Teachers’ perception of mobile edutainment for special needs learners: the Malaysian case

Anuar Mohd Yusof\(^a\), Esther Gnanamalar Sarojini Daniel\(^b\), Wah Yun Low\(^c\) & Kamarulzaman Ab. Aziz\(^d\)

\(^a\) Institute of Graduate Studies, University of Malaya, Kuala Lumpur, Malaysia
\(^b\) Faculty of Education, University of Malaya, Kuala Lumpur, Malaysia
\(^c\) Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia
\(^d\) Faculty of Management, Multimedia University, Cyberjaya, Malaysia

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Teachers’ perception of mobile edutainment for special needs learners: the Malaysian case

Anuar Mohd Yusofa, Esther Gnanamalar Sarojini Danielb, Wah Yun Lowc and Kamarulzaman Ab. Azizzd

aInstitute of Graduate Studies, University of Malaya, Kuala Lumpur, Malaysia; bFaculty of Education, University of Malaya, Kuala Lumpur, Malaysia; cFaculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia; dFaculty of Management, Multimedia University, Cyberjaya, Malaysia

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Study of Malaysian adoption of mobile learning (m-learning) is still in the early stages. However, there are numerous researchers in the country exploring the potential and application of m-learning in the Malaysian education system, including special education. A key question is whether teachers are prepared to incorporate mobile technology as part of their teaching tools or do teachers perceive mobile technology only as personal communication gadgets. This paper investigates teachers’ perception of m-learning applications in special education classes. Interviews were conducted to collect related information on teachers’ perceptions of m-learning in the selected schools. The teachers expressed that there are limited resources to cater to the attention of special needs learners and they believed edutainment technologies such as augmented reality, game-based educational software and animation projects could be the answer. The benefits and challenges of implementing blended learning for special education are also discussed. The paper concludes by summarising the current environment of m-learning in Malaysian special needs education, together with recommendations for future use of the technology.

Keywords: special needs learner; teachers’ experiences; teachers’ perception; edutainment; mobile learning

Introduction

The past decade saw a paradigm shift in the technology sector set in with the new era called the ‘Communication Tools’ era (Neo and Neo 2000). The revolution started when the internet became the communication tool of the 1990s. Moreover, electronic mail (email) usage grew and overtook conventional mail and telegrams (Horton 2002; Neo and Neo 2000). This revolution in communication technology led to the widespread use of mobile devices such as mobile phone, laptop, netbook, smart tablet and other devices. Rapid development, innovation and widespread adoption characterised the mobile sector. Among the latest trajectories is the adoption of mobile devices as tools for teaching and learning. However, the application of mobile devices as instructional and learning tools is still in the early stages and requires more consideration before the technology can be widely implemented in schools.
The technological revolution in education has started with the internet and e-learning (Leung and Chan 2003; Motiwalla 2007; Seong 2006; Sharples 2000). Then came mobile learning (m-learning) with a new lines of devices which change as teaching devices. The progression of m-learning is now focusing on supporting the mobility and flexibility of the learning process among the young generation (Leung and Chan 2003; Song and Yusof 2010).

M-learning

The use of computing technology for learning is well established and used in various ways. However, in recent years with the rapid development and pervasiveness of mobile technologies, a new term has appeared – m-learning. According to Trifonova and Ronchetti (2003), ‘Mobile learning is a field which combines two very promising areas – mobile computing and e-learning’ (1794). M-learning has been considered as the future of learning or as an integral part of any other form of future educational process. As m-learning is quite a new domain, there is a lot of work and research that is being done on various aspects of the subject. Researchers are trying to understand among other things, how the mobile devices can help in providing a better learning process.

M-learning commonly involves the use of mobile devices for individual learning. According to Sharples (2000), m-learning is mainly through the usage of personal mobile devices for lifelong learning. Similar views were also expressed by others (Sharples 2000; Sharples, Corlett, and Westmancott 2002; Trifonova and Ronchetti 2003). Sharples (2000) identified the criteria for m-learning technologies for lifelong learning as:

- **Highly portable**, so that they can be available wherever and whenever the user needs to learn;
- **Individual**, adapting to the learner’s abilities, knowledge and learning styles and designed to support personal learning, rather than general office work;
- **Unobtrusive**, so that the learner can capture situations and retrieve knowledge without the technology obtruding on the situation;
- **Available anywhere**, to enable communication with teachers, experts and peers;
- **Adaptable** to the learner’s evolving skills and knowledge;
- **Persistent**, to manage learning throughout a lifetime, so that the learner’s personal accumulation of resources and knowledge will be immediately accessible despite changes in technology;
- **Useful**, suited to everyday needs for communication, reference, work and learning;
- **Intuitive** to use by people with no previous experience of the technology.

Based on these criteria, Sharples, Corlett, and Westmancott (2002) highlighted the main advantage of the m-learning technology; ‘... powerful tools to support learning anytime, anywhere’ (220). M-learning has transformed the learning environment; through technology the scenario has become broader, information and knowledge can be gathered or accessed more easily (Aronson 2001; Leung and Chan 2003; Motiwalla 2007; Seong 2006; Sharples 2000).

However, in the special education environment, the benefits and positive impacts of m-learning are still being questioned. The questions focused on the ability of
special needs students to operate mobile devices properly in order to benefit from m-learning. Special education in general and special education classes specifically have different needs from normal classes. This is true for both in-class and out-of-class activities.

In Malaysia, adoption of m-learning is still in its early stages. However, there are numerous researchers in the country exploring the potential and application of m-learning in the Malaysian education system including special education. In the year 2010, the Malaysia government announced the policy of Information and Communication Technology (ICT) in education which encourages the educators to utilise the ICT in teaching and learning (MOE 2010). According to Ministry of Education (MOE) (2010), the government has highlighted four indicators which are important to align with the main purpose of the study. There are:

- ICT tools and devices such as screen readers and ‘embosses’ will be part of the ICT infrastructure provided to schools for the students with special needs.
- Teachers in schools for the students with special needs will be trained and sensitised to issues specially related to the use of ICT in teaching students with special needs.
- All teachers in schools for the students with special needs will be provided with ICT-enabled methods during training and their source of professional development.
- Web-based digital repositories should be deployed to address the lack of availability of resources for students with special needs.

At the initial stage, the researcher is aware that the study can support the findings to utilise the ICT infrastructure with the usage of mobile edutainment for special needs learner. Previously, Song and Yusof (2010) had discussed the current reviews on the use of mobile technology among children with developmental disabilities. They reviewed the Augmentative and Alternative Communication system which was designed for students with autism (Romski and Sevcik 2005). The purpose of this intervention approach is to help the children improve their social and communication skills (Romski and Sevcik 2005; Song and Yusof 2010; Yusof et al. 2010). However, the technological components in the system are still in the early stages and further modifications are still being made. Some of the modification and further development is being made to include cultural factors to improve the teaching and learning for special needs learners. Therefore, Yusof et al. (2011a) had reviewed the implementation of teaching methods in special education in Malaysia involving private and public schools. The study was conducted to understand the scenario which included cultural factors and the teaching and learning process before the intervention could be made.

**Mobile edutainment for special education**

According to the definition of edutainment by White (2003), it ‘… consists of two equally important parts: the format (entertainment) and the message/content (education)’. It is also defined by Yusof et al. (2010), ‘The word “edutainment” which is derived from the combination of “education” and “entertainment” which refers to learning technology that engage their learning’ (2304). From their reviews on edutainment, it was highlighted that the applications benefit students with attention deficit hyperactive
disorder (ADHD) symptoms; by engaging their attention with entertaining elements, while at the same time they can learn and adopt the lesson objectives. Mobile edutainment is when the edutainment application or modules are delivered or operated using mobile devices. There are several mobile devices that can be used, such as smart phones, personal digital assistants (PDAs), Tablet PCs, netbooks, notebooks and mobile phones. A critical factor is the selection of the right mobile device to suit the needs of both educators and the learners. Suitability can be determined by teachers’ familiarity with the devices and whether they have the capabilities to use the mobile devices as a tool for teaching. More importantly, the teachers’ willingness and preparedness to adopt and implement m-learning is a more critical success factor.

**Purpose of the study**

A key question is whether teachers are prepared to incorporate the technology as part of their teaching methods or they perceive mobile technology only as personal communication gadgets. This paper investigates teachers’ perception of m-learning in special education classes. Ten interviews were conducted to collect related information on teachers’ perception of m-learning in the selected schools. The benefits and challenges of implementing blended learning for special education were also discussed.

**Participation**

The teachers interviewed in this study came from a variety of schools such as rural, urban and SMART schools (the government-funded school which provides good ICT facilities). The selection of interviewees was made by convenience sampling, choosing national schools that have provided space and facilities for special education and which provide part of the integration of special education in the national school programme. For this study, the researchers first obtained permission to conduct the study from the Malaysian Ministry of Education. Upon receiving approval, the researchers approached the Department of Education for the State of Terengganu (located on East Coast of Peninsular Malaysia) and the State of Melaka (located in the Southern region of Peninsular Malaysia). The rationale to choose these states was because in Terengganu, the state government had given their elementary school students netbooks and e-books to use for daily learning. In Melaka, the state government had announced ‘Melaka Maju 2010’ (Melaka Development Initiative 2010) and was planning to transform educational technology in rural schools. The respective education departments directed the researchers to a number of schools, but finally only four schools that met the selection criteria were selected. Two schools were selected from each state. A total of 10 special education teachers were interviewed. **Table 1** gives details of the teachers’ job functions.

**Data collection technique**

An open and informal interview strategy was adopted to create a relaxed atmosphere, conducive for the teachers to candidly share their knowledge, experience, opinions and perceptions of m-learning for special needs learners. The interview notes were analysed qualitatively and the findings are discussed in the following sections.
Results and discussion

Published literature agrees that m-learning provides a new path for learning by improving the methods and approaches to gain knowledge. Information can be gathered, manipulated and applied easily with the appropriate software and hardware. According to the conceptual model from Yusof et al. (2011b), teachers’ perceptions of a blended learning environment are influenced by three factors, namely Connect, Confidence and Content (3C) which was introduced by Ponter and Brown (2007) (Figure 1). This conceptual model was chosen because the authors found that implementation of any ICT technologies such Mobile Edutainment applications need to blend in the classroom. A blended learning environment is the combination of the normal face-to-face class and the usage of ICT devices as mediated tools (Hisham, Che, and Abu Bakar 2006; Reay 2001; Rooney 2003; Yusof et al. 2011b). In the blended learning environment, the linkage between teacher, mobile edutainment and student shows the importance of the teacher’s knowledge of what mobile edutainment applications are suitable for the student. Then, the teachers need to learn the applications. Finally, they use the mobile edutainment to teach their students. The authors also suggested three types of Mobile Edutainment platforms such as augmented reality (AR), game-based and project-based learning.

During the interviews, the teachers shared the challenges they experienced when trying to engage the attention of the special needs students. These challenges include:

- Each student has a different ability level. The challenge is to cater to the individual differences in a classroom and match them with suitable m-learning elements (which includes fun, play important for young learners).

Table 1. The position of special education teacher.

<table>
<thead>
<tr>
<th>Type of school</th>
<th>Teacher code #</th>
<th>Position</th>
<th>Job description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK04 (urban school in Melaka)</td>
<td>SK04-01</td>
<td>Coordinator of special class</td>
<td>Person who coordinates the special class and manages the time table of the class</td>
</tr>
<tr>
<td></td>
<td>SK04-02</td>
<td>Special teacher</td>
<td>Person who teaches the students science and ICT</td>
</tr>
<tr>
<td></td>
<td>SK04-03</td>
<td>Special teacher</td>
<td>Teacher assistant</td>
</tr>
<tr>
<td>SK02 (rural smart school in Melaka)</td>
<td>SK02-01</td>
<td>Coordinator of special class</td>
<td>Person who coordinates the special class and manages the time table of the class</td>
</tr>
<tr>
<td></td>
<td>SK02-02</td>
<td>Special teacher</td>
<td>Person who teaches the students science and ICT</td>
</tr>
<tr>
<td>SK06 (rural school in Terengganu)</td>
<td>SK06-01</td>
<td>Coordinator of special class</td>
<td>Person who coordinates the special class and manages the time table of the class</td>
</tr>
<tr>
<td></td>
<td>SK06-02</td>
<td>Special teacher</td>
<td>Person who teaches the students science and ICT</td>
</tr>
<tr>
<td>SK05 (rural school in Terengganu)</td>
<td>SK05-01</td>
<td>Coordinator of special class</td>
<td>Person who coordinates the special class and manages the time table of the class</td>
</tr>
<tr>
<td></td>
<td>SK05-02</td>
<td>Special teacher</td>
<td>Person who teaches the students science and ICT</td>
</tr>
<tr>
<td></td>
<td>SK05-03</td>
<td>Special teacher</td>
<td>Teacher assistant</td>
</tr>
</tbody>
</table>
The teachers used different teaching methods to meet individual student needs. The teachers found that the one-to-one or individual teaching method is better in securing the students’ attention. The problem here is the limitation of the student to teacher ratio. Technology can help to address this limitation. Limited resources exist in terms of tailored interactive content, facilities and equipment. Teachers are often given materials from the mainstream system to use in their special needs classes. The teachers themselves have limited knowledge of how to incorporate the m-learning technologies into their teaching. However, the majority expressed their desire and willingness to learn the alternative approaches if it is available. Normally, there are specific timeframes for completion of the various lessons prescribed in the national syllabi. However, the teachers found it hard to finish the syllabus when the attention of the students is minimal.

This paper believes there are technological options that can help to mitigate the constraints, limitation and difficulty faced by the teachers. The underlying philosophy for the proposed options is to integrate entertainment and educational elements to become more enjoyable for the learners and thus capture their attention for learning.
**AR using mobile**

AR is a variation of virtual environment technology which is also called virtual reality (Azuma 1997). According to Azuma (1997), the AR applications were monitor-based (Figure 2); however, with the latest technology, mobile devices are now used to operate AR technology (Figure 3). It might help the teacher gain their students’ attention and motivation, whereas the normal flash card will show only a three-dimensional object. A majority of the teachers interviewed expressed interest in the potential of using AR as part of the range of learning tools. They saw the potential of AR as an exciting and fun teaching aid for the learners with special needs to engage their attention.

**Game-based learning**

Besides AR, game-based learning can also be another element to encourage the students and capture their focus (Chuanga et al. 2009; Embi and Hussain 2005; Green and McNeese 2007; Yusof et al. 2010). Gaming on mobile devices has become widespread and often used while having to wait, as stress reliever, for relaxing, and more for entertaining (Chuanga et al. 2009; Green and McNeese 2007; Song and Yusof 2010; Yusof et al. 2010). Currently, there are only a limited number and variety of games for special needs education that is suitable for the Malaysian cultural.

When asked for their opinion, the teachers all agreed that gaming elements will help capture the attention of the special needs students. Teacher (SK06-01) explained:

‘Kadang-kadang murid bila sudah mula main game yang ada dalam netbook terutama murid ADHD, susah hendak menyuruh dia berhenti main.’ (Sometimes, when students are playing games on their netbook, especially ADHD children, it is difficult to get them to stop playing.)

The teachers also expressed some concern that students would repeatedly play only the same games and not really learn their lessons.

Figure 2. Monitor-based AR conceptual diagram.
Animation project using netbook

Netbooks are mobile devices that can be taken anywhere and operated anytime (Leung and Chan 2003; Motiwalla 2007; Seong 2006; Sharples 2000). Based on the conceptual model in Figure 1, mobile edutainment can be implemented in the blended learning environment. The mobility of netbooks can be used for education purposes, namely, animation projects – students using online animation tools to create their own animations (Yusof and Aziz 2010; Yusof and Song 2010). According to the teachers, there are numerous challenges such as teachers’ lack of experience, knowledge and skills to use animation tools and how to develop an appropriate lesson plan suitable for special education. Teacher (SK04-01) explained:

Saya menggunakan software yang umum seperti Word dan Powerpoint, Itu pun banyak digunakan di dalam pengurusan sekolah sahaja (I use common software such as Word and PowerPoint, mainly for school administrative work only.).

Time is needed to train the teachers and the students until they are more comfortable to use in teaching and learning. The teachers agreed that animation projects may help the students to gain skills such as computer literacy, animation skills, drawing skills and communication skills. This opinion is supported by the findings of Yusof and Song (2010).

Conclusion and recommendation

In conclusion, teachers’ perception of m-learning for special education is that it is still in its infant stage and more investigation and exploration is necessary before m-learning can be implemented in Malaysian schools for the special needs learner. For future investigations, various other technological options can be developed and tested in the classroom. This will give the teachers opportunities to experience themselves and their perceptions and suggestions can be solicited.

Nevertheless, it can be said that this preliminary investigation discussed in this paper has revealed that the teachers were excited and positive towards the technological possibilities discussed above. The authors suggest a blended learning environment to ensure mobile edutainment can be implemented in the current class setting for special needs learners.
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Notes on contributors

Mr Anuar Mohd Yusof is a lecturer from the Faculty of Creative Technology and Heritage, Universiti Malaysia Kelantan. He pursued his study in Institute Graduates Studies, University of Malaya. His areas of interest are on Edutainment Technology, Multimedia Learning, Animation, ICT in Education and Inclusive Education.

Prof. Dr Esther Gnanamalar Sarojini Daniel is from the Department of Mathematics and Science Education, Faculty of Education Building, University of Malaya. Her areas of interest are: The Teaching and Learning of Biology (Science Education; Cognition; Integration of Technology; Teaching approaches ) Science Education, Cognition in Science Education, Integration of Technology in Science Education, Teaching Approaches in Science Education (Science Education; Cognition; Integration of Technology; Teaching approaches) Educational Psychology (Cognition; Technology and Cognition) Environmental Citizenship; and Environmental Education and Training (Education; Citizenship).

Prof. Dr Low Wah Yun is a Professor in the Faculty Of Medicine Dean’s Office, Faculty of Medicine Building, University of Malaya, Kuala Lumpur. Her areas of interest are Relationship Counselling, Hypnosis, and General Counselling.

Associate Prof. Dr Kamarulzaman Ab. Aziz is from the Faculty of Management whose areas of interest are: Innovation, Technology Management, Technology and Society, Economics of Innovation, Clusters & Networks, Incubation Centers and Clusters for Innovation, Tech Cluster Theory/Practice (Silicon Valley & Imitators) Flows, Norms, Emergence, and Homeless Ideas/funds/etc.

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