

# CHAPTER 1 INTRODUCTION

## 1.1 Introduction

In a fast growing country like Malaysia, the era of Information Technology has step on every ground tremendously. With the usage of computers, not only we can achieve a target economic growth but also create a high technology environment conducive for learning and research.

Basically, this research is done to look into matters regarding learning using computers or learning through the usage of educational systems in Klang Valley and Selangor.

## 1.2 Objectives

The objectives of this research are:-

1. To come up with a set of questionnaires for the evaluation of educational systems that are being used by the students in Klang Valley and Selangor .
2. Evaluate six existing tertiary level educational systems in universities and colleges around Klang Valley and Selangor using the questionnaires prepared in this research.
3. Analyze and discuss the results of the evaluation for requirements gathering.
4. Develop a prototype of educational system for tertiary level students in Klang Valley and Selangor based on software heuristics and socio-constructivist view of learning.

### 1.3 Scope

The scope of this research is stated below: -

1. Study on pedagogical issues in learning:
2. Study on evaluation methods in the Human Computer Interaction field.
3. Define a set of questionnaires for the evaluation of nine existing educational systems being used in the colleges and Universities around Klang Valley and Selangor.
4. Analyze results of evaluation statistically on graphs.
5. Discuss the results of evaluation to gather requirements for the design of educational system for Klang Valley and Selangor tertiary level students.
6. Develop a prototype based on the requirements gathered from the results of the evaluation done in this research.
7. Evaluate the prototype using the same set of questionnaires prepared in this research.

### 1.4 Problem statement

While there are now established traditions of research and development in educational computing and in Human Computer Interaction (HCI), workers in these days rarely speak to each other or take note of each others' work: the educational computing literature is littered with naïve and simplistic interpretations of interface design issues, and many writers in the HCI literature appear to be unaware of the significant developments that have been made in theories of learning [53].

The above statement shows that, the learning theories and the usability issues have not been taken together much when it comes to evaluating or developing educational systems.

## **1.5 Significance of research**

Through the Malaysian education system, education has been delivered to the students using the behaviorist learning theory (explained in chapter 2). However, now the paradigm is shifting to a more constructivist method of learning in schools.

This research stresses on the socio-constructivist learning theory when it comes to developing educational systems so that the Malaysian students will be exposed to this new method of learning.

Besides that, the author has also incorporated the usability issues with the socio-constructivist learning theory to come up with a prototype that is not only usable but also introduces a more constructive method of learning to the students.

## **1.6 Methodology**

In this research, the author has done a study on the evaluation methods in the Human Computer Interaction (HCI) field and also the pedagogical issues in learning. From both the studies, the author has incorporated the software heuristics discussed in predictive evaluation with the socio-constructivist learning theory to come up with a set of questionnaire for users opinion on six educational systems used by tertiary level students. However, the questionnaires were based more on usability issues than the socio-constructivist issues. This is because the Malaysian students are not much

exposed to the constructivist ways of learning and therefore, they will experience difficulty while evaluating the systems if the questions in the questionnaires were more constructive based. The evaluations of the six educational systems took place in University of Malaya and in some of the colleges around Klang Valley and Selangor.

After the survey, the results gathered were analyzed statistically on graphs and discussions on the outcome of the evaluations were done.

The results were used to serve as requirements for the development of a prototype of educational system for tertiary level students in Klang Valley and Selangor.

Data flow diagrams and Hierarchical Task Analysis notations were used in the design of the prototype.

In conclusion, the author discussed the elements in the prototype that were based on the results of survey and the socio-constructivist issues. The prototype was tested with a group of students in University of Malaya. The results were also analyzed statistically on graphs. This is to proof the new design is more usable and suitable for target students.

In short, the methodology used in this research are discussed below:-

1. Study was done on the evaluation methods in the Human Computer Interaction field and pedagogical issues in learning.

2. The author incorporated socio constructivist view of learning with software heuristics from predictive evaluation method to come up with a questionnaire for evaluation on six educational systems.
3. Evaluations were done at University of Malaya and some of the colleges around Selangor and Klang Valley.
4. A statistical analysis was done on the results of survey.
5. The results served as requirements for the development of a prototype of educational system for the target students.
6. Data Flow Diagrams and Hierarchical Task Analysis were used to in the design.
7. The prototype was evaluated with a group of University Malaya students.
8. The results were analyzed statistically.

The elements in prototype that are according to socio-constructivist view of learning and software heuristics were discussed in conclusion.

## **1.7 Report Summary**

Basically, in this research, the author has taken two concepts together, which are software heuristics approach and socio-constructivist learning theory to design a set of questionnaire for the evaluation of six educational systems used by tertiary level students. Focus was given to software heuristic approaches. (This will be discussed further in chapter 2 and 3)

Students in University of Malaya and in colleges around Selangor and Klang Valley area did the survey. The results of the survey were analyzed statistically on graphs for comparison. A discussion was done to come up with a set of requirements for the

development of a prototype of educational system for tertiary level students around Klang Valley and Selangor. The prototype was tested with a group of students with the same set of questionnaire. The results were also analyzed statistically and discussed in this research.

Lastly, in the conclusion, the author has discussed the elements in the prototype that have been incorporated from the software heuristics approach and socio-constructivist approach.