ICT USAGE PATTERNS AMONG RURAL ADOLESCENTS

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ABSTRACT

The government of Malaysia has emphasized the application of Information and Communication Technology (ICT) for developing the rural community It is important to investigate the ICT usage among the rural adolescents particularly its effect on of socio-demographic This study seek to identify the ICT usage patterns among rural adolescents in Bukit Serampang, Johor, Malaysia. A survey with nominal research data was adopted as the method for the study. A descriptive and inference analysis through questionnaire involving 477 adolescents aged between 11 and 17 years old was carried out. Findings from the analysis suggest that the respondents who are of generation Y responded positively and prominently towards ICT usage including the tools such as computers, ipads, ipods, smartphones and other gadgets which use internet facility. It has also been found that in overall there is a significant difference in ICT usage between genders and age groups of the male and female adolescents.

Keywords: *ICT Usage, Socio-economy, ICT Skills and Pattern, Rural Adolescents and ICT gender.*

1. INTRODUCTION

Realising the possibilities of technology in narrowing the digital divide between the rural and the urban areas, the government of Malaysia has taken steps in providing Internet connection to the rural areas. Such a step has resulted in many rural and remotes areas being connected to the outside world vis-à-vis have accessed to the unlimited information required to improve the standard of living.

As the repercussion, the ICT literacy and gadget usage among rural communities has increased [3]. The rural young folks has now able to easily use technology in just a relatively short period of time [4]. However, ICT usage technology, with specific reference to social media has not always been used wisely as young people (hereafter adolescent) likely to embark on unethical doings [5][6][7]

The wide availability of the Internet connection on one hand has resulted in adolescent become more dependent and addicted to the technology despite the validity of the information.

Other than the Internet, there are also various tools particularly the social media such as Facebook, Twitter, Myspace, Keek etc. favoured as the source for learning aid other than as communication and acquiring information. Patrício & Gonçalves [9] assert that these social media are favoured by youngsters since they are able to motivate them to look for knowledge. These tools are interactive, able to foster knowledge sharing and facilitate communication.

Apparently, there is no standard pattern in ICT usage among adolescents when socio-economy, gender and cultural background are concerned. Such a difference as reported by Livingstone et al. [10] is statistically significant. Thus, Li and Kirkup [11] suggest that comparative studies on cultures is essential to understand the differences in the pattern of Internet usage.

A survey by Subrahmanyam et al. [12], has discovered that there is similarity in the pattern of computer usage between adolescents aged between 13 and 17 years old. This is due to the fact that adolescent in this range of age have access to the Internet for a longer period of time [10] other than more frequently use the technology [13]. Hence,

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age factor directly influences Internet access and usage.

In the contrary, Subrahmanyam et al. [12]; Vekiri [14]; Tondeur et al. [15] assert that socio-economic status (SES) does not influence the usage of computer and Internet among adolescents although Tondeur et al. (2011) reported the reverse.

Subsequently, findings from a study by Nsibirano [16] has shown that male adolescents dominated ICT usage compared to the female counterparts. This finding is consistent with Monetti et al. [17], who reported that even in cases where male and female were given the same access, male are more likely to be the leading computer users compared to female.

Tomte [19] opined that there is no relationship between genders and difference in terms of ICT skills and usage [12][10]. If there is any difference between gender, it is only due to the cultural hierarchical structure for a country that discriminate the priority of rights between male and female [20]. Furthermore, the difference only exists the manner they use ICT, (male adolescents are more inclined towards playing video games and visiting web pages while the female adolescents are more towards using email [13], as well as the extended time of usage either in school or at home [21].

In addition, a study by Subrahmanyam et al. [12] found that the percentage of Hispanic and white adolescents in terms of computer usage is higher than the black adolescents. However, Mikre [21] stated that there is no difference in ICT usage among primary and secondary school students whether the student is from a minority or majority ethnicity. This is supported by Lenhart et al. [22] who found that there is major difference in Internet usage among adolescents based on ethnicity or religion, even though there is only a small variation in terms of education achievement.

2. BACKGROUND OF STUDY

ICT is able to boost the socio-economic standard inclusive of education [23]. This has made the government of Malaysia forsees that ICT should be the engine for the new economic growth (RMK-8 and RMK-9) thus makes the government strives to help the rural folks especially the young ones (adolescents) by equipping them with the ICT.

This particular target groups are provided with wireless Internet access (Wi-Fi). In addition, laptops are also distributed to each individual household making RM12.9 billion has been spent in just four years (2006-2010) for this reason. The recipient villages are such as Medan Infodesa (MIDs) including MID Kg. Parit Tengah, Johor, MID Kg. Tehel, Melaka, MID Kg. Gulang-gulang, Selangor, MID Kg. KokKlang, Perlis, Mid Kg. Bayangan, Sabah and MID Kg. Buntal, Sarawak.

The government has also granted annual tax exemption for each individual who subscribes to a broadband for a maximum of RM500 a year. As a result, adolescents are becoming more skilled and in accessing the Internet.

On the other hand, as for any other countries, digital materials are now increasingly used in teaching and learning in Malaysia [24]. Terengganu via Electronic Book Program has pioneered the use of digital books or e-books when it was first introduced in 2009 where 23 thousand units of e-books has been distributed to Year 5 students. As the Internet access has increased, the Communication and Multimedia Commission of Malaysia (CMCM) studied the Internet usage and reported that the internet access rate was 60 percent from the 28.6 million population in 2010. It is estimated to rise up to 70 percent by 2015 [25].

Meanwhile, children and adolescents have been reported to have surfed the Internet for at least 19 hours a week, which may indicate that this age group are getting better in using ICT which is seen at par with the international development. Early exposure to ICT has made students became familiar with digital materials besides better skilled in using technology. The internet is also used for communication especially via visiting social network pages [26].

Despite advantages of ICT, the pattern of ICT usage in the rural community is not known [27]. It is therefore, this study seeks to investigate the ICT usage pattern among adolescents in MID Kg. Parit Tengah, Johor with particular emphasis on Bukit Serampang. The findings reveals that the interest of the adolescent in using and exploring the ICT was contributed by the free access to the Internet and also the widely available ICT infrastructure.

The ICT usage pattern would help in the planning and implementation of gender equity

program. Hence, the research questions to be addressed in this study are as follows:

1. What is the level of ICT usage among rural adolescents?
2. Is there a difference between ICT usage and gender among rural adolescents?
3. Is there a difference between ICT usage and age among rural adolescents?

3.   RESEARCH METHODOLOGY

This study was carried out by means of survey employing using questionnaire as technique to collect data. The samples include 477 adolescents aged between 11 to 17 years old. The questionnaires were self- administered and distributed to three schools in Bukit Serampang. Respondents were grouped into three: Primary School (11-12 years old); Lower Secondary School (13-15 years old) and Upper Secondary School (16-17 years old). Descriptive statistical analysis (frequency) and inference (chi- square ($\chi 2$)) had been carried out.

The hypotheses of this study are:
H1: There is a significant relationship between gender and ICT usage among rural adolescents.
H2: There is a significant relationship between age categories and ICT usage among rural adolescents.

3. RESULTS

The results were obtained from analysis of four variables that represent computer usage, including a) Level of computer skill, b) Experience in computer usage, c) Frequency of computer usage and d) Duration of computer usage. Descriptive analysis results are presented in Tables 1 to Table 4 to show the pattern of ICT usage among the respondents.

Table 1 shows the skill level in using a computer among adolescents. The result shows that 69.4% of the students have a moderate skill in using computer; 18.4% at the 'Basic' level and 10.3% are skilled.

Table 1: Computer Usage Skill Level.

Category	Frequency	Percent
None	9	1.9
Basic	88	18.4
Moderate	331	69.4
Skilled	49	10.3
Total	477	100.0

Most adolescents have one to five years of experience in using computer shown by the highest percentage for this category with 47%, while 29.4% accounts for those with more than five years of experience and 23.7% with only one year of experience (Table 2).

Table 2: Experience in Computer Usage.

Category	Frequency	Percent
<1 year	113	23.7
1-5 years	224	47.0
>5 years	140	29.4
Total	477	100.0

Table 3 visualises that the frequency of computer usage among adolescents is high because the category of 'Few times a week' has the highest percentage, which is 61.6%, although only 16.6% responded that they use computer daily. Meanwhile, 21.8% has responded that they use the computer for only a few times in a month.

Table 3: Frequency of Computer Usage.

Category	Frequency	Percent
Everyday	79	16.6
Few times a week	294	61.6
Few Times a Month	104	21.8
Total	477	100.0

Table 4 displays the duration of time using the computer in one day and apparently 80.7% of the adolescents spend 1 to 3 hours. Meanwhile, 13.2% spend 3 to 5 hours in front of the computer and 6.1% spend more than 5 hours.

Table 4: Duration of Computer Usage.

Category	Frequency	Percent
1-3 hours	385	80.7
3-5 hours	63	13.2
> 5 hours	29	6.1
Total	477	100.0

Inference analysis results are presented in Tables 5 to 12 to examine the related hypotheses. The relationship between gender and computer usage is tested, followed by the relationship between age categories and computer usage.

Computer skill level is presented according to gender in Table 5, more male adolescents are skilled, with 11.9% compared to female which is only 8.5%. On the contrary, more females possess a moderate skill in using computer (77.7%) compared to 62.1% for the males. For the category of 'Basic' skill level, the male adolescents dominate with 24.1% compared to 12.1% for the females.

Meanwhile, the percentage of adolescents that have no skill at all in using computer is also higher for the male with 2.0% against 1.8% for female adolescents. $\chi 2$ test ($\lambda = 14.882$; $p < 0.05$) showed that there is a significant relationship between gender and computer skill among the rural adolescents.

Table 5: Relationship Between Gender and Computer Skill.

Category		Computer Skill			Total
		None/ Basic	Moderate	Skilled	
Gender	Male	67	156	30	253
		26.5%	61.7%	11.9%	100.0%
	Female	31	174	19	224
		13.8%	77.7%	8.5%	100.0%
Total		98	330	49	477
		20.5%	69.2%	10.3%	100.0%

Table 6 shows that the percentage of male adolescents having more than five years experience in computer usage is higher (31.2%) than the female,(27.2%). The same pattern can be observed for the category one to five years experience in computer usage where the males are observed to have a higher percentage (49%) compared to females (44.6%). However, the percentage of female adolescents having computer experience of less than one year is higher at 28.1% and the males account for 19.8%. $\chi 2$ test ($\lambda = 4.635$; $p < 0.05$) indicate that there is a significant relationship between gender and experience in computer usage among rural adolescents.

Table 6: The Relationship Between Gender and Experience in Computer Usage.

		Experience			Total
		<1 year	1-5 years	>5 years	
Gender	Male	50	124	79	253
		19.8%	49.0%	31.2%	100.0%
	Female	63	100	61	224
		28.1%	44.6%	27.2%	100.0%
Total		113	224	140	477
		23.7%	47.0%	29.4%	100.0%

The frequency analysis according to gender shown in Table 7 indicates that male adolescents more frequently use computers, as shown by the higher percentage for category 'Everyday' which is 19.4% compared to 13.4 for female adolescents. On the contrary, for the 'Few times in a week' category, the female adolescents' percentage is higher with 62.3% against 61.3% for male adolescents. Similarly, for the category of 'Few times in a month, the female adolescents dominate where their percentage is 24.6% compared to only 19.4 for the male adolescents. $\chi 2$ test ($\lambda = 4.038$; $p < 0.05$) indicate that there is a significant relationship between gender and frequency of computer usage among rural adolescents.

Table 7: Relationship Between Gender and Frequency of Computer Usage.

		Frequency of Computer Usage			Total
		Everyday	Few times a week	Few times a month	
Gender	Male	49	155	49	253
		19.4%	61.3%	19.4%	100.0%
	Female	30	139	55	224
		13.4%	62.1%	24.6%	100.0%
Total		79	294	104	477
		16.6%	61.6%	21.8%	100.0%

Table 8: Relationship Between Gender and Duration of Computer Usage.

		Duration			Total
		1-3 hours	3-5 hours	> 5 hours	
Gender	Male	204	34	15	253
		80.6%	13.4%	5.9%	100.0%
	Female	181	29	14	224
		80.8%	12.9%	6.3%	100.0%
Total		385	63	29	477
		80.7%	13.2%	6.1%	100.0%

The duration of computer usage according to gender shows that the percentage for the female adolescents who use the computer for more than five hours a day is higher with 6.3% compared to 5.9% for male adolescents. However, the percentage of the duration of 3 to 5 hours a day is higher for the male adolescent, which is 13.4% and followed by only 12.9% for the females. As for the duration of 1 to 3 hours a day, the percentage for the male and female adolescents are not much different at 80.6% and 80.8 respectively (Table 8). Through the $\chi 2$ test ($\lambda = .042$; $p > 0.05$), it can be seen that there is an insignificant relationship between gender and duration of computer usage among rural adolescents.

The second hypothesis of the relationship between ICT usage and age of rural adolescents is examined in Tables 9 to 12.

Table 9: Relationship Between Age Category and Computer Usage Skill Level.

		Skill level				Total
		None	Basic	Moderate	Skilled	
Age_ category	Primary School	7	10	90	31	138
		5.1%	7.2%	65.2%	22.5%	100.0%
	Lower Secondary	1	52	135	16	204
		0.5%	25.5%	66.2%	7.8%	100.0%
	Upper Secondary	1	26	106	2	135
		0.7%	19.3%	78.5%	1.5%	100.0%
Total		9	88	331	49	477
		1.9%	18.4%	69.4%	10.3%	100.0%

Table 9 shows an analysis result on the computer usage skill level according to age category, which reveals that the primary school students are much ahead of the other age categories for skill level 'Skilled' at 22.5% compared to only 7.8% for lower secondary and 1.5% for upper secondary students. Meanwhile, the upper secondary age category shows the highest percentage for moderate computer usage skill, which is 78.5% followed by lower secondary with 66.2% and primary school with 65.2%. As for the basic skill level, the lower secondary age category shows the highest percentage at 25.5%, against 19.3% for upper secondary and 7.2% for primary school students. The age category that shows no skill at all in computer usage is the primary school students with 5.1%, followed by the upper secondary with 0.7% and lower secondary with 0.5%.

The $\chi 2$ test ($\lambda = 41.721$; $p < 0.05$) shows that there is a significant relationship between age category and computer skill among rural adolescents.

The experience in computer usage according to age category shows that the primary school students recorded the highest percentage for five years of experience category (39.9%), followed by the upper secondary age category (31.1%) and lower secondary (21.1%). Meanwhile, for moderate experience in computer usage, the upper secondary age category has the highest percentage (57%), followed by the lower secondary students (51%) and the primary school students (31.2%). Analysis on the longest experience in computer usage shows that the primary school age category is the highest in percentage, accounting for 29.0%, followed by the lower secondary category at 27.9% and the

upper secondary which shows the lowest percentage of only 11.9% (Table 10). The $\chi 2$ test ($\lambda = 32.221$; $p < 0.05$) shows that there is a significant relationship between age category and experience in computer usage among rural adolescents.

Table 10: Relationship Between Age Category and Experience in Computer Usage.

		Experience			Total
		<1 year	1-5 years	>5 years	
Age_ category	Primary School	40	43	55	138
		29.0%	31.2%	39.9%	100.0%
	Lower Secondary	57	104	43	204
		27.9%	51.0%	21.1%	100.0%
	Upper Secondary	16	77	42	135
		11.9%	57.0%	31.1%	100.0%
Total		113	224	140	477
		23.7%	47.0%	29.4%	100.0%

The frequency of computer usage according to age category in Table 11 shows that the lower secondary age category most frequently use the computer with 21.1% under the category of 'Everyday' for frequency, followed by the upper secondary school students (14.1%) and primary school students (12.3%). However, the primary school age category recorded the highest percentage for the frequency of using the computer for a few times in a week (73.2%), followed by the upper secondary age category (69.9%) and lastly the lower secondary students (48.5%). Meanwhile, the lower secondary age category records the highest percentage for the frequency of 'Few times in a month' which is 30.4%, followed by the upper secondary (16.3%) and the primary school students (14.5%). The $\chi 2$ test ($\lambda= 26.753$; $p<0.05$) shows that there is a significant relationship between age category and frequency of computer usage among rural adolescents.

Table 11: Relationship Between Age Category and Frequency of Computer Usage.

		Frequency			Total
		Every day	Few times a week	Few times a month	
Age_ category	Primary School	17	101	20	138
		12.3%	73.2%	14.5%	100.0%
	Lower Secondary	43	99	62	204
		21.1%	48.5%	30.4%	100.0%
	Upper Secondary	19	94	22	135
		14.1%	69.6%	16.3%	100.0%
Total		79	294	104	477
		16.6%	61.6%	21.8%	100.0%

Table12: Relationship Between Age Category and Duration of Computer Usage.

		Duration			Total
		1-3 hours	3-5 hours	> 5 hours	
Age_category	Primary school	95	23	20	138
		68.8%	16.7%	14.5%	100.0%
	Lower Secondary	189	13	2	204
		92.6%	6.4%	1.0%	100.0%
	Upper Secondary	101	27	7	135
		74.8%	20.0%	5.2%	100.0%
Total		385	63	29	477
		80.7%	13.2%	6.1%	100.0%

Analysis on the duration of computer usage according to age category shows that primary school students spend the longest time in front of the computer (14.5%), followed by upper secondary students (5.2%) and the least time is the lower secondary at only 1.0%. Meanwhile, the upper secondary age category exhibits the highest percentage for duration of 3 to 5 hours a day (20%), followed by the primary school age category (16.7%) and the lower secondary (6.4%). For the duration of 1 to 3 hours a day of computer usage, the lower secondary age category shows the highest percentage (92.6%), followed by the upper secondary students (74.8%) and the primary school age category at 68.8% as indicated in Table 12. The $\chi2$ test ($\lambda = 44.742$; $p < 0.05$) shows that there is a significant relationship between age category and duration of computer usage among rural adolescents.

4. DISCUSSION AND CONCLUSION

Male and female adolescents in rural areas in general use computer and ICT infrastructure only at a moderate level most of them have experience between one to five years with marked the introduction of ICT facility between 2006 and 2010. With such facilities available adolescents spend between one to three hours a day to use the computer for several times in a week.

Previous research on ICT literacy level among adolescent in rural area also reports the weak to moderate level of skills [30]. Consistently, these findings suggest that digital gap occurs in Malaysian rural area due to inequality between urban and sub-urban ICT penetration [29]. The implementation of National Key Result Areas by national authorities to bridge the digital divide including by improving the infrastructure in rural and remote areas require more support and action from the government and various parties.

Findings from this study show that male adolescents have more tendency towards ICT usage compared to the female adolescents since there is a significant deference between ICT usage skill level and gender. Male adolescents were found to have a higher exploratory passion to venture into something new or more challenging [12, 28]. Such a pattern is supported by researchers such as Adenuga et al. [20]. However, the relationship between gender and experience in computer usage, frequency of computer usage, as well as the duration of computer usage show no significant difference.

Results of the study reveal that the pattern of ICT usage according to age category, found that primary school students aged between 11 to 12 years old have higher computer usage skill level these students are also top in terms of experience (more than five years of experience) and use computer most frequently as well as spend the longest time in front of computer.

With such finding pattern, it shows that the rural adolescents really used the ICT infrastructure been given. Government has successfully literates the rural adolescents with at least the basic ICT usage. They also has shown the readiness for more high level technical skill that may useful for them such as basic programing skill, game programing, web based programing as a good foundation for their future ICT usage.

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