COMPUTER ATTITUDES, COMPUTER TEACHING EFFICACY AND LEARNING OUTCOMES OF FRESH GRADUATE TEACHERS IN RELATIONSHIP TO COMPUTER USE

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PERPUSTAKAAN
UNIVERSITI MALAYSIA SABAH

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SCHOOL OF BUSINESS AND ECONOMICS
UNIVERSITI MALAYSIA SABAH
2007
DECLARATION

I hereby declare that the material in this thesis is my own except for quotations, excerpts, equations, summaries and references, which have been duly acknowledged.

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Student No: PS04-002-098
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ACKNOWLEDGEMENTS

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ABSTRACT

COMPUTER ATTITUDES, COMPUTER TEACHING EFFICACY AND LEARNING OUTCOMES OF FRESH GRADUATE TEACHERS IN RELATIONSHIP TO COMPUTER USE

This was a survey research which investigated six important issues concerning computer use among fresh graduated teachers from teacher training colleges in Sabah. The first issue was concerned with the levels of computer attitudes (CA), computer teaching efficacy (CTE), learning outcomes (LO) and computer use based on the selected demographic and personal background. The second was concerned with the effects of CA, CTE and LO on computer use. The third was concerned with moderating effects of SE on relationship between CA, CTE and LO towards computer use. The fourth was concerned with the mediating effects of CA and CTE on relationship between LO and computer use. The fifth was concerned with the mediating effects of CA on relationship between CTE and computer use. The final was concerned with the best predictor for computer use for planning, instructional, assessment and communication. A set of questionnaire was used as the research instrument and stratified systematic sampling was used to determine the research samples. The samples consisted of 192 primary and secondary school teachers. The data were analyzed using descriptive and inferential statistics (factor analysis and regression analysis). Research hypotheses were tested at significance level of $\alpha = 0.05$. The findings showed that fresh graduated teachers have high in CTE and LO, and moderate in CA and computer use. CA, CTE and LO had significant effects on computer use. SE has moderating impacts on the relationships between CA, CTE and LO towards computer use. From the findings, it was also shown that CA and CTE have mediating impacts on the relationships between LO and computer use. CA has mediating effect on the relationship between CTE and LO. The final findings had shown that CA (usefulness) was the best predictor for computer use for planning, communication and instruction purposes. CTE (general) was the best predictor for computer use for assessment purposes. In short, the study provided wider implications for theory development, practices and policymaking that can be associated with the computer use among teachers. As a whole, most of the theoretical rationales used in explaining those relationships have been supported.
Kajian ini merupakan suatu kajian survey yang meneliti enam isu penting berkaitan penggunaan komputer di kalangan graduan dari maktab penguruan di Sabah. Isu pertama adalah berkaitan tahap SK, EPK, HP dan penggunaan komputer berdasarkan demografi dan latar belakang terpilih. Kedua, berkaitan kesan SK, EPK, HP dengan penggunaan komputer. Ketiga, berkaitan kesan penyederhanaan suasana sekolah terhadap hubungan antara HP dengan penggunaan komputer. Keempat, berkaitan kesan perantara SK dan EPK terhadap hubungan antara HP dengan penggunaan komputer. Kelima, berkaitan kesan perantara SK terhadap hubungan antara EPK dengan penggunaan komputer. Isu terakhir berkaitan dengan mengenalpastikan peran termal terbaik bagi penggunaan komputer untuk tujuan perancangan, pengajaran, penilaian dan komunikasi. Soal selidik digunakan sebagai alat penyelidikan dan kaedah persampelan sistematis berlapis digunakan untuk menentukan sampel kajian. Sampel kajian terdiri daripada 192 guru dari sekolah rendah dan menengah telah mengambil bahagian dalam kajian ini. Data dianalisis menggunakan kaedah deskriptif dan statistic tabiran (analisis faktor dan analisis regresi). Hipotesis kajian diuji pada aras keertan \( \alpha = 0.05 \). Dapatkan kajian menunjukkan guru yang baru tamat pengajian mereka mempunyai tahap EPK dan HP yang tinggi manakala tahap SK dan penggunaan komputer adalah sederhana. SK, EPK dan HP mempunyai kesan signifikan terhadap penggunaan komputer. Susana sekolah mempunyai kesan penyederhana terhadap hubungan SK, EPK dan HP dengan penggunaan komputer. Dari dapatan kajian, ia juga menunjukkan SK dan EPK mempunyai kesan perantaraan terhadap hubungan antara HP dengan penggunaan komputer. SK mempunyai kesan perantaraan terhadap hubungan antara EPK dengan penggunaan komputer. Dapatatan kajian terakhir telah menunjukkan SK (kegunaan) adalah peralat yang terbaik bagi penggunaan komputer untuk tujuan perancangan, pengajaran dan komunikasi. EPK (umum) adalah peralat yang terbaik untuk penggunaan komputer di kalangan guru. Secara keseluruhannya, kebanyakan teori yang digunakan dalam menerangkan hubungan tersebut telah disokong.
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<td>AIC</td>
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<td>UMS</td>
<td>Universiti Malaysia Sabah</td>
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<td>UNESCO</td>
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Technology in schools has now taken a place in the agenda of international meetings. Along with social and economic, Ken Welch, the President of Software and Information Industry Association (SIIA) in International Society for Technology in Education (SITE), stated that technology in schools is critical to ensure that all students gain 21st-century skills necessary for success by engaging them in the learning process. Information and communications technology has provided tools to help in the teaching and learning processes. The Education Minister of Malaysia, Dato' Seri Haji Mohamed., Tun Hussein, remarked that the growing importance of technology in schools is now an international development because every sensible leader realizes that the economic, social, and cultural wealth of a nation in the Information Age lies in its people, and what they know and can do (Ministry of Finance, 2010). In the technological trends of the 21st century, all member countries of the South East Asia Ministers of Education Organization (SEAMEO), including Malaysia, have begun to focus on the benefits of information and communications technology to improve the teaching and learning of certain subjects, particularly Science and mathematics, but the benefits from computer learning activities had not
CHAPTER 1

INTRODUCTION

1.1. Introduction

Technology in schools has now taken a place in the agenda of international meetings, along with trade and economics. Ken Wasch, the President of Software and Information Industry Association (SIIA) in International Society for Technology in Education (2004), stated that technology in schools is critical to ensure that all students gain 21st century skills necessary for success by engaging them in the learning process. Information and communications technology has provided tools to help in the teaching and learning processes. The Education Minister of Malaysia, Datuk Seri Hishammuddin Tun Hussein remarked that the growing importance of education is a new international development because every sensible leader recognizes that the economic, social and cultural wealth of a nation in the Information Age lies in its people, and what they know and can do (Ministry of Finance, 2004). In the technological trends of the 21st century, all member countries of the South East Asia Ministers of Education Organization (SEAMEO), including Malaysia, have begun to focus on benefit of information and communications technology to improve the teaching and learning of certain subjects, particularly Science and mathematics but the benefits from computer learning activities had not
yet been fully promoted since many teachers are still not clear with its implementation, either in developing or developed countries (Jintavee, 2005).

In this Information Age, like other developed countries, there is a clear recognition that technologies can transform conventional education system and bring more advantages and benefits to Malaysians, especially for the younger generation, and the country as a whole (Berita Harian, 12 January 2004). Thus, Malaysian schools have devoted considerable resource to technology. Malaysian schools and colleges have included computer technology as an integral part of students learning experiences and as a way to equip them with the skills and knowledge necessary to succeed in the 21st century.

In the 2005 national budget, the Malaysian government had allocated a total of RM19.3 billion for the development of education sector to provide better information and communications technology facilities to schools and students (Ministry of Finance, 2004). To further strengthen education and training for knowledge based technology, a sum of RM33.4 billion was allocated for operational and development in the 2007 national budget. Of this, RM6.7 billion was for primary education, RM6.2 billion for secondary education, RM10.4 billion for higher education and RM10.1 billion for computer training programs. To enhance computer usage in schools, a sum of RM288 million was allocated under the Smart School Program, which involves the procurement of computers and peripherals for the Access Centers in 1,000 schools and in all teacher training colleges (The 2007 Budget Speech, 2006). For the forthcoming 2008 national budget, it has been expected that more allocation would be put aside to encourage and educate teachers and students towards this aspect.
Many survey studies in developed countries have shown that it is vital for students to learn the use of technology in order to be prepared for the increasingly technological workplace (Campbell & Perry, 1988; Cuban, 2001; Cuban, Kirkpatrick & Peck, 2001). Adding technologies into the education process does not simplify teaching and learning activities but only adds another dimension of complexity. The adoption of computers in teaching is a complex innovation in which many obstacles need to be overcome (Akbab-Altum, 2006).

Since mid 1960s, computers have revolutionary impacts upon teaching and learning. Computers have extended the ability of teachers to manage and disseminate knowledge, and provide new opportunities for students to enhance the new knowledge in various expects. Accessing computer resources has also created new opportunities for teachers and students. According to Glenn and Carrier (1989), the last decade has seen unprecedented growth in the amount of technology available in educational institutions and thus, issue concerning the implementation process has become a focus. Implementation of computer technologies involves the careful assessment of numerous factors, such as hardware, software, budgetary decisions, support services and user attitudes, competencies and participation.

The most urgent task was to reform teacher education through the use of new technologies that would generate new types of learners, new processes of learning and new approaches to evaluations of learning. This reformation was caused by the shift in teachers' role from being information providers to becoming facilitators of knowledge sources.

Many ministers have expressed strong desire to use technology in creating classroom-to-classroom connections via the internet as a way to build cultural awareness and foster studying habits. They also noted that public schools have the
responsibility to produce technology literate citizen who are prepared to excel in an information based society. The Ministry of Education in Malaysia had emphasized that public education system, either primary or secondary schools must ensure all students have equal access to computer-based technology support for academic success, regardless of social or economic status.

The push to incorporate and integrate technology in classroom teaching from all levels became much stronger and vital in Malaysian education system after the introduction of Smart School. The Smart School is one of the seven flagships applications underlying Multimedia Super Corridor (MSC) which began its operations in 1997. The objectives of the Smart School are to develop technology savvy individuals and eradicate computer illiteracy. Such strategies began with RM150 million allocated for 1340 schools to develop their multimedia facilities and computer laboratories, thus paving the way for a revised school curriculum. Malaysia seeks to convert all its primary and secondary schools to smart schools by the year 2010 through one of the flagships championed by the MSC (Ministry of Education, 1997).

Moreover, the Malaysian government has established various institutions, such as the National Information Technology Council (NITC), the Malaysian Institute of Microelectronics Systems (MIMOS), the Communications and Multimedia Commission (CMC) and the Multimedia Development Corporation (MDC) (Tipton, 2002) to encourage the use of computer related technologies in the Malaysian society. Hence, billions of Ringgits have been poured into the educational sector to acquire necessary equipment. Funding efforts over the past few years have dramatically increased the availability of computer technology for students use in schools across Malaysia.
In Malaysia, there is widespread recognition that technologies can play a powerful role in supplementing and complimenting the process of teacher’s teaching and learning activities but unfortunately at the same time, there is also growing concern that many teachers lack in either experience or skills that are needed to integrate this new technology in their teaching and learning activities. In addition, negative attitudes and self-efficacy towards enhancing the knowledge of latest technologies among teachers have become serious issues that need to be delved into.

Due to those issues, recently, Ministry of Education (MOE) has pooled leading consortia, such as Time Engineering, Microsoft Malaysia, Prestariang Technology Sdn Bhd, and Intel Malaysia to ensure the success of computer implementation in educational programs. These consortia have played vital roles in preparing healthy environment to advance communication and cooperation among teachers towards enhancing technological knowledge. Besides, they also act as coordinators in developing computer knowledge among teachers and place teaching profession at the highest level in society. As of December 2004, Intel has trained more than 27,000 teachers locally (The Star, 24 April 2005). Trainers in the Intel programs had used “teachers teach teachers” concept where teachers who have undergone the training will train their peers after returning to their own workplaces or schools.
1.2. **Statement of Problem**

At the dawn of the twenty-first century, millions of Malaysian Ringgit has been spent on educational technology in teacher educational programs. This is to equip them with a pool of computer skills, knowledge and attitudes, and simultaneously ensure higher level of computer use before they are posted to schools.

Teachers must be well trained and should continuously receive training, so that they may be able to apply newly acquired information practically the use of computer in their daily teaching as well as learning activities and achieve the objectives and aims which under the educational technology curriculum and the Ministry of Education as a whole. Numerous teacher education programs have made extensive efforts to implement effective and meaningful use of technology, such as Malaysian Teaching Diploma Course (KDPM) and Post-graduate Teacher Training Course (KPLI). However the question, "How far the effectiveness of teacher educational training programs can increase the level of computer use among teachers and what are the factors influencing it?" has become the byword for ineffectiveness. This is because no one can afford to waste time or money in delivering inefficient training or courses.

Presently, there are limited studies that focus on how teacher educational training programs influence the use of computers either in instructional or non-instructional teaching methods and its levels. The lack of information regarding factors contributing to the use of computer has led to teacher educators to deliver knowledge insufficiently and ineffectively enough to encourage teachers to use computers in their teaching and learning. It is disheartening to note that at the present time, the government, policymakers and teacher educators have not ensured
its successful implementation but have been merely promoting technology acceptance. Furthermore, they are not able to guarantee that there will be a high rate of technology acceptance at the individual level after undergoing the teacher educational programs. Morrison and Osborn (2005) have stated that one of the reasons for information and learning technology not becoming a lasting factor in education organizations is due to educators’ lack of self-reported knowledge or proficiency from the educators.

The educators and policymakers for teacher educational programs are not aware of the factors that can encourage teachers to use the ICT equipment. The potentials of computer applications in education and its full integration in classroom instruction by teachers can only be realized through effective and efficient teacher educational programs.

In line with this, Datuk Yusoff Harun, Director of Educational Technology Division, Ministry of Education, said it is vital to conduct an intensive investigation to identify the level of use of ICT in all primary and secondary schools (Berita Harian, 16 September 2005). MOE should conduct this investigation as levels of implementation are not always equal to the levels of transformation. Inequality of computer implementation and transformation of technology also happen in developed countries, such as the United States. Based on the study conducted in New York City school, Schechter (2000) has found that only 5% of New York City district’s K-6 teachers have fully integrated technology into their classroom and 25% of them never use computers at school (Jinright, 2003). Thus, it is vital to identify the level of use of ICT in the Malaysian context. Currently, the Government of Malaysia, especially the Ministry of Education has inadequate empirical information
that might guide its efforts towards enhancing positive computer use among teachers in teaching and learning activities.

As there are insufficient and limited up-to-date information on the use of computer among teachers particularly in Sabah, the researcher has conducted some informal surveys to acquire a clearer understanding on the level of use of Information Communications Technology (ICT) and factors influencing the computer use among teachers. In this pre-research study, the researcher had interviewed 38 primary and secondary school teachers. These schools were selected through personal contact with teachers or principals of the respective schools. The pre-research study had confirmed that many classroom teachers were not making appropriate use of computer in schools and they have scored low level, less than once a month, of computer use in their daily teaching and learning activities. Moreover, the findings have shown that they have low computer attitudes, low self-efficacy in teaching via computers.

The situation escalated when the researcher found out that not only senior teachers have high level of resistance towards the use of computer in their teaching and learning activities but also fresh graduate teachers who refuse to adopt the use of computer in practice or their daily instruction after having been posted to the school. Nevertheless, these groups of teachers had been trained to be computer literate while they were in teacher educational programs. In fact, pre-service teacher educational programs are a natural place to start with respect to integrate technology into education. Many researchers in developed countries, such as in the United States also noted that teacher education programs have not been successful in preparing new teachers to use technology effectively (CEO Forum on Education...
and Technology, 2000; Moursund & Bielefeldt, 1999; Yildirim, 2000). Only a few of them have learned to apply it (Kiridis, Drossos & Tsakiridou, 2006).

Besides, unclear information regarding the current levels of use of computer among teachers, policymakers and teacher educators also have insufficient information on how far the imparted knowledge, skills and attitudes can influence teachers’ computer attitudes, computer self-efficacy and their ways of computer use among teachers, which believed as the important predictors for computer use. Many teacher educators are unsure of the effectiveness of the program, especially in encouraging teachers to integrate computer in their teaching and learning. Findings based on the pre-research study conducted by the researcher proved that there were no post-assessment training activity which had been carried out by the related department or ministry to confirm the training transfer, especially in teachers’ computer attitudes and self-efficacy. This would mean that in the process of designing the educational programs for the teachers, the syllabi and curricula were designed without considering the outcomes of the training, whether it has positive or negative transfer of training. In short, in order to apply successful new teaching techniques and methods, a detailed study as follow-up must be incorporated, especially after training programs. A lack of post assessment training activities could be the related barrier to a teacher’s use of technology (Jenson & Lewis, 2001; Mouza, 2002). Mouza (2002) stated that training sessions without follow-up support and assessment have proven to be ineffective in impacting teachers' technology integration. Mouza suggested a need for ongoing post assessment professional development.

If these programs and activities are only administered to encourage the use of computers for non-instructional purposes, a comprehensive study would be


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