WHY DOES MALAYSIA NEED TO CONSIDER MOBILE TECHNOLOGIES? A REVIEW OF CURRENT PRACTICES TO SUPPORT TEACHING AND LEARNING WITH SCHOOL-AGE CHILDREN

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ABSTRACT

Mobile learning (mL) has been a most intriguing innovation in the field of learning technologies. Various research projects have been carried out to evaluate efficient mL. This paper identifies a strategy for investigating the feasibility of implementing mL in the educational system in Malaysia, as a developing country, with the curriculum focus of English language learning. The challenges facing developing countries are considered and the cost benefits as well as learner benefits are discussed. Finally, the solutions in the context of Malaysia such as the structure of mobile lesson for English Language subject as well as policy and procedure of the implementation are identified to be addressed in a conceptual framework of mL implementation in Malaysian secondary schools.

KEY WORDS

Mobile learning, Malaysia, developing countries, language learning, ICT, mobile technology.

1. Introduction

Mobile learning (mL) has been the subject of a number of research projects implemented in the developed world. With the advent of mL, learning is no longer confined in a fixed place, and learning could be anywhere and anytime. This paper will focus on exploring the issues surrounding the realisation of mL in Malaysia with the curriculum focus of English language learning, suggest appropriate solutions, and seek to draw out underlying principles that will apply to any developing country.

There was a debate whether mobile technologies supporting learning is a passing fad or it could become the underpinning pedagogy of the future [1]. Despite this, it is clear that recently there are increasing efforts that have been made in the area of mL. The mLearning IST Project, a European Commission project concentrating on social and academic problems among young adults and the University of Birmingham HandLer Project, which successfully developed mobile technology for children aged 9 to 11 are examples of the successful projects [2]. The implementation in developed countries has motivated developing countries to consider employing this learning application in their education systems.

However, in developing countries, mobile devices are less easily affordable [3]. In addition to the financial constraints, there are other obstacles that are being faced by developing countries such as:

- Negative attitude and lack of awareness [4].
- Lack of infrastructure [5] [6].

Even so, among developing countries, there have been efforts in mL in countries such as Mongolia, Pakistan, Sri Lanka, Thailand and Colombo [7]. These countries have employed mL technologies to support teaching and improve their education systems.

The way to succeed in implementing mL can be considered still far, but with a proper research and planning, it is not impossible to see that mL application could be a normal scenario at schools in Malaysia.

2. Key vocabularies

In order to fully understand the issues that surround this topic it is very important to explore the vocabulary that is used.

Mobile learning: The term mobile learning (mL) can be defined by both the technology and by the action. It is defined in terms of mobile phones, PDAs (personal digital assistants), MP3 players or XDAs (PDAs with mobile telephone connectivity) and the functionality of the devices. Or, it is defined in terms of the nature of the learning experience "lessons in small, manageable formats that they can undertake when it suits them" [8], although in some mL environments learners are paced according to instruction from teachers on a planned and structured programme.

Quinn defines mL as: "MLearning is the intersection of mobile computing and elearning: accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based assessment. E-learning independent of location in time or space" [9]. This definition emphasises the benefits of the technology in supporting learning which we define as the affordances. The functionality is the facilities and nature of the technology; the affordances are the educational, pedagogical or andragogical activities that are enabled or enhanced by the technology.

Our working definition of the term mL can be summarised as: mL is a part of learning technologies which combined mobile technologies and e-learning, which delivers e-learning materials and provide learning environment on mobile devices such as mobile phones, personal digital assistant (PDA)s, tablet personal computer and other possible mobile devices. It offers all the advantages of mobile technologies, such as location and time freedom, as well as supporting interactivity.

ICT (Information and Communication Technology): ICT is the term which functioned as an umbrella for the topic of this paper, where beneath ICT lays the term mL. The Becta definition of ICT:

"Information and communications technologies (ICT) are the computing and communications facilities and features that variously support teaching, learning and a range of activities in education" [10].

Developing countries: The term defined by the OECD and the United Nations Statistical Division indicates any country other than Japan in Asia, Canada and the United States in northern America, Australia and New Zealand in Oceania and Europe [11][12].

Smart School: The Malaysian Smart School is a learning institution that has been systemically reinvented in terms of teaching-learning practices and school management in order to prepare children for the Information Age [13].

3. The basis of mL implementation in Malaysia

As stated in the roadmap for Smart Schools [14], Malaysia is interested in the application of mobile learning technologies:

"Enhancement initiatives can include mobile technologies for teaching-learning purposed, for mobile learning or in common usage, the "wireless" way to learning. A scheme is to be instituted in order to help all children buy an access device for mobile learning for use during the child's school-going days. This is one of the solutions, schools and parents can consider as part of school governance."

The above statement shows that Malaysia has an ambition to employ mL as an extension to the success of the implementation of Smart Schools established in 1997. This runs in parallel to the government's Vision 2020 as mentioned in [14]. The government had initiated the Smart School Flagship which was intended to establish the school as an example to produce students who can deal with the fast movement of the Information Age.

There are four waves of the Smart School implementation plan as been shown in Figure 1 [14]:

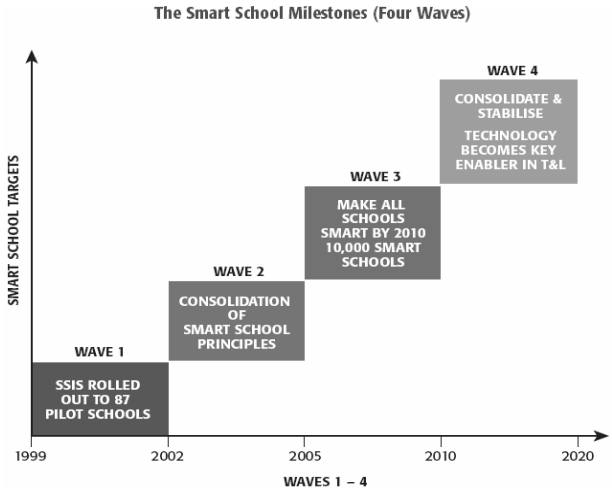

Figure 1: The Smart School Milestones-Four Waves [14]

As can be seen from the Figure 1, Wave 4 relates to a period of consolidation and stabilisation over the decade between 2010 and 2020 when technology becomes key enabler in teaching and learning. As a result, this paper proposes mL as a feasible tool to be employed in schools. It is expected that mL can become a useful resource towards the realisation of implementing technology, as directed by Wave 4.

4. mL initiatives in developing countries

Although not as common in developed countries, there have been a number of efforts to introduce and implement

mL in developing countries. UNESCO [7] stated the following:

i. Mongolia
Mongolia has proposed to apply mL in the context of supporting learning process for the herdsmen's children so that the children can have a flexible learning environment to adapt with their nomadic lifestyle.

ii. Pakistan
The introduction of mL in Pakistan is related to the intention of improving literacy rate among women and proposed the use of bus equipped with mobile devices that will be used in learning activities.

iii. Sri Lanka
Sri Lanka aimed for the application of mL in supporting students with disabilities. A solution has been proposed to employ mL as an additional support to help teachers in giving special attention to these children.

iv. Thailand
In Thailand, a solution has been proposed to solve educational problem in rural areas with the use of WiMax technology and Pocket PCs because these tools can support distance learning.

v. Colombo
In Colombo, the financial constraints that are confronted by the families in rural areas have deprived women of access to education. With the use of training buses equipped with mobile devices, this helps to disseminate education to women in rural areas.

5. Examples of the initiatives of language learning with mobile technology

Language learning has been suggested as the first aspect of learning to employ mobile technology in Malaysia. Thus, the following subsections are provided to review the initiatives of language learning with mobile technology in Malaysia and also in other countries.

i. mL initiative for language learning in Malaysia

In Malaysia, there has been an effort in mL for language learning, which is known as SMS-ME-ENGLISH and it provides vocabulary which is sent out every weekday through text messaging (SMS) [15].

From the organisation of the course structure which is divided into three levels, Basic, Intermediate and Advance [15], this application can be classified as a learning application for adult learners. Thus, there is a need to develop a similar but specific application that can support young learners, in other words students at school, so that they will also gain benefit from the effectiveness of this mobile lesson covering the syllabus provided by the Malaysia Ministry of Education [16].

ii. mL initiatives for language learning in other countries

The have been numerous language learning development through mobile devices in other countries. Examples are:

a. Learning on the Move which delivers vocabulary items to students at timed intervals
Described by Thornton and Houser [17], this is an application where vocabularies were sent at scheduled times and the usage of vocabularies are shown in multiple context, together with lesson review as a supplementary. This application has proved its effectiveness because it has been a push method to motivate students to learn vocabularies regularly and this helps them with memorising.

b. Vidioms which delivers visual explanations of English idioms
Vidiom is an mL system [17] that consists of rich multimedia application that explains English idioms using animation, video and sound together with quizzes. It is developed because of the demands that exist from the difficulties among foreign language learners to master idioms.

c. Korean Language Learning, M-CALL
Described by Cho et al [18], M-CALL, is a mobile computer-assisted language learning courseware for Korean language learners based on a cyber pet growing game, where learner solves problems by feeding, loving, bathing and lodging the pet. When the learner gets an excellent score, the cyber pet grows faster, but it gets sick or even dies when the learner fails or cannot handle the problems repeatedly.

d. Learning Italian via Mobile SMS
This is an application to support learning Italian which adopt SMS technology to deliver vocabulary [19]. This lesson used vocabulary obtained from a novel that students learn in the course.

6. Issues among teachers towards ICT

One of the important factors in determining the success of employing mL is the teacher's attitude. Thus, it is important to learn about teachers' attitudes in order to introduce mL at schools in Malaysia and to measure the rate of resistance among teachers for big changes.

As described in the Becta review [20], the following are the barriers that cause the negative attitudes towards ICT among teachers:
"

- lack of time-for both formal training and self-directed exploration and for preparing ICT resources or lessons.
- lack of self-confidence in using ICT.
- negative experiences with ICT in the past.

- fear of embarrassment in front of pupils and colleagues, loss of status and an effective degrading of professional skills.
- classroom management difficulties when using ICT, especially where pupil-to-computer ratios are poor.
- lack of knowledge necessary to enable teachers to resolve technical problems when they occur.
- lack of personal change in management skills.
- perception that technology does not enhance learning.
- lack of motivation to change long-standing pedagogical practices.
- perception of computers as complicated and difficult to use. "

According to Cox et al [21], the following are the barriers that cause negative attitude towards ICT among teachers: "

- difficulties in using software/hardware.
- need more technical support.
- not enough time to use ICT.
- it is too expensive to use regularly.
- insufficient access to the resources.
- restricts the content of the lesson.
- makes lesson more difficult.
- makes lessons less fun.
- reduce pupils' motivation.
- impairs pupils' learning.
- is not enjoyable.
- takes up too much time.
- counter-productive due to insufficient technical resources. "

Comparing the literatures, both have some similar findings regarding the barriers that cause the negative attitude towards ICT among teachers. If the barriers in adopting ICT among teachers can be eliminated, it can be suggested that positive attitude towards ICT will soon replace the negative attitude towards ICT. This will further bring positive impact on the teachers' attitude towards mL specifically.

7. Issues among students towards ICT

In addition to the concern about teachers' attitudes, there is also a need to study the issues among students in Malaysia. Hunt et al identify the issue [22]. "Successful implementation of new information and communication technologies (ICT) in education also depends on acceptance by students". Acceptance by students to use ICT in education is important so that the students can make the most of the tools and the effort that have been done to implement mL.

The results shown from the study by [22] indicated that students are more interested in adopting traditional modes of teacher-controlled teaching and learning. However, the remaining students that choose the ICT based education are those who had a positive attitude and experience with computers.

Furthermore, a study by the OECD [23] also found that the factors that determine students' positive attitudes towards ICT are based on the availability of ICT at home, the frequency of ICT usage and self motivation to learn about ICT. The measurement of positive attitude is based on survey that indicated students' opinion about the importance of ICT use, the enjoyment of using ICT and motivation in using ICT.

In developing countries, because of the financial constraints, there is not much funding available to implement mL compared with developed countries. As being mentioned by Masters [3] "For these countries, the developed world's emphasis on highly sophisticated devices is a futuristic dream".

In addition, [24] also have a similar opinion that mentions that mL technologies which are developed in rich countries are neither suitable nor affordable for developing countries. Thus, other than students' attitude towards ICT or mL in particular, it is also crucial to study the financial ability among students in Malaysia prior to any experimental implementation.

8. The introduction of English language learning via mL at Malaysian schools

Learning English language via mL for students at secondary school will be an added-value for the educational system in Malaysia. Firstly, it is worthwhile to introduce English Language lesson that will be tailored to the curriculum needs of students at secondary school. This mL lesson will act as a supplement to the English Language lesson inside the class, which means that students will do the activities from this lesson outside school hours, but with teacher's feedback and guidance to monitor students' progress.

With mobile devices, students will receive bite-size lesson through SMS which will be scheduled accordingly so that it will be paralleled to the lesson plan at school. Once a week, students will transfer the data from their mobile phones to the computers at schools in order to enable the teachers to monitor their progress. The mobile lesson will include appropriate vocabularies that conform to the Syllabus and Curriculum Specification of the Curriculum Development Centre, Ministry of Education Malaysia [17]. However, to enrich students' knowledge, it is also suggested that additional vocabularies are introduced in this mobile lesson.

Prior to the implementation, there is a need to enhance the teachers' and students' perceptions and attitudes towards mL to ensure that this technology will sustain and they will reap benefits from it. As being practised in the development of Smart School in Malaysia [14], teacher training for mL is also necessary. Moreover, students must also being given the appropriate induction before the usage. Any efforts which can increase the interest of teachers and students should be considered.

In the beginning, Form 4 and Form 5 (aged 16 to 17 years) students are the most suitable candidates to use mL because of their maturity in age to appreciate the values of the learning and take responsibility for the technology. There are advantages to introducing the implementation of mL in Smart Schools, which already have access to learning technology. Systems to support parents in the purchase of technology should be considered as well as facilities for those unable to pay.

To ensure the smoothness of the technology deployment, a conceptual framework on the implementation of mL for English Language subject for Malaysian secondary schools will be developed. The conceptual framework will consist of two parts; Part 1: Mobile technology integration into the curriculum and Part 2: Policy and procedure of mL implementation.

For Part 1, this section will consist of the description of the proposed structure of the mobile lesson which will be used in the vocabulary learning for English Language subject. For Part 2, this section will consist of the description of the proposed guiding principle which will be developed from themes such as; (1) Acceptable Use Policy (2) Purchase Scheme (3) Technical Support (4) Maintenance and Management of the Device (5) Training for Teachers (6) Induction for Students (7) Briefing for Parents. These themes are proposed by taking into account the role and responsibilities of the stakeholders such as technical support staffs, teachers, students and parents in the mL implementation and the logistic of the technology. Some of the themes are also proposed with the intention to eliminate the negative impact of mobile technologies on the stakeholders especially the students.

School principals, subject leaders and the policy makers in the Ministry of Education Malaysia will be consulted in evaluating the relevance of the suggested conceptual framework to be used in Malaysian secondary schools. Other theoretical issues will also be analysed such as how the implementation of mL at school will complement existing Malaysian Smart School implementation and existing policy of the Malaysian Educational System.

9. Conclusion

The uses of technology in developed countries have shown the effectiveness of mobile technology in many aspects of learning through numerous research projects. Developing countries can learn from this, but reformulating the technology so that it is both suitable and sustainable in the situation of developing countries.

The examples provided in this paper are some of the outstanding inventions in the proliferation of language learning via mobile devices. However, without serious attention towards the issues with the major stakeholders (policy makers and teachers, students and parents and the commercial enterprises supplying the services, infrastructure and learning materials) it is possible that sustainability of this learning tool diminishes after its novelty wears off.

With optimistic view, we believe that the developing country of Malaysia has a future in successfully employing mL. This is justified by the efforts of the Malaysian government with its implementation of the Smart School programme [13] [14], as well as the effort by LTT Global Communication in the development of SMS-ME-English [15]. These initiatives can be regarded as a jump start towards mL implementation in Malaysia.

As an addition to the above mentioned efforts, with the introduction of mobile lesson for English language learning at schools, it is hoped that in the future, mL will be seen as an ordinary learning tool at schools in Malaysia. This can be realised if the implementation is planned systematically, step-by-step and the challenges are considered and confronted prior to the implementation.

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