METRICS EDUCATIONAL PACKAGE APPRAISAL/UPDATE

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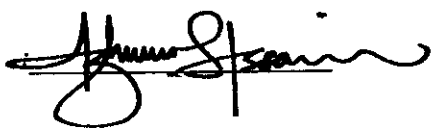

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ABSTRACT (BAHASA MALAYSIA)

Pada kebelakangan ini, terdapat banyak pengajaran berindividu dan teknologi komputer, telah digunakan untuk memudahkan pembelajaran pada semua peringkat pendidikan dan latihan. Didapati bahawa aplikasi Pembelajaran Berbantuan Komputer (PBK) telah menjadi salah satu kaedah yang menyokong aktiviti pembelajaran ini.

Memandangkan perkembangan ini, penyelidikan ini bertujuan untuk menilai Pakej Pendidikan METKIT (Metrics Educational ToolKit) dalam bidang pengukuran kejuruteraan perisian, dan kemukakan cadangan untuk keperluan-keperluan pengemaskinian, dan seterusnya menyusun langkah untuk menjadikannya sebagai satu bahan pengajaran dalam pendidikan jarak jauh.

Penyelidikan ini telah menunjukkan bahawa kepincangan dalam pengukuran perisian menjadi punca utama kegagalan banyak projek perisian. Penyelidikan ini telah menidentifikasikan bahawa kekurangan ketepatan dalam objektif pengukuran perisian menyebabkan kegagalan dalam kebanyakan projek perisian. Dengan kesedaran inilah, projek ini mencadangkan supaya pengukuran perisian perlu digalakkan dalam kursus melalui penggunaan pengajaran berindividu dan teknologi komputer untuk memudahkan proses pembelajaran dan pengajaran. Pakej Pembelajaran Berbantuan Komputerb(PBK) telah dikenalpasti sebagai satu bentuk media yang dapat membantu untuk mencapai proses pembelajaran yang berkesan.

Pembangunan perisian PBK telah dirancangkan dengan rapi dan teliti untuk memastikan ia akan menjadikan satu alat pengajaran berindividu yang berkesan. Untuk tujuan ini, teori pembelajaran pendidikan telah dirujuk dan ciri-ciri rekabentuk yang baik telah dimasukkan ke dalam pakej perisian PBK itu. Pakej PBK itu kemudiannya dijalanujikan dengan sampel yang terpilih secara rawak daripada sesuatu populasi yang tertentu. Hasil daripada penyelidikan ini menunjukkan bahawa sesuatu pakej PBK yang efektif boleh meningkatkan proses pengajaran dan pembalajaran yang berkesan.

Sesuatu pakej PBK yang direkabentukkan perlu mengambil kira unsur-unsur teori pembelajaran dan memasukkan ciri-ciri rekabentuk yang baik dalam segi ruang, visual, audio, warna, grafik, dan animasi, untuk menjadikannya sebagai alat pengajaran berindividu yang berjaya.

Kajian ini juga menunjukkan keberkesanan dari segi kos dan masa dalam sistem pendidikan dan latihan dapat dicapai dengan aplikasi pakej PBK yang mempunyai bahan pengajaran yang berkualiti. Dengan teknologi maklumat ini, matlamat jangka panjang para pendidik dan tenaga pengajar dapat dicapai dengan mengagihkan bahan pengajaran berindividu seperti pakej PBK ini, kepada pelajar-pelajar, dan bukannya lagi mengagihkan pelajar-pelajar kepada bahan pengajaran. Tambahan pula, kemajuan teknologi menunjukkan kos perpindahan maklumat-maklumat secara elektronik dijangka jauh lebih rendah berbandingkan dengan penghantaran maklumat-maklumat secara cetakan kertas. Selain daripada itu, kos perkakasan per unit ingatan secara relatifnya,

telahpun dikurangkan. Kesemua faktor ini akan menggalakkan penggunaan PBK di dalam bidang pendidikan dan latihan.

Dalam konteks ini, pakej pendidikan METKIT telah memainkan peranan yang penting dalam usahanya untuk mempromosikan penggunaan pengukuran kejuruteraan perisian di kalangan komuniti Eropah. Sama ada pakej pendidikan METKIT ini berjaya atau tidak untuk mencapai matlamatnya, ini akan menjadi satu soal tanya. Akan tetapi kajian ini telah menunujukkan bahawa integrasi pakej pendidikan METKIT kepada pakej PBK dapat menjayakannya sebagai alat pengajaran berindividu yang berkesan dalam penggunaan kursus.

ABSTRACT

In recent years there has been increased development on individualized instruction and computer technology to facilitate learning at all levels of education and training. The application of CAL is one of the methods that support this activity.

In view of this development, the research aims to evaluate the METKIT Educational Package on software engineering measurements, and make recommendations for update requirements, and propose suggestions for it to be use in course for distance learning. A CAL educational package has been developed for that purpose.

The research has identified software measurements as a contributive factor towards the success or failure of a software project. The research has shown that the lack of objectivity in software measurements had resulted in project failures and over-runs. It is with this awareness that the software measurements should be promoted in course through the usage of individualized instruction and computer technology to facilitate learning. The CAL package has been recognized as one form of media for effective learning.

The development of CAL courseware has been carefully planned out. Emphasis has been placed on the application of educational learning theory, and the inclusion of good designing features. The CAL package is then evaluated by conducting a test on a sample of the selected population.

The finding from the research has shown that an effective CAL package can promote learning process efficiently. An effective CAL educational package should developed with elements of learning theory in mind, and incorporated with good designing features to make it a successful tool as an individualized instruction package for use in course.

The research has shown that the cost effectiveness of education and training systems can be achieved by application of CAL using high quality instructional material and computers. With this technology, a long-term goal of educators and trainers can be realized by distributing instruction to students rather than by distributing students to instruction. Furthermore, technological advances indicate that electronic transfer of information is expected to be cheaper than paper transmission of information. In addition, the hardware cost per unit memory has been relatively reduced. All of these factors promote a technological change to the use of CAL in educational and training field.

In this respect, the METKIT educational package has played an important role in its effort to promote the use of software engineering measurements within the European Community. Whether the METKIT has successfully fulfill its mission is still questionable. But, one of the effective ways to make METKIT a successful instructional medium is to incorporate it into an effective CAL package for use in course.

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TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The main idea of this project "Metrics Educational Package Appraisal/Update" was formulated on 18th March, 2001, when I went to see the lecturer, Encik Azham Bin Hussain for the project proposal. My project proposal is to evaluate a METKIT educational package, make recommendations for update and forward suggestions for use in course for distance learning. A Computer Assisted Learning (CAL) package was then developed for that purpose. I was very keen to undertake this project because I had been involved in educational field for almost 16 years since 1984. In fact my previous experience and training in education was an invaluable asset to me when I was doing this research project.

METKIT stands for **M**etrics **E**ducational **T**oolkit. The primary goal of the METKIT educational package is to promote the use of software measurement within the European software engineering industry.

METKIT is a modular package design to cover the theoretical foundation and application of software metrics. The METKIT Educational Package shows how measurement can be used in software engineering to understand, control and improve the process of software development. The METKIT philosophy is not to tell people what to measure, rather it is to show how to use measurement to solve and avoid problems in software engineering.

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