

# Factors Influencing the Use of ICT in Rural School Libraries

Adila Ismail<sup>1,\*</sup>, Habee Bullah Affandy<sup>1</sup>, And Mohammad Rezal Hamzah<sup>1</sup>

<sup>1</sup> School of Technocommunication & Human Development (iKOM), Universiti Malaysia Perlis, Malaysia

**Abstract.** The basis of the study is to discover the use of ICT among students in rural school libraries in a district located in Northern Malaysia. The study is conducted with the aim to identify the factors influencing the utilization of the technology in the students' day-to-day activities. The study used the use of ICT model, with 4 independent variables. This study has used the quantitative method, with 400 students from the total of 4 existing rural secondary schools in Malaysia as the respondents. The result shows only two independent variables as the significant factors responsible for the said intention. The results are enclosed, and the recommendations for future planning are also discussed.

## 1 Introduction

Children in information societies are surrounded by more information and communication technology than any previous generation [1]. This shows that younger generations tend to use the ICT since it is almost available anytime and everywhere. Malaysia implemented the first computer system in 1966 and since then, the Government has introduced various initiatives to facilitate the greater adoption and diffusion of ICT to improve capacities in every field of business, industry, education, and life in general, and the Ministry of Education is attempting to reduce the digital divide that exists in the different parts of the country [2]. In order to reduce the digital divide, there are several initiatives taken, including to make the full use of libraries, since it holds the roles of information centers where people come to fulfill their information needs.

In order to support the country's ICT master plan and in line with the Malaysian's drive to fulfill Vision 2020, the education system had been transformed. The catalyst for this transformation will be ICT-enabled Smart Schools [2]. The Malaysian Smart School was launched by the Prime Minister in July 1997 as one of the Multimedia Super Corridor's (MSC) Flagship Applications. The aim was to capitalize on leading-edge technologies and the rapid deployment of the MSC's infrastructure to jumpstart deployment of enabling technology to schools. This was done by creating a group of about 90 pilot schools in 1999. The schools selected is situated in urban areas, and the initiatives included those schools those are well-known with academic excellence.

Back in 2009, 15 rural schools have been selected for the implementation of the rural smart school programs [3]. The development of rural smart schools is slow compared to other smart schools those located in urban areas, by only an additional of 20 rural schools adopted as smart schools from 2009 to 2012. The main question that has risen from this situation is that, what is the current

situation of other rural schools? Are they doing well in terms of ICT development compared to smart schools and those located in urban areas? If the Government is trying to reduce the gaps of digital divide since 1966, what is the current state of the rural schools to date? Those are the questions that needed to be answered thus the development of this study.

While the use of information technology is largely confined at present to the libraries and information centers of research and higher academic institutions, the public library system is practically unaffected [4]. This largely happened because of the following reasons;

- 1) Lack of funds for acquiring necessary hardware and software facilities;
- 2) Lack of adequate trained manpower in the use of ICT; and
- 3) Resistance on the part of library staff to change from their traditional practices [4].

School libraries are governed by the Government thus it also falls under the public library system. Because of the reasons stated above, the school libraries are affected too, by not having enough resources to make the full utilization of ICT in the school libraries. However, it is the responsibility of the school libraries to provide ICT facilities for the students, so that the students will not left behind in terms of technological advancement, and again, to reduce the gaps of digital divide. The question here is that, in which extent do the school libraries manage to keep up with the advancement of ICT for the benefits of their students, especially those schools in rural areas?

Because of these problems, there is an uncertainty on whether the students in non-developing areas are fully utilizing, or at some extent ever been provided the facilities and access to the ICT in their school libraries. Thus, this study is conducted to examine on the use of the ICT in rural school libraries, and some other factors that contributes to its utilization by the students.

\* Corresponding author: [adilaismail@unimap.edu.my](mailto:adilaismail@unimap.edu.my)

## 2 Conceptual / Theoretical Frameworks of Previous Studies

Technology acceptance has been used as a model to predict technology use and to explain factors that impact that use [5]. Davis (1986) mentioned that the Technology Acceptance Model (TAM) is a theoretical framework that can be used to assess how post-secondary teachers integrate ICT tasks and skills into the curriculum [6]. Thus it can be implied that TAM can also be used to assess how the students will integrate their ICT tasks and skills into their daily lives as students. TAM is based on a proven framework, which is the Theory of Reasoned Action (TORA) by Fishbein and Ajzen (1975) which provides the rationale for many assumptions seen in TAM [7, 8]. The authors noted that attitudes are a function of beliefs, and that beliefs lead to behavioral intentions which, if not mediated by some external factor, lead to specific behaviors [8]. TAM extends the TORA model by looking at two specific attitudes important in technology adoption, which are perceived usefulness and perceived ease of use [7]. The research argued that an individual who has a strong sense of capability in dealing with technology is more likely to accept new technology, such as ICT.

Adriaanse, Voordijk, and Dewulf (2010) had also adapted TAM in their framework in investigating the use of interorganisational ICT in United States construction projects in 2010. According to them, the basic idea of this model is that the decision to perform or not to perform a certain behaviour depends jointly on motivation (intention) and ability (behavioural control) [9].

Zandvliet and Buker (2003) in their paper titled 'The Internet in B.C. Classrooms: Learning Environments in New Contexts' mentioned that the interdisciplinary nature of learning environment research points to the diversity of factors involved. These include many psychosocial factors, including student perceptions of independence, cohesion, motivation, and so on, but can be expanded to include a variety of physical or material factors, such as classroom dimensions, classroom densities, and lighting [10].

In the International Communication Union (ITU) 2009 report, titled 'Measuring the Information Society', the international organization had come out with a framework to measure the ICT Development Index (IDI) [11, 12]. IDI is a composite index combining several indicators into one benchmark measure that serves to monitor and compare developments in ICT across countries. The recognition that ICT can be a development enabler, if applied and used appropriately, is critical to countries that are moving towards information or knowledge-based societies [13].

The framework consists of 3 stages, which are;

- Stage 1: ICT readiness (reflecting the level of networked infrastructure and access to ICT)
- Stage 2: ICT intensity (reflecting the level of use of ICT in the society)
- Stage 3: ICT impact (reflecting the result/outcome of efficient and effective ICT use) [12].

Advancing through these stages depends on a combination of three factors which are the availability of ICT infrastructure and access, a high level of ICT usage and the capability to use ICT effectively. Accordingly, the first two stages listed above correspond to two major components of the IDI which is ICT access and ICT use. Reaching the final stage, and maximizing the impact of ICT, crucially depends on the third component of the IDI, which is ICT skills. ICT skills determine the effective use that is made of ICTs, and are critical to leveraging the full potential of ICTs for socio-economic development. Economic growth and development will remain below potential if economies are not capable of exploiting new technologies and reaping their benefits. Therefore, the IDI includes a measure of the capability to use ICT effectively. The IDI aims to capture the evolution of the information society as it goes through its different stages of development, taking into consideration technology convergence and the emergence of new technologies [13].

This study is conducted based on the framework suggested by Adila, Nor'izah, & Habee Bullah (2013) in their published paper titled the use of ICT in Rural School Libraries [14]. According to them, there are four factors that will influence the use of ICT among the students, as showed below;

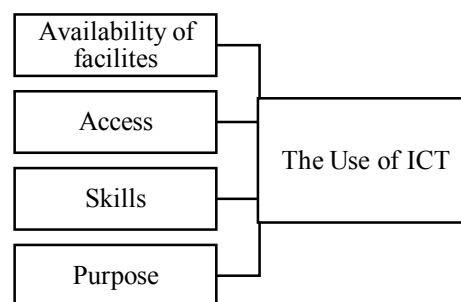


Fig. 1: The proposed model by Adila, Nor'izah, & Habee Bullah (2013)

## 3 Methodology

In completing this study, a quantitative approach had been undertaken, which is a survey in the form of questionnaire. The researchers chose to undertake a quantitative study because this study researched on the use of ICT in school libraries among rural school students in Malaysia, thus it is most likely that the statistical data is more appropriate to be used in measuring the use of ICT among students compared to qualitative study. The respondents of the study are secondary school students from one rural district located in North Malaysia. From the preliminary study that had been conducted, all 5 schools in the district but one, have ICT facilities in their school libraries, which is relevant for the study to be conducted. The school that does not have the ICT facilities, is then dropped from the respondent list, and the researcher conducted the study in the remaining 4 schools.

The instrument consists of 46 questions and is divided into 5 parts. The types of questions used are multiple-choice questions, Likert Scale and open-ended form of questions. Part A consists of questions related to demographic information of the respondents. Part B of the questionnaire is consisting questions to discover availability of facilities in rural secondary school libraries. Part C and D is to discover the satisfaction level of access of ICT facilities in rural secondary school libraries and the level of ICT skills among rural secondary schools students respectively. The final part, Part E is to identify the purpose of ICT use by the students in rural school libraries.

For this study, the researcher had measured the validity of the instrument by using the Content Validity measure. The questionnaire is reviewed by 3 experts in the ICT and information field, and once the instrument had been approved, the data collection involving 100 students from each rural school is undertaken. The researcher used the internal consistency to measure the reliability of the questionnaire that had been used for the study. The reliability test is done by testing the data collected by using the Cronbach’s alpha index. The reliability test is undertaken by using SPSS.

The reliability statistics for each independent variable is shown in Table 1 below;

**Table 1.** Reliability statistics for the questionnaire used in the study.

Reliability Statistics		
Independent variable	Cronbach’s alpha	Number of items
Availability	.837	9
Access	.829	11
Skills	.839	14
Purpose of use	.851	9

For the first independent variable that is availability, the Cronbach’s alpha is 0.837, and for satisfaction of access is 0.829. As for skills and purpose, the Cronbach’s alpha is 0.839 and 0.851 respectively. Since each independent variable scores more than 0.8, the questionnaire used for this study is considered acceptable and reliable.

### 3.1 Demography

From the findings, it is found that there are 137 male and 263 female respondents from the total of 400 respondents from the 4 identified rural secondary schools. The female respondents are the majority because there is one school being the all-girls school; thus all respondents from that particular school are females. Otherwise, the questionnaires are well distributed to both genders because the researchers divided 400 questionnaires to 4 schools (100 for each school), the male and female respondents from the remaining 3 schools are 137 and 163 respectively. Thus in terms of gender, it can be said that the questionnaires are distributed and the answers of the students are not gender-biased.

For the second demographic information which is the Form of studies, majority of the respondents are from Form 4 students, followed by Form 3, and Form 5. There are a majority of Form 4 students because the researcher had been collecting the data during the examination season, of which Form 4 students (at that time) were more available than the latter 2. Form 1 and Form 2 students were excluded from the research as the researchers need the insights of the seniors who had been using the school facilities longer.

The next is the period of time of which the students had been using the ICT facilities. The majority is 1 to 3 years, followed by less than 6 months. Although it is appropriate for the students in rural areas, but when it is calculated, these students start to use ICT from the range of age of 11 to 17 years old. When being compared to the students in urban areas, the age of which these students started to use the ICT facilities is quite late, thus the lack of skills and interest in the use of ICT among them. Of course, there are quite a number of students had been using the ICT since 4 to 7 years ago or more, but the number of the students who started late is worrying especially in rural school context. These students must be exposed to the use of ICT in early age, so that they will become familiar with the facilities and not being left out in terms of ICT advancement.

## 4 Results and Discussion

### 4.1 Availability of ICT facilities

For the availability of facilities, there are 9 items being asked to identify the availability of the ICT facilities in rural school libraries. From the findings, it is found that there is only a slight difference of percentage of the total respondents that denotes to the agreement and disagreement of the good level of availability of facilities provided by their school libraries. Even though the majority of the students agreed that their school libraries provide great availability of facilities, this number is very close to those who are not agreed. Thus, it can be considered that to some students, the facilities are greatly available and to some other students, more effort is needed to be done by their school libraries concerning this matter.

Other than the general part of the findings, majority of the students, almost 60% of the respondents either disagreed or strongly disagreed that the number of computers is enough to cater the needs of the whole school. This shows that to them, more addition in terms of number of computers is needed, so that the number will be adequate for the students to use. In terms of the computer software/program and Internet connection, majority of the students found them as good, and readily available in their school libraries. In other hand, a significant number of students also found that there is comfortable space provided for them to use the ICT facilities in their school libraries. By that, it is considered that the school libraries manage to provide and serve their users appropriately by providing great services in terms of

the allocation of comfortable space to use the library services.

In most of questionnaires, there are a great number of respondents who always answered 'Neutral' for a lot of items. The 'Neutral' answer shows that the respondents either have no opinion, or do not know about something. In this research, the questionnaires had been constructed in such way that a respondent should either agree or disagree with the statements, because all of the items are based purely on facts and are direct to the point and objectives of the questions. Thus, it can be said that if a respondent answered 'Neutral' that means they particularly do not know about the current situation of the ICT facilities in their school library. In this case, it can be implied that there are students who still do not go to the library and use the ICT facilities in their school library at all, and that is why they do not know or have opinions regarding the matter. This tallies with the respondents' opinions in which many of them indicated that the library does not promote the use of ICT facilities in the school libraries. With that, a lot of effort needed to be done in promoting the use of the ICT facilities in the rural school libraries so that the students will start to go to the library and use its services, if not the ICT facilities alone.

As for the availability of ICT facilities, it is concluded that the level of availability is fair, since there is only a slight difference of percentage among those who agreed and disagreed.

#### **4.2 Satisfaction level of access**

From the data analysis, it is found that a significant amount of the students who use the ICT facilities in their school libraries is less than 1 time per week. Only a relatively small percentage of the students use the ICT facilities 1 time or more in a week. This is clearly a serious problem because the main purpose of making the facilities available is for the students to use them, but if they do not use the facilities even once in a week, it is a great disappointment to the school libraries. Again, this matter is related with the students' opinion that the libraries do not promote the use of ICT facilities among the students. This could be one of the reasons that the students either not aware of the facilities or just do not find it necessary for them to use the facilities provided.

When being enquired about the length of time the students access the ICT facilities per session, majority of their answers is 1 hour and less. This shows that the students get quite limited access to the ICT facilities in terms of hours in accessing the ICT. This is quite worrying because if the students go to the library less than 1 time per week and their access time per session is less than 1 hour, the total length of time they get access to the ICT facilities is very limited and this is a serious problem, because since the schools and the Government in a whole is now promoting the use of ICT and is applying the advancement of technology in daily lives, if these students get limited access to the ICT facilities in their own school library, their familiarity, skills, and confidence level in using the ICT will also be limited. The Malaysian Government is now promoting and applying ICT even in

education system, and did a lot of effort in overcoming the digital divide between the urban and rural areas, and if the students are getting limited access to one of the primary source of ICT facilities, which is in their school libraries, it is most likely the students will also get limited access elsewhere.

This problem tallies with the students' opinion, in which they always do not have enough time in accessing the ICT facilities in their school libraries. This might be related with the rules of accessing the ICT established by the libraries, and it could also be that way because of the number of the facilities is not adequate to cater the needs of the students, thus the time to access the facilities per student is made short. In this case, it is not that the students are reluctant to go to the library and use the ICT facilities, but there are certain other problems that lead to the limited access to the ICT facilities in the rural school libraries. This is more apparent when a significant amount of students' find that it is difficult to get access to the ICT facilities in their school libraries compared to other places, and a number of students are not satisfied with the current library hours and the rules in accessing the facilities, established by the library. This situation does not align with the roles and objectives of a school library, which is to provide access to library services to the students it serves. As mentioned before, perhaps with the limited number of computers available, thus the access to the facilities are also made limited.

However, when being asked on the satisfaction over the computer programs/application and facilities, most of respondents stated that they are satisfied. Also in addition, when being enquired on the overall satisfaction level of the access to the ICT facilities in their school libraries, more than half of the respondents stated that they are satisfied. This shows that even with the limited time in accessing the facilities, they managed to either understand the situation of the library, or in that short time accessing the facilities, they manage to reach their goals or completed their tasks by using the ICT in the school libraries. Again in this variable, a lot of respondents tend to give 'Neutral' as their answers and again, the researcher found that these students do not know the situation of the access to ICT facilities thus do not have any opinion regarding that matter.

As for the satisfaction level of access, it can be concluded that there is a good satisfaction level among the rural secondary school students.

#### **4.3 Skills in using ICT facilities**

From the data analysis, it is found that a significant majority of the students are familiar with the computer and are comfortable being around the computers' environment. This shows that the secondary school students nowadays, even in rural area is able to work with computers and the familiarity around the ICT environment is present. There is also a significant majority of the students feel confident in using the computer, and more than half of them indicated that they are able to operate the computers by themselves, and understand how the computers work. This shows a good



progress in minimizing the digital divide among the urban and rural areas, since these students who are from rural areas are well comprehended with the computer, which is the most basic component among other ICT facilities.

There is also a significant majority of the students indicated that they learn how to use computers at home. By this, it shows that there are efforts being made at home, in order to learn on how to use the computers and thus could improve their skills in using the ICT. Praises should be given to the parents or guardians today, as they are now aware of the importance of ICT towards the students' future undertakings, which will of course evolve around the technology. By providing computers at home, it shows that the mind setting of today's parents are not limited by boundaries, even though they are living in rural area. However, a large number of students indicated that they do not learn how to use computer at school. By a comparison to learning computer at home, this shows that the students acquire their computer skills through the learning at home. This is not the right way in education, since the school is the most important teaching institution, and other than only focusing on the theories of other core subjects in school, the emphasize should also be put in educating the students to use the computer.

When being asked on whether they learn to improve their ICT skills in ICT class at school, nearly half of the students agreed on this matter. This shows that with the basic computer skills they obtain from learning at home, they improve more of those skills by learning more in depth in ICT class. Today, the ICT classes are made available to secondary school student since they are in Form 1, and with that, along the 5 years in secondary school time they will keep improving their skills. However, there is a slight difference in percentage, on whether the students are able to improve their ICT skills by using the ICT facilities in the school library. The difference is only about 5%, which is 20 students who are more agreed on this matter, and the rest disagreed. This shows that the students are almost equally agreed and disagreed on whether they are able to improve their skills by using the facilities in the libraries. Other than that, there is a significant majority of the students who are ready to learn more about computer, and this shows that the rural secondary school students are interested in learning about ICT, and they would want to keep on learning to improve their skills in using the ICT. Most of the students rated themselves as intermediate and advanced level in using certain programs, which are the Internet, and word processing software/programs. For spreadsheets, and presentation software programs, the majority is still the intermediate level but it has only a slight difference with the beginner level. Thus, it shows that the students' skills are more on using on the Internet and word processing, since they use these programs in their course of studies.

As for the skills in using the ICT among students, it can be concluded that the students have an average knowledge about computers and are ready to learn more.

#### 4.4 Purpose of use

From the data analysis, it is found that most of the students do not go to the school libraries to use the ICT facilities. Again, this is a frustration to the libraries, as they are providing all of the equipment and space for the use of the students but they do not go there to use them. A very extensive library promotion should be done in order to build and enhance the students' interest in going to the libraries and use the facilities provided, so that the facilities are fully utilized by the students.

Other than that, the majority of the students indicated that they use ICT to do their school works and to find information. This proves that the students are required to use the ICT in completing their school tasks and assignments, thus it is apparent that the students must use the ICT facilities regularly. However, to relate with the first finding above, it shows that the students do not go to the school libraries in order to complete the school works. They might have accessed other ICT facilities anywhere other than libraries, because in the previous finding relating to access also proves that the students do not access to the ICT facilities in their libraries in regular basis and it is difficult to get access to ICT facilities in school libraries in comparison to other places.

There is also a significant majority of the students who use the ICT for personal use, such as personal e-mails, chatting, social networks etcetera. Again, to relate with the previous findings, this shows that the students use ICT for the purpose of personal use elsewhere, not in the school libraries. The same case applies when a majority of them indicated that they use the ICT to retrieve their previous works. However, by a slight difference of 0.7%, which is about 3 students, there is about the same amount of agreement and disagreement on whether they use the ICT facilities in the libraries to exchange ideas and information with others. This shows that there are students who use the ICT facilities in the school libraries regarding this matter, as well as who do not. There are a lot of initiatives need to be done in order to overcome this problem, and some of them will be discussed in the next section. The last finding shows that a significant majority of the students share their ICT knowledge and experience with their friends. It proves that they do talk about ICT, and if the school library is one of the best places for them to access the ICT facilities, this could also be considered as indirect advertising, and school libraries could most benefit from this.

#### 5 Recommendations and Conclusion

There are some recommendations suggested by the researchers through the observations regarding the attitudes and responds from the respondents towards the use of ICT in the rural secondary school libraries. These recommendations are being made to develop better provision on the ICT facilities and access, to increase the level of skills among students, and also to improve the level of ICT usage in rural secondary school libraries. They are highly recommended in order to lead the younger generations in improving the quality in all

aspects related to the use of ICT in rural secondary school libraries.

The first recommendation that is to be made is regarding the insufficient number of computers in the school libraries. ICT facilities should be made adequately available in the school libraries so that the facilities could cater the needs of the whole school students. Here, it is important that the Government at the federal and state levels, should as a matter of priority, fund the rural schools adequately, as this will enable the school administrators to provide more of the ICT facilities in the school libraries and properly maintain the existing ones.

The financial expenses required in providing ICT facilities are enormous to the extent that the Government may not be able to provide it alone. It therefore becomes vital for the schools to enter into partnership with ICT providing organizations such as Prestariang, Cisco, etcetera for the purpose of equipping their schools with ICT facilities. This will enable the schools to acquire necessary ICT facilities in order to make available good availability of the facilities.

In order to improve the satisfaction of access of the ICT facilities, the access to the facilities itself must be improved first. The first step to improve access is to improve the ICT facilities and infrastructure. With that, when the school libraries are able to provide a great availability of facilities to the users, the level of access can also be made higher. Thus, the rules and restrictions in using the ICT facilities can be amended in accordance with the new level of availability of facilities. When the new and better level of access to the ICT facilities in the school libraries is provided to the students, this will automatically improve their satisfaction level of access.

From the discussion on skills in using ICT facilities among rural secondary students, it is found that the students have quite average ICT skills, and it is considered adequate for their age, level of studies and it can be said that their skill level is good enough since they are living in rural areas. However, since these students are eager to learn more about computer, there are some initiatives can be taken by the school administration, such as providing extra classes on ICT, or organized ICT camps or workshops for the students, in order to educate or teach these students in handling computer, or in using certain programs/applications. With that, the students can improve their skills and generate more interest in learning more about ICT.

The level of ICT usage among the students is high outside the school library, but very low in the school libraries. As being mentioned before, this problem is related with the availability and level of access of the facilities. When these two problems had been overcome, it is not just that. There are still a lot to be done, especially in promoting the school libraries as a provider of ICT facilities. There are a lot of promotional activities can be done inside the school libraries, and the first one identified is to organize a library orientation session. Library orientation sessions are well known in universities and colleges, but it is not done widely in schools. By organizing the library orientation session, the students can get the information about what their school library has, and with that, will come to the library to use the services

provided, including the ICT facilities. The other activities that can be done are outreach programs. The school administrator along with the library staff can organize some programs that require the students to do activities in the library and in terms of promoting the use of ICT facilities, activities relating to computers and technology can be organized such as digital drawing competition, online quiz competition, or simply give some topics to the students to find information about and present their findings using word processing or presentation software.

Those are just some random activities suggested by the researchers, and there are of course hundreds or thousands more activities can be done by/in the library to promote the use of ICT facilities. Once the students are comfortable with the facilities provided, they will keep coming to the library to use the facilities, share their experience with their friends, and thus, it could enhance the level of usage of ICT facilities in the school libraries as a whole.

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