Teachers’ Perceptions towards Implementing Mobile Learning in Rural Malaysia

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Abstract: The use of mobile technologies appears to be in line with the strategic goals in education besides facilitating and promoting learning anywhere and anytime. However, despite the complete and advance mobile infrastructure in the developed world, the digital divide still exists in developing countries. This paper discussed the students’ behaviour and responds towards digital devices and mobile learning through interview sessions held with the school administrator and teachers. The paper defines the various perceptions of the use of mobile technology for teaching and learning by reflecting the positive opinions from the school administrator and the teachers. The different perceptions and acceptance towards technology between the aboriginal and non-aboriginal students are also reviewed in this paper.

Keywords: Mobile learning, technology devices, primary schools, rural Malaysia

1. Introduction

The widespread use of mobile phones is spreading like wildfire. It is difficult to walk without colliding with a sea of people using mobile phones nowadays. In fact, there is a study reported the rapid growth of active mobile phone would reach 7.3 billion by 2014 which resulting the world having more mobile phone accounts than people on earth (International Telecommunications Union, 2013). The same situation applies to other portable devices. The rise of mobile technology in the form of phones and tablets allowing computing power and wireless communication in the hands of millions of new users at affordable prices and in a form that is easier to use than the desktop computer. This phenomenon indirectly leads to various kind of study involving portable or mobile devices thus changing the landscape of technology learning tools. The use of mobile technologies appears to be in line with the strategic goals in education besides facilitating and promoting learning anywhere and anytime. However, despite the realisation of ubiquitous mobile infrastructures and practices in much of the developed world, a digital divide still exists in rural developing regions. They do not yet benefit from the widespread availability of information over the internet or the ability to consume, create and share multimedia content, due to the lack of internet and mobile connectivity, client devices and corresponding textual and computer literacy.

One sector where mobile technology is set to have an enormous influence is that of mobile learning or M-Learning. M-Learning might be more generally considered a new phase in the development of e-learning technologies and is set to have a significant impact on education according to a recent series of reports by United Nations Educational, Scientific and Cultural Organization or UNESCO (2012a). The growth of open educational resources is also making new multimedia teaching materials available to educators and learners, free of royalties and licences (Open Educational Resources Africa, 2009). A good context for exploring the
The potential of M-Learning technology would be rural Malaysia, which is a Category 1 country with a mature mobile market, high mobile phone penetration and strong ICT infrastructure (UNESCO, 2012b). One of the Malaysia’s prominent online news portal reported that a study conducted by Ericson ConsumerLab in South-East Asia has proven the increasing of the smartphone penetration from 47% in 2012 to 63% in 2013 while the tablet penetration was increasing from 14% in 2012 to 39% in 2013 (The Star Online, 2013). Furthermore, the Malaysian Government is implementing an ambitious nationwide development programme under the National Blue Ocean Strategy (NBOS), as one of the strategies to reduce the gap between the rural and urban area. This is an initiative to ensure the people in the rural area received similar services and facilities as well as the people in the urban area: http://www.blueoceanstrategy.com/. The Malaysian government's determination to bridge the education and digital gap between rural and urban students was also proven when the government introduced various measures in the Malaysia Education Blueprint 2013-2015 to meet the requirements of rural students, including aboriginal (Malaysia Education Blueprint, 2013). Government support towards the use of technology in education was reinforced by the launched of 1BestariNet in 2012. The visions of the 1BestariNet project were to transform education in Malaysia and bridge the digital divide between rural and urban students (1bestari.net, 2012). Through this project, the government aimed to equip public schools in Malaysia with high-speed Internet access and a virtual learning platform.

However, the provision of technology alone is not sufficient to ensure students can utilise technology in their education, especially if it involves students in rural areas. Research done by Dexter et al. indicates that the effectiveness of incorporating technology into education depends on the technology ability to help students in learning (Dexter, Anderson, & Becker, 1999). Students can construct their knowledge if they are actively engaged in learning with the help of technology tools (Jonassen & Carr, 2000). The literature reviewed by Sadik (2008) reveals that technology integration is meaningful if learning is designed from the constructivist approach that encourages students to learn in a social context and help them to develop the ability to create new knowledge, resolve problems, as well as applying creativity and critical thinking. Thus, searching for a platform that can encourage student engagement is essential in ensuring the effectiveness of technology integration in education. Therefore, this study aims to understand the current teaching and learning activities in the rural schools in Malaysia. Teachers are the main persons who play an important role in ensuring the goal of applying technology in teaching and learning sessions is achieved. Therefore, it is important to have their views and perceptions in integrating mobile learning in the current teaching and learning activities in the rural schools.

2. Research Motivation

The rapid development of research on mobile learning in Malaysia is fascinating. There were some significant research groups in Malaysia that are actively investigating mobile learning. Even though Wu et al. (2012) claimed that the global research direction on mobile learning is alienated into two major directions: evaluating the effectiveness of mobile learning, and designing mobile learning systems, a reviewed study conducted by Embi and Nordin (2013) on mobile learning research in Malaysia showed the different trend. According to the reviewed literature by Embi and Nordin, most of the researchers were more on investigating the level of readiness for the implementation of Mobile Learning among students and the educators. Besides, a reviewed study conducted by Song, Murphy, and Farley (2013) shows that the current trend of the research on mobile learning in Malaysia is focusing on implementing
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Mobile Learning among students in higher education. However, there are some Mobile Learning researchers focuses on school students, but research on the use of mobile learning in rural communities or specific race in Malaysia has yet to be addressed.

Selinger (2009) (as cited in Woolf, Arroyo, & Zualkernan, 2011) stated that information and communication technologies that worked for teaching students in developed countries would not necessarily work with students from developing countries. Besides, research done by Reitmaier et al. (2010) shows significant differences between usability in urban areas and rural areas even in the same country. Thus, the argument issued by Walsh, Vainio, and Varsaluoma (2014) regarding the importance of taking into account cultural issues before designing the mobile learning system is totally true. Thus, all of the above factors motivate this research to conduct a detailed study in the rural context to integrate technology that is useful and can be fully utilised by the rural students and teachers.

3. Participants

This study involves school administrators and teachers two rural primary schools with different sociocultural values: a school for indigenous children and a rural Malay school.

i. Sekolah Kebangsaan Pulau Beluru, Tumpat, Kelantan

One of the objectives of National Blue Ocean Strategy (NBOS) is to enhance teaching quality and lessen the gap between rural and urban schools in Malaysia. The school was chosen due to working relationships with the surrounding village communities on the East Coast of Malaysia through community service activities under NBOS: Pantai Suri and Teluk Renjuna. Sekolah Kebangsaan Pulau Beluru (S.K Pulau Beluru) is the only primary school in Tumpat archipelago. The school accommodates students from 12 islands out of a total of 30 islands around Kelantan River including Pantai Suri and Teluk Renjuna. Most students travel to school by boat or sampan. In 2011, SK Pulau Beluru made history when eight students successfully obtained straight A’s in the Malaysia Primary School Evaluation Test. These results prove that a rural school, whose students are mainly from low-income families, can succeed.

ii. Sekolah Kebangsaan Tohoi, Gua Musang, Kelantan

Sekolah Kebangsaan Tohoi (S.K Tohoi) is a primary school located in Gua Musang, one of the districts in Kelantan. This school was chosen based on discussion with one of the officers from Department of Orang Asli Development, Gua Musang. The school was suggested because it is one of the aboriginal schools in Gua Musang situated in an area considered as ‘the rural-urban fringe’, just at the outskirts of the nearest town. It also had working relationships with Universiti Malaysia Kelantan through community services organised by the university. Despite the poor school condition, the school is equipped with an office, a small library, a hostel, a dining hall, a field, classrooms, a pre-school, musolla or prayer room, a computer laboratory, toilets, and a staffroom. An unpaved dirt road is the main track linking the village with the main road. The journey from the main road to the school takes about 60 minutes depending on the condition of the road or path. During the rainy season, the road is very slippery, which makes the journey much more difficult.
Given the remote location of the school, access to the Internet and mobile phone coverage is limited.

4. Research Method

Four teachers from S.K Pulau Beluru and eight teachers from S.K Tohoi were interviewed, including the headteachers and deputy headteachers. The information sheets were given to the participants to enable them to understand the purpose of this interview and the background of the research. They were then required to sign the consent form if they agreed to be interviewed. The interviews were audio recorded based on the permissions given by the participants. The interviews were held in various places around the schools such as in the participants’ offices, canteen or dining hall, in the computer lab, and staffroom. The average time for each interview sessions was around 30 to 60 minutes. All the recorded data obtained from the interviews were transcribed into digital text documents by using Express Scribe Transcription software. The interviews were analysed using thematic analysis. Themes are the patterns found in data sets that are required for explaining a particular topic and are associated with a specific research question (Daly, Kellehear, & Gliksman, 1997). NVivo was then used to analyse the transcribed interviews. The answers given by the interviewees were categorised into several patterns or sub-themes by using the Nodes function.

5. Results

Ten nodes (themes) were created during the interview analysis; i.e. current communication and Internet facilities, current technology available, family background, type of Multimedia elements suit the students, mobile learning acceptance among teachers, mobile learning acceptance among students, mobile phones availability in students’ families, and teachers or administrator suggestions, students’ attitude and behaviour. The nodes were then classified into four nodes classifications (themes) depending on the answer to the research questions. The themes were classified according to the number below;

1. key requirements for learning technology in a rural school village context,
2. forms of existing materials used in teaching and learning,
3. multimedia elements for most effective learning outcomes, and
4. students attitude and behaviour.

5.1 Key Requirements for Learning Technology in a Rural School Village Context

Knowing and understanding the community requirements is crucial in developing a community-centred system design and critical to the success of interactive systems. Understanding of the needs and requirements of the users leads to the success of a system (Maguire & Bevan, 2002). Thus the interview questions were mainly designed to understand the community behaviour, needs and requirements through the eye of the school administrator and the teachers, as they were one of the community members who act as the educators and mediators. As mentioned earlier, the answers given by the participants were categorised into ten sub-themes before being classified into four main themes. Based on the answers from the
participants, there were four sub-themes classed into this theme; current communication and Internet facilities, mobile learning acceptance among teachers and school administrators, and teachers suggestions towards mobile learning in rural schools.

5.1.1 Current Communication and Internet Facilities

Finding out the current communication network in the study area will help researchers to choose the suitable platform and design for the system. Based on the interviews conducted with the headteacher and teachers of Sekolah Kebangsaan Pulau Beluru, we found out that the school was equipped with Wi-Fi in specific areas. The villagers in the vicinity of the school were allowed to use the Wi-Fi too. They were allowed to come to school for using this Internet facility. As for the students, they were exposed to the Internet through the computers in the computer lab that were equipped with cable Internet connection. However, probably due to the school location which is on an island, the Internet connection, as well as mobile telephone telecommunication, were very low and limited. The information on the current communication and Internet facilities in the school was obtained through the following quote: ‘There is no mobile coverage. The Internet connection is also limited.’ The other teacher also commented: ‘The mobile coverage here is not stable. The teachers are having difficulties to use a mobile phone in the school.’ The headteacher described the Internet facilities in the school as: ‘The Internet facilities in the village here are limited. The Internet is only able in the school area. Thus, I am permitting the villagers to come to the school and used the WiFi here… As for the students, they are using the computer lab.’

The Internet network supplied by YTL Communications Sdn. Bhd, the official technology partner of Malaysia Ministry of Education for the 1BestariNet project. This can be found in this quote: ‘The government provides the Internet… Also, the Internet installed in school was supplied by YTL and BestariNet.’ The fact is the Malaysian government has actively supported the use of technology in education. Through the 1BestariNet project, the government aims to provide high-speed 4G Internet access and a virtual learning platform in each primary and secondary public schools in Malaysia. The project vision was to transform education in Malaysia and bridge the digital divide between rural and urban students (1bestarinet.net, 2012).

The Internet facilities and mobile network in Sekolah Kebangsaan Tohoi were reported worse than Sekolah Kebangsaan Pulau Beluru. There was no mobile network in the area. The school staffs were depending on the Internet. However, the Internet connection itself was very limited, and the speed was very slow even though there was satellite broadband installed in the school area. This can be summarised by the following quote: ‘Internet is the only communication here. However, it very limited.’ The other quote from another participant supported this matter: ‘There is no mobile network here. However, for the Internet, the government had supplied the school with visit, satellite. However, the Internet speed is very limited. If I were to rate this service, I could only give 1 out of 10 only. The fastest speed is 0.5 Mbps.’ Another teacher commented; ‘No fix telephone and fax here. Internet was installed in April last year. However, the speed is limited…’ Even though the school has a computer lab, unfortunately, most of the computers were defective. However, according to the headteacher, the school received brand new computers sponsored by one of the public university in Malaysia, Universiti Sains Malaysia at the end of 2013: ‘Computers were supplied last year (2013). We received sponsored from Universiti Sains Malaysia.’ The deputy headteacher supported this statement: ‘the previous computer lab was unusable. Most of the computers were damaged. However, since the end of last year (2013) we received new computer…’. The computer lab was equipped with cable Internet connection too. However, multiple computers shared the connection despite the low Internet speed, which was only 54Mbps. This was stated
in this quote: ‘The computers in the lab are equipped with the Internet facilities. The speed is 54Mbps and shared by multiple devices.’

5.1.2 Mobile Learning Acceptance among the School Administrators and Teachers

Majority of the participants from Sekolah Kebangsaan Pulau Beluru knew about mobile learning or at least had an idea of what mobile learning is all about. Even though they did not have any experience of implementing mobile learning in their teaching sessions before, they agreed that mobile learning is an appropriate learning tool that aid teachers, parents and students in learning experiences. This can be summarised by the following quote: ‘As we know, mobile learning helps to improve student understanding of certain subjects or skills, so the positive impacts are good.’: ‘Previously, we were only exposed to e-learning and smart board. Mobile learning is a learning method that can be accessed everywhere. So, I do not think there will be a problem of expanding mobile learning in the education field. Teachers can accept it as it is new and exciting. Teachers are also interested in something that is non-conservative like chalk and talk.’: ‘This mobile learning method is beneficial for students, parents and teachers...’ Also, they believed that implementing mobile learning in Malaysian Education system is working towards the Malaysian government’s vision in empowering technology in education: ‘This study is interesting as it is closely related to what is recommended by Ministry of Education.’ Besides, participants strongly supported the use of mobile learning because they believed that learning process should happen anywhere, not only in the classroom. The headteacher commented: ‘Learning process can occur without requiring a classroom. Learning takes place everywhere. Under the trees, at the riverside and so on.’ The Information Technology teacher was also agreed on this matter: ‘I am strongly agreed if mobile learning can be practised or implemented in our education system by the government and the responsible parties. This is because learning is not just actually happen in school. Learning happens all the time. Students can access the content of the lesson while watching television, relaxing in the living room, everywhere. The student who did not attend the school (due to valid reason) is also allowed to access the learning content of the day.’ However, the participants stressed that the use of mobile learning should be along with parents and teachers supervision. This is to ensure the expected learning goals can successfully be achieved. The following quote is by the headteacher: ‘Therefore, to get the maximum effect of the use of mobile learning, it is best carried out with the teacher’s supervision.’ Another teacher also expressed the same stance: ‘The use of mobile learning required teachers supervision at school and parents supervision at home’, she said. The headteachers and teachers were also unanimously stated that mobile learning is applicable for all subjects. This was summarised when all participants gave similar responses when they were asked about the subjects that are most suitable to be used with mobile learning as the following quote: ‘Every subject is suitable to be used with mobile learning.’

However, the majority of the interviewees from Sekolah Kebangsaan Tohoi had no experienced using mobile learning before, but they did have the experience of using e-learning. For example, one of the English teachers who obtained his degree in Plymouth, United Kingdom said that he was used to online learning but did not have the experienced of using mobile learning yet even in the United Kingdom: ‘I had never used mobile learning before even in the UK. Have no experience of using it yet. However, I am used to online learning by using computers. Web-based.’ A Science teacher told that his previous school did implement e-learning programme called Zoom A in the teaching and learning session. However, it was compulsory only for the Tier 2 students. Students used to access the password protected web-based programme through desktop and laptop: ‘My previous school was using Zoom A programme in teaching and learning. […] Compulsory to the Tier 2 students. This programme
consists of all subjects, and it was web-based. Password protected. Access through desktop and laptop. During that time, there was no smartphone yet.’ Although they had never used mobile learning before, the majority of them supported the implementation of mobile learning in teaching and learning session in rural schools in Malaysia. They believed the use of mobile learning could help to attract students’ enthusiasm towards learning and encourage learning to happen anytime and anywhere. “I am 100% supporting the use of mobile technology in teaching and learning session as it will stimulate students’ thinking and can be used outside of the classroom and anywhere, even at home”, said a senior teacher. The school headteacher supposed the use of mobile learning in the education system as the best way and in line with current technological developments. He said that mobile learning would facilitate students to explore the learning contents themselves with least tutoring from the teachers. Besides, the headteacher believed that mobile learning is allowing students to access information anywhere, the two-way communication stimulates interactions between students and the system and broaden the students’ learning field. The following quote summarised the information: ‘I think it (implementing mobile learning) is the best way. It is up-to-date with the current development. It will ease the students to find information. Students can explore the learning content themselves, and the teachers only need to give the instructions. [...] Students can interact with the system. This will not limit the students’ surrounding only. Their learning field will be wider. [...]’ In spite their support in the use of mobile learning, they were still concerned with the aboriginal students’ acceptance towards this kind of technology. The headteacher expressed his concerned if aboriginal students did not know how to use this technology: ‘It is good if we can use mobile devices in the teaching and learning session, but the technology usage among the aboriginal students is quite worrying. Worry if they did not know how to operate the devices.’

5.1.3 Teachers’ Suggestions and Ideas towards Mobile Learning

As experienced teachers working in the rural area, the interviewed school administrators and teachers indeed had better understandings on the rural students’ behaviours, needs and requirements. Hence, their views, suggestions and ideas on the use of mobile technology among rural students are important to be taken into account. Through the interview sessions, the school administrator and teachers were free to share their points of view and suggestions towards the possibility of implementing mobile learning in teaching and learning in rural schools in Malaysia. Based on the answers obtained from the interviews, the suggestions and ideas can be divided into two parts: i.e. for the researcher and the government. Misuse of technology that occurred among students nowadays is very alarming. Therefore, the teachers from Sekolah Kebangsaan Pulau Beluru felt it was good to have a device or application that solely focus on education, in which the students will not be able to access other things apart of the learning contents. The teachers were also suggested a learning application that can be used by the students together with their parents could be developed. A religion teacher suggested developing a new device that can only access to the education: ‘I agree if the researcher can develop a special mobile that is focusing on learning only. If it is focusing on learning, the students will not be able to access another irrelevant side.’ An English teacher from the same school suggested that all research towards Malaysian education should involve the Malaysian students and could not be developed based on the observation and study on overseas students: ‘Whatever research involving education in Malaysia should be done in Malaysia. It is inappropriate to use the result and research done in overseas to be implemented in Malaysia.’

In order to realise the use of mobile learning among rural students in Malaysia, participants from Sekolah Kebangsaan Pulau Beluru and Sekolah Kebangsaan Tohoi hoped the government could set a lower price for mobile devices for lower income families or rural
people. The current prices were considered high and unaffordable for lower-income families. A senior teacher of the aboriginal school said it was impossible for the aboriginal parents to buy the expensive mobile devices themselves: ‘As for the devices supply, I hope there are sponsors from any agencies or else, offer the devices with a very low price.’ An Information Technology teacher from the other school commented: ‘It is about the devices itself, for example, IPad and tab, makes the devices affordable (for the rural people). Finding the devices is easy but make sure the prices are affordable. [...]’ Other suggestion by the participants from both schools is regarding the affordability of mobile devices among rural students was for the government to provide the mobile devices to the school but with the control of the responsible authority. The deputy headteacher of the aboriginal school believed the aboriginal students would be able to use the mobile learning technology if there is devices supply from the government: ‘[...] if the government can provide the mobile devices, I think the aboriginal people can also use it (mobile learning). It will attract the students.’ It was highly recommended if the school is given the authority to distribute the devices to the students as transparency in distributing the mobile devices are easier to control. The headteacher supported the statement by the following quote: ‘If the government wants the people responded to this (mobile learning), provide the devices but with supervision. And I prefer if the responsibility to distribute the devices is given to the school.’ The school administrators of the aboriginal school sincerely hope the government will not marginalizes the aboriginal schools as the aboriginal students were also needed good education just like other students from different races. The government should provides better facilities to the aboriginal school such as clean water supply, comprehensive teaching equipment, good telecommunication and Internet services, as long as improving the school infrastructures as told by the headteacher: ‘What’s important is to complete the basic needs here. Water supply, infrastructures, faster Internet connection, that would be enough for the moment. [...]’ The lack of basic facilities in the aboriginal school was reported to indirectly affect the teachers teaching motivation. They found that the no mobile network and limited Internet connection coupled with the school remote location made difficult for them to find interesting or attractive teaching material to attract the illiterate students’ learning attention. In addition, it was advisable for the government to provide faster Internet connection in rural schools, as the current speed of Internet facilities for both schools was very slow and limited.

5.2 Forms of Existing Materials used in Teaching and Learning Sessions

This theme consists of 2 sub-themes; Current technology used by teachers in teaching and learning and the availability of mobile phone in students’ families.

5.2.1 Current Technology used by Teachers in Teaching and Learning

Sekolah Kebangsaan Pulau Beluru

Powerpoint was one of the well-known software used by the teachers in the classroom for both schools. An Information Technology teacher explained that the teachers of Sekolah Kebangsaan Pulau Beluru were also using Microsoft Word and Microsoft Paint in their teaching sessions: ‘Technologies used are Powerpoint, word-processing software such as Microsoft Word and spreadsheet (Microsoft Excel), as for graphic we used a basic graphics tool like Paint’. He also added that there was an Information and Communication Technology (ICT) subject for Tier 2 students in Sekolah Kebangsaan Pulau Beluru. Through this subject,
the students were exposed and learned the basic of Microsoft Word, Paint and Microsoft Excel.

'[...] Year Four, Five and Six students have an Information and Communication Technology subject. [...] The ICT subject teaches the students basic graphic, word-processing such as Word and spreadsheet (Microsoft Excel). However, it is just basic.' Other than that, the teachers were also using Mp3 song and video in the classroom. An English teacher attracted her students’ attention by playing the Mp3 songs and projected videos to the white screen: ‘What I did was searching for songs and videos through the Internet, saved them in the pen drive, and played the song in the computer lab. So, the teacher does not need to sing in the class. I just need to project the videos to the white screen and students will follow the movements as in the video.’ A different approach was taken by a religion teacher to play the songs and videos in her classes. She was using her smartphone, radio and laptop in the classroom to play the songs and videos she downloaded so that she did not have to bring the students to the computer lab, which was time-consuming for her. ‘I am using radio, laptop and smartphone’, she said. She was also used the compact disk (CD) to teach her students: ‘Normally I am using the CD that has been supplied. Alternatively, the CD I bought myself.’ A VLE Frog, a national web-based programme was introduced by Malaysian Ministry of Education in 2013 to enhance the education in Malaysia. Despite the limited Internet connectivity in the school, Sekolah Kebangsaan Pulau Beluru was one of the rural schools in Kelantan which actively involved in this programme. According to Information Technology teacher, ten students were trained to participate in the VLE Frog programme: ‘There is one programme under Ministry of Education, the VLE Frog [...] SK Pulau Beluru is actively involved as we are currently in second ranking for Tumpat county [...]’. The students were also used to Youtube. They were allowed to access Youtube in the computer lab but with teachers’ supervision. Teachers were able to monitor the students’ desktop through the central desktop.

Sekolah Kebangsaan Tohoi

The usage of PowerPoint was very limited even though the teachers were reported to use PowerPoint in teaching and learning session. This was due to the limited number of liquid-crystal display (LCD) available in the school: ‘Currently, we are lack of LCD. We were supposed to have 10 LCD, but many of them are broken.’ The headteacher explained there was no maintenance provided for the broken LCD. Thus they were left unattended: ‘We do have LCD. However, most of them are broken. Moreover, there is no maintenance. [...]’ An English teacher mentioned that he had used video and music for his subject as the students enjoyed watching the video and listening to the music. A discussion then would be held based on the video: ‘I did use video. [...] Based on the video, I will interact with the students through questions and discussion. Because the students like to watch the video and listening to the music. I am also using music for learning.’ Animations were also used in the classroom. The deputy headteacher had using the desktop in his classroom. What he did was displaying questions from an e-learning website through the central desktop, and shared the screen with the students’ desktop for them to answer the questions on the paper: ‘[...] For example I opened the Zoom A (an e-learning website), and displayed it to all desktops and the students will answer (the questions). It was normal for the standard six students. I just needed to open the main website to the teacher’s desktop, and the questions can be displayed on the other desktops. Students will answer the questions manually. [...]’ A science teacher used the compact disc (CD) provided by the government to educate the students: ‘There is CD provided for Science subject. I used a projector to display it on the white screen. [...]’ He was also using an educational television programme to facilitate learning among the students: ‘[...] we did switch on Astro Pendidikan to be shown to the students. Sekolah Kebangsaan Tohoi was also involved in the VLE Frog programme however according to the school VLE Frog programme
coordinator; it was challenging to implement this programme in this aboriginal school as the Internet facilities were the main obstruction: ‘Government had introduced FrogVLE. I am as the programme coordinator. However to implement it in SK Tohoi would be hard as the Internet connection is terrible.’

5.2.3 Availability of Mobile Phone in Students’ Families

_Sekolah Kebangsaan Pulau Beluru_

An observation done by an English teacher had found out that there were students who own a mobile phone even though it was just a candy bar type: ‘Based on my observation, students have mobile phones.’ She believed in a few years time the most of the students will have their mobile phones: ‘Maybe within 3 to 5 years more, the students here will have their mobile phones.’ Most of the students were exposed and knew about technologies even though the majority of them did not have the experienced of using most of the technological devices due to the low family finances. According to the Information Technology teacher, the students did recognised smartphones as one of their family members might have own one: ‘They knew about smartphone because one of their family members own it. [...]’ Despite the families finances inability, all the participants believed that at least each family own mobile phone: ‘I think they (the family) have mobile phones. Even though it is not the smartphone. Nowadays, the mobile phone is a necessity.’: ‘Based on my observation, each family own a mobile phone.’: ‘Each house at least has a mobile phone.’

_Sekolah Kebangsaan Tohoi_

According to the school deputy headteacher, the current market price for the basic mobile phones was low and affordable for the aboriginal community: ‘As for me, mobile phones are available at the lower price. However, it is for the normal basic phones. Not the smartphones type. As for the smartphone, it is quite difficult for them (the aboriginal people) to own it.’ Based on the observation of the villagers, a Science teacher had found that the villagers used mobile phones even just for listening to the music: ‘Most of them have it (mobile phone). This is based on my observation when we passed by the villages during the journey to school. They used it (mobile phone) to listen to songs.’ The teachers believed that there were families with a mobile phone, but they were not sure whether there is a mobile phone in each student’s families. An English teacher said it was difficult to anticipate whether the majority of the aboriginal villagers have a mobile phone as there was no network coverage in the area: ‘The mobile phones are now inexpensive. As there is no network coverage in this area, it is difficult to estimate whether the villagers own a mobile phone.’ The famous phone types among the aboriginal people were the basic mobile phones (candy bar) and mobile phones with the functions of Mp3 player and camera. This is summarised based on the following quote: ‘They (aboriginal people) have basic phones. [...] A mobile phone that has camera and Mp3 (for them) to listen to music.’ However, the teachers confirmed some aboriginal villagers own a smartphone, and most of them were the youngsters: ‘The youths own the mobile phones. But not each of the aboriginal family has it (mobile phone)’: According to the headteacher, some the aboriginal youths preferred to work outside of his or her villages. They did not inherit their parents’ occupation as farmers (owned/ salaried workers), loggers or collecting forestry products. They were working in the nearest town, and they owned a smartphone. ‘Some of them came to the school to use the Wi-Fi.’
5.3 Multimedia Elements for Most Effective Learning Outcomes

The participants from both schools were agreed that the combination of the five elements of Multimedia, which are animation, video, graphic, text, and sound, helped to attract the students’ attention as well as improving their concentrations. A religion teacher from Sekolah Kebangsaan Pulau Beluru said that her students loved watching movements: ‘Students love movements. Such as video or animation. Moving images. […]’ Even though the usage of texts is considered important, but the stand-alone text would not being able to attract the students’ attention: ‘Text is important too, but if we only used text alone, students will not be interested.’ Thus, she suggested the combination of text and movement, as it would create effective learning: ‘[…] If possible combined texts and movements together.’ The Information Technology teacher from the same school described students as excited if the teacher using animation in the teaching and learning session: ‘Sometimes, the students using teaching sources that contents animation. This attracted the students.’ He believed the combination of the multimedia elements were effective to the students learning outcomes. An English teacher from the aboriginal school explained that he was using video and music in his teaching and learning session: ‘I had used videos (for teaching the students). […] I am using music for learning too. […]’ He concluded that the combination of music and video were effective for his classes: ‘The combination of those (music and video) was effective.’

5.4 Students’ Attitudes and Behaviours

As the students’ residences were located on islands, the students of Sekolah Kebangsaan Pulau Peluru did not have adequate educational facilities, unlike the students living on the mainland. According to the religion teacher, there were no tuition centre or even bookshops on the islands: ‘As they were living on islands, there were lack of facilities such as tuition centre, bookshops, so the time spent at home was not the same as the students living on mainland, where parents normally send their children to the tuition centre and bought reference books for their children to use at home.’ Thus, the students learning were dependent on school. Besides, teachers were reported to have many things to deliver to the students, but the students’ level of understanding was the main barrier, coupled with the school’s remote location. For example, the Information Teacher wanted to deliver as much as information to the students and society, but the intention was unsuccessfully achieved: ‘The teachers here actually have many things to deliver to the students, parents and the society. However, because of some constraints, there was various messages and information were not delivered to the society and the students.’

The aboriginal students were reported to have a different culture from the non-aboriginal students from another school. The language barrier was one of the constraints in teaching the aboriginal students. The Malay language was considered as the second language for the students as their first language was Temiar. For example, the English teacher needed to teach the students in the Malay language first before translating them to English: ‘I need to translate the teaching contents one by one to the Malay language.’ Another constraint was the students’ level of understanding. Their capability in learning was at a low level. The English teacher added that the teachers needed to use drilling technique in teaching and learning sessions as the students were very passive and difficult to understand the lessons taught by the teachers: ‘Their capabilities are low. I did not mean to say their IQ is low, but they were different from the other students out there. Teachers need to use drilling technique here.’ The deputy headteacher said that the aboriginal students were very sheepish. He needed to
redundant his teaching affords to give an impact to the students: ‘I need to ask the students a lot when I am teaching. I asked two times, and they only answered once. We need to work harder. The effects to the students were not much.’ The aboriginal students also had low motivation to study. Thus, they had no interest in learning. “The students here have no motivation to study. [...] They have no interest to study”, said a Science and English teacher. The headteacher explained the students were not interested in attending the school because of their inability to read: ‘They are illiterate so for books are nothing for them. [...] Their failure to read affected their interest to go to the school.’ Students had the capabilities to draw, follow their parents to hunt, swimming, climbing the tree, weaving, etc.

**Technology Acceptance among Students**

The response received from the students from both schools were positives when technologies were involved in teaching. The religion teacher of Sekolah Kebangsaan Pulau Beluru said that the students preferred if teachers using technology in teaching and learning session: ‘Students like it (technology). They preferred to use technology (in learning)’ The Information Technology teacher from the same school explained that students were so excited about the technology devices: ‘They were excited to gadgets.’ They were also very interested in Youtube: ‘Their tendency to surf Youtube is high. They like Youtube.’ Based on the observation done by the deputy headteacher of the aboriginal school, the students were found excited when they were brought to the computer lab: ‘The students seemed excited to know what will the teacher shows them through the computer.’ According to the junior teacher of the aboriginal school, the students were able to concentrate on the learning session if the teachers used multimedia materials such as animation. However, it was temporary, as the students get bored easily: ‘When we showed multimedia elements such as cartoon, they managed to concentrate, but just for the first 15 minutes.’ He said to gain the students’ interest and attention, teachers needed to use teaching materials and methods that required the student’s involvements: ‘They need an activity that required their involvement such as presentation or games.’

6. **Discussion and Conclusion**

The interview results indicate that the cultural values play an important role in the development of students’ behaviours and their motivation in pursuing knowledge. Cultural values and family background also affects the perception of students toward technology. Based on the interviews, it is understandable that the Malay students seemed to be more participated and motivated to study compared to the indigenous students even though both Malay and Indigenous students came from the needy family and parents have a low educational level. Learning processes were depending on schools, and even though teachers have so many things to deliver, the students level of understanding are the main barriers. As the students were reacted positively towards digital devices, teachers believed that the implementation of mobile learning would be able to attract students’ attention and interests in learning as well as supporting the government vision to empower technology in education. However, the usage of mobile learning among the students required parents and teachers supervision to ensure the learning goals are achievable as expected. Besides, teachers believed that the implementation of mobile learning would help to facilitate learning process anytime and anywhere. This positive perceptions and supports from teachers in implementing mobile learning even though in rural schools will be great signs for the government. However, besides just providing the facilities and provision of technology alone, the government should always examine on the functionalities of the technology and the relevance to the education especially if it involved rural schools. The government should also
conduct more organised inspections on the technologies provided to ensure the facilities are fully functional and at the same time enhancing digital literacy among rural students. High-speed Internet connectivity, and mobile network is necessary to be equipped in all public schools in Malaysia including the rural schools. Also, it is also crucial for the researcher especially in the field of Information and Communication Technology for Development (ICT4D) to explore more about the needs and requirements of education in rural areas to ensure practical usability of the technology introduced.

References


