



## THE USE OF ICT IN RURAL SCHOOL LIBRARIES

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### ABSTRACT

*Increasingly people are turning to the advancement of technology in their daily lives, therefore the Information and Communication Technology (ICT) is considered as one of the most important aspect in day-to-day activities. Since its introduction, the development of ICT has never stopped, and today, people use ICT everywhere. There are a lot of initiatives been taken by several bodies, especially the Government in order to make sure that its people, in all education level and living background is well equipped, obtain access, and possess certain skills in ICT to use the facilities for different purposes, in order to promote more up-to-date and sophisticated lives for the nation. Against this concern, this paper will provide a conceptual understanding on the factor contributing to the use of ICT in rural school libraries. Based on the proposed model, propositions are formulated as a basis for the study that will follow.*

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**Keywords:** Use of ICT, ICT in rural school libraries, Availability of ICT facilities, Access to ICT facilities, ICT skills, Purpose of using ICT

### INTRODUCTION

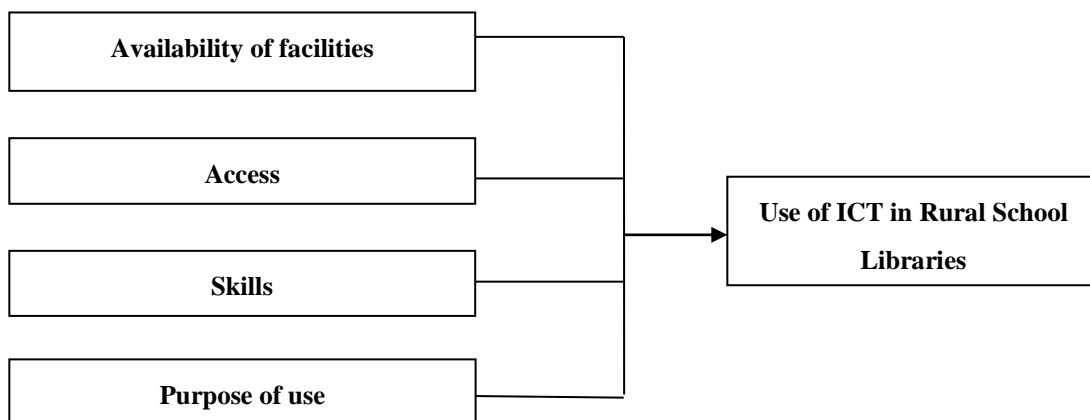
The problems contributing to the digital divide are currently being addressed via hundreds of projects implemented by a multitude of governmental and non-governmental organizations around the world (United Nations, 2003). According to Norris, the notion of the global digital divide relates to the disparities in ICT use between people living in different parts of the world (Norris, 2001). Information and Communication Technology (ICT) includes technologies such as desktop and laptop computers, software, peripherals and connections to the Internet that are intended to fulfill information processing and communications functions (Statistics Canada, 2008). Even though Malaysia is now considered as a developed country, the digital divide between the well-developed area and non-developed ones is transparent. According to Zaitun and Crump, the digital divide in Malaysia is still growing and this calls for a serious and concerted effort to overcome it

(Zaitun and Crump, 2005). The Malaysian effort on bridging digital divide not only aims to firstly provide the best ICT infrastructure to all Malaysian but also to adopt the use of ICT as their way of life (Norizan and Alaluddin, 2008). In order to support the country's ICT master plan and in line with the country's drive to fulfill Vision 2020, the education system has to be transformed (Chan, 2002). One of the efforts that can be made for this transformation is by the full utilization of school libraries. Students go to the school libraries to study, to complete their homework and tasks, to find information, and also for leisure. The school libraries provide information and ideas that are fundamental to function successfully in today's information and knowledge-based society, which equip students with information literacy skills and help them develop life-long learning habits, enabling them to be knowledgeable and responsible citizens (Fadzliaton and Kamarulzaman, 2010). It is evident that if the school library operates a system allowing student access on a need basis, and by providing the quality and variety of resources, including ICT provision, those can be significant factors in student learning (Williams *et al.*, 2002).

### The Proposed Model

The framework used in this study (Refer to Figure 1) is developed to study on the factors that will influence or contribute to the use of ICT in rural schools libraries, and the relationship between them. The dependant variable is the use of ICT in rural school libraries, and there are 4 independent variables identified, and those include availability of facilities, access to the facilities, student's ICT skills, and the purpose of using ICT.

Figure-1. The Proposed Model



### Use of ICT in Rural School Libraries

Living in today's world of information society, people cannot be separated from the technology. In this era, people cannot run from the use of technology in their day-to-day lives, and this will include the younger generation as well. As school students, one of the technological exposures that these young children will experience is the introduction of ICT in schools. According to Macmillan Dictionary, the term 'use' means has to do something using a machine, tool, skill, method, etcetera

in order to do a job or to achieve a result. In this framework, the use of ICT in rural school libraries will be the main issue to be investigated (Macmillan, 2010).

According to the United Nations, in information-rich societies, the use of ICT by children and young people is largely uniform and appears to develop in very similar stages, with little cross-national variation (United Nations, 2003). From the statement, it can be applied that there is a constant use of ICT among students in developing countries, and in order to identify the level of ICT use between them, a number of various studies across the whole world has been made, especially in those rural areas where the students are lack of access to quality education and resources that their urban counterparts consider basic (Herselman, 2003). Costello, as cited by Herselman mentioned that geographic location should not place limitations on access to information and the use of the Internet, which are considered vital to the promotion of learning, training and business development in developing communities (Herselman, 2003);(Costello, 2000). From this statement, it is apparent that school students in either urban or rural areas should be provided with sufficient, if not completed ICT facilities in order for them to cope, adopt and adapt with the technological advancement in the course of their studies. In the 21st century, private and public institutions were using computers in their daily routines and most major information centres and libraries were computerized (Hansson, 2010). This phenomenon did not only take place in public and academic libraries, but also in school libraries. Project work, individual study, group research, reading and the teaching of ICT, amongst other things, can all take place within the school library, and in providing this flexible place for learning, and by supporting and giving access to a broad range of information sources the school library can motivate students and stimulate learning by providing the means to freely pursue subjects which fully engage them (CILIP, 2001). This means the school library can be fully utilized, or exploited as a channel to deliver or promote ICT to the students, since it is a place where students go for fulfilling their information needs, be it for their personal or official purposes. IFLA/UNESCO School Library Guidelines 2002 recommended that the national curriculum and education development programmes at national level should consider the school library as vital means for fulfilling ambitious goals regarding the following (IFLA/UNESCO, 2002):

- 1) Information literacy for all, gradually developed and adopted through the school system.
- 2) Availability of information resources for students at all educational levels.
- 3) Open dissemination of information and knowledge for all student groups to exercise democratic and human rights.

Fadzliaton and Kamarulzaman mentioned that the school library aims to provide a range of learning opportunities for both large and small groups as well as individuals with a focus on intellectual content, information literacy, and the learner (Fadzliaton and Kamarulzaman, 2010). In addition to classroom visits with collaborating teachers, the school libraries also serve as a place for students to do independent work, use computers, audio-visual equipment and materials, and also hold special events such as thematic exhibitions and reading club activities. It can be implied that

school libraries act as information centers for the students and teachers in school. The school library is most benefited by the students as the library's main users, since all of the information resources in one particular school are placed in its school library. According to Abdul Rahim, school libraries are centres that constitute the collection of both printed and non-printed materials including reference books, documents, newspapers, models, charts, diagrams, maps, slide films, projectors, tape recorders, multimedia kits, and others (Abdul Rahim, 1990). This is the 90's definition of school libraries. These libraries can eventually evolve to include computers to help train the students in computer literacy (Herselman, 2003). In the New Zealand initiatives, it is stated that the schools' ICT infrastructures enable libraries to link learners with information and with each other within the virtual learning community (Ham and Wenmoth, 1998). Thus, it shows that the school library can be used as a catalyst for linking the students with the ICT facilities.

There are a lot of initiatives taken by a lot of parties to encourage the use of technology among students, and since this group of people is exposed to the advancement of technology since from a very young age, the efforts to promote the use of ICT in schools usually will become a success. The concept of ICT in education, as seen by the Ministry of Education, includes systems that enable information gathering, management, manipulation, access, and communication in various forms (Chan, 2002). Here, it means that the use of ICT will include various aspects in the students' daily routine, not only to learn a thing or two about it and they are done, but it includes the full utilization of ICT in school as a whole. From the statement, it can be implied that the Government is promoting the use of ICT among school students by providing the facilities and access to them. The transformation of Malaysian education system through the implementation of ICT means reinventing the culture and practices at schools which requires students to exercise greater responsibility for their own education and prepare them for the Information Age by making use of the presence of leading-edge technologies and ICT infrastructure in all components (Fadzliaton and Kamarulzaman, 2010). In order to employ the ICT, the students must have certain skills, and in what purpose they are using them will also influence the use of ICT. The framework proposed is aimed to address these influential factors in the use of ICT in rural school libraries.

### **Availability of Facilities**

The first key factor in the use of ICT among students is the availability of the ICT facilities. The term '*available*' means present or ready for immediate use (Merriam, 2012). Availability meanwhile, is the handiness, accessibility, availability, availableness, or the quality of being at hand when needed (Princeton University, 2012). In this framework, the term 'availability' will cover on the handiness or readiness of the ICT facilities to be used in the school libraries. United Nations points out that many young people, particularly in developing countries, are excluded from the information revolution, leaving them on the wrong side of the digital divide (United Nations, 2003). They are being left behind because of the geographical location, and this should not be the case, especially when everybody deserves the equality in retrieving educational resources. This is a very serious issue which needs to be addressed, since the facilities availability is most important to determine the students have access to ICT and use them. Urban scholars have the advantage of

computer centres, Internet access to information, experienced teachers and ample sporting and cultural facilities to choose from, in contrast to most rural schools, it is unlikely that we will find a computer lab (Furlonger, 2002). Of course, the absence of the computer labs will not hinder the fact that these students in rural areas are given fewer facilities than those in urban areas, but the school on rural areas can control this problem by providing sufficient ICT facilities in their library. School libraries provide educational resources to its students, and because of the lack of other facilities provided by the school management (such as computer labs), the school library must provide all of the equipments required by its students.

According to Herselman, there are many rural schools that do not have adequate school buildings and stationery for learners to use, because of the partial subsidy the state provides for building costs (Herselman, 2003). However, in Malaysia we are lucky enough. Fatimah stated that in Malaysian environment, a school library generally consists of a minimum of three main rooms which is, reading, audio-visual and teaching and learning material, and some schools especially those with a big population of students may extend the school library network to more than these three basic rooms by including other rooms like self-access centres, science labs, computer labs and even classrooms as well (Fatimah, 2002). Beginning 1989 onwards, all newly built schools are given the whole floor of the building which is equivalent to four classrooms space for a library (Fatimah, 2002). Thus, it is apparent that in Malaysian educational system, initiatives had been taken to ensure that the students will receive adequate facilities in terms of physical buildings for libraries. The Policy on ICT in Education Malaysia 2010, it is stated that all schools and education institutions must be provided with basic enabling infrastructure and Ministry of Education must regularly update the list of schools which do not possess the basic enabling infrastructure. One of the initiatives provided in the Policy is that basic infrastructure to support network connectivity and a minimum of 4MB connectivity speed must be provided for all schools and education institutions. In other words, every school must be provided with computers and Internet connections. This shows that effort has been made to ensure that every school in Malaysia will be provided with the ICT facilities by the Government. According to Library and Information Services Council Northern Ireland, students without access to a computer at home can be disadvantaged in acquiring and practicing ICT skills, and the provision of suitable ICT resources in a school library which is open and freely accessible throughout the day, can go a long way towards overcoming this disadvantage (LISC NI, 2012). Yushiana and Shahar mentioned that in a typical school environment, the library could play the role as a gateway to the information world. The advances in ICT, coupled with the merging of computers, telecommunications, and broadcasting technologies, have brought a new dimension in the roles of school libraries as they would become 'knowledge hub' for the school, linking the school community to knowledge networks within the country as well as globally (Yushiana and Shahar, 2003). From these statements, it is clear that the school libraries should provide ICT facilities for its students to access them, as it plays the most important roles as the provider of information resources throughout the whole school, and this includes the provision of ICT as well. However, does every school library, especially those in rural areas possess sufficient ICT facilities? This is the issue that needs to be examined thoroughly to inspect the level of

provision or the availability of ICT facilities in rural school libraries, since from the literatures, it is evident that this factor will influence the use of ICT among rural school students.

### Access

Access to ICT services and benefits for the developing countries is very important but also a big challenge from a different perspective as poverty, lack of digital literacy, infrastructure, and stable political situation are becoming the main barriers (Poudel, 2010). The term 'access' means the ability and means to communicate with (i.e. , input to or receive output from), or otherwise make use of any information, resource, or component in an automated information system, and an individual does not have access if the proper authority or a physical, technical, or procedural measure prevents him/her from obtaining knowledge or having an opportunity to alter information, material, resources, or components (INFOSEC, 1992). In this framework, the term 'access' is referring to the access of ICT facilities in school libraries. In order to gain access to the ICT facilities, they must be first made available. The availability of facilities in the school libraries will influence the level of frequency of accessing it. Thus it can be said that these two has a close relationship with each other.

Gutterman et al. mentioned that insufficient access to computers is one of the main obstacles for ICT in education programs (Gutterman, 2009). This is particularly relevant for educational institutions located in rural areas where the school or training institution is the only access point for computers. Even when the ICT facilities are available in the library, it does not mean that the students will get constant access to them. Access here will be influenced by the cost of the facilities per use, (such as the electricity costs, software, maintenance, etcetera) library hours, and how long the students are really in the library to use them. Providing basic access to ICT to young people living in either impoverished communities or rural locations often neglected by policy makers is one major challenge being faced and Ssewanyana mentioned that the promotion of the modern ICTs benefits mainly the wealthy that have the capacity to access the information technology, while the poor do have limited if any access (Gutterman, 2009);(Ssewanyana, 2007). Caspary and O'Connor have claimed that there are enormous gaps in ICT access not only between developed and developing countries, but also between urban and rural areas of developed countries (Caspary and O'Connor, 2003). Looking at this in depth, this gap is wider in the remote rural areas where poor and marginalized communities are living. This can be implied that the access to the ICT infrastructure in the rural secondary school is limited, as there are costs involved. For example, if the computers are there available in the school library, but there is limited software to be used by the students, still the total benefits of the whole ICT initiatives are defected. According to Nonyane and Mlitwa, rural schools either lack of the physical infrastructures, or have some few computers but lack of programs (Nonyane and Mlitwa, 2007). Other than that, the access to the ICT facilities will also be influenced by the school library operating hour. Usually the school library will be opened only during school hours, and are closed on weekends. This means the students will only get access to their school libraries when they are in their school hours. According to National Literacy Trust (NLT) and Museums, Libraries and Archives (MLA), most respondents in local

authority focus group believed school libraries had a key role to play in extended schools and they said that school libraries should be integrated with the rest of the school providing after school clubs, homework sessions and reading or writing groups (NLT-MLA, 2010). They also believed that the school library should provide access to resources before school, after school and in the lunch hour (NLT-MLA, 2010). Thus, there is a need to extend the library operating hours in schools so that the students will have more time to go to the library to use the ICT facilities provided.

According to Sey and Fellows, there are several main types of impacts from the provision ICT access identified, which are evidence on venue performance and sustainability, users, usage patterns and downstream impacts, and assessment of this evidence indicates that trends are most apparent in the first three areas (Sey and Fellows, 2009). This can be implied to the school libraries environment, that the access of ICT may impact how the students use the facilities available. How they use the facilities may differ from each other, as the dominant finding is that the ICT access venues are used primarily to meet personal and social needs such as communicating with friends and family, entertainment, doing homework, and developing computer skills (Sey and Fellows, 2009). With that, it can be hypothesized that there is a relationship between the access and the use of ICT facilities in school libraries.

### **Skills**

ICT can enrich and enhance both education and information provision. Young people need to acquire the skills and knowledge to get the best out of the new information and communications technologies (LISC NI, 2012). The literacy requirements of the ICT extend from the ability to read text to the capacity to operate and understand the meanings delivered by various devices such as compact disc, the computer, the mobile phone and video equipment; skills that often precede the acquisition of traditional literacy (United Nations, 2003). This means the ICT skills is the ability to understand, operate, and use or exploit the ICT facilities. In this framework, the term 'skills' will refer to the knowledge and ability of the students to use the ICT facilities. Skills of using ICT is necessary in our emerging, knowledge society. It involves the ability to solve increasingly complex problems in a variety of knowledge-rich domains, participate in knowledge work as well as engage in various networked activities, but it may help promote educational change only if students have an access to the new technology and it is intensively used as a tool for learning (Hakkarainen, 2000). To do so, the students need to have sufficient skills in using and work productively with the new technology. The practice of ICT skills depends, to a large degree, on having access to a computer to work on. This is clear that the ICT skills of the students has a positive relationship with the access of the facilities (Rae, 2004).

According to the Department of Business and Innovation, Victoria (2011), for the foreseeable future, ICT skills will be in demand (DBIVA, 2011). Thus, there is a need to develop human resources capable of responding to the demands of the information age and to nurture ICT literacy and skills through education, training, and lifelong learning (Kozma, 2008). The OECD (2001,



2006) emphasizes the economic importance and impact of ICT in developed countries and points out the need for these countries to develop a workforce with the skills to use ICT to increase productivity, as well as the need for young people to develop ICT skills in preparation for adult life (Kozma, 2008). When these school students go into the university, they will have no choice but to possess certain ICT skills in order to survive in their studies. The ICT skills that have become increasingly important in the pursuance of a university education will affect both how students manipulate these e-learning resources and how they are used for learning (Rae, 2004).

The Malaysian education system promotes the teaching of ICT as well, in order to train its students in developing the skills in using the ICT facilities, and also to prepare them for their near future. ICT skills is one of the major aspects that will influence the use of the ICT facilities. Poudel mentioned that access to information is has the ability to empower and enhance skills, and students seem to absorb knowledge, skills and attitudes from the media culture almost by osmosis (United Nations, 2003);(Poudel, 2010). Here, it can be implied that if the students are exposed and provided the access to ICT facilities, it may improve their ICT skills, or ICT literacy. Hakkarainen et al. research titled "Students' Skills and Practices of Using ICT: Results of a National Assessment in Finland" found that intensive reported use of ICT at home as well as networking with expert cultures and coaching of other people will improve the students' ICT skills (Hakkarainen, 2000). Of course, the findings shows that the use of ICT at home can enhance the skills, but it can be implied that that there is a significant relationship between the intensive use of ICT with the skills of the students. Williams, Coles, and Wavell suggested that basic literacy, numeracy and ICT skills of students could benefit from involvement in library administration, and thus, this framework is designed to investigate the relationship of the ICT use in school libraries with the skills of the students (Williams *et al.*, 2002).

## PURPOSE OF USE

Krikorian stated that the most obvious illustration of purpose is the use of tools, instruments, and machines, for example, the purpose of a saw is to cut, of a musical instrument to produce sound, of a motor-car to transport, and the purpose of living beings, quite often say, is self-maintenance (Krikorian, 1930). In this framework, the term 'purpose of use' will refer to the utilization of ICT facilities to achieve specific goals of the students as users, or the reasons they use the facilities.

ICT can be used in many different ways, as some options are more relevant for and popular among youth than are others. According to United Nations, young people often use ICT for identity development; some, for example, establish, maintain or join fan clubs on the Internet such as Facebook and Twitter (United Nations, 2003).

According to a survey, Internet use among 12 to 19-year-olds in the United States primarily involves e-mailing and instant messaging between friends, the next most common uses are online gaming, downloading digital music and retrieving educational resources, and to engage in online



chatting and to follow sports and world events (United Nations, 2003). This shows that the students in such young age know how to use and utilize the ICT facilities, as they get access to them for retrieving information pertaining to their needs. There are several Learning Objectives and Assessment of ICT listed as below (USNC *et al.*, 2000);

**Table-1.** Learning Objectives and Assessment of ICT

| <b>Word Processing, Multimedia and Internet</b>  |
|--|
| Pupils should explore information from different sources, showing they know that information exists in different forms.  |
| Pupils will use ICT to work with text, images and sound.   |
| Pupils will enter, save and retrieve their work.   |
| They will use ICT to help them generate, amend and record their work and share their ideas in different forms, including text, tables, images and sound.   |
| Pupils use ICT to generate, develop, organize and present their work.  |
| They can add to, amend and combine different forms of information from a variety of sources.   |
| Pupils use ICT to present information in different forms and show they are aware of intended audience and the need for quality in their presentations.   |
| They exchange information and ideas with others in a variety of ways, including email.   |
| Pupils use ICT to structure, refine and present information in different forms and styles for specific purposes and audiences.   |
| They exchange information and ideas with other in a variety of ways, including email.  |
| They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.  |
| <b>Data Handling</b>   |
| Pupils use ICT to organize and classify information and to present their findings.   |
| They use ICT to save information and to find and use appropriate stored information, following straightforward lines of enquiry.   |
| Pupils understand the need for care in framing questions when collecting, finding and interrogating information. Pupils interpret their findings, question plausibility and recognize that poor-quality information leads to unreliable results. |
| Pupils select the information they need for different purposes, check its accuracy and organize it in a form suitable for processing.  |
| <b>Simulation and Modelling</b>  |
| Pupils use ICT to explore what happens in real and imaginary situations.   |
| They make appropriate choices when using ICT-based models or simulations to help them find things out and solve problems.  |
| Pupils use ICT-based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions.   |
| They explore the effect of changing the variables in an ICT-based model.   |
| <b>Control and Monitoring</b>  |
| Pupils recognize that many everyday devices respond to signals and instructions ... make choices when using such devices to produce different outcomes.  |
| They plan and give instructions to make things happen and describe the effects.  |
| Pupils use sequences of instructions to control devices and achieve specific outcomes.   |
| They use ICT systems to control events in a predetermined manner and to sense physical data.   |
| They create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions. Pupils understand how ICT devices with sensors can be used to monitor and measure external events.      |
| <b>Using ICT in the Real World</b>   |
| Pupils talk about their use of ICT.  |
| Pupils talk about their experiences of ICT both inside and outside school.   |
| They describe their use of ICT and its use outside school.   |

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They compare their use of ICT with other methods and with its use outside school.

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*Source:* (USNC *et al.*, 2000). *Learning Objectives and Assessment of ICT*. Retrieved 5 April 2012 from <[http://www.sagepub.com/upm-data/24341\\_Table\\_42.doc](http://www.sagepub.com/upm-data/24341_Table_42.doc)>

From the table, there are several main purposes of use of the ICT by the students. It is classified in categories, which are Word Processing, Multimedia and Internet, Data Handling, Simulation and Modelling, Control and Monitoring, and how they are Using ICT in the Real World. This table shows how the students can fully utilize the ICT facilities available in their school.

However, this table only provides the objectives of the students to use the ICT facilities; in other words, it suggests what the students can do with the facilities. The main purposes behind the use of the ICT facilities by the students must be identified, especially for those students in rural schools, as it will also be one of the main factors of ICT use in the first place.

## CONCLUSION

The testable propositions presented in this conceptual framework offer an opportunity for further investigation on the use of ICT in rural schools libraries, especially through a variety of research designs and settings. The survey research designs using rural school students in Malaysia as respondents would best match the requirements for validating the proposed framework, and prospective researchers intending to adopt the model should also consider incorporating additional dimensions of other factors that can influence the use of ICT in school libraries.

The studies can then provide education policy makers, educators, and those interested in the use of computers and related technologies in rural schools with an understanding of how those facilities are used in rural secondary school libraries. Other than that, it can also be used as a guideline for the future implementation of ICT in rural school libraries.

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