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# IN-SERVICE TEACHERS' VIEWS TOWARD TECHNOLOGY AND TEACHING AND THEIR PERCEIVED COMPETENCE TOWARD INFORMATION TECHNOLOGY (IT)

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**Abstract.** The purpose of this study is to measure in-service teachers' views toward technology and teaching and their perceived competence toward Information Technology (IT). A survey was carried out through a set of questionnaires among 160 teachers in three selected schools, each representing the three districts in Malacca, which are Melaka Tengah, Alor Gajah and Jasin.. A pilot test was conducted to obtain the reliability of the instruments. The Cronbach alphas for the IT Competence Scale and Teachers' Views of Technology and Teaching Scale were reported at 0.98 and 0.83 respectively. The respondents believed that they have positive attitudes toward computers although most of them had moderate level of IT competence. These competencies include basic computer operation skills (43.1%), word processing (48.1%), spreadsheet (51.9%) and telecommunication (48.1%) while in media communication, participants had low level of IT competence (57.5%). They also believed that they still lack skills in IT integrate technologies into the teaching and learning. Apart from that, the result confirmed that there was a small, positive correlation between in-service teachers' views toward technology and teaching and their perceived competence toward using computers. In conclusion, to face the fast development in the field of education, teachers ought to equip themselves with IT skills, through training courses.

*Keywords:* In-service teachers, views, technology, perceived competence, information technology

**Abstrak.** Kajian ini bertujuan untuk mengukur pandangan guru terhadap teknologi dan pengajaran serta tahap kompetensi mereka terhadap Teknologi Maklumat (IT). Maklumat daripada responden dikumpulkan melalui soal selidik yang diperolehi daripada 160 orang guru daripada tiga buah sekolah menengah yang dipilih mewakili tiga daerah di Melaka iaitu Melaka Tengah, Alor Gajah dan Jasin. Satu kajian rintis telah dijalankan untuk menguji kebolehpercayaan instrumen. Nilai Cronbach alfa yang diperolehi bagi instrumen kajian iaitu Skala Kompetensi IT dan Skala Pandangan Guru terhadap teknologi dan pengajaran adalah 0.98 dan 0.83. Berdasarkan pandangan guru terhadap teknologi dan pengajaran, mereka mempunyai sikap yang positif terhadap penggunaan komputer walaupun mendapati sebahagian besar daripada mereka mempunyai tahap kompetensi IT yang sederhana (55%). Tahap kemahiran IT yang sederhana ini termasuklah kemahiran asas pengoperasian komputer (43.15%), perisian pemproses perkataan (48.1%), perisian helaian hamparan (51.9%) dan telekomunikasi (48.1%), di samping guru menganggap mereka masih lagi kurang kemahiran dalam IT untuk

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mengintegrasi teknologi dalam proses pengajaran dan pembelajaran. Keputusan turut menunjukkan bahawa kebanyakan guru mempunyai tahap kemahiran IT yang rendah dalam domain komunikasi media (57.5%). Dapatan kajian juga mendapati terdapat hubungan yang positif dan lemah di antara pandangan guru terhadap teknologi dan pengajaran dengan tahap kompetensi guru terhadap penggunaan computer. Kesimpulannya guru harus melengkapkan diri mereka dengan kemahiran melalui latihan untuk membina sikap yang positif dan mengeksploitasi pembaharuan-pembaharuan yang dibawa oleh arus teknologi dalam bidang pendidikan.

*Kata kunci:* Guru dalam perkhidmatan, pandangan, teknologi, kompetensi, teknologi maklumat

## 1.0 INTRODUCTION

In this new millennium where Information Technology (IT) plays an important role, Malaysia aspires to become a fully developed, matured and knowledge-rich society. In order to achieve the above objectives, several relevant measures should be implemented so that strong foundations can be laid for the long journey towards achieving the ultimate objective, that is a fully developed country by the year 2020.

Many changes need to be done in developing and improving the educational system. One of the major areas that should be given attention is the development of computer education and technology. This is essential because educational technology has the potential to assist educational process (Bragg et al., 1996). This is possible because it can disseminate knowledge and information faster than any other medium today (Kaur, 1997).

One of the new creations of technological age in Malaysia is the establishment of Multimedia Super Corridor (MSC). The MSC helps to actualize Vision 2020 where it serves as an effective interlink for the global village concept for exploring the full potential of the Information Age technology without any artificial limits. According to Harris (1998), as technology transforms and generates the economy, national development increasingly depends on the capacity to acquire and apply knowledge. Therefore, in order to support the country's IT master plan and in line with the country's ambition to fulfill Vision 2020, the education system has to be transformed to accommodate and facilitate the acquisition of technological skills among Malaysian school children. The catalyst for this transformation is the Malaysian Smart School system.

The Smart School system offers many advantages to teachers and students. The effectiveness of multimedia application can be seen by the creation of a new learning environment, a knowledge based learning system and study facilities that are available for the benefits of students and teachers in classroom (Bragg et al., 1996). At the same time, the teacher's role will shift from the traditional role of just lecturing to guiding or facilitating students, especially through the application of IT. Therefore, teachers need to be equipped with the skills of using IT in all aspects of teaching and learning. They have to be skillful in using computer technology in order to be able to play an effective role as classroom teachers and create positive attitudes among students (Gressard and Loyd, 1985).

With the integration of IT into the education system, teachers will have new roles to play such as introducing teaching and learning technology into their instructional goals. Teachers should be encouraged to create or implement more technology-based activities, and share information, and strategies dealing with technology among themselves so that they will collectively gain better understanding of the new IT based curriculum. This is made easier because, technology has the potential to support a better degree of communication and collaboration between teachers and others, inside and outside the school walls (Kaur, 1997).

## 1.1 Background of Problem

As computers are gradually being introduced into schools, teachers need to be prepared with IT skills. Teachers cannot be excluded from using the computers for Internet and other technology tools, as it has become apart of the new curriculum. Therefore, teachers have to equip themselves with computer literacy and the use of multimedia technology to enhance their teaching. Mohamad Hassan (2001) emphasized this when he said that the skills to operate a computer is an asset, which is a necessity for teachers. Therefore, in order to integrate this 'smart' concept, teachers must have positive attitudes and be competent toward this technology.

Teaching in Smart Schools requires teachers who are knowledgeable and skillful, especially in using computers and other technology tools. Unfortunately, education majors who became teachers reported that they hesitate to use technology and do not feel prepared and fear to integrate in their teaching in classroom (Yildirim, 2000). Their reluctance to use technology is mainly due to their negative views towards accepting technology as part of their new teaching methodologies (Summers, 1990).

In other words, if teachers already have negative perception toward the use of technology, this may affect not only their teaching effectiveness but more importantly, they may become incompetent in technologies (Akbaba and Kurubacak, 1999). Thus, students are denied the benefits and usefulness of modern technology in their classrooms. Eventually, the students may have the same negative attitudes toward computers and may not be competent in IT.

Thus, it is important to evaluate the teachers' views toward technology and teaching as well as their IT competencies as computer aided instructions are being implemented in both private and public schools in Malaysia. It is essential to investigate the potential impact of their views and competencies toward IT in determining the success of the education system. For that reason, a research needs to be conducted in order to gauge and assess in-service teachers' views toward technology and teaching, and their perceived competence toward IT.

## 1.2 Research Questions

The followings are the research questions for the study:

(1) What are the in-service teachers' views toward technology and teaching?
(2) What are the in-service teachers' levels of perceived competence toward IT?
(3) What are the in-service teachers' levels of perceived competence toward IT according to sub-domains (basic computer operation skills, word processing, spreadsheet, telecommunication and media communication)?
(4) Is there a relationship between in-service teachers' views toward technology and teaching, and their perceived competence toward using computers?
(5) Is there a significant difference between competent and incompetent in- service teachers in terms of their views' toward technology and teaching?

## 2.0 REVIEW OF RELATED LITERATURE

The integration of technology in education has become a part of the education system. Today's technology can provide teachers and students with opportunities for teaching and learning that were impossible in the past. Since technology is always evolving and in need of frequent revision, effective integration strategies will always be part of the important concern, especially in the education system.

The integration of technology in teaching and learning does not emphasize solely on learning technology skills. It includes classroom modeling where teachers are actively using technology in lessons. This follows closely the definition of instructional technology, where it is defined as the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning (Seels and Richey, 1994). Therefore, the integration of technology in teaching and learning is an innovative and instructional tool to enhance the teaching and learning of students throughout the curriculum. It includes a variety of technologies to guide learning in the most appropriate and efficient manner.

In Malaysia, the Ministry of Education has implemented several training courses for Smart School teachers, whereby the objective is to nurture the qualities of the teachers and develop the professionalism that is needed to facilitate learning in a technology enriched environment (Smart School Project Team, 1997). However, research have shown that many teachers do not use IT in their teaching at all or feel reluctant to do so. The technology training that most teachers received is too little and too late (Kearsley, 1998).

Many teachers felt that they needed more training and better resources, and more technical support and time to use IT (Davis, 1997). For example, teachers who had been using computer technology more frequently in teaching were associated with finding it easy to think of ways to use IT in teaching. Thus, teachers experienced fewer difficulties in using the technology. Dorman (2001) also claimed that teachers with more classroom computers reported using these technologies more often as compared to teachers with fewer computers.

In the Malaysian context, almost 65% of teachers were reported to be capable of developing instructional materials by using computers (Noriza Suhadi, 1999). In fact,

91.6% of teachers are knowledgeable in terms of understanding the application and limitation of computer technology. However, only 69.4% of the teachers are competent in using and operating the computers efficiently (Norizan Abdul Razak, 1998). This indicates that the level of teachers' competency and usage toward IT is still unstable and need to be improved.

Mohd Sani Ibrahim, Jamalul Lail Abdul Wahab and Mohd Izham Mohd Hamzah (2001) reported that although 69.1% among smart teachers claimed that they were confident in giving courses to teachers from other schools, they faced difficulties in conducting the courses among teachers at district or state levels. Hence, the courses which are designed for training teachers should be reviewed in order to develop not only good understanding of the technology, but also to equip teachers with sufficient skills to teach their own peers.

## 3.0 METHODOLOGY

This study seeks to assess in-service teachers' views toward technology and teaching as well as their perceived competence toward IT. Respondents for the survey conducted were secondary school teachers in three selected schools in Malacca, each representing the three districts in Malacca (Alor Gajah, Melaka Tengah and Jasin). From a population of 198 in-service teachers, a total of 160 were selected as the sample for this study.

### 3.1 Instrumentation

The instrument was divided into three sections. Demographic information of the teachers (Section 1) was developed to determine the teachers' background. The Teachers' Views of Technology and Teaching Scale (TVTT) were used to measure teachers' views of technology and teaching in school (Section 2). The TVTT was developed by Christensen (1997) and was modified with permission from the author for this research. There are 10 Likert like scale items and each item is measured in terms of a five point rating from 1-strongly disagree to 5-strongly agree.

The IT Competence Scale (Section 3) was used to measure teachers' perceived competence toward IT. The items for this section were modified with permission from the Basic Technology Competencies for Educators Inventory (BTCEI) developed by Algozzine and Flowers (2000). The items of Section 3 are divided into five components which are basic computer operation skills, word processing, spreadsheet, telecommunication, and media communication. Each item is measured in terms of a four point rating scale from 1-not competent to 4-very competent.

### 3.2 Validity

The items in Sections 2 and 3 of the instrument were checked for content validity by three experts from different area of IT and language. The experts evaluated and

reconstructed the content of the instruments and several changes were made. A pilot test was them carried out to obtain the reliability of the modified instruments. It was administered by the researcher to 30 in-service teachers. The Cronbach alphas reported for the Teacher's Views of Technology and Teaching and IT Competence Scales of the modified instruments were high, 0.83 and 0.98 respectively. The reliability of each component for the IT competence scale was higher than 0.8 (Table 1). The reliability scores above provide evidence that the measures are internally consistent.

**Table 1** Reliability estimates for IT Competence Scale

| Subscale | Cronbach's Coefficient Alpha |
|---|---|
| Basic computer operation skills | 0.94 |
| Word processing | 0.98 |
| Spreadsheet | 0.88 |
| Telecommunication | 0.95 |
| Media communication | 0.97 |
| Overall reliability | 0.98 |

## 4.0 DATA ANALYSIS

The data collected were analyzed using the Statistical Package for Social Sciences program (SPSS), using both descriptive and inferential statistics. Frequency, percentage, mean and standard deviation were computed for the purpose of analyzing the demographic variables. Pearson product-moment coefficient was also used to determine whether there was a correlation between in-service teachers' views toward technology and teaching and their perceived competence toward using computer. Besides that, in order to compare the mean scores between competent and incompetent teachers in terms of their views toward technology and teaching, an independent-samples t-test was used.

In order to assess the in-service teachers' levels of competencies toward IT, scoring procedures reflecting low, moderate and high degrees of teachers' competencies toward IT were constructed. The score for each domain was categorized into three levels, namely low, moderate and high. The score for each level was derived by subtracting the maximum score with the minimum score achieved by the respondents and the difference was then divided by the number of levels, in this case, three levels which are low, moderate and high.

## 5.0 FINDINGS

Demographic information of the participants is presented in Table 2. The majority of the participants were females (60%). This is due to the fact that the population itself consists of 66 males and 132 females.

**Table 2** Demographic information of participants

| Variables | | Frequency (f) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 64 | 40.0 |
| | Female | 96 | 60.0 |
| Computer ownership | Yes | 152 | 95.0 |
| | No | 8 | 5.0 |
| Computer training course | Yes | 107 | 66.9 |
| | No | 53 | 33.1 |
| Frequency of using computer prior to the training | None | 53 | 33.1 |
| | One time | 51 | 31.9 |
| | Two times | 25 | 15.6 |
| | Three times | 17 | 10.6 |
| | More than three times | 14 | 8.8 |

Most teachers in this study were between the age of 36 to 43. The mean age is 37.61 and the standard deviation is 6.38. The result reveals that most teachers have teaching experience of between 9 to 14 years in schools ($M$=11.99; SD=6.89). As such, most of the teachers are experienced in their respective field.

Based on the information in Table 2, the result also indicates that most teachers own computers (95%) and most of them have attended computer training courses (66.9%). This suggests that most of them have some basic knowledge and experience about using computers. However, about 53 teachers (33.1%) have not attended any computer training courses. This shows that even though some teachers own computers, nevertheless they have not attended any computer training courses to improve their skills in using computers.

Also, out of 66.9% who have attended computer training courses, 51 teachers (31.9%) have attended the computer training courses only once. This shows that only 56 of them (35%) have attended the training courses more than once. For those teachers who have attended the training courses more than three times, it is revealed that most of the teachers are males and they are in their late 30's and early 40's. This suggests that most of the teachers have some basic skills in using computers prior to the training and there are still some of them who need to attend the computer training courses in order to improve their knowledge in using computers.

## 5.1 In-service Teachers' Views Toward Technology and Teaching

As shown in Table 3, the teachers strongly agreed (18.1%) and agreed (55%) that they enjoyed using new tools for instruction and they believed that computers are valuable tools that can be used to improve the quality of education (55.6%). Most of them believed that they are better teachers with technology (51.9%).

**Table 3** Responses associated with Teachers' Views of Technology and Teaching

| Item | SDf% | Df% | NSf% | Af% | SAf% |
|---|---|---|---|---|---|
| 1. I enjoy using new tools for instruction. | 0<br>0.0 | 17<br>10.6 | 26<br>16.3 | 88<br>55.0 | 29<br>18.1 |
| 2. Computers are valuable tools that can be used to improve the quality of education. | 0<br>0.0 | 18<br>11.3 | 9<br>5.6 | 89<br>55.6 | 44<br>27.5 |
| 3. Teachers should know how to use computers in their classrooms. | 0<br>0.0 | 3<br>1.9 | 4<br>2.5 | 101<br>63.1 | 52<br>32.5 |
| 4. Teachers should know how to apply computers in their classrooms. | 0<br>0.0 | 3<br>1.9 | 4<br>2.5 | 100<br>62.5 | 53<br>33.1 |
| 5. I believe that I am a better teacher with technology. | 0<br>0.0 | 22<br>13.8 | 24<br>15.0 | 83<br>51.9 | 31<br>19.4 |
| 6. I need more time so I can learn to use computers. | 3<br>1.9 | 18<br>11.3 | 27<br>16.9 | 91<br>56.9 | 21<br>13.1 |
| 7. I need more time to change the curriculum to better incorporate the technology. | 3<br>1.9 | 13<br>8.1 | 36<br>22.5 | 97<br>60.6 | 11<br>6.9 |
| 8. I need more training with technology. | 1<br>0.6 | 3<br>1.9 | 17<br>10.6 | 11<br>169.4 | 28<br>17.5 |
| 9. I need more training with curriculum that integrate technology. | 1<br>0.6 | 5<br>3.1 | 15<br>9.4 | 109<br>68.1 | 30<br>18.8 |
| 10. I need more training with teaching strategies that integrate technology. | 1<br>0.6 | 5<br>3.1 | 15<br>9.4 | 105<br>65.6 | 34<br>21.3 |

SD-Strongly Disagree, D-Disagree, NS-Not Sure, A-Agree, SA-Strongly Agree, F-Frequency

Teachers recognize that they need a lot of help and guidance, particularly with IT. 56.9% of the teachers agreed that they need more time to learn to use computers and more time to change the curriculum to better incorporate the technology (60.6%).

The data in Table 3 also suggests that the majority of the teachers' responses toward the usefulness (63.1%) and application of computers (62.5%) in their classrooms are positive. This shows that teachers have been enthusiastic and eager to implement computer integration in their lessons. Most of them acknowledge that technology has become part of the new education system.

However, teachers seem to express a number of concerns about computer application in the classroom, such as lack of adequate training with technology and technical skills in using IT. They agreed that they need more training with technology (69.4%), more training for curriculum (68.1%) and teaching strategies (65.6%) that integrate technology.

This is also supported by the fact that the majority of the teachers (55%) are at the moderate level of competency in IT (Table 4). This suggests that even though most of

**Table 4** Levels of competency toward IT (N= 160)

| Levels of competency toward IT | | |
|---|---|---|
| **Low** | **Moderate** | **High** |
| **F** | **F** | **F** |
| **(%)** | **(%)** | **(%)** |
| 25 | 88 | 47 |
| 15.6 | 55.0 | 29.4 |

the teachers' score are in the range of between 'somewhat competent' and 'competent' in using computers, still they believe that they lack knowledge and skills to face the technologies due to the constant innovation in the field of computer technology (Dupagne and Krendi, 1992). There is no limitation in creating new and interesting technologies for the benefit of the people who are willing to embrace it.

Therefore, on-going computer training courses should be provided for the teachers so that they are aware of the changes in technology that may affect their performance in the process of teaching and learning. Such training may reduce the different levels of competency among teachers.

## 5.2 In-service Teachers' Levels of Competency toward IT

The data in Table 4 shows that most of the teachers had moderate level of IT competence (55%). Those who had high level of IT competence felt that they are able to teach others how to perform the task by using computers (29.4%). This can be seen where the lowest score recorded was 38.0 and the highest score was 134.0 (Table 5). The dimensions measured were basic computer operation skills, word processing, spreadsheet, telecommunication and media communication. This suggests that the majority of the participants can perform and complete the task with assistance by using computers.

**Table 5** Scoring procedure of Teachers' Perceived Competence toward IT

| | **Low** | **Moderate** | **High** |
|---|---|---|---|
| Levels of competency | 38-70 | 71-103 | 104-134 |
| Basic computer operation skills | 11-17 | 18-22 | 23-28 |
| Word processing | 10-20 | 21-31 | 32-40 |
| Spreadsheet | 5-10 | 11-16 | 17-20 |
| Telecommunication | 6-12 | 13-19 | 20-24 |
| Media communication | 6-12 | 13-19 | 20-24 |

Teachers' perceived competence toward IT are at the moderate level (*M*= 2.71, SD= 0.64), which is derived by dividing the total mean scores of teachers' perceived competence toward IT with the 34 items of the instruments. This suggests that, most of the teachers' competencies level ranged from 'somewhat competent' to 'competent' toward the technology.

## 5.3 In-service Teachers' Levels of Competency toward IT according to sub-domains

The results in Table 6 shows most of the participants had moderate level of IT competence in basic computer operation skills (43.1%), word processing (48.1%), spreadsheet (51.9%) and telecommunication (48.1%). However, in media communication (57.5%), most of the participants had low level of IT competence. This suggests that most of the participants are not able to perform the task in media communication compared to other IT competence sub-domains, where most participants are able to perform the task with assistance and complete the task given.

The results in Table 6 also reveal that the participants with the highest level of skills were competent in word processing (42.5%), followed by basic computer operation skills (39.4%), spreadsheet (14.4%) and telecommunication (13.8%), but had the lowest level of skills in media communication (7.5%). Therefore, proper computer training courses that emphasize skills in media communication should be given to improve the participants' level of IT competence in that particular skill.

**Table 6** Levels of competency toward IT according to sub-domains (N=160)

| | **Low**<br>**F**<br>**(%)** | **Moderate**<br>**F**<br>**(%)** | **High**<br>**F**<br>**(%)** |
|---|---|---|---|
| Basic computer operation skills | 28<br>17.5 | 69<br>43.1 | 63<br>39.4 |
| Word processing | 15<br>9.4 | 77<br>48.1 | 68<br>42.5 |
| Spreadsheet | 54<br>33.8 | 83<br>51.9 | 23<br>14.4 |
| Telecommunication | 61<br>38.1 | 77<br>48.1 | 22<br>13.8 |
| Media communication | 92<br>57.5 | 56<br>35.0 | 12<br>7.5 |

## 5.4 Relationship between In-service Teachers' Views toward Technology and Teaching and their Perceived Competence toward Using Computers

The relationship between in-service teachers' views toward technology and teaching and their perceived competence toward using computers was analyzed using Pearson product-moment correlation coefficient. Overall, the result indicates that there is a small, positive correlation between in-service teachers' views toward technology and teaching and their perceived competence toward using computers, ($r = 0.127$, $p < 0.05$).

## 5.5 Differences between Competent and Incompetent Teachers in terms of their Views toward Technology and Teaching.

The figures in Table 7 reveal that competent teachers have more positive views toward technology and teaching ($M = 39.59$, SD = 4.91) compared to the IT incompetent teachers ($M = 39.29$, SD = 4.50). However, the mean score difference between IT competent and incompetent teachers is only 0.30. The value of the observed significant level (0.695) is more than the 0.01 significant level.

**Table 7** T-test for teachers' views scores between competent and incompetent teachers

| Teachers | N | Mean | SD | t | df | Significance |
|---|---|---|---|---|---|---|
| Incompetent | 63 | 39.29 | 4.50 | –3.93 | 158 | 0.695 |
| Competent | 97 | 39.59 | 4.91 | | | |

Significant at the 0.01 level

The difference between competent and incompetent teachers is identified based on the definition of competence stated by Algozzine and Flowers (2000) (Table 8). Result indicate that there is no significant difference between the mean scores of

**Table 8** Definition of competence

| IT Competence Scale | Definition |
|---|---|
| Very competent | Can teach others how to perform the task |
| Competent | Can complete the task |
| Somewhat competent | Can perform task with assistance |
| Not competent | Cannot perform the task |

(Algozzine and Flowers, 2000)

teachers' views of technology and teaching for the competent and incompetent teachers, $t(158) = -3.93$, $p > 0.01$.

Perhaps both competent and incompetent teachers have similar positive views toward the importance of technology and teaching. Thus, teachers' skills in using computers are the major factors that affect the teachers' initial acceptance of computer application in education.

## 6.0 DISCUSSION

The findings indicate that most of the teachers strongly agreed (18.1%) and agreed (55%) that they enjoyed using new tools for instruction. They believed that computers are valuable tools that can be used to improve the quality of education (55.6%). In fact, most of the teachers believed that they are better teachers when equipped with technology (51.9%). This suggests that teachers have positive attitudes toward using computers. Akbaba and Kurubacak (1999) also agreed that teachers seem to have positive attitudes towards technology. Similarly, Dupagne and Krendi (1992) also agreed that some teachers view computer as a valuable tool for instruction. They believe that technology is an integral part of their classrooms (Yildirim, 2000).

Even though results indicate that teachers have high positive views toward technology and teaching, teachers still perceive that they need a lot of help and guidance, particularly with IT. This is due to the fact that most teachers need more time to learn how to use computers (56.9%), and more time to change the curriculum to better incorporate the technology (60.6%). This suggests that teachers already have the right attitude toward using computers.

However, due to some limitations, they are not able to improve their skills in order to be able to teach others to perform particular tasks by using the computers. This is also agreed upon by Norhayati Abdul Mukti (2000), who reported that teachers needed more time to prepare lessons that were related to the use of computers, because teaching with computers was a new field to them. They had insufficient time to complete the required objectives, and use the computer. In fact, they also agreed that they did not have the opportunity to master the computer, either by themselves, or as a group.

This is critical, where teachers who are positive toward using computers do not have the facilities to develop their new skills. This can be seen from the result, which indicates that there is no significant difference between teachers' views of technology and teaching for the competent and incompetent teachers. Both competent and incompetent teachers are actually eager to use the computers, but the barriers above hinder them from developing themselves to a level competent enough to teach others how to design creative instructions, through the integration of IT in the curriculum.

This can be proven where most of the teachers' responses toward the usefulness (63.1%) and application of computers (62.5%) in their classrooms are positive. They

have been enthusiastic enough to use computers in their classrooms. Even Dupagne and Krendi (1992) stated in their studies that teachers have been enthusiastic about, and have expressed positive attitudes toward, the implementation of computers in the classroom and curriculum.

However, based on the findings of this research, teachers have expressed a number of concerns about computers in the classroom. Most teachers agreed that they need more training with technology (69.4%), and more training for curriculum (68.1%) and teaching strategies (65.6%) that integrate technology.

As such, proper training programs should continue to emphasize technology skills, especially in media communication, so that teachers are not only able to perform and complete the task by themselves, but they can actually teach others to complete the task given, in order to be very competent in the technology. Thus it can be assumed that teachers at three districts in Malacca believe that they still lack the knowledge and skill, even though they are positive toward the implementation of computers in schools. They do, however, believe that computers hold great promise for classroom use.

Training would be effective if it follows in consecutive stages in order to induce progressive learning. In other words, the training should focus only on a particular stage, which is based on a particular learning or module. However, in order for the training to be effective, relevant assessment should be conducted prior to further training programs (McDougall and Squires, 1997). This will enable trainers to identify the individual needs of teachers. For example, integrating the computer in Science subjects demands more and different skills than teaching Mathematics, or teaching how to conduct research via the World Wide Web. Thus, when considering training in computer competency in relationship to teachers, the bottom line is: What is it that is useful and beneficial in the training to the teachers who will be administering the lessons?

## 7.0 CONCLUSION

Several positive findings emerged from this study. It was found that teachers seem to have positive views toward technology and teaching. However, due to lack of skills in computer application or insufficient time to use computers, they seem to lack confidence in using computers. In other words, they know that IT is useful and plays a pivotal role in education. The teachers have accepted the important role computers play in today's society. They are even willing to learn and be aware of the rapid changes of IT toward the education system. Thus, they are prepared for the information age. All they need is guidance, motivation and support to be competent enough in technology. Therefore, teachers' positive views and competencies toward technology must always commensurate with the right attitude needed to face current technology, which always evolves without limitation.

## REFERENCES


Akbaba, S., and G. Kurubacak. 1999. Teachers' Attitudes towards Technology. *CSS Journal Computers in the Social Studies*. 7(2). March/April. (Accessed on 30 December 2002): http://www.cssjournal.com

Algozzine, B., and C. P., Flowers. 2000. Development and Validation of Scores on the Basic Technology Competencies for Educators Inventory. *Educational and Psychological Measurement*. 60(3): 411-418.

Bragg, C. A., J. F., LeBaron, D. T., Nelson, and T. P. O'Donnell. 1996. Harness the Power of Technology: Developing Minds in an Information Age. *Vision 2020*. January / February (4): 49-53.

Christensen, R. 1997. Effect of Technology Integration Education on the Attitudes of Teachers and Their Studies. Doctoral Dissertation. University of North Texas, Denton.

Davis, N. 1997. Framing Teacher Professional Development. *Journal of Information Technology and Teacher Education*. 6(2). (Accessed on 13 December 2002): http://www.triangle.co.uk

Dorman, S. M. 2001. Are Teachers Using Computers for Instruction? *Journal of School Health*, Feb 2001. 71(2): 83-85. (Accessed on 21 November 2002): http://search.epnet.com/direct.asp?an=4191897&db=aph

Dupagne, M., and K. A., Krendi. 1992. Teachers' Attitudes toward Computers. A Review of the Literature. *Journal Research on Computing in Education*. Spring 92. 24(3): 420-429.

Gressard, C. P., and B. H., Loyd. 1985. Validation Studies of a New Computer Attitudes Scale. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago.

Harris, R.W. 1998. *Malaysia's Multimedia Super Corridor* An IFIP WG 9.4 Position Paper by Roger W. Harris Vice Chair for Asia, IFIP WG 9.4 and Faculty of Information Technology. Universiti Malaysia Sarawak. (Accessed on 20 November 2002): http://is.lse.ac.uk/ifipwg94/pdfs/MalayMSC.pdf

Kaur, S. 1997. A Great Oak for Smart Schools. *New Straits Times*: 3.

Kearsley, G. 1998. Educational Technology: A Critique of Pure Reason. *Educational Technology Magazine*. April/May 1998. (Accessed on 12 January 2002): http://home.sprynet.com/~gkearsley/critique.htm

McDougall, A., and D., Squires. 1997. A Framework for Reviewing Teacher Professional Development Programmes in Information Technology. *Journal of Information Technology for Teacher Education*. 6(2): 115-126.

Mohamad Hassan. 2001. Information and Communication Technology (ICT): The Role of Teacher Education Division. A paper presented at the Asia and Pacific Seminar: Workshop on the Development of a Teacher Training Curriculum Utilizing the Learning Resource Package in the Open and Flexible Lifelong Learning, Tokyo, Japan.

Mohd Sani Ibrahim, Jamalul Lail Abdul Wahab, and Mohd Izham Mohd Hamzah. 2001. Kajian Keberkesanan Program Latihan Guru Bestari dan Impaknya Terhadap Pembelajaran Pelajar. Prosiding Konvensyen Teknologi Pendidikan Kali Ke-14: Persatuan Teknologi Malaysia (PTPM) 2001: 363-391.

Norhayati Abdul Mukti. 2000. Computer Technology in Malaysia: Teachers' Background Characteristics, Attitudes and Concerns. *The Electronic Journal on Information Systems in developing countries* (EJISDC) 3, 8: 1-13. (Accessed on 20 December 2002): http://www.is.cityu.edu.hk/research/ejisdc/vol3/v3r8.pdf

Noriza Suhadi. 1999. Tahap Penggunaan Komputer dalam Proses Penghasilan Bahan Pengajaran – Satu Tinjauan di Sekolah Menengah Daerah Hulu Langat. Latihan ilmiah yang tidak diterbitkan. Universiti Putra Malaysia, Serdang.

Norizan Abdul Razak. 1998. Pengajaran Bahasa Melayu di Alaf 21. (Accessed on 2 February 2001): http://www.geocities.com/Athens/Styx/1349/masmintra_pendidikan1.html

Seels, B., and R., Richey. 1994. *Instructional Technology: The Definition and Domains of the Field*. Washington, DC: Association for Educational Communications and Technology.

Smart School Project Team. 1997. *The Malaysian Smart School: A Conceptual Blueprint*. Kuala Lumpur: Government of Malaysia.

Summers, M. 1990. New Student Teachers and Computers: An Investigation of Experiences and Feelings. *Educational Review*. 42(3): 261-271.

Yildirim. S. 2000. Effects of an Educational Computing Course on Preservice and Inservice Teachers: A Discussion and Analysis of Attitudes and Use. *Journal of Research on Computing in Education*, Summer 2000. 32(4): 479-496. (Accessed on 13 December 2002): http://search.epnet.com/direct.asp?an=3168168&db=aph