

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The usage of computers by the government and private sectors has increased since the introduction of the Pentium-based Centre Processing Units (CPUs) in the 1990's. The effectiveness of computers in processing and updating database for the administration and the business sector make them more superior compare to manual processing. This makes the use of computers in the education sector more and more popular.

Educational technology has reached the computer era where a lot of information that has to be taught and learnt can be stored by the computers. The powerful new Pentium-based microprocessors enable more interactive multimedia software or interactive multimedia instruction (IMI) on teaching and learning to be produced and used. IMI is defined as an instructional program intentionally designed in segments, coherent and interactive with responses (Schwier & Misanchuk, 1993).

With IMI, learning materials incorporating text, pictures, music and video clips give learners more interesting lessons compared to traditional 'chalk and talk' method in the classroom. However, IMI needs a higher capacity storage disk and greater processing power because of lots of graphics involved. However, with the advancement of new computer technology especially in the Pentium MMX series (multimedia enhanced) and application software, the prospect of education is enormous.

The Internet (International Network of Networks) has also become more and more popular with its latest educational resources for teachers and students. Students can study school subjects enriched with sound, voice and video direct from Internet. The importance of Internet has encouraged many multimedia software programmers to use authoring tools to create more Web-based educational programs. Authoring tools such as Macromedia Authorware are gradually replacing other programming languages (Higdon, 1995).

The government of Malaysia has begun to equip selected schools such as the fully residential science schools with multimedia computers since the early nineties. The development of the Multimedia Super Corridor (MSC) for the commercial world and the scheduled implementation of 90 Malaysian Smart schools clearly indicates the government's ambition to promote computer literacy to a new height. Hence, the development of IMI for the implementation of Computer-Assisted Instruction (CAI) in Smart schools has increased rapidly.

1.2 Rationale of the Study

There are very few studies on CAI in Malaysia at present. This is mainly due to the fact that most schools do not have enough computers to facilitate the implementation of CAI. In the District of Temerloh (Pahang State, Malaysia), only three out of nine secondary schools have computer laboratory and all of them are located in the town (Temerloh District Education Office, 1998).

In a research done by Kok (1989) on effects of CAI on achievement, it was found that CAI is effective in improving academic achievement. His result was based on a sample of 192 Form One students who used CAI in Geography. Many foreign researchers had also found that CAI is an effective method in teaching. Mevarech (1985) had found that the CAI method facilitated the acquisition of mathematical skills. The use of computers in imparting knowledge to the learners is also far more efficient (MacGregor, 1988). Content-relevant illustrations, coupled with text can provide significant gains to the learner (Schwier & Misanchuk., 1993).

Besides achievement, this study will also look into gender differences in using CAI. The use of computers in Mathematics for example, showed that males performed better in term of achievement compared to females (Fennema and Carpenter, 1981). Therefore, this study is needed to establish the influence of gender in achievement.

This study will also look into students' perception of CAI. Past studies had found that students had positive attitude towards computers (Kok, 1989 ; Nickell, 1987). Fowler (1983) in her study of CAI method in management science, had found that the students' attitude towards the appreciation of computers increased significantly. The present study will attempt to establish similar findings.

A secondary school in Temerloh, Pahang is selected for this study because it is a coeducational school. It is one of the prime school in the district and therefore it has a computer laboratory equipped with 20 sets of PC. All the PCs are pre-installed with at least a Windows 3.11 operating system. The IMI program can only run in a Windows environment.

As very few studies on CAI especially on the subject of Geography had been carried out in Malaysia, this study is needed to assess the effectiveness of CAI in improving achievement and students' perception of CAI.

1.3 Research Questions

1. Is the CAI method more effective than traditional classroom teaching method in improving content understanding among Form Four Geography students ?
2. Is the effectiveness of learning through CAI influenced by gender ?
3. Does teaching using computers enhance students' perception of computers ?
4. Do boys perceive the use of computers as a learning tool better than the girls ?

1.4 Significance of the Study

The purpose of this study is to establish whether learning Geography through CAI is more effective than normal classroom teaching. If it is effective, this significant finding will be useful to curriculum planners of the Ministry of Education, Malaysia.

The traditional instruction (classroom) method has its limitations. After the lessons, the students are required to extract information from reference books to answer their assignments. Searching for relevant books in the library is a difficult task. However, in the CAI method, by browsing through the IMI program and databases through the computer, the students will manage to complete the task faster. It indicates that the

information technology era has made information to be obtained at a very much faster rate compared to the traditional way of searching for it in the library.

Computer allows information to be displayed with colourful graphics, audio and video clips. The presentation will be interesting and less boring compared to classroom teaching. Understanding of the related concepts will be very much easier because concepts and ideas can be presented into colourful charts or graphic organisers. The computer allows charts and many other presentable graphs and materials to be prepared easily as many of these softwares such as Corel Draw and Microsoft Word 95/97 are widely available. However, in the traditional instruction method, many manila cards or mahjong papers have to be used in a presentation. The materials need a great deal of time to be prepared.

This CAI study attempts to investigate on whether the subjects of the study develop positive perception towards CAI. It will also look into whether boys have more perception on computers than girls. If the study shows that CAI does improve students' achievement and perception, then it will be useful for curriculum planners of the Ministry of Education. This study will provide some feedbacks on the types of materials to be included in the teaching software to be implemented in the future Form Four Geography curriculum.

If the study also indicates that students develop positive perception towards the use of computers in learning, then it is suggested that parents purchase a computer for their children. This will enable them to use it as a daily learning tool.

1.5 Limitations of the Study

This study is limited to only one school of Form Four Geography students of the Temerloh District in Pahang, Malaysia. Therefore the results may not represent Form Four students in Malaysia.

The subjects for the CAI method is also limited ($n = 30$). One restriction to CAI studies is the availability of computers. When computers in the laboratory are limited, a CAI facilitator will have to divide the students of the class to smaller groups. This means that he has to teach the same lesson a few times. In order to conduct lesser CAI sessions, the researcher has no choice but to choose a smaller sample. With a small sample, the results of this study may not be able to represent the huge population of all Malaysian Form Four Geography students.

Another restriction to this study is the IMI software. This learning software requires students to read and learn the materials contained in it. After each section of the notes, they have to answer a question. This is to maintain their attention to the notes. If they answer the multiple choices question without thinking or simply press any answer, then this will give implication to their achievement. After going through the whole learning module, they may seem to have understood the content but in real fact they do not because they answer questions correctly only through guessing.

ic in

, version

y. Windows