VR ENVIRONMENT NURSE TRAINING – ECG MODULE

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Information and Communications Technology (state your specialization in this space)

FACULTY OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
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DEDICATION

To my late grandmother, for giving me warm memories and made me realize of how wonderful life is;
to my father for his loving attention;
to my mother, for her trust in my chosen path of life;
to my dear little brothers, for supporting my back;
and all friends, for being here with me.

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Last but not least, credits for my beloved parent and brothers, all my friends, room-mates, and acquaintances, for being my personal critics, and for believing in me.

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ABSTRACT

"VR Environment Nurse Training – ECG Module" is a courseware project where it focuses on how to conduct the ECG test. This interactive courseware utilizes visual simulation technology which assists in providing the technique for developing skills in the use of ECG machine for training nurse or clinic assistant. This courseware will be used by training nurse or private clinic assistant which conduct or use the ECG machine. In literature review, a more deep down knowledge's that reflect this project elements such as ECG machine, Virtual Reality concept, courseware concepts and how these elements related to each other and being combined and composed into one conclusion in order to develop this project. Also, project methodology that will be used along when implementing this project will be outlined clearly. Every step taken in the selected methodology will be justified, related to every phase of project delivery. In analysis chapter, problem analysis will be conducted on target respondent which is Kolej Kejururawatan Melaka, using a few obtaining information techniques such as observation, interviews, and distributing questionnaires. From the analysis, the requirement for the project can be determined and analysis of the requirement for the project will be outlined. Every software and hardware that will be used in the project will be justified, included with the advantages and disadvantages of each determined tools. In design phase, content outlines, screen templates, flowcharts, storyboards and navigation maps will be produced and justified.. Each of the output from this phase will be the guidelines for building the project. And also, there is also preliminary design, where a prototype of user interface design will be produced and the input and output design for this courseware will be outlined.

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ABSTRAK

"VR Environment Nurse Training – ECG Module" adalah sebuah aplikasi multimedia di mana ia memfokuskan kepada bagaiamana mengendalikan ujian ECG. Aplikasi interaktif ini menggunakan teknologi simulasi gambaran di mana ia membantu jururawat pelatih atau pembantu klinik berlatih menggunakan peralatan ECG. Aplikasi ini akan digunakan oleh jururawat pelatih ataupun pembantu klinik yang akan menggunakan mesin ECG. Di dalam bahagian kajian literatur, pemahaman yang lebih mendalam mengenai elemen penting projek seperti mesin ECG, konsep *virtual reality*, konsep aplikasi multimedia dan bagaimana elemen - elemen tersebut berhubungkait dan digabungkan menjadi satu kesimpulan untuk membina projek ini. *Methodology* projek yang akan digunakan bagi mengimplementasikan projek ini akan dijelaskan. Setiap langkah yang diambil di dalam *methodology* yang dipilih akan diterangkan dengan jelas, selaras dengan setiap fasa. Di dalam bahagian analisis, analisa masalah akan dilakukan ke atas responden sasaran iaitu Kolej Kejururawatan Melaka dengan menggunakan beberapa teknik seperti pemerhatian, temuramah dan pengagihah boring soal selidik. Daripada analisa tersebut, keperluan projek dapat ditentukan. Setiap perisian dan perkakasan yang digunakan untuk projek akan disenaraikan, termasuk kelebihan dan kekurangan penggunaan perisian atau perkakasan tersebut. Di dalam fasa rekabentuk, bentuk isi kandungan, contoh skrin, carta alir, papan cerita dan peta navigasi akan dihasilkan. Setiap hasil dari fasa rekabentuk akan menjadi kayu ukur bagi membina projek ini. Selain itu, terdapat juga rekabentuk awalan, di mana prototaip bagi rekabentuk antaramuka pengguna akan dihasilkan, selain rekabentuk input dan output bagi perisian ini.

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ACRONYMS

3D	Three Dimensional
ADDIE	Analyse Design Develop Implement Evaluate
BMP	Bitmap
CD-ROM	Compact Disc Read Only Memory
CD-RW	Compact Disc Re-Writable
DPI	Dot per Inch
ECG	Electrocardiography
FTMK	Fakulti Teknologi Maklumat dan Komunikasi
GB	Giga Byte
GIF	Graphics Interchange Format
HCI	Human Computer Interaction
HMD	Head Mounted Display
JPEG	Joint Photographic Expert Group
KUTKM	Kolej Universiti Teknikal Kebangsaan Malaysia
MB	Mega Byte
MHz	Mega Hertz
MIS	Minimally Invasive Surgery
MP3	MPEG Audio Layer 3
OHP	Over Head Projector
PC	Personal Computer
PSM 1	Projek Sarjana Muda 1
SWF	Shockwave Flash
USB	Universal Serial Bus
VGA	Video Graphic Acceleration
VR	Virtual Reality

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CHAPTER I:

INTRODUCTION

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CHAPTER I

INTRODUCTION

1.1 Project Background

"VR Environment Nurse Training – ECG Module" is a courseware project with a specific content, where it focuses on how to conduct the ECG test. This interactive courseware utilizes visual simulation technology which assists in providing the technique for developing skills in the use of ECG machine for training nurse or clinic assistant. This courseware enables users to interactively practice concepts making the learning environment much more practical than an online manual or video. This courseware will be used by training nurse or private clinic assistant which conduct or use the ECG machine. Even though the current system is existed, normally training nurse or clinic assistant used conventional method of explanation, where they were being taught verbally from the lecturer or doctor.

By using this courseware, training nurse or clinic assistant can learn how an ECG machine is being used on a patient, and how to control the ECG machine by understanding main button function, in a VR environment. This courseware enable training nurses/clinic assistant to interactively practice the concepts, making the learning environment much more realistic than alternative training methods. Also, this courseware offers evaluation test, where they can evaluate their skills by taking test on how to operate ECG machine correctly.

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1.2 Problem statement(s)

Based on observation, this project is specifically being design to patch a few problems facing by training nurse and clinic assistant. The problems are:

i. ECG machines are only a few in quantities, which cause problem during training. Training nurse/clinic assistant are being taught on how to operate this machine verbally by the lecturer/doctor, and normally they learned in a group of people, which means not all of them have the chances to operate the machine themselves. This will reduce the self-confidence of training nurse, before they are being evaluated on using the ECG machine.

ii. Before being evaluated on using the ECG machine, the only source that the training nurse can refer to is only books and their curriculum syllabus. So, a training courseware would be a very suitable medium where they can use the courseware to practice operating the ECG machine.

1.3 Objective

The objective of this project is listed below:

i. To develop a training courseware which provide basic knowledge on ECG machine and the purpose of doing ECG, and allows training nurse or clinic assistant to experience and navigate, almost as if them in the real patient room/ward/clinic.

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1.4 Scopes

This project will being develop due on certain constraints. Below is list of scopes for the project:

i. For VR environment, this courseware will only simulate the environment in a small room, which contains one patient, ECG machine, and other necessary tools and furniture.

ii. The VR simulation will only focus on how to start the ECG process and how to use the ECG machine on the patient. This courseware will not simulate on how the ECG process reacted with human body.

iii. Target respondent will be chosen from Kolej Kejururawatan Melaka.

iv. This courseware will be developed based on curriculum syllabus for government hospital training nurse in Kolej Kejururawatan Melaka. Main language used in this courseware is Bahasa Melayu.

v. This courseware will be developed as a stand-alone courseware.

1.5 Project significance

This courseware will directly benefit training nurse or clinic assistant. They can use this courseware to practice their skills in handling ECG machine, without even being in the room which have the ECG machine.

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1.6 Expected Output

By the end of this project, the output that can be expected is a courseware that being designed to tailor training nurses needs. This courseware contains information on ECG machine and explanation on how to operate it. The add-on features is training nurse can evaluate themselves on how to use the machine by taking the evaluation test provided in the courseware.

1.7 Conclusion

As a whole, "VR Environment Training Nurse – ECG Module" is a courseware which show how to conduct ECG machine. This courseware will provide basic knowledge on ECG machine and the purpose of doing ECG, and allows training nurse/clinic assistant to experience and navigate, almost as if them in the real patient room/ward/clinic.

For next chapter, it will be literature review and briefing on methodology used for this project. The literature review will be a summary of previous research on a topics related to this project, while in project methodology, a detailed explanation of every steps taken to develop in this project will be explain.

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CHAPTER II:

LITERATURE REVIEW AND PROJECT METHODOLOGY

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CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

Literature review is one of the crucial parts in the whole process of developing a project. It's a set of task where researcher has to search, collect, analyze and draw conclusion from all debates and issues raised in relevant body of literature. In this chapter consist of a more deep down knowledge's that reflect this project elements such as ECG machine, Virtual Reality concept, courseware concepts and how these elements related to each other and being combined and composed into one conclusion in order to develop this project.

Also in this chapter, a project methodology that will be used along when implementing this project will be outlined clearly. Every step taken in the selected methodology will be justified, related to every phase of project delivery. Project methodology is a way to use all available technique, tools and approaches used to achieve predetermined project objectives. Without a methodology, project developer might run out of track and cause to project failure or maybe not achieved the project objectives.

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