CERTIFICATION OF APPROVAL

E-Dictionary builds for Primary School Student

By

Siti Zaharah Bt. Md Akhir

Dissertation submitted to the Information Technology Programme University Technology PETRONAS in partial fulfillment of the requirement for the **BACHELOR OF TECHNOLOGY (Hons)** (BUSINESS INFORMATION SYSTEM)

Approved by

(Miss Noreen Izza Arshad)

Norean Izza Arshad

Lecturer

Information Technology/Information System Universiti Teknologi Petronas

31750 Tronoh

Perak Darul Ridzuan, MALAYSIA

UNIVERSITY TECHNOLOGY PETRONAS TRONOH, PERAK September 2006

CERTIFICATION OF ORIGINALITY

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

SITI ZAHARAH BT. MD AKHIR

ABSTRACT

Nowadays, we can see that there are many translation systems for many languages available in the website. The aim of this translation system is to recognize and translate volume of text in Malay to English languages and vice versa. It is very useful especially for the student who wants to learn English language in a faster way. The translation system focused on translation from Malay to English language and reverse translation system. The translation system in Malay-English is very useful for the primary students who want to learn and practice conversing in a different language (English). For example, this system can help native Malay speaker to learn English, by engaging them with assistant of E-Dictionary. Beside that, by using the system, it helps them to capture and translate the word. The database will keep the entire data dictionary using SQL statement in the database server. The author is use SQL Server 2000 as the database. Basically the system tested on how well the system retrieves the translated words. The most important part in developing the system is collecting data and developing the translator. The methodology that used to complete this software is RAD (Rapid Application Development) Prototyping. Testing was done at Sek. Ren. Keb Sri Iskandar, Tronoh Perak with 30 students of standard 4 Melur. Thus, with the help of existing software and system that is developed, E-Dictionary hopefully will help the students to translate volume of text in Malay to English and enjoy learning English in an interactive way.

ACKNOWLEDGEMENT

Most grateful to Allah that I finally able to complete my final year project.

I would like to express my gratitude and thanks to my supervisor, Miss Noreen Izza Arshad for this continuous guidance and support in assisting me during the project development. I would also like to thank my parent, Mr. Md Akhir Ahamd and Mrs.Kamilah Dollah for their morale support during my good and bad times during in completing this project.

Many thanks also to UTP Information Technology and Information System FYP Committees for putting an effort in succeeding the completion of the project.

Last but not least, thank you to all my friend for their support and understanding during the development period. Without support, guidance and help from all the person mentioned above, this project would not be produced like what it is today.

TABLE OF CONTENTS

Certification of A	Approval	i
Certification of C	Originality	ii
Abstract	•••••	iii
Acknowledgeme	nt	iv
Table of Content	S	v
List of Figures		vii
List of Appendic	es	vii
CHAPTER 1:	INTRODUCTION	
	1.1 Background of study	1
	1.2 Problem Statement	2
	■ 1.2.1 Problem Identification	2
	1.2.2 Significant of the project	3
	1.3 Objective and scope of study	4
	1.3.1 The Relevancy of the project	4
	 1.3.2 Feasibility of the project within the scope and 	
	Time frame	5
CHAPTER 2:	LITERATURE REVIEW AND/OR REVIEW	
	Supporting information	6

CHAPTER 3:	METHODOLOGY/ PROJECT WORK	
	3.1 Procedure Identification	9
	3.2 Tool (Equipment, Hardware) Required	12
	■ 3.3 System Architecture	13
CHAPTER 4:	RESULT & DISCUSSION	
	• 4.1 Current System	16
	• 4.2 Result of Testing	17
	• 4.3 Evaluation Procedures	21
	• 4.4 System Interface	22
	• 4.4.1 Main Menu	22
	• 4.4.2 Malay to English Word Translation	23
	• 4.4.3 English to Malay Word Translation	24
	4.4.4 Malay Word Antonym	25
	• 4.4.5 English Word Antonym	26
	4.4.6 Malay Word Synonym	27
	• 4.4.7 English Word Synonym	28
	• 4.5 Findings	29
	■ 4.6 Limitation	29
CHAPTER 5:	CONCLUSION AND RECOMMENDATION	
	• 5.1 Conclusion	30
	■ 5.2 Recommendation	30
	REFERENCE	32
	APPENDICES	33

LIST OF FIGURES

Figure 3.1: Rapid Application Development (RAD) Prototyping

Figure 3.3: System Architecture

Figure 4.2.1: Testing Conduct without any instruction given

Figure 4.2.2: Testing Conduct with instruction given

Figure 4.2.3: Preference

Figure 4.2.4: System accuracy of E-Dictionary

Figure 4.2.5: System Performance of E-Dictionary

Figure 4.4.1: Main Menu

Figure 4.4.2: Malay to English Word Translation

Figure 4.4.3: English to Malay Word Translation

Figure 4.4.4: Malay Word Antonym

Figure 4.4.5: English Word Antonym

Figure 4.4.6: Malay Word Synonym

Figure 4.4.7: English Word Synonym

LIST OF APPENDICES

Appendix I: Questionnaire

Appendix II: Example of Database

CHAPTER 1 INTRODUCTION

1. 1 BACKGROUND OF STUDY

Language translation system is to translate language between the people with different native language who want to engage in conversation by using their mother-tongue. The importances of the technology keep increasing because they are more opportunity for cross language communication.

From my research, there are many translation systems that are available in the market in other language. The people can use it in any time and provide a lot of advantage for them because most of the translation system is translate in English.

As we know, nowadays English is one of the important languages in the world. By learning and using this system, it can provide and give opportunity for the user to communicate well with other people all over the world.

Beside that, the advantage of Malay - English Translation System it can help user to translate the language especially for primary student. By using the system, they can improve communication skill in English.

1.2 PROBLEM STATEMENT

1.2.1 Problem Identification

Time consuming

Student required more time to open from one page to another page in order to find or search on the meaning in the dictionary where it is time consuming. Whereby, by using the system, student can just enter the keyword and the system will search and provide the result for them where it is more effective and easy for student to search.

Incorrect grammar and spelling

There are student sometimes spell the word incorrectly especially while completing their homework or task given by the teachers. When it happened, they might get a wrong answer for that question. Beside that, this cause might lead the student to maintain the spelling if there are is anyone to correct the spelling. By using the system, maybe it might reduce the problem caused by the student.

Teacher has no time

Teacher cannot entertain many students at one time. So the students have their own responsibility to check on the meaning or find an alternative solution to get for the answer. This system is one of the alternative solutions to solve the problem in faster and easy way.

Lazy to bring the dictionary

Beside that, there are students who are lazy to bring the dictionary to the school. The dictionary might be too heavy for them to carry. If this is happened, it is hard for them to refer at especially when they got problem to find the meaning on certain word.

1.2.2 Significant of the project

Overall, the significance of this project is to help the student especially primary school student gain the most value in their learning. It means that the concept of learning, consisting understanding and application, will fulfilled in the E-Dictionary. Therefore, among significance of this project is to aid student's learning process using the E-Dictionary's application. Furthermore, E-Dictionary improves their performance of time, where the system is quick response to the user input

To make searching and retrieving faster

The system reduced the amount of time in order to provide an output to the user. Beside that, it gives an advantage for the user to search or find the word in fast way. No need to use the dictionary.

To ensure accuracy of the system

In addition, the system translates the meaning from the input sentence which saves the effort and time for the error checking. So, it will assure the accuracy in term of correct grammar and spelling error of the word.

To promote paperless environment

The system has ability to document, save and capture the data in the database which is automatically eliminating the paper-based concept.

Automatically generate the output

The most significant, the system has an ability to generate output for the user which fit the user-specified criteria.

More attractive and user friendly

The system is more attractive than the dictionary because it is colorful where it can attract many students to use the system. It is also user friendly.

Recognize and Analyze

Beside that, the system is used to recognize and analyze the word in the input sentences and translate the Malay word into English.

1.3 OBJECTIVE AND SCOPE OF STUDY

1.3.1 The Objective of this project

Perform Translation between Malay and English Language

It performs translation from Malay into English where the system needs to understand the meaning of the text and perform the translation.

Improve Performance

The future of work is to improve the performance of the search engine and find more effective way to select the best result to the user. By using the system, it provides an easy way for the user to translate the word and convert it in English.

To help student learn English

Beside that, the system is one alternative where it will help the user especially primary student to learn English in a more interactive way.

1.3.2 Feasibility of the project within the scope and Time frame

This study was initiated with the aim to develop the system which is to translate Malay word into English language and vice versa. The advantage is the system provides an effective and efficient way for the user to select the best result. The most significant, the system has an ability to translate the word automatically from the database.

These enhancements were clearly stated in the objective and it help to achieve the scope of the project which is stated clearly before. The enhancement is what making the software unique than others.

Due to the study that has been done, to come out with the successful system with the new enhancement as listed, it is possible effort to be put and can manage within 14 weeks time. This is due to the scope of study that had been clearly stated.

CHAPTER 2 LITERATURE REVIEW

Literature review is used to recognize relevant information in order to complete the study of the project. We can get a lot of data through the internet and search it in the library. Beside that, it is used to synthesize result into a summary. This also include a controversy where we can create an questionnaire for further research based on the journal and article that have been studied.

2.1 From Similar System

"Machine translation automatically translates text in one language (for example, English) into another language (for example, French or Japanese). The technology has been available for decades, but because of the inability of computers to understand the context and meaning of human language, the quality of translations created by a machine translation system is significantly lower than translations created by professional human translators. However, there are many situations in which the "imperfect but fast" approach of machine translation can bring worthwhile benefits....." (J.Fenn, 2002).

By referencing from the above statement, it show the main goal of developing the system is provide an ability for the user to translate from one language to another language in faster way. Beside that, as mention above, translation system created by the machine translation have low quality if compared by the translation created by human translator. Because of the problem, I also have to focus on the quality of the translation in term of grammar and spelling of the output. There are many reason of developing the system and some of the reason is mention below:

- To improve the performance of the system
- To reduce the time consuming for the user to find and search the word or phrase
- To make sure the accuracy of the output system
- To help non-English speaker if they do not know the relevant terminology

"Non-English speakers may use the system to create a document in English, if they do not know the relevant terminology. Users become familiar with how to tailor their original text to help the system work better" (J.Fenn, 2002). Due to that, this is one of the objectives of developing the system which is by using machine translation system help the non-English speaker to translate from one language to another language. This is supported as mention below.

"....because translation of words and some transformation on syntactic structures are merely needed. However, it is not seemed to be quite effective when performing translation among non-related languages, for example, Japanese and English, because of the need for large structural transformation." (Uchida and Sugiyama, 2001). But in some cases, due to some language for the example English-Japan it is become quite complicated. In order to make successful translation system really need good skill in grammar and need huge database. It is one of the problems when developing this translation system. The database needs to be maintain in order to produce the correct grammar and spelling to the user.

Based on the second significance, which is the project is to ensure accuracy of system. If the system provides wrong and incorrect output so the accuracy of the system is off. "Accuracy of machine translation is an important issue" (Hutchins and Somers, 1992). As mention above, the accuracy of the system is one of the important issues for machine translation system. So, in developing the system, developer should maintain the database to avoid the spelling error and maintain the correct grammar.

"Manipulating data in a task involves complex abilities on how information is detected, represented and transformed as knowledge and how knowledge is used. It is necessary for this study to consider the outcome of the mathematics performance test and thinking to measure the accuracy of machine translation and other abilities" (Solso,1995). It is quite complex in maintaining the system output because system developer need to do more research and study on how the input sentences translated by the system itself. It cannot be done alone because to complete it, need big afford from the system developer. Beside develop the system, as mention before; they also have to make sure that the system provides the correct output for the user. The system will provide silly output if the grammar is off.

Usually people especially student will depend on the Dictionary to find or search on certain word. This is because from child they have been taught that they need to refer to the Dictionary as their reference. "A human can understand and accept the meaning of word in dictionary by predication because most cognitive scientists agree that precision is the most difficult and impossible task" (Kintsch, 2001). The dictionary provided meaning of word and example of sentences which explained more detail on the word itself where easy for student to understand the meaning. This study takes the idea to form a scale rating for the subjects to scale their understanding based on the output from the Machine Translation.

CHAPTER 3 METHODOLOGY

3.1 PROCEDURE IDENTIFICATION

In order to develop the system, RAD (Rapid Application Development) Prototyping is used (Figure 3.1). RAD-based methodologies are the newer class of system development methodology that emerged in the 1990s. RAD is attempt to address both weaknesses of structured design methodology by adjusting the SDLC phase to get some part of develop quickly.

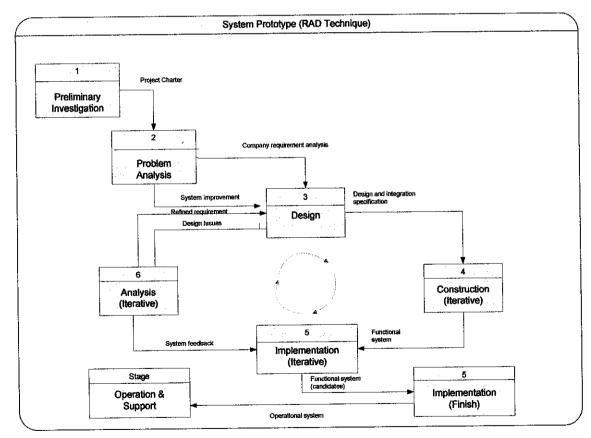


Figure 3.1 Rapid Application Development (RAD) Prototyping

Part 1: Planning Phase

- i. Define the topic for FYP
 - Prepare the project proposal and submit to the supervisor
 - Get the approval for FYP Title by the supervisor

ii. Search for the information

- Gather more information through the Internet for the related topic.
- Search the related article and journal that have been define by the supervisor and try to do a research based on the article and the journal.

iii. Preliminary Report

- Start to do preliminary report which includes Background of study, Problem Statement, Objective and Scope of study, Literature Review and Methodology of the project in it.
- Identify the existing system and try to get an idea for developing the new system.
- Prepare the project proposal.
- iv. Submit the Preliminary Report to the supervisor

Part 2: Analysis Phase

- i. First, identify and recognize the problem.
 - I have to understand the required function, behavior, performance and interfacing of the existing system in order to identify the problem
 - Then, try to come out with the solution.
- ii. Analyze the current performance level.
 - Try to recognize on which stage the performance level of the existing system is. Is the system has a better or have poor performance.
- iii. Identify the causes of the problem
- iv. Identify the desired performance outcome

- After looking at the problem, I have to find suitable solution or outcome of the problem.
- v. Identify the expectation of the related outcome
 - Define the constraint and limitation of the experience and expertise that the developer has in order to develop the new system.
 - Try to overcome the problem and find other solution to solve the constraint and limitation of the problem.

Part 3: Design Phase

The design phase is very crucial in whole development cycle. This phase could very expensive to solve of the software development. Much care is taken during this phase. Design the user interface:

- Once the user interface created, user tested and evaluates the product.
- Then the developer get the feedback according to the user's exact expectation.
- Developer has make an improvement of the system if there have any suggestion or requirement from the user in order to make a good interface for them.

Part 4: Testing Phase

At the testing phase, once the system is generated, the system testing begins. During the testing stage, I conduct a testing at Sek. Ren. Keb Sri Iskandar, Perak. Divide them into two groups where one group is provided with an explanation on how to use the system. The second group not provided an explanation on how to use the system. After that, provide the questionnaire to the student. Based on the questionnaire, the author provides the graph and report. The purpose of the testing and evaluation is to determine the advantages and disadvantages of such application.

Part 5: Implementation Phase

This phase is the longest phase part of the development phase. Once the development passed series of test, it is installed. Then, at the training plan, the users have to know on how to use the system and help manage the changes caused by the new system. If there were many error or problem during this phase, it will turn back to the Testing Phase to improve it.

3.2 TOOL (EQUIPEMENT, HARDWARE ETC) REQUIRED

- i. System Development
 - Macromedia Dream weaver
- ii. Database
 - SQL Server 2000
- iii. Others
 - Paint , Microsoft , Project Microsoft Office Visio

3.3 SYSTEM ARCHITECTURE

Machine translation system includes three tier which is client tier, application tier and data storage tier. See figure 3.2 for architecture overview.

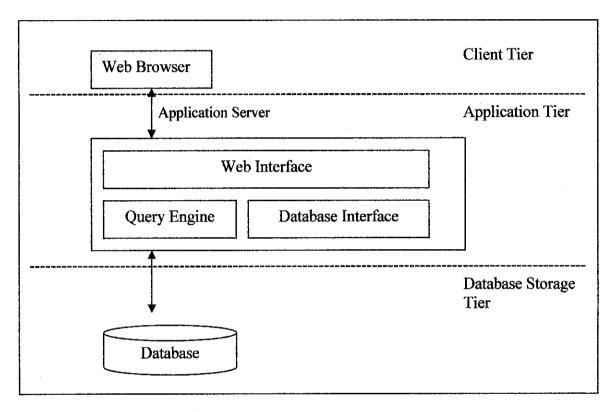


Figure 3.3 System Architecture

Client Tier

During the client tier, user will access the service using Microsoft Internet Explorer. The user will enter the input and the browser will pass the query data to the application server. After the application server finish the query processing the browser will display the output for the user.

❖ Web Browser

There were four main features in the web browser which is

Main menu

Translate features.

User can use the translate feature when they want to translate certain word from English – Malay or Malay – English. Beside that, the system provides an example of sentences for each meaning translated. This is to ensure that the student will more understand for the meaning itself.

Antonym features

This feature provides antonym features for the user.

Synonym features

This feature provides synonym features for the user.

Application Tier

The main part of the system is the application server. It will accept queries, retrieve the corresponding data from the database, computer the result and deliver it to the client tier.

❖ Web Interface

It is responsible for the communication with the client tier. It will receive the query and triggered the corresponding functionality of the query engine which process the query and return the result to the user.

Query Engine

The query engine will execute the user queries or user input. It will extract the required information from the database and build the pathway to the user.

❖ Database Interface

The communication between the query engine and the database is done via the database interface. The database interface is using the Microsoft Dream weaver.

Database Storage Tier

The data is stored in the SQL Server 2000 which is in the database of this system. See **Appendix II** for database print screen.

Database

The database includes 6 main tables which are:-

- Malay_Wordlist
- English Wordlist
- Antonym English
- Antonym_Malay
- Synonym English
- Synonym_Malay

CHAPTER 4

RESULT AND DISCUSSION

In result and discussion, the author focused more on research and what the author have done during completing and developing the system. Actually the system is divided into three parts which is:

- The system is able to translate word by word from the input sentences
- The system is able to provided the synonym features
- The system is able to provided the antonym features

4.1 Current research

Machine Translation System from Malay-English needed to translate from a source language to another source of language. Currently Malay-English and English-Malay computer translation system is based on the word by word translation, antonym and synonym features.

Beside that, the author provides an example of sentences in English and Malay word translation part. The sentences explain in more detail about the meaning for word by word translation.

As I mentioned before, now I'm going to focus on three different parts which is:

- Word by word translation
- Antonym features
- Synonym features

Actually word by word translation is already done by the author. Right now the sections need to be completed is the database which contains all the word in the dictionary and the database of antonym and synonym features.

Below here is one of the examples of word by word translation, antonym and synonym features.

E.g. Malay-English Word Translation

• Buku = Book

E.g. of sentences:

Saya beli buku di kedai

• E.g. English-Malay Word Translation

Book = Buku

E.g. of sentences:

• I bought the book from the bookshop

E.g. Antonym

In Malay

• Panjang = Pendek

In English

• Long = Short

E.g. Antonym

In Malay

Miskin = Fakir

In English

• Rich = Wealthy

4.2 Result of Testing

The purpose of evaluating the E-Dictionary in this study is to fulfill the first and second objective of the project, which to help the student in their learning and to improve the student's performance.

The testing is conducted for 30 students from Sek. Keb. Sri Iskandar, Tronoh Perak. During the testing part, the student is divided into two groups which is 15 students in

one group which is provided with an explanation on how to use the system and another 15 students in one group is conducted the testing part without an explanation. The testing is based on the user friendliness, timeliness, attractiveness of the system, system accuracies, which they prefer to use whether E-Dictionary or Dictionary and evaluate on system performance itself.

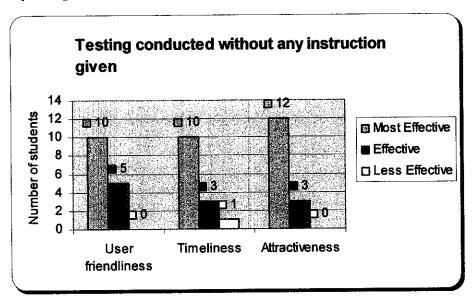


Figure 4.2.1 Testing conducted without any instruction given

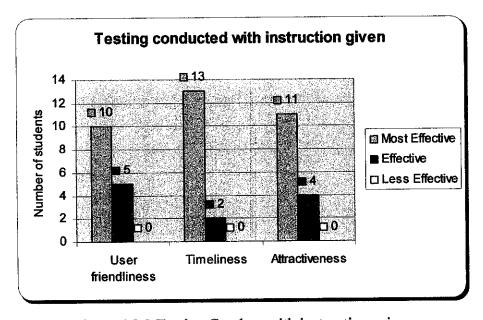


Figure 4.2.2 Testing Conduct with instructions given

Figure 4.2.1 shows the result of testing conduct without any instruction given. The students manage to complete the testing part even thought they did not provided with details explanation of the system.

Figure 4.2.2 shows the result of testing after the student is provided with details explanation on how to use the system. Even though the student is provided with an explanation on how to use the system, the result compare to the student that complete the testing without an explanation is the same. There is no different whether the student is provided with an explanation or not, they can interact with the system easily.

As the result, we can see that the system is user friendly because even they did not been provided with any explanation, they manage to complete and interact with the system easily. The system is also attractive and reduces time for student to search or find the word.

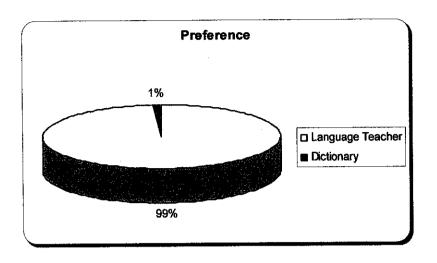


Figure 4.2.3 Preference

Based on Figure 4.2.3, most of the students prefer to use E-Dictionary if compared to the Dictionary. The student felt that E-Dictionary easy to use and they did not have to waste their time to use and search the word in the Dictionary.

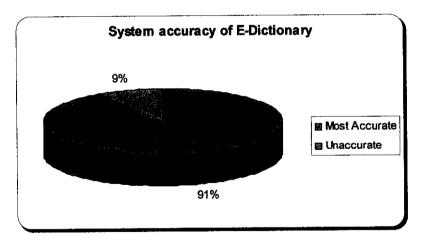


Figure 4.2.4 System accuracy of E-Dictionary

Figure 4.2.4 shows that, in term of accuracy, 91% percent of the students get the correct output. We can say that the system manage to provide the correct output for the student.

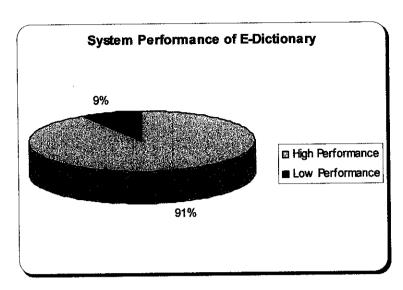


Figure 4.2.5 System Performance of E-Dictionary

Overall, Figure 4.2.5 show that the system provides is high performance for the user where E-Dictionary is user-friendly, user easy to interact with the system, provided an accurate output, most attractive and the most important thing, the students prefer to use E-Dictionary if compared to the Dictionary.

4.3 EVALUATION PROCEDURES

A set of questionnaire is used as a pre-test for the evaluation testing. The purpose of the evaluation is to determine the advantages and disadvantages of such application. With the feedback of the target evaluates the usefulness of E-Dictionary will further supported upon implementation.

The sample of questionnaire is enclosed in Appendix I.

4.4 SYSTEM INTERFACE

4.4.1 Main Menu

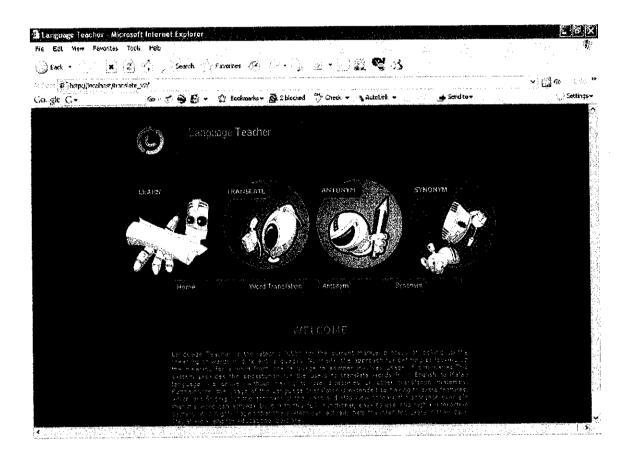


Figure 4.4.1 The main page

This is the main page of the system. As I mention before, the system is divide into three main parts which is 'translate', 'antonym' and 'synonym' features.

4.4.2 Malay to English Word Translation

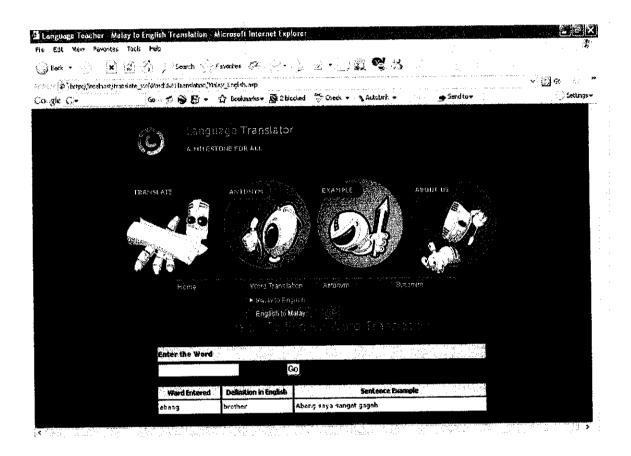


Figure 4.4.2 Malay to English Word Translation

This is the interface for user to translate word by word translation. This part the system will be able to translate from Malay to English word translation. User also will provide an example of sentences for each meaning they entered. This to ensure that student will more understand about the meaning translated.

For the example, the student entered keyword 'abah' in Malay, the system will search and provide the meaning in English word and example of sentences for that meaning entered by the user.

4.4.3 English to Malay Word Translation

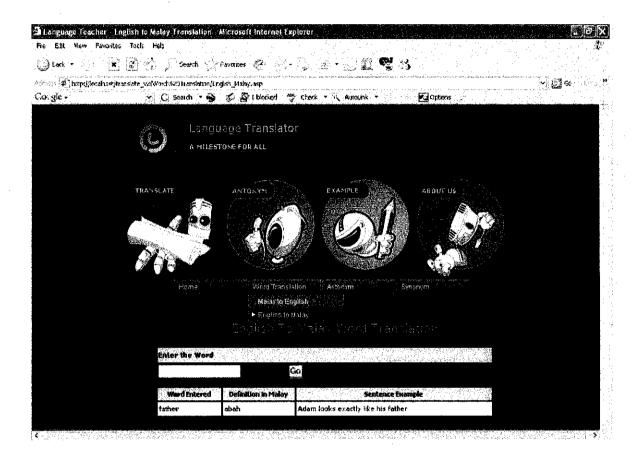


Figure 4.4.3 English to Malay Word Translation

This is the interface for user to translate word by word translation. This part the system is able to translate from English to Malay word translation. User also will provide an example of sentences for each meaning they entered. This to ensure that student more understand about the meaning translated.

For the example, the student entered keyword 'father' in English, the system will search and provide the meaning in Malay word and example of sentences for that meaning entered by the user.

4.4.4 Malay Word Antonym

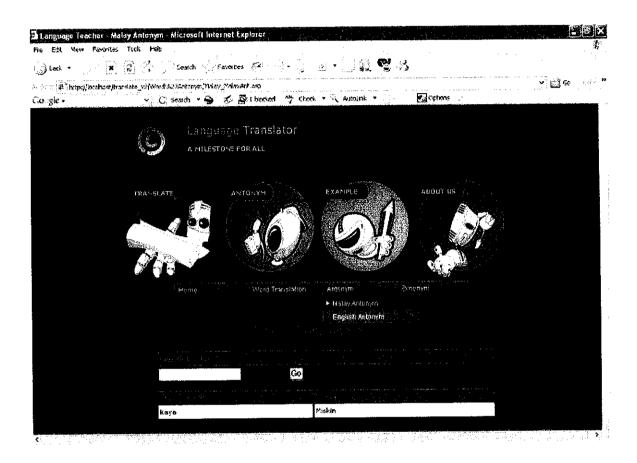


Figure 4.4.4 Malay Word Antonyms

This is the interface used for user to translate the antonym features. This part the system is able to translate from Malay to Malay antonym word translation.

For the example, the student entered keyword 'kaya', the system will search and provide antonym word.

> As an example, kaya = miskin, in Malay.

4.4.5 English Word Antonym



Figure 4.4.5 English Word Antonyms

This is the interface used for user to translate the antonym features. This part the system is able to translate from English to English antonym word translation.

For the example, the student entered keyword 'long', the system will search and provide antonym word.

> As an example, long = short, in English.

4.4.6 Malay Word Synonym

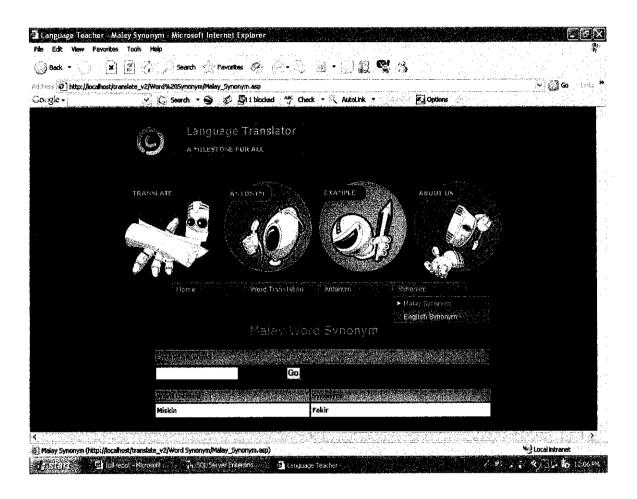


Figure 4.4.6 Malay Word Synonyms

This is the interface used for user to translate the synonym features. This part the system is will be able to translate from Malay to Malay synonym word translation.

For the example, the student entered keyword 'miskin', the system will search and provide synonym word.

> As an example, miskin = fakir, in Malay.

4.4.7 English Word Synonym

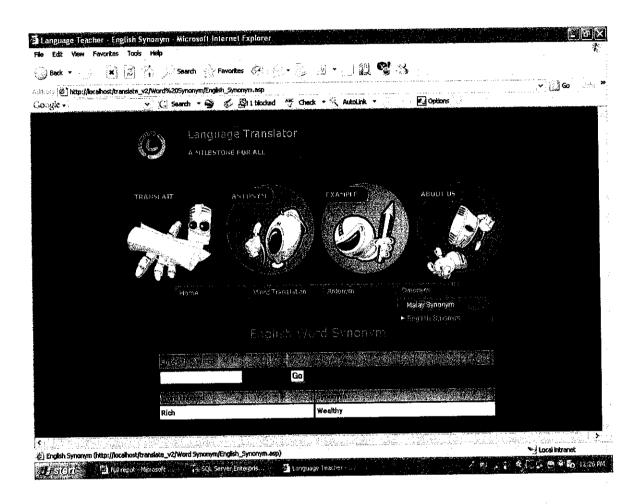


Figure 4.4.7 English Word Synonyms

This is the interface used for user to translate the synonym features. This part the system is able to translate from English to English synonym word translation.

For the example, the student entered keyword 'rich', the system will search and provide synonym word.

> As an example, rich = wealthy, in English.

4.5 FINDINGS

E-Dictionary is an interactive system with quick response to the user. Users prefer to use E-Dictionary compared search or find the word in the Dictionary. The interface that has been developed is user friendly and it speeds up the user learnability time where user did not have to open page by page to look for keyword in the Dictionary anymore.

Beside that, E-Dictionary provided user with three main function which is translate word by word in Malay-English and English-Malay, Synonym and Antonym features. In term of capability, user is capable to enter the word they want to search and the system automatically select and provide an output they entered. After completing the testing part, most of the user prefers more on E-Dictionary instead of using Dictionary. This shows that E-Dictionary has attracted most of the student to use the system because the system is user friendliness, attractive, and easy to interact.

4.6 LIMITATION

There are many limitations and problem that could not solved in the mean time. Among this system limitation is the database itself. In order to complete the database, I need to insert the data manually from alphabet A-Z where it required more time. Beside that, it can cause problem to the user where maybe the keyword that they want to search is not available in the database yet.

Beside that, for word by word translation, the system provides just one meaning for each keyword that entered by the user which is insufficient. The user might have limited explanation about the meaning if compared to the dictionary.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

As a conclusion, we can say that Search Engine for Translation System Malay-English will help most people especially primary student to translate the word by word translation accordingly. Beside that, it reduces time because the student doesn't have to find the word one by one in the Dictionary. User will get a lot advantage such as make the user become more educated person because an English language is one of the main language in the world where it helps to communicate with other people around the world in a faster way.

Successful language translator is to keep it simple. The original text should be simple and clear and avoid ambiguity. Beside that keep the sentences short to get the correct output. Then, it is also provides correct grammar and spelling to the user. Based on all aspect, Translation Engine may lead and help students to translate the word in easier and faster way.

5.2 RECOMMENDATION

'E-Dictionary builds for Primary School Student' is a system that still insufficient in term of the database. Therefore, for future development, helpfully the database is complete with all data required by the user. It is more efficient because easy for the user to search and find the word they want. Besides that, maybe the system can provide more than one meaning for more explanation to the user in the future. However, due the time limitation, the database could not be completed since the system alone required huge database to maintain it.

Beside that, the system is limited in term of its functionality. One more function that can be added is sentence by sentence translation part. In completing this part, it required an understanding about Natural language Processing (NLP). It requires more time in order to ensure the function is fully completed. Therefore, greater time and research is needed to ensure the function being develop effectively.

Due to the era technology, many translation systems are done online. The problem is there are limitation of the grammar and spelling. Perhaps, for future expansion hopefully they can provide the system with correct grammar and spelling to the user.

REFERENCES

J.Fenn. (26 September 2002). Corporate Deployment of Machine Translation. Research note. p1-4. Available: http://www.systransoft.com/Technology/PWC.pdf. Last accessed 31 Aug. 2006.

Hiroshi Uchida and Kenji Sugiyama (2001). *A Machine Translation System. From Japanese into English Based On Conceptual Structure*. Fujitsu Laboratories Ltd. Available: http://acl.ldc.upenn.edu/C/C80/C80-1068.pdf . Last accessed 15 July 2006.

Hutchins, W. J. & Somers, H. L. (1992). *An Introduction to Machine Translation*.

Unites States: Academic Press Inc. Available:
http://ourworld.compuserve.com/homepages/WJHutchins/IntroMT-TOC.htm . Last accessed 15 August 2006.

Kintsch, W. (2001). Cognitive Science: A Multidisciplinary Journal. New York, USA: Elsevier Science Inc, 25 (2), p173-202. Last accessed 12 August 2006.

Miranda Steel, (2000). New Oxford English-English-Malay Dictionary. In: Penerbit Fajar Bakti Sdn. Bhd.

Solso, R. (1995). Cognitive Psychology (4th Edition) USA: A Simon & Schuster Company. Last accessed 11 August 2006.

APPENDICES

APPENDIX I: QUESTIONNAIRE

Name:

1

Cuba adik-adik lengkapkan perkataan di bawah.

Bahasa Melayu- Bahasa Inggeris

Bahasa Melayu	Bahasa Inggeris	Perkataan Lawan / Antonym Word	Perkataan Seerti / Synonym Word
1. abang			
2. akibat			
3. bandar			

Bahasa Inggeris – Bahasa Melayu

Bahasa Inggeris	Bahasa Melayu	Perkataan Lawan / Antonym Word	Perkataan Seerti / Synonym Word
1. century		(-)	(-)
2. last			(-)
3. forgive			(-)

0	E-Dictionary builds for Primary School Stud
W	

Name:		Kelas:	
Sila tanda Dada kotak yan	ng sesuai.		
1. Adakah 'E-Dictionary'	ini mudah digunakar	1?	
Sangat mudah	Mudah	Agak sukar	Sukar
2. Mampukan 'E-Dictiona	ry' ini membantu da	lam mencari makna per	rkataan?
Ya	Tidak		
3. Mampukah 'E-Dictiona	ry' ini membantu da	lam mencari makna per	rkataan seerti
dan perkataan lawan?		· ·	
Ya	Tidak		
4. Adakah 'E-Dictionary'	ini membantu dalam	mencari perkataan Bal	nasa Inggeris?
Sangat membantu	Membantu	Tidak membar	ntu
5. Adakah 'E-Dictionary'	ini menarik?		
Sangat menarik	Menarik	Tidak menarik	X
6. Yang mana lagi mudah	?		
Kamus	Language Tea	acher	

APPENDIX II: EXAMPLE OF DATABASE

Malay_Wordlist's Table

	到!唤 歌 (1986年) [#16]	
falay Word	English Word	Malay Sent
sukan	sport	Sukan baik untuk kesihatan
bab	exhaled breath.	<niii></niii>
abad	century, age, era.	Dinasti Ming memerintah negara China berabad lemanya
nbadi	eternal, lasting, enduring.	Keamanan yang abadi
abah	direction, 2 see ABA.	
abah-abah	harness.	Dia memasangkan abah-abah pada anjing-anjing itu dan dikatkan pada andur sahi
abal .	neglectful.	Keluarganya telah mengabaikan nya
bang	brother	Saya ada dua orang abang
bangan	who does not achiere strictly to the precep	<m31></m31>
bar	brake.	<nul></nul>
bat	see ABAD.	
abau	k.o. tortoise.	<nal></nal>
bbas	abbot.	<nul></nul>
ABC	abese the ABC's.	<mal></mal>
abd Late	see ABDI.	<nul></nul>
abdas abdes	(Islam) absolution before prayer.	(MIL)
abde:	abbey.	(NUL)
ioa: Iodidalemisme	servant. 2 slave.	Mereka dibawa ke Amerika dan dijual sebagai hamba abdi kepada tuan punya ladang
ibaidalemisme ibalikusi	abdication.	<nui></nui>
socikasi Ibdis	abacación. abbess.	
botu	see ABDI.	(MIT)
bece	[ABC] alphabet, ABC's,	(MIT)
wete Meliz	see HABLUR.	<nul></nul>
iben	cremate.	<nul></nul>
berasi	aberration.	<nul></nul>
berikos	see ABRIKOS.	ONLLO
bet	appearrance, 2 behavior,	(NLL)
bib	(in families of Arabic descent) grandfather,	ONITIS
ibid	plous, devout, 2 see ABADI.	(NIII)
doktin	Jabidum! (Islam) the faithful.	(NUL)
Abil	see HABIL.	<nll></nll>
bis	see HABIS.	<nal></nal>
ibi turien	o. who went as far as high school.	<null></null>
bjad	alphabet.	Huruf A ialah salah satu abjad
abjadiah	alphabetical.	◇NULL>
blak	(Jata) open wide.	<nlu></nlu>
blatif	(Ling.) ablative.	ØNUL>
bkr	see HABLUR.	₩III>
ABN	(Anggaran Belanja Negara) national budget.	ANULL>
bnormal	abnormal.	Kelakuan yang abnormal
ionormalitas	abnormality.	<#UL>
bnus	(Lit.) ebony.	⟨NULL>
bolisi	abolition.	<nul></nul>

English_Wordlist's Table

- <u> </u>	P! \$ \$. E &		
English_Word	[Maley Word	Engåsh Sent	1
and the same	berdasar teori daripada kenyataan yang sebenar	<nul></nul>	1
a.d.	[Anno Domini] T.M. [Tarich Masehi] sesudah lahirny	<null></null>	1
a.m.	(ante meridiem) waktu dari jam 12 malam hingga 12	<nel></nel>	!
888	1 (American Automobile Association) Ikatan Mobil	<nerl></nerl>	!
8885	American Association for the Advacement of science	<null></null>	1
aau	(Amateur Athietic Union) Persenkatan Atik Amatir	<null></null>	[
abaca	kb. pisang Manila/serat.	√VITT>	\$
aback.	TAKE.	<nut></nut>	1
abacus	se(m)poa, sipoa.	<n t=""></n>	1
abaft	buritan, di belakang.	abaft the main mast	į
abalone	tiranykerang laut.	She like to eat abalons	!
abandon	bebaskkt. 1 meringgalkan (ship). 2 memutus	stre abandoned her baby	1
abandoned	yang ditinggalkan, an a. house or ship rumah	she abandoned her baby	!
abandonment	kb. 1 keadaan tertinggal. 2 dengan bebas.		!
abase .	kkit, to a, o,s, before merendahkan diri terhadap.	he only abases himself by such behaviour	
abasement	kb. penghinaan, kerendahan diri.	<nit></nit>	
abash	kit, memakukan.	<nut:></nut:>	1
bashed	ks. maku, bingung, kebingungan.	<nlc></nlc>	
shate	iki, 1 (me)reda. The storm abated Angin ribut (me)	<nel></nel>	;
abattoir	kb. pembantaian, pejagalan, tempak pemetongan.	<nel></nel>	
abbess	itb. kepala biara wanita.	<nal></nal>	!
abbey	klo, biara.	<null></null>	!
abbot	ith, kepala biara pria.	<null></null>	
abbreviate	kki menyingkatkan, memendekkan –kki . menyingkat		
abbreviated	ks. yang disingkatkan, a. shorts celana pendek yan	<nul></nul>	1
abbreviation	kb. 1 singkatan, kependekan. 2 perpendekan.	<null></null>	
abc	kb. 1 abjad. That child knows his ABCs	<null></null>	£
abdicate	kkt. 1 turun takhta. 2 melepaskan . to a. o's resp	<1831>	}
abdication	abdication	<nul></nul>	}
abdoman	ks. perut, daerah parut.	<nlt></nlt>	4
abdominal	ks. yang berhubungan dengan perut a. operation pem		į
abduct	kit. menculik, mengalap, melarikan (dengan paksa).	<####>	
abduction	ldb, penculikan. A. of a child is a crime punishabl		
abductor abeam	kp. pencuak. kk. (ditengah) rusuk.	<nul></nul>	
	ks. (deengan) rusuk. ks., kk. bidek diindinken. Scholerships often go a.	<nll></nll>	
abegging aberrant	ks, yang menyimpang dari kabiasaan a, behavior tin		
aberrank aberration	ks, yang menyimpang dari kacasasan a. Benaviur di kb, penyimpangan, penyelewengan, keluar-kebiasaan,	<nul></nul>	1
aberrasion abet	kit. (abetted) bersekongkol dengan. He abetted his	<nll></nll>	
abetment	kb., penchasutan.	<nul></nul>	
aueunenk abettor	kb, kaki tangan, penglong dalam ketahatan.	<nal></nal>	1
abettur abeyance	kb. penundaan, in a. terkatung-katung, ditangguh	<nrl></nrl>	1
speyance sibhor	kit, (abhorred) bend akan, tidak menyukal, I a, h	<nul></nul>	
abnor abhorred	ko. benci, kebencian, kejijikan, kemualan, his a.	<###>	i
OU INTEU	NO. DOSIO, NEDGLICION, ROBINGIO, NASIRIGIGIA, LES G.	THE PARTY OF THE P	1

Antonym_Malay's Table

Acres de Contrar de la contrar	w Help		:						=.0
) <u>50 m</u>	羅 博士教教	7 (E %			<u> </u>				
orig_word		antonym_word			7.744.9		ł		
ebadi .		sementara				1	i i		
abah		emak					į		
abai		awas				i	İ		
abang	-	kakak				i	t		
acah		betul-betul					1		
acuh	-	biar			***		1		
ada		tiada					İ		
adik		abang, kakak					É		
adil		zalim					ł		
adinda	*	kekanda					ĺ		
agak		tentu					į		
agung		kerdif					(
año		megah				1	ĺ		
a¥r .		api					•		
ajaib		biasa					1		
ajak		haleu					4		
akar		pucuk					İ		
akhir		awal					1		
akhirat		dunia		1.0			1		
aktoat		sebao					İ		
aktif		pasif					İ		
aķu		engkau							
aku		nafi					1		
akur		bankah				1	i		
alah		manang					Į		
ain		tetap							
anim		jahil				1	!		
ali		takung					ĺ		
ара		insaf							
am		khas				Ī	İ		
aman	e e	kacau khianat							
amanah									
ambi		beri hukum				į	į		
ampun anda							1		
		saya biasa							
aneh angguk		geleng					İ		
angkasa		bum bum					i		
angkat		letak					i		
ang.co. api		air					1		
apung apung		tenggelam					†		
apring asing		biasa					1		
asii		tiruan				-	1		
-						i	I .		