

IT Literacy of Language Teachers in Malaysian Technical Schools

**NORIZAN ABDUL RAZAK¹, MAIMUN AQSHA LUBIS²,
MOHAMED AMIN EMBI³, RAMLEE B. MUSTAPHA⁴**

Universiti Kebangsaan Malaysia
43600 Bangi, Selangor
MALAYSIA

ekomuniti@gmail.com¹, mal@ukm.my², m.amin@ukm.my³, drramlee@yahoo.com⁴,

Abstract: - Successful introduction of technology in language education comes with a price - as not only the technology is expensive, it is ineffective unless teachers are trained and made comfortable with its use. As technical schools contribute and prepare skilled workforce for Malaysian economy, the need for teachers to be IT literate is immensely critical. This paper presents findings of a study designed to investigate the existing level of IT competency of language teachers in Malaysian technical schools. The results show that the majority of English teachers in Malaysian technical schools are still novice users of IT. Some of the reason deduced from the survey and the interview were low level of computer competency, less focus on the new computing skills, limited training program, *technofear*, limited infrastructure and support. Recommendations in addressing these issues especially regarding the provision of supportive teaching environment in technical schools are put forth.

Key-Words:- Information Technology, Computer Literacy, English Teachers, Technical Schools

1 Introduction

Multimedia Super Corridor (MSC) dubbed as the *Asian Silicon Valley* has revolutionized Information Technology (IT) architecture in Malaysia. Established in 1996, MSC occupies a 15 x 50 km *Intelligent City* governed by the Multimedia Development Corporation (MDC) which enforces cyber laws, policies and practices that enable operating companies to harness the full potential of Information Communication Technology and Multimedia (Mustafa 2001)[1]. The goal of MSC is to provide a dynamic multimedia and telecommunication mega infrastructure in eco-friendly surroundings that attracts world-class Malaysian and international IT companies for the development of next-generation IT products.

In order to drive the development and growth of the MSC, seven Flagship Applications were launched. They are the Electronic Government, Smart Schools, Tele-Medicine, R&D Cluster, Smart Cards, E-Business and Technopreneur Development [2]. Together, these Flagship Applications act as a booster to the development of MSC, provide business opportunities for ICT companies especially Malaysian small and medium enterprises (SMEs) and to spearhead the transformation of Malaysian society into a knowledge society.

Due to the increasing demand for knowledge workers to work in the IT and high-tech industries

in the MSC, Smart Schools program was adopted as one of the 7 Flagship applications. The flagships also support the government's plan to obtain the status of an industrialized nation by the year 2020 (Vision 2020) and to gain a competitive edge over other developing countries in the global economy (Muhammed 1999)[3]. In the Smart School concept, learning will be self-directed, individually-paced, contextualized and reflective using IT as a prime enabler (Abdul Manab 1999) [4]. According to the Ministry of Education, all public schools will be smart school by the year 2010 [5].

To achieve the aims of the MSC and the Vision 2020, the initiative to integrate the use of IT and multimedia technologies in technical and vocational education is timely. The Ministry of Education seems serious in paving its way to equip schools with computers and appropriate telecommunications for database and internet facilities. The Ministry has launched *Komputer dalam Pendidikan* (Computer in Education) program in 1992 to enhance computer literacy among Malaysian teachers and students (Berita Harian 1999) [6].

The future of Malaysia's competitiveness depends on the skills of its workforce. As the demand for IT professional is increasing, Malaysia should be prepared to produce adequate IT and knowledge workers in this country. Since technical and vocational program is one of the largest sectors that supply semi and skilled workers in this country,

it is critical to assess the quality of IT and multimedia competencies among its stakeholders especially the teachers.

2 Statement of the Problem

According to Badusah and Hussin [7], the usage of computers and internet among Malaysian teachers is still at the low level. Their survey of secondary school teachers in Selangor (a central state in Malaysia) shows that 56.3% of the teachers have never use internet. This may be partly due to the lack of computers and internet network in their schools and homes. The study also shows that 59% of the schools do not have internet access. In addition, 39% of the teachers who use the internet do not have any formal training on how to use the internet.

In addition, a study by the National Information Technology Council [8] which highlighted that a total of 5,010 (69.5 percent) of primary and 758 (46.2 percent) of secondary schools do not have adequate computer facilities. Furthermore, about 276,000 households constituting 1.2 million Malaysians (total population: 23 million) are considered as "marginalized" when it comes to access to information technology.

This is alarming since the Multimedia Super Corridor needs considerable number of knowledge workers. Therefore, if this country fails to prepare the teachers and students with adequate knowledge of IT, then the objectives of MSC may not be fully realized. According to the Seventh Malaysia Plan (1996 – 2000), a sum of RM 2.3 billion was allocated to Ministries and public agencies to invest in IT-related programs and projects [9]. These include building IT infrastructure and providing IT training to enhance IT literacy in the public and private sectors. However, little is known about IT literacy among English teachers in technical and vocational schools in Malaysia. Further, research regarding the effectiveness of the pre- and in-service IT training of Malaysian teachers is minimal. Therefore, it is critical to examine the IT competencies of English teachers in technical schools in Malaysia.

3 Purpose of the Study

The purpose of this study was to identify the IT competency of English teachers in technical schools in Malaysia. IT competency in this study is defined as having the knowledge of computer concepts and theory of use and having the skills to execute tasks in computer-based teaching environment.

4 Literature Review

The IT and multimedia revolution has virtually permeated every sector of the society. It has transformed the way people live and work, communicate, entertain, and conduct business (Osterlund & Robson, 2009) [10]. Further, the unprecedented demand for IT professionals has never been more critical (Peng 2000) [11]. This challenge has enormous implications for both education and research (Saunders 1998) [12]. The use of IT in education has given a new perspective to teachers in technical schools. It is now possible to have class's on-line, communications in real time and interactions between students and teachers beyond place and time boundaries. As the technical schools prepare for future knowledge and skilled Malaysian workforce, it is logical that all teachers, especially English teachers, to play a more active role in *immersing* their students in the cyber-savvy environment.

A starting point in teaching language should be on understanding of how people learn. If we wish to improve the techniques, methods, and content of the subject, the basis of the improvement should be grounded on the theories of learning. The applications of computer in the teaching and learning as stated by Garrett [13] "... does not constitute a method" rather it is "a medium in which a variety of methods, approaches and pedagogical philosophies may be implemented." The use of computer and related software in pedagogy must be based on sound principles of teaching and learning. Theories of language learning, for example, the behaviorist theory has shown that language is learned when there are stimulus, response, and reinforcement. The cognitive theory describes that language is learned with predetermined set of rules. A more recent approach to language learning stresses on the need for an environment that is both communicative and integrative. An innovative use of computer can provide tremendous wealth of information and language activities that are both communicative and integrative. Krashen and Terrell [14] support language learning via communicative language activities such as on-line forum and internet relay chat (IRC).

In language education, research (e.g., Embi et. al, 1998; O'Malley & Chamot, 1990; Oxford, 1990; Oxford & Crookall, 1989) suggests that successful language learners are those who utilize a wide repertoire of key language learning strategies that includes on-line learning. Jonassen [15] described computer technology as a *mindtool* that can assist

teachers to help learners think creatively and analytically. There are myriads of software, multimedia tools, and Internet resources that can be utilized by the teachers to generate activities that help students to think critically and creatively. Computer use in classroom is also in line with constructivist approach of teaching as computer activities can be designed to be interactive and to tailor to the students' level of learning. Finally, literature shows that the classroom environment plays an important role in learning; in addition to being a valid predictor of learning outcomes (Davis, Preston, & Sahin, 2009)[16]. Thus, computer can be a dynamic learning environment for both teachers and students if use appropriately.

Multimedia is one of important approach to attract and give students more understand with what they were learning in classroom. The students get better marks [17] in assessment during learning and teaching process. Besides, E-learning [18] is a good way to apply during learning process. Actually, we need to realize the importance of ICT and its impact [19] in order to improve our teaching and learning process.

5 Methods

This study utilized a survey method using a set of questionnaires and interview to obtain the data. To identify the critical IT competencies, a Delphi technique was utilized. The Delphi panel consisted of IT experts. The selection of Delphi Panel was selected based on their reputation as experts in the field. The researcher employed the snowballing technique where the selection of the new experts was based on the previous experts' recommendation. A total of 15 experts was appointed. According to Kasem [20], the panel size of fifteen could maximize reliability and minimize average group error in the calculation of the consensus value. A sample of 56 English language teachers from 14 technical schools in Malaysia was selected randomly and participated in a survey using a self-report questionnaire. The survey was carried out via postal mail and interviews were conducted to validate the self-report data.

5.1 The Instruments

There are three sections in the self-report questionnaire employed in this study. The three domains - the competency, attitudes and infrastructure and support were chosen based on the

previous studies conducted in the same area by several researchers (Kirk) [21].

The first section was developed by first getting the experts' consensus regarding the IT competencies needed and required for the English language teachers in Malaysian secondary schools. After the three rounds of Delphi interviews, a total of 98 IT competencies under 8 categories were accepted and finalized. The reliability indexes of these categories are Knowledge of Computers and Its Social Impact (0.94), Operational Basics (0.95), Basic Internet (0.97), Computer Assisted Learning and Teaching (0.96), Web-Based Learning and Teaching (0.82), Computer Mediated Communication (0.97), Computer Assisted Management (0.94), and Assessment and Evaluation (0.95). A 5-point Likert scale of competence was used (Not Competent [1], Novice [2], Moderately Competent [3], Competent [4], Highly Competent [5]).

The second section of the questionnaire is related to attitudinal factors comprising of 4 attributes - anxiety, liking, confidence, and usefulness. This section has a total of 40 attitude statements using a 5-point Likert scale (Strongly Agree [1], Disagree [2], Undecided [3], Agree [4], Strongly Agree [5]). The items in this section were adapted from Knezek and Christensen [22]. The third section is related to demographic factors. The questionnaire was pilot-tested and the internal consistency of the items using Cronbach Coefficient Alpha ranges from 0.6-0.9 for the items in Section A and B that was considered as medium to high based on classification of index reliability. Table 1 describes the interpretations of mean scores.

Table 1: Interpretation of Mean Scores

Mean Scores Interpretation	Interpretation
Less than 2.33	Low competency. The sample needs help and assistance in demonstrating competency.
2.33-3.66	Moderate. The sample is able to demonstrate the competency but need occasional help.
More than 3.66	High competency. The sample has expertise in using computer and able to teach others.

5.2 IT Competency Categories

After the three rounds of Delphi interview, the Delphi panel agreed that 98 IT competencies in eight categories are important for all English language teachers to have. The categories are:

1. Knowledge on Computers and Its Social Impact (KNOW) - Basic knowledge of computer characteristics and terminology, knowledge on applications of network communications and knowledge on the effects of computer-based instruction in education and society.
2. Operational Basics (OB) – Ability to run the operating systems, install computer program, print document and use applications software (e.g. word processor, spreadsheet and presentation program).
3. Basic Internet (BI) – Ability to use internet browser, use of search engine and conduct information search.
4. Computer Assisted Learning and Teaching (CALT) - Ability to integrate application software into learning and teaching as well as apply instructional programs to develop language skills.
5. Web-Based Learning and Teaching (WBLT) – Ability to guide students to use internet browser, search engine and utilize language learning materials on the web.
6. Computer Mediated Communication (CMC) – Ability to communicate and conduct consultation with students on-line, subscribe and participate to ESL discussion group and forum.
7. Computer Assisted Management (CAM) - Ability to use computer to support classroom management, monitor students' use of computer and manage school computers for self access work.
8. Assessment and Evaluation (AE) – Ability to evaluate software and programs on suitability for classroom purposes. Construct and bank test items for class assessment.

6 Results and Discussions

The quantitative data were analyzed based on the three main domains namely competency, attitudes, and infrastructure and support. The interview data were analyzed qualitatively.

6.1 IT Competency of English Teachers

The teachers' IT competency level was determined by calculating the mean scores of all the items in each computing category as described earlier. The teachers reported their level of computing knowledge and their ability to carry out certain computing tasks. As displayed in Table 2, the respondents were at low competency level and need help and assistance in demonstrating competency related to *Computer Mediated Communication* (1.97), *Assessment and Evaluation* (2.11), *Computer Assisted Management* (2.14), and *Web-Based Learning and Teaching* (2.15). The respondents reported to be moderately competent in *Operational Basics* (3.25), *Basic Internet* (2.86), followed by *Computer Knowledge and Its Social Impact* (2.58) and *Computer Assisted Learning and Teaching* (2.54).

Within the range of means, the highest score is in *Operational Basics* (3.25). This shows that the respondents claimed that they were moderately competent to do basic tasks with the computer. The respondents reported that they were able to log-on and run the computer program. They were also able to print selected documents. They were moderately competent to use applications software such as word processor for clerical work, presentation program to create slide show, database and spreadsheet to generate list, charts and tables.

The relatively "high" mean score in the *Operational Basics* may be due to several reasons. About 43% of the sample responded they had taken computer-related courses during their teacher training years. Those courses may help them to grasp the basics in computer technology and provide a good background for them to learn the new skills like the use of *Internet*, *Computer Mediated Communication* and *Web-Based Learning and Teaching*. Almost half (46.4%) of the sample said that they had undergone in-service training provided by the Ministry of Education and in-house training related to computer and IT. Result of a t-test shows that those who had in-service computer training have significantly higher mean score on computer competency than those who did not get any computer training at 0.01 significance level.

The lowest mean is in *Computer Mediated Communication*. The specific competencies in this category deal with the use of e-mail for consultation and communication with students. Other elements include establishing network with other schools and other students for collaborative projects and to contact language experts for views and advice. The teachers reported they were not competent in

handling such tasks and needed help, for example, in subscribing and participating in English as a Second Language (ESL) discussion group, forum or mailing list. There are many reasons that contributed to low competency in this category. The critical ones include lack of training and lack of Internet access.

Table 2: Teachers' IT Competency of Each Category

Competency level	Percentage (%)
Not competent	27.8
Novice	40.7
Moderately competent	29.6
Competent	1.9
Highly competent	Nil

Table 3: Overall IT Competency of English Language Teachers in Technical Schools

Category	Mean	Std. Dev.
KNOW	2.58	2.64
OB	3.25	3.23
BI	2.86	2.90
CALT	2.54	2.60
WBLT	2.15	2.00
CMC	1.97	1.91
CAM	2.14	2.11
AE	2.11	2.23

6.2 Overall Competency

Table 3 shows the overall competency of the English language teachers in technical schools. Most of the respondents (40.7%) were in the novice category. Novice in this study is defined as needing frequent help to perform computing tasks. This indicates that even though the respondents could perform basic computing task they still needed help as they were not proficient users yet. A relatively high percentage of the respondents (27.8%) perceive themselves as incompetent IT users and needed substantial assistance to perform computer-related tasks.

From the total sample, 29.6% of them were categorized as moderately competent. Only 1.9% of

the respondents perceived that they are competent and none of the respondents claimed to be highly competent in IT. These findings implicate that only a minority of the English language teachers in technical schools in Malaysia has expertise to use IT in language teaching. Majority of them said that they could not help or teach others. This findings support an earlier study of a nation-wide survey on the Malaysian English language teachers readiness towards the application of computer-assisted language learning and teaching where majority of the teachers responded that they are technically not ready (Abdul Razak 1998)[23].

6.3 Attitudinal Factors

Table 4 depicts the mean scores of four attitudinal attributes of the respondents toward computer. The data shows that the respondents have quite a high anxiety level towards computer (3.67). From the interview, this aspect was further investigated and it was found that teachers do have some reservation in using IT in teaching due to the fact that they are not familiar and not sure how the technology will change their teaching methods and styles. They were also concerned of having more workload and unable to complete their course syllabus. On item related to liking towards computer, the mean score reflected that the respondents moderately prefer teaching English using computer (3.53). Regarding the confidence of using computer, the mean score shows that the respondents were moderately confident that they could cope with computer-related work and tasks (3.55). Respondents also show high agreement that computer is useful especially in their teaching career (3.66).

Table 4: Mean Scores of Attitudinal Factors

Attribute	Mean
Anxiety	3.67
Liking of computer	3.53
Confidence of computer	3.55
Usefulness of computer	3.67
Overall	3.60

6.4 Infrastructure and Support

From the survey, it was found that only 5.5% of the teachers used computers daily for their English class, 9.1% used computers once a week, 27.3% used them once a month and the majority of the respondents (58.2%) did not use computers at all. Table 5 illustrates the types of support that the respondents received. The majority of the sample (51.9%) received in-service training provided by the school. About the same percentage of respondents

(21.2% and 21.6%) received support in terms of in-service training provided by the computer vendors and the Ministry of Education, respectively. From the interview data, some respondents assert that there were not enough teachers in the schools and therefore, the opportunity to go off for training was very limited. Teachers had the opportunity to attend computer-related workshop but only few received such support (21.4%). It was also noted that very few teachers were given the support to develop new software (8.9%) and to participate in software competition (6.0%).

Table 5: Types of Support Received

Support	Percent (%)
Loan to buy computer	37.3%
Time off from teaching to go for training	19.6%
In-service training at school	51.9%
In-service training from computer company	21.2%
In-service training from Ministry of Education	21.6%
Recognition for software developed	8.9%
Chances to attend computer related seminar	21.4%
Software competition	6.0%

6 Conclusion and Recommendations

After examining various factors such as teachers' competency, attitudes, infrastructure and support, it can be concluded that the majority of English teachers in Malaysian technical schools are still novice users of IT. Some of the reason deduced from the survey and the interview were low level of computer competency, less focus on the new computing skills, limited training program, technofear, limited infrastructure and support. Each of these factors is discussed below.

6.1 Low level of computer competency:

Data revealed that the majority of the English language teachers in this study were at the novice level. This means that they still need help with various computer skills and far from having the expertise to teach others. Having the competency in using computer is crucial and the determinant factor in ensuring the effective use of IT in education (Embi 2001) [24]. Due to limited competency among English teachers, the applications of IT in language classroom daily and weekly were very

low. The study found that majority of the teachers (58.2%) did not use computers at all for teaching.

6.2 Lack of focus on new computing skills

The findings also show that the teachers reported lowest competency in new computing skills such as *Computer Mediated Communication*. Competencies in this category are considered as new skills and crucial for the classroom of tomorrow as they enhance interaction and enable communication in real time to take place (Maddux 1997) [25]. Majority of the teachers also reported that they were not competent to interact with students on-line. In Malaysian schools, conducting "teaching" on-line is still new (Abdul Razak 2001) [26]. Therefore, teachers need to be oriented to use IT for teaching and communication purposes. Furthermore, on-line communication requires expertise in writing as to avoid misunderstandings. Teachers need to be careful with the choice of words and use of emoticons to encourage more interaction from and within students' group. The lack of expertise and experience can create barrier to effective use of IT for such purposes.

6.3 Limited Training Program

The findings from this survey also reveal that teachers benefited from the in-service training either provided by the schools, the computer vendors, or the Ministry of Education. However, the training session contributed most is in the development of the basic skills related to the use of application programs such as word processing, spreadsheet and presentation program like Power Point. Training on new skills such as internet and web-based learning and teaching are usually for selected few and not many English language teachers in technical schools had an opportunity to attend the training. It is proposed that training sessions should focus on development of new skills and IT applications in teaching and learning. Furthermore, the training must be tailored to the different needs of the teachers.

6.4 Technofear

The major finding on the teachers' attitude towards computer is technofear. In the interview conducted, it was found that the teachers' low competency in using IT was partly due to fear of change. They feared that with the use of IT, they would have more work and the shift from conventional teaching to the use of IT could create more confusion among the

teachers and students. Therefore, IT awareness program should be conducted on a regular basis to correct this misconception.

6.5 Limited infrastructure

Some of the teachers interviewed reported that lack of computer software in schools and the priority to complete the syllabus for the examination made their effort to apply technology even more difficult. Most of the schools have only one computer lab equipped with 20 computers and due to the limited hardware and facilities, teachers had to rotate and plan carefully their lab schedules to avoid clashes. Teachers also reported lack of technical help in the computer lab. Therefore, it is suggested that the schools need to find resources to equip and sustain their computer labs.

6.6 Limited support

The support received by teachers such as in-service training and computer loan is commendable but not sufficient. Other supports such as recognition for developing software and support to design new software for competition should be provided to those teachers involved. These incentives can encourage teachers to be creative and certainly upgrade their computer competency level. Teachers' participation in workshops and seminars related to computer in education should be encouraged even more. Time off to go for IT training is another possibility that can be on a rotational basis to ensure a sufficient number of IT-literate teachers in each school.

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