

BORANG PENGESAHAN STATUS TESIS[^]JUDUL: BLOOD TRANSPORTATION FOR BIOLOGY COURSEWARESESI PENGAJIAN: 2004/2005Saya HASNIDA BT SAID

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DECLARATION

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BLOOD TRANSPORTATION FOR BIOLOGY COURSEWARE

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

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DEDICATION

To my beloved parents.

Your positive inspiration and positive strength had inspired me each and everyday.

ACKNOWLEDGMENTS

Thank to God because with the give and can I finish my *Projek Sarajana Muda* that is the Blood Transportation for Biology Courseware in the good healthy and environment.

At this space, I would like to thank to my supervisors, En Ahmad Shaarizan bin Shaarani and my new supervisor, Pn Norazlin bt Mohamed because help in the give guidance and teach me in all the process finish this *Projek Sarjana Muda* .Furthermore, I would to thank the student biology of matriculation and the lecturer because had given cooperate in the analysis process.

I would also like to thank my beloved parents and my family who have been giving support and motivation throughout my project. I hope, with this project will give benefit to all people especially to the student biology of matriculation. Beside that , I also would thanks to my friends, Fazliya bt Azli, Noor Marini bt Azlan and Ili Farhana who have given help, support and advice until its completion. I appreciate for all the good deed and help.

ABSTRACT

Nowadays, the developments of courseware are widely used in the standard of education. Biology subject especially needed the effective learning tool because the content of subject is complicated and difficult to remember. The subject integrated the body structure, cell of body, scientific name and complex process to understand and memorized. For matriculation student, these situations are complicated because more difficult subject needed to learn in the short time, So that, the quality and flexible courseware needed to given easier student get the knowledge and information. Through this system, student biology of matriculation can learned the blood transportation topic so easier and effective because it is included interesting media element and visualization the real process in the body of human. This system is developed using Macromedia Flash MXC, 3d Studio Max, Adobe Photoshop, Sound Forge, and Swish Max.

ABSTRAK

Pada masa sekarang, penggunaan *e-learning* semakin meluas di dalam pembelajaran khususnya . Subjek biologi khususnya memerlukan satu alat pembelajaran yang efektif kerana kandungan pelajarannya begitu kompleks dan susah. Ia melibatkan struktur badan, nama saintifik dan proses yang kompleks untuk difahami dan diingati. Bagi pelajar matrikulasi , keadaan ini lebih menyukarkan mereka kerana banyak subjek yang kompleks perlu dipelajari dalam jangka masa yang singkat. Oleh itu, CD pembelajaran yang berkualiti dan fleksibel akan memudahkan pelajar mempelajari serta mendapatkan pengetahuan dengan lebih efektif. Melalui pembangunan system ini, pelajar biologi di matrikulasi akan dapat mempelajari topik *Blood Transportation* dengan lebih menarik dan dapat menggambarkan proses yang sebenar berlaku di dalam badan manusia. Sistem ini dibangunkan menggunakan *Macromedia Flash*, *3D Studio Max*, *Adobe Photoshop*, *Sound Forge* dan *Swish Max*.

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CHAPTER I

INTRODUCTION

1.0 Project Background

The project will be developed is an E-Learning courseware that specify on Biology of the Government Matriculation Program. It focuses on the sub topic which is the Blood Transportation of human. The main target users of the system are the matriculation students and the lecturer. Student do not have long time to study all topic because their just have a short time and many topic to remember.

Blood Transportation topic involves too many processes and many organs of the human body. Furthermore, the problem is that student find it difficult to understand and remember the process and structure because they cannot see through the real process and structure in the human body. Students just learn and get the knowledge from the book and lecturer. This learning method is difficult to student in memorizing because the book just displays the fixed image and cannot see the clear process.

This project develops to solve the student problem in the learning process. The goal of this project is to provide efficient tool learning to the student matriculation. This project is containing the interactive learning and more interesting compare to the book. This is because, the courseware have included an animation, images color, text and audio to present the information. It is given for an easier method

1.1 Problem Statement

Matriculation students obtain the knowledge from the book and learn about the information needed during the lecture. The book uses in studying is find to be bored because the information presented is not interesting and the images are static. It was difficult for student to realize and remembered the process of the blood transportation in the body of human because they cannot see the real situation. Actually, the student take a long time to study in retaining information the structure and process in the transportation especially in human cardiac.

Beside that, although many biology coursewares are in the market but it focuses more to the medical student. The content of the topic provided were not the same with the matriculation syllabus. The content included in the courseware is much more complex with the matriculation syllabus and it is not appropriate to matriculation student. It is complicated to student to understand on the information.

Furthermore there is also biology courseware that had been developed by the *Bahagian Teknologi Pendidikan* . However the courseware provides many weaknesses that need to be improved. Among the problem of the courseware development is the content is too simple. It is just applicable to used by the school student because the information focuses to the PMR syllabus. Beside that, the courseware also is not user friendly and not flexible. It is hard to access from one menu to another menu because it is not a user friendly interface.

For that purpose, the project is developed in solving the problems. The courseware is assured to provide an attractive learning instrument to the matriculation student compare the content provided through the book. This is because the information through the courseware is going to presented with many multimedia element like animation, audio, images colors and text. This purposed given is easier for students to memorize on the information provided.

The project develops had overcome the weakness on the current courseware which develops by *Bahagian Teknologi Pendidikan* . The courseware develop is more than interactive , flexible , user friendly and easy to use. User can access every topic from any interfaces or menu. Thu courseware provides exercises section in order to improve the understanding of student in the Blood Transportation topic. The style of question provided follows the standard of the question of matriculation exam. So that student will be familiar with the exam question.

1.2 Objective

The main objective of this project is to provide an e-learning courseware to the matriculation students. This project develops focuses on Blood Transportation topic. It concentrates in the biology syllabus of the matriculation. The courseware is given to the student as a revision and to analyze on the subject especially on the transportation system. The information provides is not too complex an suitable to the matriculation students compare to the current system. This courseware also consists of exercises and question relate to the topic which easier for students to do revision. In addition below are some of the objectives through the development of the biology courseware.

- 1) To enhance the weakness on current system

The project includes interactivity and interesting learning contrast to the book. This is because this courseware provides animation features, image colors, sound and interesting interface. It is considered an effective learning tool compare to the current system. Beside that, the knowledge which is presented is interesting, simple but covers the

overall sub topic of the transportation. It will be easier for students appreciate and memorize on all the structures and processes in the topic.

2) To provide a flexible and user friendly

The courseware is much more flexible compare to the current system. This is because its provides a characteristic of an easier interface to be used. User also can access the information at any interface faster and easier. The system is user friendly because user can recognize and use the system without having the time to learn to use the system. It provides simple function so that is will be easier for user to use it.

3) To provide an effective tool teaching in the lecture

The courseware provides interesting information compares to the current system used during lecture. Now days, lecture just used the static slide to present the subject. It is considered very bored this is because the information presented is static, not interesting with the deliverable of long text, and non color images. So, with the courseware development, learning process is much more effective. Its displays the media elements like an animation, images colors and sound in making the courseware much more attractive.

1.3 Scope

The project develops is an about E-Learning courseware of biology to the matriculation students. It focuses on the Blood Transportation topic with the standardization of the syllabus performed by *Kementerian Pelajaran Malaysia*. The E-learning development gives a new learning to the matriculation students. At the side, the project also recommends effortless to the lecturer in becoming creative and

good in providing the effectual learning tool during lecture. This project is divided to two main phases. The first phase is about the information on the Blood Transportation topic. Meanwhile the second phase is on the Exercise part which is related on topic provides through the courseware.

The first phase contains the information on Blood Transportation topic which is divided to six sub topic which is separated referring to each topic. Among the sub topic are Component, Blood Circulation, Blood , Cardiac, Cardiovascular Disease and Lymphatic System. Every sub topic are divided with the reference to each related topic nevertheless there additional smaller topic under this sub topic.

The Component integrates with the vascular, fluid, vessel and pump. Every sub topic is presented in the form of colorful image content, and text. For the Blood Circulation topic, it includes several type of blood circulation that are the Open Circulation, Closed Circulation and Gastrovascular Cavities. The Closed Circulation also has two parts that is Single Circulation and Double Circulation. Every circulation is presented in animation, image colors, audio, and text in order for the process of the circulation is explained wisely

The third topic is about Blood which underlines on the type of Blood in the transportation of human body and their function. The Blood is divided to three parts that is Erythrocyte, Leukocyte, and Platelet. Every type of blood is shown in image color with text to clarifying the function of each blood. Meanwhile, the Cardiac topic contains all information needed in cardiac such as the Structure, Cardiac Mechanism and Cardiovascular System. Every process is presented in 3D and 2D animation series and the explanation are delivered in the text and audio.

For the Cardiovascular Disease topic, it includes on the type of disease of cardiovascular which are Hypertension, Arteriosclerosis and Angina Pectoris. Every disease is displayed in the 3D animation to show process how the disease happen in the vessel blood. The image color, text and audio also included an element to

clarification the topic. The last topic is about the Lymphatic System which comprises on the sub topic about the Component, Function and Process. Every sub topic is displayed using images features and the explanations are in the text and audio.

The second phase is the Exercises. There are two sections through this phase which Examination and Topic Section. The Examination part included all type of question which is true false, objective and structure. It is like a one of examination test question. And for the Section part, has a three section which are Section A, Section B, and Section C. Section A focuses on the objective question. User needs to choose one of the answer given. Then for Section B centered on structured question where user needs to answer and fill in the blank. And the last Section C focuses on the True/False question. User needs to determine the statement given whether it is true or false. User can view a result when they finish answering the question.

The project will develops uses Flash MX, 3D Studio Max, Swish , Adobe Photoshop and Sound Forge software. The Flash MX is used to design the outline off the overall system and creating animation process. 3D Studio Max creates animation through the object or model being designed. Swish is used in animating the attractive texts. The Sound Forge is used in recording and improves sound for the explanation of the animation process being displayed. In addition , Adobe Photoshop used to design or edit images of the component and interface courseware.

1.4 Project Significance

Matriculation students use the courseware as an effective and attractive learning tool compares to the text book. This courseware focuses on the Blood Transportation which covers in biology subject. It has few aspect, multimedia elements provided are animation, images color, text and audio in clarifying on every single information, process and component in the topic.

The courseware, all the structure, component about the Blood Transportation is shown or present in the colorful images. Beside that, it also presented in the animation series in explaining on the process related for some of the topic such as Blood Circulation, Mechanism Cardiac and Cardiovascular Disease. Student can have the real picture on the process occurs in human body. From there, it will be easier for students to recognize, and remember the process and the component.

Beside that, the courseware also focuses on the syllabus of the biology in matriculation compares to other courseware in the market which were many of the courseware focuses to medical students. Through, the development of the courseware applicable to the matriculation student. It is simple but the information is compact it includes the matriculation course outline. Beside that, this courseware provides exercises for student to do their revision. The questions provided are based on the standard question of the matriculation exam. Student will be familiar to answer the question during examination.

This courseware also provides benefit to the biology lecturer in working out with some research or outlines as this courseware act as media in the learning process. It is effective learning device perform to the lecturer. The students will not be bored if the learning process conveys interesting, clear and easy to understand. The courseware contains animation and color representation that is interesting compare with the current learning system which uses transparency and books.

1.5 Expected Output

Featured covered in the project are interactive of an e-learning. The knowledge and information is displayed in the animation, image color, text and audio. The most important feature for this project is the cardiac structure will be design and displayed in the 3D cardiac model. The process of cardiac mechanism, cardiovascular disease will be created and showing in the 3D animation. For the process lymphatic system and all type of blood circulation will be showing in the 2D animation. Student can see the real process in the structure of the cardiac and the process happens in the human body.

Beside that, for the courseware to be interesting, it contains audio, and text explanation for every topic. The courseware also provides exercises focuses on the Blood Transportation sub topic. Student also can get familiar with the exam question because has question follow the standard matriculation question. Beside that, the courseware also provides a search function. The search function displayed like a site map of function. User can find the topic their want to revision.

1.6 Conclusion

The project to develop is a courseware which focuses on the Blood Transportation topic. The project develops for biology matriculation students because the content of the courseware is specific to the biology syllabus of the matriculation. The goal of this courseware is to solve and enhance the problem of the current system. An effective learning tool to study is not provided beside a text book. Another problem is that the courseware of the biology at the market is not applicable to the matriculation student because the content and course outline provided is much more complex compare to the syllabus of the matriculation.

For the reason the objective of this project is provide a learning tool which is applicable to the matriculation student, much more interesting contrast to the book , user friendly, flexible and interactive. It will be easier for students get gain knowledge, understand and memorizing on the process because the courseware have a multimedia elements like animation, image colors, audio, and interesting text. For that purpose, user wills not easily getting bored in the learning process.

The project also includes several features in enhancing the current system. The feature is on the exercises part and searching function. From the exercise, student can do revision and can be familiar with the exam question because this courseware provides standard question with the matriculation exam. Beside that, students can gain more information through the courseware. The site map function can help the user to find directly the topic they want.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

The literature review is one of the least understood parts of a research project. A literature review is a summary of previous research on a topic. Literature reviews can be either a part of a larger report of a research project, or it can be bibliography essay that is published separately in a scholarly journal. Either way, the purpose is the same, to review the scholarly literature relevant to the topic studying. This review will help in designed methodology and help others to interpret on the research.

The purpose of a literature review is to help in explaining how the question to be investigated fits into the larger picture and the purpose of approaching the topic the way it have too. This section of a scholarly report allowed the reader to be brought up to date regarding the state of research in the field and familiarizes him or her to any contrasting perspectives and viewpoints on the topic. Another that, the purpose of literature review also in the purpose to prove a courseware is the important and effectiveness tool in the learning process at the matriculation college especially to the biology student and lecturer biology.

Methodology is a system that any set of components that work together to achieve a specified outcome or goal. The instructional design process (ISD) is a systems

approach that result in development of targeted training and education programs to meet the needs of learners. That ADDIE model for instructional system design (ISD) is a generic model that serves as the foundation for many ISD models in use today. This ADDIE model included five major phases that are Analysis, Design, Development, Implementation and Evaluation. This design model is one many version of ISD models that have been developed for education and training.

2.1 Fact Finding

This section will maps out on different perspective which related to the project that will be developed. It focuses on the how far the courseware is important in the learning process especially to the biology students. There are four case studies that had been undergo which are Case Study I: Why the learning with courseware as medium gave more effective compare to the text book. Case Study II: How the method teaching given effective to the student. And Case Study III: Why the Macromedia flash is applicable to develop the courseware e-learning The final case is Case Study IV: Why the subject medical is not applicable to another student. The following research presents on e-learning applications that can help many people.

2.2.1. Case Study I: Why the learning with courseware as a medium gave more effective compare the text book.

Education and multimedia computing have symbiotic relationship education is shaping the development of multimedia and multimedia is opening new possibilities in education (Hodges & Sasnett, 1993). From this, it proved the technology and multimedia is important to exposes student to multiple forms of information in a non-linear way. Cause from that, the courseware to develop is more important in the education student.