THE EFFECTIVENESS OF COMPUTER-ASSISTED INSTRUCTION IN LEARNING SCIENCE

A Master Project submitted to the Graduate School in partial
fulfillment of the requirements for the degree
Master of Science (Management),
Universiti Utara Malaysia

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ABSTRAK

KEBERKESANAN KAEDAH PEMBELAJARAN MELALUI BANTUAN KOMPUTER (CAI) DALAM SAINS

Kaedah CAI semakin popular pada masa kini. Seperti yang diperkatakan oleh kebanyakan penyelidik CAI, kaedah CAI memyampaikan isi pelajaran kepada pelajar melalui komputer dalam bentuk bahan-bahan Multimedia. Interaktif (IMI). Kebanyakan program dari bahan pembelajaran yang diperolehi dari Internet atau CD-ROM adalah juga dalam bentuk IMI.

Adakah CAI berkesan sebagai satu alat pembelajaran? Soalan ini merupakan fokus utama kajian ini. Kajian ini juga mengkaji faktor pengaruh jantina ke atas pencapaian akademik dan persepsi pelajar terhadap CAI. Pengetahuan asas komputer juga dikaji sebagai faktor pengaruh ke atas pencapaian akademik. Kajian ini dilaksanakan ke atas satu topik Sains Tingkatan 2 yang dipilih melalui program CD-ROM.

Kajian ini melibatkan 73 orang pelajar daripada salah sebuah sekolah menengah di Temerloh, Pahang. Subjek yang dipilih menjalankan proses pembelajaran dengan kaedah CAI melalui komputer menggantikan kaedah pengajaran tradisional dalam bilik dajah. Sebelum sessi CAI, semua subjek sampel menduduki ujian Pra-CAI. Mereka juga menjawab Borang Soal-selidik Persepsi CAI. Selepas sidang CAI, semua subjek sampel menduduki ujian Post-CAI untuk menilai pencapaian dalam akademik. Mereka menjawab Borang Soal-selidik sekali lagi untuk menilai sebarang perubahan persepsi terhadap penggunaan komputer.

Keputusan menunjukkan bahawa Kaedah CAI adalah signifikan dalam peningkatan pencapaian akademik pelajar. Kajian ini menunjukkan Kaedah CAI adalah berkesan dalam pembelajaran Sains. Daripada keputusan juga didapati bahawa tiada perbezaan yang signifikan dalam aspek perbandingan pencapaian akademik di antara lelaki dan perempuan. Pelajar lelaki dan perempuan didapati mempunyai persepsi sama terhadap CAI. Didapati juga keputusan yang signifikan iaitu, persepsi pelajar terhadap penggunaan komputer dalam pembelajaran telah bertambah. Kajian ini juga mendapati faktor pengetahun asas komputer tidak mempengaruhi pencapaian akademik pelajar.

Kajian ini mencadangkan bahawa kajian-kajian akan datang menggunakan tempoh masa kajian yang lebih lama supaya memperoleh keputusan yang lebih tepat lagi. Tempoh masa kajian ini hanya terhad kepada 3 minggu sahaja. Implikasi daripada kajian ialah para ibubapa dan juga pihak Kementerian Pendidikan patut membekalkan komputer (PC) kepada anak-anak dan para pelajar kerana mempunyai persepsi positif terhadap komputer dan CAI. Walaubagaimanapun, disarankan bahawa lebih banyak kajian mengenai keberkesanan CAI terhadap pencapaian akademik dijalankan ke atas matapelajaran-matapelajaran yang lain.

ABSTRACT

THE EFFECTIVENESS OF COMPUTER-ASSISTED INSTRUCTION IN LEARNING SCIENCE

Computer-Assisted Instruction (CAI) has become increasingly popular nowadays. As mentioned by many well-known CAI researchers, the CAI method uses mainly Interactive Multimedia Instruction (IMI) program via computers to impart knowledge to the students. Many programs and learning materials from Internet or those available on CD-ROMs are IMI materials.

How effective is CAI as a learning tool? It is the main focus of this study. This study also investigated whether the factor of gender and students' prior knowledge of computers influenced achievement and finally students' perception towards CAI. The study was conducted on a Form Two Science topic using CD-ROM program.

It involved 73 students from a secondary school in Temerloh, Pahang. The subjects learnt using CAI method via computer, replacing the existing traditional textbook method. Before the CAI sessions, students took a pretest, They also answered a questionnaire on students' perception towards CAI. After the CAI treatment, all the subjects sat for a posttest to assess the academic achievement. The students answered the questionnaire again to assess changes in perception towards CAI.

The results showed that CAI method significantly improved students' academic achievement. This study revealed that CAI method was effective in learning Science for the secondary school students. The results indicated that the effectiveness of learning through CAI was not affected by gender. There was also no significant difference in the perception of computers as a learning tool between boys and girls. There were significant results showed that there was an increase in students' perception towards the use of computers. The results also revealed that the students' prior knowledge of computers did not affect the achievement in CAI.

The findings suggest that future researches should focus on a longer duration of CAI sessions in order to obtain more reliable results. The present CAI sessions were only limited to 3 weeks, The implication of the study was that parents should make available PCs for their children, and likewise the Ministry of Education should equip schools with more PCs. This is because of the positive perception towards computers and CAI. However, it is recommended that more studies be conducted to assess the effectiveness of CAI on achievement in other academic subjects.

ACKNOWLEDGMENTS

Many people have contributed in one way or another to help make this study possible. I am grateful to my supervisor Dr. Abdul Malek Abdul Karim, who has provided invaluable assistance and advice for this study. I wish to thank him for his constructive criticisms and suggestions towards my project paper.

I would like to express my appreciation to the Dean of the Graduate School, Associate Professor Dr. Ibrahim Abdul Hamid, and Pn. Pujawati Said for their support and encouragement. I would also like to thank the Education Planning, Research and Development Unit, Ministry of Education for their kind approval to enable this study to be conducted in a government school. I wish to thank the Principal of Sekolah Menengah Kebangsaan Abu Bakar Temerloh, Pn. Minah Hamzah for giving her permission and support for conducting the study in the computer laboratory of her school. Many thanks to Madam Choong Yeat Ching, a senior science teacher of the school, who had contributed greatly in this study as a facilitator. The students of the school who have participated in this study deserved my sincere thanks, particularly for their cooperation in making this study a reality.

Finally, my heartfelt gratitude to my beloved wife Ching, who stood by me and showed tremendous support, comfort and tolerance during the difficult moments all the way through.

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CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

The usage of computers by the goverment and private sectors has increased since the introduction of the Pentium-based Central Processing Units (CPUs) computer 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. The rapid advances in computer technology and the subsequent widespread utilization of computers have had dramatic impact on all aspects of society including education. In addition, the ever-decreasing cost of computers and software has given rise to their increasing availability and application in schools. Therefore, this makes the use of computers in the education sector more and more popular.

Living in a technologically based information society has created new expectations regarding the education of students. These changing societal expectations, along with new research on how students learn, have challenged the traditional model of schooling. The new information and communication

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