Malaysian Teachers' Professional Development In ICT

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Abstract: Malaysia established a visionary policy entitled Vision 2020 to transform the country into a developed nation by 2020. To achieve this aspiration, the nation had embarked on a myriad of initiatives, one of which is reforming education through ICT. Some of the actions taken by the government were to intensify the development of ICT infrastructure; expand access to and equity for ICT facilities; expand ICT-based curriculum; emphasise ICT integration in teaching and learning processes; improve on ICT knowledge and skills among students; and increase R&D efforts in ICT. Right in the middle of all these plans are the teachers who have to play a pivotal role in trying to achieve these monumental tasks. For teachers already in the service, the Ministry of Education (MOE) has planned numerous types of professional development, and this paper highlights some of the professional development activities carried out and the challenges faced by MOE.

Keywords: Information Communication Technology, Teachers, Professional Development, Malaysia

Introduction

The government of Malaysia had established a visionary policy to transform the country into a developed nation by 2020. This aspiration to become a fully developed nation is known as Vision 2020 was launched in 1991 during the tabling of the Sixth Malaysia Plan, by the fourth Prime Minister of Malaysia, Tun Dr. Mahathir bin Mohamad. In order to realize this vision, Malaysia has to address nine strategic challenges, namely: (1) to establish a united Malaysian nation; (2) to create a psychologically liberated, secure, and developed Malaysian society; (3) to develop a mature democratic society; (4) to form a community that has high morale, ethics, and religious strength; (5) to establishing a mature, liberal and tolerant society; (6) to establish a scientific and progressive society; (7) to establish a fully caring society; (8) to ensure an economically just society; and (9) to establish a prosperous society [1].

One of the nine challenges is relevant to the issue at hand, which is the sixth challenge of establishing a scientific and progressive society, a society that is innovative and forward-looking, one that is not only a consumer of technology but also a contributor to the scientific and technological civilization of the future [2][3]. To overcome this challenge and to improve the educational system in Malaysia, teachers are the most significant agents. They are the most important workforce for achieving the Malaysian educational aims in enhancing the educational quality and for the development of the human capital for the nation, who are knowledgeable and highly-skilled future workers who will embark on ICT and the K-economy.

The impetus to the emergence of ICT in Malaysia's educational system was the establishment of the Smart School initiative in 1999 [4]. The chosen 89 smart Schools

were then provided with varying number of computers resulting in three categories of smart schools (A, B+ and B). These initial smart schools were supposed to be the nucleus for other schools around them to become 'smart' until all 10,000 schools turn into smart schools, supposedly, by 2010. With the Smart School initiatives as the impetus, other initiatives such as the MOE-Intel School Adoption Project [5], Microsoft's Partnership in Learning [6] and the teaching and learning of science and mathematics in English (known by the Malay acronym PPSMI) [7] which started in 2003.

Table 1: Smart Schools Category A, B+, B

Category	Description
A	✓ High level of IT integration in the teaching and learning process ✓ Equipped with computerized classrooms, electronic resource center, computers in science laboratories and self-access centers
B+	✓ Moderate level of IT integration in the teaching and learning process ✓ Equipped at least with 5 computers in 15 selected classrooms, complemented by computers in computer laboratories
B	✓ Low level of IT integration in the teaching and learning process ✓ Equipped with computers in the computer and multimedia laboratories

(Source: [8])

Professional Development of Teachers

Professional development is the development of a person in his or her professional role, be it a teacher, lawyer, engineer or doctor [9]. Specifically, Glatthorn [10] specifies that teacher professional development is the professional growth that a teacher achieves as a result of gaining increased experience and examining his or her teaching systematically. This professional growth could either be in the form of formal experiences (by attending workshops or professional meetings, mentoring, etc.), or through informal experiences, such as reading professional publications, watching television documentaries related to academic disciplines, etc. [11]. For the purpose of this paper, the formal form of professional development of teachers in ICT is the point of focus.

Professional Development of Teachers in ICT

Since March 2004, teacher training in Malaysia has been under the jurisdiction of two ministries, the Ministry of Education (MOE) and the Ministry of Higher Education (MOHE). Before then, teacher education was under the purview of the former ministry. With the establishment of the MOHE, the Ministry is charged with the training of secondary school teachers via government-funded public institutions of higher learning (IPTAs), while the MOE is left with the responsibility of training primary school teachers via Institutes of Teacher Education (IPGs).

With the advent of ICT in Malaysia's educational system, pre-service training of teachers was conducted through programmes specifically to train ICT teachers, or through the injection of ICT courses into the then existing training programmes. This is to ensure that the future teachers are proficient in the preparation and organization of ICT materials for teaching. However, for the massive teachers who are on the ground, professional development of the teachers in the service was of concern. The need for professional development for the teachers was recognized early in 1995 by a specially appointed committee set up by MOE to make recommendations on the professionalism and

professional development of the teachers, which put forward recommendations to be implemented [9]. At the same time, in order to meet the needs of the nation, the Teacher Education Division (TED) under the MOE plans, coordinates and monitors on-going staff development programmes locally and overseas to ensure quality, effective implementation of teacher training initiatives are conducted.

Some of the in-service teacher training initiatives include the selection of serving teachers to further their studies at higher institutions full-time for the purpose of upgrading the qualifications of the teacher into ICT programmes. Some of the primary school teachers were also selected to undergo a one-year Specialist Training Certification. Other in-service training initiatives include on-going ICT-based professional development courses at Institutes of Teacher Education (IPGs) or are school based.

Teaching and Learning of Science and Mathematics in English (PPSMI)

On June 6th, 2002, a dramatic move in the Malaysian education system was announced by the Minister of Education. The teaching of the Science and Mathematics subjects were declared to be taught in English in all fully aided government schools starting from January 2003 onwards [12]. To overcome this problem, the MOE designed and developed professional development courses as the initial step to meet the Science and Mathematics teachers' specific needs of teaching Science and Mathematics in English via training programsmes called English for the Teaching of Mathematics and Science (ETeMS). To enable the teachers to be able to teach in English, these science and mathematics teachers who attended professional development programmes were provided with laptops and a LCD facility for each school.

The ETeMS programmes initially lasted for 14 weeks. This programme covers a wide range of knowledge and skills on computer hardware, software, networking, multimedia, Internet and integration of ICT in teaching and learning. It also ensures that teachers were able to handle computer labs and ICT-equipped classrooms [13]. The duration of the professional development training was later progressively reduced to 10 weeks, seven weeks and finally to four weeks [14]. By the end of 2010, ETeMS training programmes stopped since the Minister of Education decided that by 2013, the teaching of mathematics and science was to revert to the National Language (Bahasa Melayu). Until then, the individual schools could decide to carry out the teaching of mathematics and science in either English or Bahasa Melayu.

Status of ICT Integration by teachers

Current researches in Malaysia have shown that the level of ICT integration amongst teachers is still low to moderate. In 2006, a team of researchers organized by the Malaysian Development Council (MDeC) collected data and observed about 400 teachers throughout Malaysia. It was not surprising then that the level of ICT integration in the teaching-learning processes was still low. The research conducted by Khambari, Wong and Ayub [7] in 2009 has seen an improvement where the level of ICT integration in teachers' teachings was only moderate. In fact, according to this research, the level of laptop impact on teacher professional development was moderate for teaching-learning dimension, use of resources, communication and sharing of information, and for laptop competency. Two years later, in another research conducted by Moses, Wong, Kamariah and Mahmud [15] in the central states of Malaysia—again, it was found that the level of integration of ICT in the teachers' teaching was still at the moderate level.

Challenges to Professional Development

According to Kamariah, Embi, Hamat and Kabilan [16], educators in many parts of the world face numerous challenges that hold them from being active in professional development, and Malaysian teachers are no different. Among some of the reasons given were due to the:

i. lack of time
ii. insufficient up-to-date resources
iii. insufficient materials and references
iv. lack of direct involvement
v. lack of financial support.

Steps taken by Government of Malaysia

The government of Malaysia through the Ministry of Education has spent an enormous amount of resources to ensure that the educational system in Malaysia is ready to prepare the human capital for the nation, knowledgeable and highly-skilled future workers who will embark on ICT and the K-economy. This is illustrated from the progression of the digital education revolution that commenced from the 6th Malaysia Plan (1990-1995) where the focus was on strengthening and improving the quality of education, through the 7th Malaysia Plan (1996-2000) which focused on the improvement of man-power needs and to produce an ample amount of skilled and quality workers. The digital education revolution during the 8th Malaysia Plan (2001-2005) focused on creating a level playing field for all students – making all schools 'smart'. During the 9th Malaysia Plan saw the intensification of the development of human capital into a knowledge-based economy and the continual upgrading in the quality of teachers and academic staffs. In fact, the Malaysian government had provided RM33.4 billion, which was 21% of the total amount of the 2007 Budget had been set aside to upgrade the education system. A portion of the total budget amounting to RM782 million was for the training of teachers, whilst another RM288 million was schools transformation programmes involving the provision of computer sets for 1000 schools [17]. The 10th Malaysia Plan (2011-2015) focused on strengthening education and training systems, providing the best teaching and learning infrastructure, ensuring the quality of teachers and educators were of a high level. The performance of students in critical subjects, particularly the National Language, English, Science and Mathematics, would also be improved by increasing the number of quality teachers, and increasing the number of high-performing schools.

In order to achieve these, the government had allocated a sizeable portion of the educational budget to ensure continuous professional development and in-service training for the teachers in order for them to maintain professionalism, to upgrade their knowledge and skills, and in integrating ICT into their teaching and in the students' learning. This is evident for, according to Jamil, Razak, Raju and Mohamed [9], in 2002, the Prime Minister-cum-Finance Minister had set aside RM 5 billion for the implementation of Science and Mathematics in English, for a period of seven years. The money was used for the professional development training of the teachers, and for the cost of laptops and LCDs disbursed to the teachers to encourage them to use multimedia in their teaching, as well as incentive allowances of 5% of their basic pay every month.

The teachers in the schools require effective leadership and administrative support to ensure the availability of infrastructure, smooth utilization and ease of use of ICT in the place of work. To this end, the MOE embarked in collaboration with other ministries and

agencies on a number of capacity-building initiatives to develop ICT leaders and coaches, and to empower these leaders and coaches to adopt and adapt ICT. The 9th Malaysia Plan has allocated RM 12 billion for the development of ICT and infrastructure and training.

Challenges Ahead for Ministry of Education

One of the many challenges faced by MOE is to continue to provide professional development for serving teachers, teacher leaders and teacher trainers. ICT knowledge is changing at a very rapid rate. Thus, the teachers need continuous professional development, formally and informally, in order to be able to fulfill the aspirations of education and the aspirations of the nation. The continuous in-service training will ensure that the teachers will be able to use ICT and keep up with the changing time. So far, teachers are still moderately integrating the use of ICT in the classroom teaching-learning processes even after attending the in-service training. It is quite doubtful if teachers who have not attended any training can really do this. In a recent research conducted by Moses [18] using 473 mathematics and science teachers, majority of the teachers (78.4%) indicated that they have attended training sessions on ways to incorporate ICT into the instructional practices. Most of the mathematics and science teachers (30.9%) have attended only one training session. However, almost a quarter of the sampled teachers (102 teachers) admitted that they have not attended any training session before (21.6%). For these almost 22% of teachers, how were they supposed to integrate the use of ICT in the teaching-learning processes when they had not attended any professional development on how to do it. Insufficient training will pose a challenge to MOE. MOE will need to further focus on the in-service training of teachers in order to ensure that every teacher be given the opportunity to attend training sessions. MOE is to provide longer hours of training to ensure that the teachers are able to learn on how to effectively integrate ICT in their teaching, and MOE is to ascertain that the transfer of training be effectively done by the teachers when they go into their own classrooms.

A challenge that the MOE may face is in terms of what has been highlighted by [19] on the problem of transfer of training. Merriam & Leahly [19] highlighted that based on many studies in the past, it is estimated that only 10% of those who have attended training do actually show performance improvement at the work place. Thus, after spending millions of ringgit on training for the teachers, there is a possibility that the number of teachers who really integrate ICT into their teaching and learning is still small. However, MOE should keep on giving in-service courses to the teachers.

Teacher training programmes for primary as well as secondary schools may need to be reviewed to ensure that the curricula provide the pre-service teachers with the knowledge and skills to really integrate ICT effectively in the lesson. The full potential of ICT can benefit the teachers and students if the teachers can confidently implement and skillfully integrate ICT in the teaching and learning processes. In order to achieve this, the teacher trainers themselves are to be highly trained so that they could be the role models for the pre-service teachers to emulate.

Another challenge for the MOE is in terms of providing sufficient and latest ICT facilities with Internet connection to all schools. Currently, not all schools have the latest ICT facilities and some schools still do not have Internet access. Many of the laptops and LCDs previously given to the schools have either been obsolete, or beyond repair. These need to be replaced with the latest gadgets to ensure that teachers are motivated to continuously use ICT in their classes. Thus, to ensure that all of the infrastructures are well maintained, the MOE need to provide technical support, e.g. technicians to schools for

computer maintenance. Let the teachers do what they do best, i.e. teaching and leave the computer maintenance to the technicians.

The MOE needs to attempt continuously to narrow the digital divide between urban and rural schools. Steps must be taken to ensure rural schools get the benefit to be involved in the K-economy. Newly built schools should be provided with computer laboratories. State governments, which can afford it (like The Trengganu State government), should provide notebooks to all students. Besides, research is being conducted by the National Research & Development Centre in ICT or better known as MIMOS to develop computer tablets which are cheap enough to be discarded if no longer functional. These cheap computer tablets should be provided to all students. With the increase in connectivity through increased internet use, the MOE has to face the challenge to provide all school teachers with broadband facilities especially for the rural school teachers. This will promote the use of ICT in their delivery and in accessing internet services and resources.

Another challenge faced by the MOE is in terms of Research & Development activities in the development of systems and applications, and coursewares as well as learning objects, all of which are beneficial to teaching and learning. A concerted effort by a selected division in the Ministry need to be done to continuously develop and research on materials which would be useful for teachers to use. Previously, different divisions under the Ministry were developing materials and courseware, however, some of them were found to be not so useful to the teachers.

Conclusion

Malaysia, a developing nation, has always placed emphasis on the educational system in order to be on par with more advanced countries. One way of doing this is to integrate ICT into the learning environments. By doing so, all teachers must be ready to embrace ICT. However, even after spending enormous amount of ringgit for in-service training, MOE has not had full success in terms of ICT integration into the teaching-learning process. MOE needs to provide continuous professional development and monitor those teachers who missed in-service training, and even for those who had attended training but are reluctant to integrate ICT in their lessons. Furnishing and refurbishing schools, both in the urban and rural areas, with the latest IT equipment, hardwares, softwares and coursewares, will further motivate the teachers and students at the schools to use them. Malaysian teachers' professional development particularly in ICT should continue and be further enhanced in order to ensure the success of the aforementioned initiatives and programmes.

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