedback. In future development, iLMERT will consist of all ERT chapters' for both Form 4 and Form 5 and will be distributed in all schools. Extra features will also be added in the future development to make it more attractive.

5.1 RELEVANCY OF THE OBJECTIVES

This project is relevance to its objectives since all the functionalities designed in the design phase which has been designed specifically according to the objectives has been able to be developed.

In future, with all new added functionalities and major improvisation, it is highly suggested that this module being used in the learning process of ERT. There are strong potential that this module will be developed to make it a better version and can be marketable to everyone. Besides that, the module might be converted into a mobile version in line with the mobile development.

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APPENDICES

6.1 SURVEY QUESTIONS

Kindly answer all the questions below.

1) Do you like the current textbook of ERT?

   ☐ Yes   ☐ No

2) Do you have additional materials beside textbook (Example: Exercise book & Reference books).

   ☐ Yes   ☐ No

If yes, how many books do you have and are you satisfied with it?
....

3) Do you prefer an interactive learning material?

   ☐ Yes   ☐ No

If yes, please state what type of interactive material do you prefer? (Example: Flash card, power point, video, etc.)

....

4) Which chapter that you prefer to be converted into interactive module? (You may choose more than one)

No	Topic	Sub-topic	
1	Makanan & Pemakanan	Makanan dan Pemakanan	
		Diet	
		Pencernaan dan Penyerapan	
		Pemilihan Makanan	
		Prinsip Memasak	
		Pengurusan Sajian	
		Sanitasi Makanan	
2	Pakaian	Kajian fabric	
		Peralatan Jahitan	
		Pemilihan Pakaian	
		Membuat Pakaian	
		Wardrobe	
		Label Jagaan Tekstil Antarabangsa	
3	Keluarga dan Tempat Kediaman	Pengurusan Keluarga	
		Tempat Kediaman dan Teknologi	

6.2 SURVEY RESULTS

<u>Survey Results (1 Class = 35 students)</u>

1) Do you like the current textbook of ERT?

YES	NO
15	20

2) Do you have additional materials beside textbook (Example: Exercise book & Reference books).

YES	NO
7	28

3) Do you prefer an interactive learning material?

YES	NO
26	9

4) Which chapter that you prefer to be converted into interactive module? (You may choose more than one)

No	Topic	Sub-topic	
1	Makanan & Pemakanan	Makanan dan Pemakanan	14
		Diet	18
		Pencernaan dan Penyerapan	22
		Pemilihan Makanan	10
		Prinsip Memasak	20
		Pengurusan Sajian	14
		Sanitasi Makanan	11
2	Pakaian	Kajian fabric	10
		Peralatan Jahitan	8
		Pemilihan Pakaian	16
		Membuat Pakaian	19
		Wardrobe	15
		Label Jagaan Tekstil Antarabangsa	10
3	Keluarga dan Tempat Kediaman	Pengurusan Keluarga	19
		Tempat Kediaman dan Teknologi	9