



EXPLORING MALAYSIAN TRAINEE TEACHERS' ADOPTION OF THE INTERNET AS INFORMATION TOOL

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This study reports the usage of three commercial Internet search engines in information seeking among trainee teachers at a teacher training institute in Malaysia. It attempts to investigate the information seeking behavior of the trainees via three Internet search engines (Google, Yahoo and MSN) as gateways to information for research in academic learning using two cohorts of trainee teachers. The study surveyed 166 trainee teachers undergoing a 5-year Bachelor's Degree program and compares the statistical differences on gender, programs and years of computer technology experiences. The results revealed that there were significant differences between gender for all the three search engines. Furthermore it also indicated that there was a significant difference between TESL and PISMP group for Yahoo and MSN but not for Google. A significant difference was also observed between years of computer technology experiences and the frequency of usage in the case of MSN. Post hoc test revealed a significant difference in the Internet search between those with more than 7 years of experience with those with less than 2 years experience and those between 2-4 years computing experience. The results provide insight into TESL and PPISMP trainee teachers' use of the Internet search engines as a tool in information seeking when approaching research for their academic learning activities. Implications on the impact of the Internet to the trainee teachers' academic learning in approaching research needs were discussed.

Key Words: teachers' education, Internet search engines, information seeking, Malaysia

INTRODUCTION

The Malaysian Ministry of Education reported in 2004 that students' enrolment at twenty-seven teacher-training colleges nationwide was 24,853. This comprised of 17,109 (68.84%) female students as compared to 7,744 (31.16%) male students (Kementerian Pelajaran Malaysia, 2004). In 2005, the Malaysian Ministers' Council Meeting approved a memorandum to upgrade Teachers' Training Colleges in Malaysia to Institutes of Teachers Education Malaysia (IPGM) that confer Bachelor's Degree besides teaching Diploma certificate for pre-service and in-service teachers in Malaysia. Institutes of Teachers Education Malaysia (IPGM) are teacher-training institutes within the Ministry of Education Malaysia and under the purview of the Teachers Education Division (Ministry of Education Malaysia, 2008).

The present research will add to the body of knowledge by contributing to the research on information seeking behavior of trainee teachers in adopting the Internet when approaching research in academic learning. The study derives quantitative data from the sample of 2 cohort groups: those pursuing Twinning Degree Program for Bachelor of Education (TESL) and those pursuing Bachelor of Education (PISMP) program. PISMP (Persediaan Ijazah Sarjana Muda Pendidikan) and Bachelor of Education (TESL) programs are Bachelor's Degree programs to train English language teachers. The PISMP program began in 2004 and started as part of the Malaysian government's effort to produce teachers for both the primary and secondary schools.

In the past two decades, innovations of the Web and the information communication technologies (ICTs) have rapidly transformed teaching, learning and research experiences in education arena (Sleeter & Tettegah, 2002). In this regard, educational research in Malaysia needs to be aligning with the development and use of information technologies such as multimedia, interactive Internet and web-based electronic tools to facilitate exploration of effective teaching instructional modules and students' learning behaviour in using technology. Many studies had been conducted in higher education institutions locally on English language teaching and learning related to information technologies. Recently, Sanmugam (2008) investigated teacher trainees' attitude and motivation in using the Internet as resources for ESL classroom and reported positive results in those characteristics. Arshad and Noreen (2006) researched on the perceptions of Webquests on English Language In-service and pre-service teachers found that the reaction to the practicality of Webquests in Malaysian schools were relatively less positive though the respondents were very positive towards the suggested benefits of Webquests. Furthermore, there were a variety of studies conducted on the

Internet and Internet Communication Technologies' adoption in various contexts among trainee teachers in Malaysia (Abdul Rahim and Shamsiah, 2008; Lee et al., 2001; Marlia and Supyan, 2003; Wong and Atan, 2007; Wong et al., 2003). It is timely to conduct studies on trainee teachers in different domains of learning behaviors, including information seeking when approaching research in learning using technology tools. This will provide feedback to effective resource management in decision-making, creativity in instructional design and strategies for teaching and learning. Additionally, it offers insight to educators in re-aligning the literacy pedagogy approaches to the trainee teachers learning behavior in a holistic manner.

The objective of this study therefore is to investigate if there is a significant difference in regards to gender (male vs. female), degree program (TESL vs. PISMP) and years of computer technology experience in the usage of three commercial Internet Search Engines (Google, Yahoo and MSN) as information tools.

LITERATURE REVIEW

The innovation of Information Communication Technology (ICT) allows the ease in dissemination of information on the World Wide Web. Albirini (2004) suggested that the global adoption of ICT has been the landmark of the educational scene for the last two decades. In addition, it was regarded as a tool that transforms the way people discover, store and acquire knowledge (Asia Intelligent Wire, 1998). Wong et al. (2005) aver that the Internet has revolutionized the way students learn and how teachers teach in the classroom. Furthermore, Stapleton (2003) argued that the Internet has in the past several years become an acceptable supplementary source for academic research, or even as an alternative research tool. In a study of investigating college students writing research reports, Burton and Chadwick (2000) found that 63% (n=543) students generally ranked most highly sources that were easy to use and easy to find, whether those sources were library-based or internet-based.

The changing social environment facing students and teachers in this new millennium has motivated educators to explore new approach to literacy pedagogy (New London Group 1996). The ease of searching for information via the Internet with multitude subjects is often being perceived as a convenient research tools for college and university students in doing their assignments and research projects. Many researchers have expressed concerns on these information habits, having distinctive influence over the quality of students' assignments, research papers and projects (Rothernberg 1997; Thompson 2003).

The availability of journals publications dedicating to computers and education related research shows the popularity and its importance to educational development. International renowned publications such as *Computers & Education*, *Journal of Educational Computing Research*, *Computers in Human Behavior*, *Journal of Research on Computing in Education*, *The Internet and Higher Education* contributes to a vast variety of literature on different constructs of research works in diversified groups, culture and economic conditions.

Past research suggested that the Internet is a popular communication and searching tools for information among students (Nie and Erbring, 2000; Pew Internet and American Life Project, 2002). Many published literature had reported on different attributes of the Internet and ICT related to information seeking among college and university's students (Ballantine et al., 2007; D'Esposito and Gardner, 1999; Dong 2003; Ramayah and Aafaqi, 2004; Selwyn, 2008).

Brophy and Bawden (2005) compared the popular Internet search engine Google, with library databases and system to assess the relative value of the two systems. The study reported both systems have their respective strengths and weaknesses. It was found that Google is superior in accessibility and coverage, but the library systems excel in quality of results. The authors suggested improving the information skills of the searchers to give better results from the library systems.

In the survey of the web Search Engine (Nielson NetRatings, 2007) reported on the top 10 search providers of the Web by internet users, Google, Yahoo and MSN/Windows Live have been ranked among the top three search engines. Hananzita and Kiran (2006) explored and compared the features, as well as evaluated the performance and search capabilities of four Malaysian independently built Web search engines (Malaysian Directory, Malaysian Central, Saja Search and Cari). The study used the Internet Search Engine, Google as the benchmark in evaluating performance based on four criteria of system designs: feature presentation, search capabilities, retrieval performance and user effort. The study reported that overall comparison with Google leaves Malaysian search engines with much to improve on in terms of performance and search capabilities.

Yi (2007) conducted a study among international students at Texas Woman's University. It was found that the top three most commonly used search engines by the respondents (n=61) were Google (88.5%), Yahoo (65.6%) and MSN (18%). The results show that Google was the preferred choice of Internet search engine in seeking information for academic use. The study reported that

there was no significant relationship between library use and the demographical attributes of gender and age variables.

Past studies suggested that the Internet continues to affect undergraduates' research habits with its convenient array of online research tools. Robinson and Schlegl (2005) evaluated the scholarly content of student citations in a political science course and tested two designed interventions intended to improve the quality of students' works. The study recommended that instructors might encourage students to improve the quality of their research by providing guidelines included in the instruction-and-penalty on students' assignments. The OCLC (Online Computer Library Center, 2002) conducted a survey among college students and reported that 31% (n=1050) of the respondents use Internet search engines to find answers to their questions, and search engines were the first-choice web resources for most of the respondents. It was also suggested that academic librarians could influence students' web-based information choice through incorporation of various strategies to increase the visibility of library on the web, including relentless promotion, instruction and customer service. A further research by OCLC in 2005 revealed that a majority of college students used search engines rather than library resources for seeking information. This study reported that a trivial of 2 percents of college students begin their research by using library website (De Rosa et al., 2005).

In 1999, Shanmugam investigated 197 trainee teachers information seeking behavior from selected courses in 2 teacher training colleges at the State of Johor, Malaysia. The study examined the information needs and seeking behavior of participants on attributes of information. The results revealed that the majority of the information needs are focused around course work and there is a low awareness of information needs that are not related to teaching. Informal and interpersonal sources were preferred. Accessibility to sources and using OPACs were cited as major problems when locating information. Investigations showed that computers were largely used for typing rather than for seeking and processing information even after a decade of technological advancement.

Lau and Yeoh (2008) investigated the information seeking behavior in regards to differences between gender for undergraduate business students on various academic activities. It was found that female business students seek information more frequently compared to male students in tutorials and assignments, but no difference was found for research projects/thesis. The authors suggested that female students were basically more diligent in seeking information in their academic learning. Even in the case of tutorials, when no marks were awarded

for giving correct answers, female students were shown to seek information more frequently.

Based on the previously reviewed theoretical and empirical literatures, the following research questions were proposed:

RQ1: Is there significant difference between gender in how often trainee teachers use Google, Yahoo and MSN for their research work?

RQ2: Is there significant difference between programs of study in how often trainee teachers use Google, Yahoo and MSN for their research work?

RQ3: Is there significant difference between years of computer technology experiences in how often trainee teachers use Google, Yahoo and MSN for their research work?

METHOD

The questionnaires for this study were administered to 200 trainee teachers undertaking a five-year Bachelor degree programs at a teacher's training college in Penang. The sample consisted of two cohorts of trainee teachers: those taking Bachelor of Education (TESL) program and those taking Bachelor of Education (PISMP) program. The trainees completed the survey during class time by one of the researchers and were assured anonymity. Participation was voluntary and no remuneration was offered. The teacher's training college where the survey was conducted did not require the students to undergo formal information literacy modules or information management skills courses.

There were two parts to the survey. Part A require respondents to fill up their demographic details such as gender, current level of study, program of study and years of computer experience. Part B require respondents to indicate how often they use Internet search engines for their research in regards to the three Internet search engines: Google, Yahoo and MSN. Trainees were asked to rate 1 (Very often), 2 (Often), 3 (Occasionally), 4 (Rarely) and 5 (Never). The three Internet search engines were selected based on past literature review and observations of student information search behaviour.

RESULTS

Profile of respondents

A total of 166 completed questionnaires (yielding a response rate of 83%) were obtained and deemed sufficiently complete to be useable. Prior to subjecting the data to statistical analysis, frequency distributions were tabulated for each item to ascertain possible response biases. In addition, a visual inspection was also performed to identify any possible anomalies. None were detected and the sample was determined to be of sufficient quality to be subjected to statistical analysis. Table 1 describe the characteristics of the sample in detail.

Table 1. Demographic profile of respondents (n= 166)

<i>Gender</i>	<i>Level of study</i>	<i>Program</i>	<i>Years of computer experiences</i>
Female: 50.6%	Year 1: 63.9%	PISMP: 53.6%	< 2 years: 19.3%
Male: 49.4%	Year 2: 6.6%	TESL: 46.4%	2-4 years: 36.1%
	Year 3: 25.9 %		5-7 years: 26.5%
	Year 4: 3.6%		> 7 years: 18.1%

Analyses of data

The first part of the analysis looks at whether there is significant difference between gender (male/female trainee teachers) and the frequencies of Internet search engine use (Google, Yahoo and MSN). Based on the results shown in Table 2, there were significant differences between gender for all the three search engines. On closer observation, female trainee teachers were found to use Internet search engines more compared to their male counterparts for all the three search engines. Based on the mean score results, for both male and female trainees, the number one choice of search engine is Yahoo followed by Google and MSN.

Table 2. Independent sample t-test results of Internet search engine use by gender (n= 166)

<i>Internet Search Engine</i>	<i>Male (Mean)</i>	<i>Female (Mean)</i>	<i>Significance</i>
Google	1.78	1.35	0.014*
Yahoo	1.62	1.23	0.020*
MSN	3.80	3.15	0.008*

* p < 0.05

The second part of the analysis looks at whether there is significant difference between programs of study and the frequency of Internet search engine usage.

Table 3 shows the result of an independent sample t-test. The results indicated that there was a significant difference between TESL and PISMP group for Yahoo and MSN but not for Google. In the instance of Yahoo and MSN, those who were in PISMP programme were found to use Yahoo and MSN search engine more often compared to those taking PISMP program. Furthermore, on closer investigation of the results by looking at the mean scores, it was discovered that for all levels of study, Google was the preferred choice of Internet search engine for trainees in both TESL and PISMP programs compared to Yahoo and MSN.

Table 3. Independent sample t-test results of Internet search engine use by program of study (n= 166)

<i>Internet Search Engine</i>	<i>TESL (Mean)</i>	<i>PISMP (Mean)</i>	<i>Significance</i>
Google	1.58	1.54	0.800
Yahoo	1.64	1.24	0.019*
MSN	3.79	3.20	0.016*

* p < 0.05

To address research question three, one-way ANOVA for measurement of differences between years of computer technology experiences and the use of Internet search engine was adopted. Table 4 illustrate the results. It can be observed that there was a significant difference between years of computer technology experiences and the frequency of usage in the case of MSN as the search engine. Further post hoc test conducted in the case of MSN revealed a significant difference in the Internet search between those with more than 7 years of experience compared those with less than 2 years experience and those between 2-4 years computing experience. On closer scrutiny of the mean score, those who has more than 7 years of computing experience tend to use all three search engine (Google, Yahoo and MSN) more frequently compared to other groups.

Table 4. One-way ANOVA results of Internet search engine use by years of computer technology experiences (n=166)

<i>Internet Search Engine</i>	<i>< 2 years (Mean)</i>	<i>2 to 4 years (Mean)</i>	<i>5 to 7 years (Mean)</i>	<i>> 7 years (Mean)</i>	<i>Significance</i>
Google	1.72	1.63	1.52	1.30	0.480
Yahoo	1.50	1.38	1.50	1.30	0.839
MSN	3.78*	3.87*	3.36	2.53*	0.001*

* p < 0.05

The summary of the research results in relation to the three research questions were shown in Table 5 below.

Table 5. Summary of results in relation to the research questions

<i>Research questions</i>	<i>Findings</i>
RQ1: Is there significant difference between gender in how often trainee teachers use Google, Yahoo and MSN for their research work?	Significant across gender for Google, Yahoo and MSN
RQ2: Is there significant difference between program of study in how often trainee teachers use Google, Yahoo and MSN for their research work?	Significant for Yahoo and MSN
RQ3: Is there significant difference between years of computer technology experiences in how often trainee teachers use Google, Yahoo and MSN for their research work?	Significant for MSN only

DISCUSSION

Differences have been observed on the usage of Internet search engine with female trainees searching the Internet more often compared to male trainees (for Google, Yahoo and MSN). However in general, it has been shown that both male and female trainees prefer to use Yahoo as their first choice of Internet search engine for research followed by Google and MSN. The result is in contrast to previous study by Yeoh and Lau (2008), which shows that in general both male and female business students prefer Google as their main search engine for research, followed by Yahoo and MSN. The preference of the main search engine among students across different institutions of higher learning will need to be explored further.

With regards to the program of study, significant differences were observed between trainees taking TESL and PISMP programs on their frequency of using Yahoo and MSN search engines. Those who were in TESL program tend to use Yahoo and MSN search engines more often compared to those in the PISMP program. One of the reasons for such occurrence might be that those in TESL were required to prepare more comprehensive report for their assignments and projects as the program was considered more rigorous than the PISMP. Therefore to look for more information, TESL students were required to use more alternative search engines other than Google compared to their counterparts from the PISMP. The result also shows that in general Google was the main choice of search engine for both the TESL and PISMP programs. This is consistent with the result of past study by Brophy and Bawden (2005), Yeoh and Lau (2008) and Yi (2007).

In the instance of trainee teachers with more than seven years of computing experience, the result indicated that they were prone to use MSN more frequently. Therefore, the more computing experience the trainees had, the more likely they will be using MSN in information seeking at the Internet. Also on closer scrutiny of the mean score, those who had more than 7 years of computing experience tend to use all three search engine (Google, Yahoo and MSN) more compared to other groups. This result shows that trainee teachers who have more computing experiences tend to use other alternative search engine such as MSN and do not merely rely on Google and Yahoo. In another words, trainees who have more computing experiences are more "savvy" in their choices of research tools.

From the results it is imperative to improve trainee teachers research skills by providing training in information skills to impart the ability to recognize the information needs and locate the required information so that they would be able use them critically for research. Additionally the faculty may want to consider providing guidelines for using open web resources retrieved from the Internet. In concerted efforts with the university's library, the teaching faculty could provide guidelines to review information sources as suggested by Robinson et al. (2005) and influence students' use of web-based information choice when supervising students' research work. Undoubtedly the information professionals need to keep current with Information literacy practices for continuous improvement of user services and maximize a return in investment on library resources. The advent of Web 2.0 has further revolutionized the way information is organized, shared, distributed and retrieved virtually with the Internet, thus pushing further the needs in inculcating information literacy skills in this digital environment to students in higher education.

Limitations and Future Research

There are a number of limitations when interpreting the results of this study. First, the samples consist of trainee teachers from only one teacher training institution. Therefore the findings of this study could not be generalised to the Malaysian trainee teachers. Future research should endeavor to include representative samples of the Malaysian trainee teachers across the country. Second, it may be appropriate to compare the sample of the current study by including trainees' from other disciplines of study. Additionally, future research could be undertaken to compare information seeking behaviour among different groups of students (trainee teachers, public university students and private university students).

CONCLUSION

The Internet search engines is a convenient gateway to information and is fast gaining popularity as research tool among college students. This is a phenomenon documented in many past studies and research. Other researchers have responded positively on the use of the Internet to enhance tertiary levels of learning and teaching in English as a Foreign Language (EFL) (Muehleisen, 1997; Yang, 2001) in addition to support and motivate students' efforts to acquire English proficiency skills (Fox 1998). The results of this study reveal the extents of trainee teachers' information seeking for academic research using the Internet search engines, Google, Yahoo and MSN. The findings may be specific to EFL trainee teachers, but their implications are significant to other disciplines of teacher education in Malaysia as well. However, the use of the Internet as a resource has caused professionals concerns on the quality of the information retrieved for students' research works (Burton and Chadwick, 2000; Gillette and Videon 1998; Lombardo and Miree, 2003) and its influences to students' academic performance (Camille et al., 2008; Kubey et al., 2001). Nevertheless, the study sheds some light on the need to inculcate information skills through various strategies in empowering students' ability to use information effectively and meaningfully.

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