

# DIGITAL DIVIDE AND COMPUTER LITERACY FROM SOCIOLOGICAL PERSPECTIVE: A CASE STUDY AMONG MALAY MALE AND FEMALE TEENAGERS

**Khauthar Ismail <sup>a</sup>**

<sup>a</sup> School of Distance, University Science of Malaysia, Penang, Malaysia.

<sup>a</sup> Corresponding author: khautharismail@yahoo.com

©Ontario International Development Agency ISSN: 1923-6654 (print)

ISSN 1923-6662 (online). Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

**Abstract:** The major objective of this research is to find out the different levels of computer literacy among Malay male and female teenagers. The methods used in this research were survey and field observation. In this research, three independent variables were tested, namely, gender, location and socio-economic factors. The result shows that the two most influential factors are gender and socio-economic. The study proves that gender variables such as lack of confidence, inferiority complex and gender stereotypes are the factors affecting digital divide among male and female respondents. However, the gender stereotype among respondents is only limited to the level of expertise among genders and not on the treatment in the ICTL class. In addition, gender also contributed to the different levels of computer usage. In fact, the study discovers that location and area of the respondents' houses do not contribute to the digital divide. However, the location and condition of the cyber café do contribute to the digital divide among the respondents. Meanwhile in the socio-economic variables; the amount of the family's income and the parents' educational background do contribute to the different levels of computer literacy. Family's income is important in measuring the affordability to have a computer and subscribing to the Internet. Meanwhile, parents' educational level is important in measuring the perception parents' on the usage of computer. The levels of parents' education is related to the gender stereotype and inferiority complex among the respondents.

**Keywords:** Digital divide, education, technology and teenagers.

## INTRODUCTION

It can be considered as unexaggerated to claim that the definition of literacy today was expanded. Previously, the definition only confined into reading and writing yet, the new concept of literacy was emerged which is computer literacy. The operational definition of computer literacy in this paper is the knowledge, skills and understanding in using computer characteristics, capabilities and applications of hardware, software and Internet and ability to use these computer applications based on individual roles in society confidently.

There are two factors that trigger the usage of computer in Malaysia. First, the introduction of K-Master Plan. The policy of "one computer to one family" in K-Master Plan increase the public interest to invest in the computer usage. Second, the Malaysia government seeks to convert all its primary and secondary schools to Smart School status by the year 2010 through one of the flagships championed by the MSC (Ramayah, Ignatus, & Bushra, 2005). Therefore, computer literacy becomes one of important agenda in the country. A Ministry of Education circular<sup>1</sup> states that computer literacy is going to be a bona fide school subject and shall not be categorized or taught as a co-curricular subject. The main target is to gear teenagers parallel with the

---

<sup>1</sup> In-Tech, 3rd March 1992, p. 1.

aspiration of the nation which is to establish a technological and knowledge-economic based society (Tan, 1998). Alias et al., (2003: 2) stated that from Wim Veen (2002; 2003) that the Malaysian youth of today are evolving increasingly to what is described as the e-generation or e-geners (electronic generation) or n-geners (network generation). Yet, there are different levels of computer literacy based on gender, socio-economic status and location (Schaumburg, 2001, Chen & Wellman, 2004).

Why must we look at gender and computer usage? Firstly, it has been proven by researches that there is digital divide in computer literacy based on gender (Nor Azan et al, 2000, Muira, 1987). Secondly, there are gender stereotype that females are less capable in computer usage. Thirdly, today, women empowerment cannot be achieved if they are incapable in computer usage. What make computer literacy become important is because it is an access to use Internet.

Women generally use computer less than men. Even in situations where they are given equal access, it seems that females are less likely to make use of computer than males (Arch & Cummins, 1989). At the same time, gender roles as practiced by society has kept away women from these opportunities. This is proven by Primo (2005: 7) who states that:

“Poverty, illiteracy, lack of computer literacy and language barriers are among the factors impeding access to the ICT infrastructure, especially in developing countries, and these problems are particularly acute for women. But women’s access to ICTs is constrained by factors that go beyond issues of technological infrastructure and socio-economic environment. Socially and culturally constructed gender roles and relationships remain a cross-cutting element in shaping (and in this case, limiting) the capacity of women and men to participate on equal terms in the Information Society (Primo, 2005: 7)”

In addition, a study carried out by the Association of Progressive Community (APC) found that women generally have less access to electronic communications and have less ownership of the necessary equipment. Women also simply have less time to spend on learning new programs, how to install things, what to do when there is a problem and surfing on the internet to see what it has to offer. Meanwhile, men seem to have an easier time adjusting to the language and high tech terminology and new software toys to play with. Men also seem to have expendable incomes to purchase all the latest gizmos; men are more focused on the technical side (Nor Shahriz, 2009).

For example, Tella and Mutula (2008: 65) found out in Jackson et al. (2001) in a comparison between

female and male computer literacy competencies found that females reported more computer anxiety, less computer self-efficacy, and less favorable and less stereotypical computer attitude. This inferiority complex can be a result of gender socialization process. Moreover, it is posited that women receive less social encouragement and less educational support to master the technical skills associated with more sophisticated computing. Thus, many women have less personal inclination and less computing competence than their male peers to take advantages of the applications of computing that might be most job enhancing (Dunkle, King, & Danziger, 1994:35)

The gender stereotype was not only build through the process socialization from family but also in the classroom . Robin (2008) in his citation of Sanders research stated that society, age, attitude, ability, use patterns and the classroom can create gender stereotype from preschool until high school. Moreover, a research done by Barker and Aspray (2006) claims that elementary teachers who are primarily females, have limited computing skills and therefore act as poor role model for young girls. Moreover, boys still can use computer more than girls at home, although each sex uses computers for different reasons. Boys use games, educational software and Internet more, whereas girls use computer for email and homework. Finally, the culture of computing is largely driven by males whereas females begin to reject this culture starting at early adolescence (Robin, 2008).

Gupta and Houtz (2000:4) quoted from Davidson (1987) that several research studies indicate that women use computers primarily for word processing and other mundane activities, while men tend to use computers for higher applications such as problem solving and analytical thinking. Research indicates that male students are very interested in how technology works while female students tend to focus on how the technology is used (Silver, 2001). This is particularly the case as women are generally more focused on the activity, which is using ICT as a tool to achieve a certain end, rather than the technology or expert technical knowledge behind it (Anis Yusal & Sharon, 2003: 3).

Besides gender, the poorer groups with affordability problems, located in rural and distant areas where ICT infrastructure is not well developed, also experience a further disadvantage in terms of access. Rao (2005) concluded that the gap in the level of computer literacy is essentially based on geographical factors (Furuholt & Kristiansen, 2007). They also cited from Wong (2002) that the extension of infrastructure in the rural area has generally been much slower than urban area due to the low demand of computer usage.

Therefore, the demand for computer usage and facility depends on the location itself. This is because people in rural areas have limited use of computer and socio economic status limit rural people to own personal computers. A study done by Chen and Wellman (2004) reveals that the more affluent regions have higher computer use rate than poorer one. In Malaysia, Sharifah Mariam (2004) reports that in an area which is politically marginalized and physically ignored, the computer usage is bridged by way of structurally poor and financially weak cybercafés.

On the other hand, it cannot be denied that socio-economic variable contribute a lot in the level of computer literacy. In most countries, including Malaysia, there is a direct correlation between income levels, and computer ownership and Internet access. The basic issue is affordability, because computers and Internet subscription as well as usage involve relatively significant costs which the poorer income groups find unaffordable. Research done by the National Library in 1996 highly supported this statement. Nevertheless, current evidence indicates that the current technology divide has consistently followed the income divide all over the world. According to Natriello (2006:2), in United States, poor and minority children are less likely to have access to computers and the Internet at home and at school (National Center for Education Statistics 2000), and their parents are less likely to have access to them at home and at work (U.S. Department of Commerce, 2000). Thus, it is not surprising that people tend to adopt the notion that people must initially overcome the economic disparity before they can be successful in the resolution of the digital divide problem (Zaitun & Crump, 2005: 10).

For example, a study involving 855 children in years five and eight of eight schools in the South East West of England and Wales discovered that access to computer is patterned along socio-economic lines with families of low incomes were significantly less likely to purchase a computer (Facer, Furlong, Furlong, & Sutherland, 2001: 25). In addition, Shashaani (1994) found that socioeconomic status, as indicated by parents' occupations and incomes had a significant influence on students' attitude towards computers. Students from families with higher socioeconomic status were found to have more positive computer attitudes than those from families with lower status (Shashaani & Khalili, 2001). It can be assumed that those from the higher socioeconomic end are more likely to have a computer at home or have better opportunities of gaining access to one.

Zaitun and Crump (2005) mentioned in their article that from the social and cultural aspects, prosperity and the proliferation of technology are seen as the

means to alleviate poverty and ensure a better quality of life for the people living in developing countries. Thus, the digital divide can create unequal opportunities between those who have and have-not. Moreover, in the digital era, the difference between groups of people who have access to digital information and those who do not will be an influential factor in determining their economic success. The digital divide in Malaysia is still growing and this calls for a serious and concerted effort to overcome it. Until June 2003, the number of Internet subscribers in Malaysia was 2.73 million. The statistics show that 93 percent of the Internet subscribers were concentrated in urban areas.<sup>2</sup> Lastly, according to Benson (1998), when a society has no digital divide, every group will be able to participate in nation building and this will help towards the creation of a knowledge society.

## METHODS

Quantitative and qualitative methods are used in this research involving questionnaires, participant observation and interview methods.

### Quantitative methodology

Based on the quantitative methodology, data collected through the distribution of questionnaires. The questionnaires which are open-ended, close-ended and scale type questions will be distributed to the selected respondents.

### Qualitative methodology

In the qualitative methodology, participant observation and face to face interviews conducted in collecting data.

### The Sample

The location of research is at the village of Utan Aji, Perlis. The researcher distributes the questionnaires to 50 male and female teenagers, aged 14 years old.

There are three hypotheses to be tested in this study. Firstly, the level of computer literacy depends on the gender. Secondly, the level of computer literacy depends on the location and area. The location refers to the distance between the respondents' house and the center of change (city) and the distance of their house and cyber café. Meanwhile, the area refers to the rural area where most of the respondents' houses are located. Thirdly, socio-economic factors do contribute to computer literacy such as parents' educational level, income and computer ownership.

---

<sup>2</sup> Ramasamy, C., "Mind: Internet and the Malays," *Harian Metro*, 19 January, 2004, 10.

**Table 1:** Self-evaluation of computer literacy based on gender

	Male (%)	Female (%)
<i>Skills in using computer hardware</i>		
Excellent	34.2	11.4
Good	25.4	24.5
Moderate	27.5	34.2
Poor	10.8	20
Extremely Poor	2.1	2.1
<b>Total</b>	100	100
<i>Skills in using computer software</i>		
	44.9	26.8
Excellent	23.5	27.7
Good	23.3	26
Moderate	8.3	13.2
Poor	0	6.3
Extremely Poor	0	0.5
Missing		
<b>Total</b>	100	100
<i>Skills in using Internet</i>		
	41.8	23.3
Excellent	27.2	24.4
Good	20.5	29.5
Moderate	9.8	16.4
Poor	0.7	6.4
Extremely Poor		
<b>Total</b>	100	100

**Table 2:** Respondents' perception on using a computer by both genders

Respondents	Majority of male students are more expert in using computer compared to the female students. Do you agree or not?	
	Yes	No
<b>Male (N)</b>	41	1
<b>(%)</b>	(49.4)	(5.9)
<b>Female (N)</b>	42	16
<b>(%)</b>	(50.6)	(94.1)
<b>Total (N)</b>	83	17
<b>(%)</b>	(100)	(100)

\* Pearson  $\chi^2$  (1,100) = 10.968, p = .001

**Table 3:** Computer literacy and inferiority complex

	Gender		Total
	Male	Female	
<b>Yes (%)</b>	30.8	69.2	100
<b>(N)</b>	(16)	(36)	(52)
<b>No (%)</b>	54.2	45.8	100
<b>(N)</b>	(26)	(22)	(48)
<b>Total (%)</b>	42	58	100
<b>(N)</b>	(42)	(58)	(100)

\* Pearson  $\chi^2$  (1,100) = 5.609, p = .002**Table 4:** The level of computer literacy and availability of cyber café

	Cyber café available (%)	Cyber café not available (%)
<i>Skills in using computer hardware</i>		
Excellent	22.3	19.2
Good	26	24.2
Moderate	31.9	31.4
Poor	15.2	17.1
Extremely Poor	4.6	8
Missing	0	0.1
<i>Total</i>	100	100
<i>Skills in using computer software</i>		
Excellent	37	31.5
Good	24.4	27.4
Moderate	25.7	24.7
Poor	10.8	11.7
Extremely Poor	2.1	4.7
<i>Total</i>	100	100
<i>Skills in using Internet</i>		
Excellent	37.6	26.5
Good	26.0	24.8
Moderate	25.0	26.7
Poor	8.8	17.0
Extremely Poor	2.6	5.0
<i>Total</i>	100	100

The researcher used three sets of multiple responses namely the skills in using computer hardware, the skills in using computer software and the skills in using Internet. The skill in using computer application will then be correlated with other variables for every hypothesis. The frequency and percentages of responses was calculated via SPSS (Statistical Package for the Social Sciences). The statistical significance level was set at  $p < .005$ . The questions are based on the module prepared by the Ministry of Education, Malaysia.

## RESULTS AND DISCUSSION

### First hypothesis: The levels of computer literacy depend on gender.

Based on the survey done on the 100 respondents, the researcher found that males are more computer literate than females. The result from the survey indicates that majority of the male respondents claim that they are "excellent" in every type of skills in computer applications. The types of skills in computer applications are skills in using computer hardware, software and Internet. On contrary, the female respondents claim that they are "moderate" in the skills of using computer hardware and Internet. However, the female respondents are "good" in the skill of using computer software. (See Table 1).

Another finding in this research shows that majority of the respondents believe that males are more skillful in using the computer. Table 2 shows that the variables (gender as independent variable and bias perception as dependent variable) were statistically significant since  $\text{pearson } \chi^2 (1,100) = 10.968, p = .001$ . The female respondents especially showed higher percentage in agreeing that majority of male students are considered expert in using computer compared to the female respondent.

Moreover, the finding also indicates that there is a relationship between gender and inferiority complex. The female respondents show high degree of inferiority if they are computer illiterate. Meanwhile, majority of the male respondents do not feel inferior if they are computer illiterate (See table 3). Although the female respondents do feel inferior to the male respondents regarding the level of computer literacy, both genders agree that they receive equal treatment in the ICTL class. Majority of the female students (43.1 percent) agreed that their teacher always treated them equally as the male students in ICTL class. Meanwhile, majority of the male students with 31 percent either agreed or were neutral in this issue. Thus, gender stereotyping that exists among the respondents is in their perception of the different levels of computer literacy and not the result of treatment they received in the class.

### Second hypothesis: the level of computer literacy depend on location and areas

The location and area are potential factors for the digital divide between the genders due to the availability of public transportation and electricity. Public transportation is important for connecting respondents in the rural area and the computers available in the town. Meanwhile, electricity is important for using the computer in their home. Although they cannot use computer in their house, they can use computer in the cyber café. In the cyber café they can learn to use computer.

Table 4 indicates that the availability of cyber café does contribute to computer literacy among the respondents. In general, the researcher assumes that location and area are not the reasons for the digital divide and different levels of computer literacy among the respondents. On the other hand, the availability of cyber café in the nearest town can actually assist the respondents to improve their skills in using computer. Although, there is no significant relationship between the availability of cyber café and frequency level of going to the cyber café ( $\text{Pearson } \chi^2 (1,100) = .969, p = .325$ ).

The respondents also do not face any difficulties to go to the cyber café outside their village. Difficulties only occur among those who need to use public transport. The cross tabulation based on gender shows that for those who need to use public transport, a majority of them faced the difficulties to go to the cyber café; 71.4 percent of the male respondents and 92.3 percent of the female respondents faced the difficulties. Meanwhile, for those who were not in need of public transport, most of them did not face any difficulties to go there. This represents 71.4 percent of male respondents and 53.3 percent of female respondents. The significant level for male is  $p = .03$  while for female is  $p = .003$ .

Meanwhile, data from the observation suggests that male teenagers used the cyber café more than the female teenagers. The female teenagers claimed that they face difficulties to go to the cyber café. Therefore, the researcher focuses on another potential factor that can lead to the female's reluctance to go to the cyber café. The condition of the cyber café itself may become an obstacle, for the female teenagers (see table 5). Moreover, some gender-relation factor such as prohibition from parents from going to cyber café especially for female can become an obstacle to achieve computer literacy. The condition of the cyber café should be changed to be more environment-friendly for female users.

**Table 5:** Conditions of the cyber café in three towns

<i>Cyber café</i>	<i>City</i>	<i>Location of the cyber café</i>	<i>Facilities around the cyber café</i>	<i>Conditions outside the cyber café</i>	<i>Conditions inside the cyber café</i>	<i>Total of computer</i>	<i>Gender of cashier</i>	<i>Cashier's clothes</i>	<i>Arrangement of computers between male and female users</i>
Cyber café A	Kangar	Located on second floor of the building	<ul style="list-style-type: none"> <li>• KFC, parking lot, police booth, and close to other government building; MARA and UNIMAP</li> </ul>	<ul style="list-style-type: none"> <li>• Dark</li> <li>• Odor of cigarette smoke around the stairs</li> <li>• Tinted window</li> <li>• No poster hanged</li> </ul>	<ul style="list-style-type: none"> <li>• Privacy</li> <li>• Dull atmosphere</li> <li>• No wall picture</li> <li>• No flower decoration</li> </ul>	15-20 computers	Male	t-shirt and jeans	Mixed
Cyber café B	Kangar	Located on second floor of the building	<ul style="list-style-type: none"> <li>• Shopping complex, bazaar, food court, police station and JPN.</li> </ul>	<ul style="list-style-type: none"> <li>• Dark</li> <li>• Dirty</li> <li>• Smelly</li> <li>• Fake CCTV</li> <li>• Tinted window</li> <li>• Video game poster hanged</li> </ul>	<ul style="list-style-type: none"> <li>• Video game banner hanged</li> <li>• Flower decoration</li> <li>• Vending machine</li> <li>• Noisy and crowded</li> </ul>	12-15 computers	Female teenager	t-shirt and jeans	Mixed
Cyber café C	Kangar	Located on second floor of the building	<ul style="list-style-type: none"> <li>• Shopping complex, bazaar, food court, police station, and JPN.</li> </ul>	<ul style="list-style-type: none"> <li>• Bright light</li> <li>• Clean stairs</li> <li>• No CCTV</li> <li>• Slightly tinted</li> </ul>	<ul style="list-style-type: none"> <li>• No poster</li> <li>• Flower decoration</li> <li>• Quranic citation</li> <li>• Door widely open</li> </ul>	20-25 computer	2 female adult	Baju Kurung and head scarf	Mixed
Cyber café D	Kangar	Located on second floor of the building	<ul style="list-style-type: none"> <li>• Shopping complex, bazaar, food court, police station, and JPN.</li> </ul>	<ul style="list-style-type: none"> <li>• Not well lit</li> <li>• Vandalized wall</li> <li>• Smelly</li> </ul>	<ul style="list-style-type: none"> <li>• Advertisement poster</li> <li>• Malaysian flag hung on the wall</li> </ul>	7-10 computers	Young adult female	Baju Kurung and head scarf	Mixed
Cyber café E	Kangar	Located on second floor of	<ul style="list-style-type: none"> <li>• Near Tabung Haji,</li> </ul>	<ul style="list-style-type: none"> <li>• Well lit</li> <li>• A lot of</li> </ul>	<ul style="list-style-type: none"> <li>• A lot of notices pasted</li> </ul>	12-15 computers	Adult female	Baju Kurung and head scarf	Mixed

		the MARA building	taylor shop and surau.	<ul style="list-style-type: none"> <li>• notices pasted</li> <li>• No uncomfortable odor</li> </ul>	<ul style="list-style-type: none"> <li>• Window not tinted</li> </ul>				
Cyber café F	Simpan Empat	Located on second floor of the building	<ul style="list-style-type: none"> <li>• Food court</li> </ul>	<ul style="list-style-type: none"> <li>• Well lit</li> <li>• No bad smell</li> <li>• No pictures</li> </ul>	<ul style="list-style-type: none"> <li>• Poster of computer games</li> </ul>	25-27 computers	Young adult male	t-shirt and jeans	Mixed
Free cyber café <sup>3</sup>	Simpan Empat	First floor	<ul style="list-style-type: none"> <li>• Shared the same building with POS</li> </ul>	<ul style="list-style-type: none"> <li>• Good lighting</li> <li>• Secure parking lot</li> <li>• No bad odor</li> </ul>	N/A	N/A	N/A	N/A	N/A
Cyber café G	Arau	First floor	<ul style="list-style-type: none"> <li>• Shopping complex, food court, bus stop and school</li> </ul>	<ul style="list-style-type: none"> <li>• Well lit</li> <li>• Secure parking lot</li> </ul>	<ul style="list-style-type: none"> <li>• CCTV</li> <li>• Tinted window</li> </ul>	45-50 computers	Young adult male	t-shirt and jeans	Mixed
Cyber café H	Arau	First floor	<ul style="list-style-type: none"> <li>• Shopping complex, food court, bus stop and school</li> </ul>	<ul style="list-style-type: none"> <li>• Well lit</li> <li>• Tinted window</li> <li>• No bad odor</li> </ul>	<ul style="list-style-type: none"> <li>• Clean and comfortable</li> </ul>	48-50 computers	Adult male	t-shirt and jeans	Mixed

**Table 6:** Skills in using computer and the availability of computer

	Those who have a computer (%)	Those who do not have a computer (%)
<i>Skills in using computer hardware</i>		
Excellent	27.7	12.7
Good	26.8	22.5
Moderate	28.5	35.0
Poor	12.0	21.2
Extremely Poor	4.9	8.6
Missing	0.01	0
<i>Total</i>	100	100

<sup>3</sup> The cyber café was closed.



<i>Skills in using computer software</i>	40.8	26.7
Excellent	28.2	23.3
Good	20.5	30.0
Moderate	8.1	14.9
Poor	2.4	5.1
Extremely Poor		
<i>Total</i>	100	100
<i>Skills in using Internet</i>	39.8	20.4
Excellent	27.0	23.8
Good	23.7	28.2
Moderate	7.8	20.7
Poor	1.6	6.9
Extremely Poor		
<i>Total</i>	100	100

**Table 7:** The level of computer literacy and self-reported family income (%)

	Income level				
	≤ 661	662 – 1000	1001 – 2500	2501 – 3000	≥ 3001
<i>Skills in using computer hardware</i>					
Excellent	13.1	18.8	24.2	45	46
Good	24.2	25.7	26.4	20	20
Moderate	36.1	32	28.7	18.8	22
Poor	19.4	17.2	13.5	7.5	12
Extremely Poor	7.2	6.3	7.2	8.7	0
<i>Total</i>	100	100	100	100	100
<i>Skills in using computer software</i>					
Excellent	28.8	29.7	37.9	53.8	68.1
Good	20.6	33.4	28.2	15	14.9
Moderate	28.8	24.3	23.6	18.8	14.9
Poor	15.8	11	6.9	7.5	2.1
Extremely Poor	5.9	1.6	3.4	5	0
<i>Total</i>	100	100	100	100	100
<i>Skills in using Internet</i>					
Excellent	27.3	26.9	35.2	38.8	64
Good	20.9	26.9	26.8	37.5	20
Moderate	29.8	25.3	27.4	10	16
Poor	17.3	15.6	7.8	12.5	0
Extremely Poor	4.7	5.3	2.8	1.2	0
<i>Total</i>	100	100	100	100	100

**Table 8:** Inferiority feeling among respondents and their parents' educational level  
(Based on N)

Types of parents' educational level	<i>"I feel inferior if I cannot use a computer"</i>			
	Male respondents		Female respondents	
	Yes	No	Yes	No
	N	N	N	N
PhD	1	-	-	-
Master	1	1	1	-
Degree	2	2	-	1
Diploma	1	3	3	-
STP	1	1	5	2
SPM	7	14	10	8
≤ SRP	2	4	12	9
Total	15	25	31	20

**Table 9:** Inferiority feeling among respondents and their parents' educational level  
(Based on %)

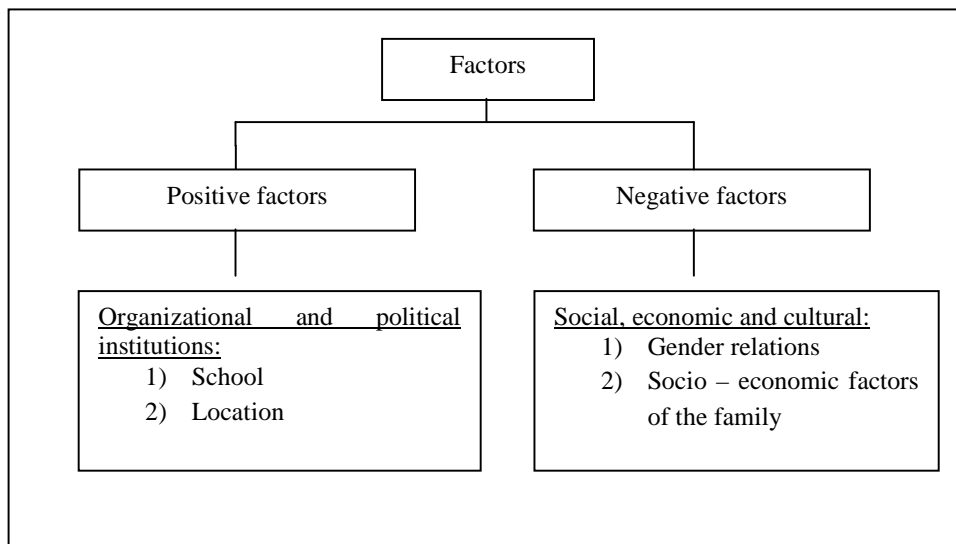
Types of parents' educational level	<i>"I feel inferior if I cannot use a computer"</i>			
	Male respondents		Female respondents	
	Yes	No	Yes	No
	%	%	%	%
PhD	6.7	-	-	-
Master	6.7	6.7	3.2	-
Degree	13.3	8	-	5
Diploma	6.7	12	9.7	-
STP	6.7	4	16.1	10
SPM	46.7	56	32.3	40
≤ SRP	13.4	16	38.7	45
Total	100	100	100	100

**Table 10a:** Relationship between gender stereotype and parents' educational level  
(Based on N)

Types of parents' educational level	<i>Do you agree with this statement: "Most of the boys were adept at using computer compared to girls"</i>			
	Male respondents		Female respondents	
	Yes	No	Yes	No
	N	N	N	N
PhD	1	-	-	-
Master	2	-	1	-
Degree	4	-	-	1
Diploma	4	-	1	2
STP	2	-	5	2
SPM	21	-	13	5
≤ SRP	5	1	15	6
Total	39	1	35	16

**Table 10b:** Relationship between gender stereotype and parents’ educational level  
(Based on %)

Types of parents’ educational level	<i>Do you agree with this statement: “Most of the boys were adept at using computer compared to girls”</i>			
	Male respondents		Female respondents	
	Yes %	No %	Yes %	No %
PhD	2.6	-	-	-
Master Degree	5.1	-	2.9	-
Diploma	10.3	-	-	6.2
STP	10.3	-	2.9	12.5
SPM	5.1	-	14.3	12.5
≤ SRP	53.8	-	37.1	31.2
Total	12.8	100	42.9	37.5
	100	100	100	100



**Figure 1:** Factors that contribute to the different level of computer literacy

**Hypothesis three: socio-economic factors do contribute to computer literacy**

The researcher will evaluate the relationship between socio-economic status of parents and the level of computer literacy. This includes the ownership of computer, family income, and parents’ educational level.

The availability of computer in the respondents’ house is important in enhancing computer literacy. This is because a majority of them are “excellent” in each category of computer skills namely skills in using computer hardware, software and Internet

compared to those who have no computer in their house. Table 6 shows that students who have computer at home are “excellent” in all the three skills namely skills in using computer hardware, computer software and the Internet at 27.7 percent, 40.8 percent and 39.8 percent. On the contrary, students who do not have computers at home scored higher in the “moderate” category at 35 percent, 30 percent and 28.2 percent for each skill respectively.

Next, Table 7 shows that those whose parents earn an income of more than RM3001 per month are “excellent” in each of the computer skills compared to those with income less than RM661. The table

suggests that family income do determine the level of computer literacy due to ability to have computer and Internet subscription. In other words, the wealthier they are, the more they can afford to have computer. Computer ownership is one way to improve computer literacy.

The different level of computer skills may also depend on another variable namely the process of socialization. The relationship between socialization process and socio-economic status is important. Socialization is an important process in society. Gender socialization shapes males and females to play their roles in society. Family and school play an equally important role in the socialization process. It is here that the researcher stresses the importance of the educational level and parents' perception on the use of computer. While, the socialization process in school depends on the gender of teacher in ICTL class.

The researcher is also concerned with the issue of inferiority complex in using computer. The operational definition of inferiority in this research is the feeling of inadequacy in the using computer as the use of the computer is usually associated with the masculine world. The researcher wants to determine whether the skill of using the computer among female respondents is related to their parents' educational level (See Table 8 and 9).

Overall, male respondents would not feel inferior even they do not know how to use the computer. On the other hand, the female respondents would feel inferior if they do not know how to use the computer. Interestingly, the male respondents who would never feel inferior are those whose parents' are "SPM" holders only. Lack of interest from parents may not be the reason for this as majority of the respondents claimed that their parents are concerned about their computer class in school. One reason may be because of the lack of motivation. The ICTL's teachers in both school are female and the male respondents may not see their female ICTL's teacher as their role model. If they see her as a role model, they would feel inferior if they cannot emulate her. On the contrary, this is why the female respondents would feel inferior if they cannot use a computer. The female respondents are motivated by the female teacher. The result may be on the contrary if the ICTL's teacher was a male.

Parents' educational background also gives different types of inferiority complex for male and female respondents. For males, the lower their parents' educational background, they will feel less inferior. While for female, the lower their parents' educational level, the higher their inferiority level is.

Table 10a and 10b shows the relationship between parents' educational level and respondents' perception on the competency of using computer based on gender. The table shows that both genders believed that males are more competent in using the computer. Interestingly, majority of them who opted for this were the male and female respondents whose parents' are SPM and SRP holders respectively. This result suggests that, the lower the educational level of the respondents' parents, the more the respondents will be gender-stereotyped. In other words, the educational status of the parents can strongly affect the mentality of the respondents.

The mentality of the female respondents may be socially shaped and could later influence their career decision. Families indeed have a strong influence in the socialization process. A female teacher in the computer class cannot fully influence the female mentality to be more computer literate. This may be the reason for the lack of interest among females in technical fieldwork and more inclined towards social-arts related careers. Moreover, most parents may have encouraged their daughter to be involved in human-related careers especially in the educational field. Most rural parents would be more proud if their daughters become teacher. This is because a job as teacher comes with a good package of time, holiday and freedom to become a good mother and wife. Meanwhile, most of the rural parents give freedom for their sons in choosing their career. If they are not capable of getting a good job, their fathers usually prefer their sons to take over their job. However, this situation and condition mostly occur among rural parents with low education and limited exposure to gender-flexible jobs.

From the researcher's point of view, she assumes that their parents' lack of exposure may shape their mentality by assuming that males should have higher level in computer literacy than female. The "exposure" in this case refers to the realization among the parents on the importance of computer regardless of what type of gender their children may be. From the socialization process, parents with lower educational background tend to neglect the importance of computer literacy especially among their daughter. Thus, it leads to the perception that males should be more computer literate than female. However, blame should not be put on the parents solely. As mentioned before, these parents have low educational background. They may not even realize that they have put the barrier in their children's minds. Thus, the researcher assumes that socio-economic factors do contribute to computer literacy. This makes the third hypothesis in this research applicable and significant.

## CONCLUSIONS

The researcher tries to integrate the social factors and the 'impact' of technology on the subject of the study. 'Technology' refers to computer, while 'impact' refers to different levels of computer literacy among the respondents. The researcher has divided factors that contributed to this impact into two categories. Firstly, the negative factors which are social, economical and cultural. Social, economical and cultural factors refer to gender relation and socio-economic factors of the family. Secondly, the positive factors which are organizational and political institution refer to school and locations factors (See figure 1).

As a conclusion, the researcher found out that different levels of computer literacy do occur among the respondents. Gender and socio-economic factors are the possible reasons for the different levels of computer literacy. However, the digital divide that exists between genders in this study is not serious as in other developing countries. This happens may be because of the positive factors from political and organizational institutions. The political and organizational institutions slightly contributed to the narrowing gap of digital-divide between genders. The Malaysian government puts an effort to increase the level of computer literacy and to narrowing the digital gap that happens through several factors namely gender, location and socio-economic factors. The Information and Communication Technology's class (ICTL) is an effort by the government to increase the level of computer literacy. In addition, free cyber café in rural areas such as in Simpang Empat, Perlis is one of the projects by the Malaysian government.

The researcher concludes that location and area in Perlis should not be considered as potential factors for the digital divide. Moreover, in the mid-term review of the Ninth Malaysian Plan (2006-2010), the knowledge-based economy development index showed an improvement in computer infrastructure.<sup>4</sup> Malaysia is not the only country which encourages the use of computer. Other developing countries such as Swaziland also take a serious concern on this issue.

Furthermore, there is a lot of motivation to use computer encouraged by the Malaysian government. For example, the roll-out of broadband infrastructure will be accelerated through a public-private partnership initiative to achieve 50 percent household penetration by 2010. The demand for broadband will be stimulated by expanding e-Government

applications, developing local content and applications with private sector participation and intensifying awareness campaigns.<sup>5</sup>

Moreover, the government is also already keenly aware of the need to close the digital divide. Among the programs planned are the Universal Service Provision Program, based on the three basic principles of availability, accessibility and affordability. Other programs include the *InfoDesa* and *Internet Desa* programs. The government has also formulated a comprehensive and integrated policy as well as the framework for action to address the problem of the digital divide to cover four important aspects. They are ICT infrastructure plan for universal access, local content development, equitable access to affordable ICT products and services, and access to lifelong learning opportunities.<sup>6</sup>

However, computer literacy can be affected by social-factors. A social factor such as gender relation is one such factor. In this research it is clear that gender is a factor for digital divide. Thus, the initial step to empower women by the government is eliminating the gender stereotype that exists among males and females. For example, the government does have formal and non-formal training in areas such as computer literacy and applications of ICT, with special emphasis given to rural women and encouraging the development of gender-sensitive software.

The researcher would like to suggest several potential recommendations for increasing the level of computer literacy among male and female teenagers. Firstly, free cyber café should be made available. Computer resources at such locations should also generally involve a minimal fee or are free for individuals. There should also be expertise and peer support available to assist at no cost as well.

However, the idea for providing free-cyber café can raise a counter argument that more free cyber café enable more video game playing by users. It is true that every educational program does have its own shortcoming. The researcher suggests that research should be conducted to evaluate the performance of all existing free-cyber café. The result of this research can be used for future improvement of newly opened free-cyber café.

Secondly, due to stigmatization of cyber café as an inappropriate place for female users, the owners of the cyber café should allocate different sections for male and female customers. Thirdly, Cyber café

<sup>4</sup> The mid – term review of the Ninth Malaysian Plan (2006 – 2010).

<sup>5</sup> The mid – term review of the Ninth Malaysian Plan (2006 – 2010)

<sup>6</sup> The Ministry of Finance, 156.

should be organized so that the parents and teachers can also visit. Finally, the ICTL class should be introduced in the early stage of child development especially in the kindergarten and primary school. Early exposure of the usage of computer can limit gender stereotype and inferiority complex among females.

This idea should be implemented with several layers of protection. This protection should act as prevention for any negative effect such as addiction to computer games and pornography surfing. This can happen when the use of computer is not coated with moral values. Thus, in order to prevent this situation from happening, each computer in class should not be installed with computer games and the school's authority should also block all possible porn website.

Unfortunately, this research may not escape some limitation such as information provided by respondents may not be accurate due to misunderstanding of the language or terms provided in the questionnaire. Furthermore, the number of respondents were limited as they were taken from two schools only. However it is hoped that the study will give input to others so that other studies can be conducted to increase the level of computer literacy among respondents.

#### REFERENCES

- [1] Alias Daud, Zainab Awang Ngah & Zaitun Abu Bakar. (2003). *The impact of IT on higher education for Malaysia*. Paper presented at the proceeding of the President Forum of Southeast Asian Universities, National Cheng Kung University, Taiwan.
- [2] Anis Yusal Yusoff & Sharon, Lim. (2003). ICT and women. In *ICT for development: understanding ICT4d thematic in Malaysia: A sourcebook* (pp. 29 – 34). Kuala Lumpur: United Nations Development Program.
- [3] Benson, P. B. (1998, January). Village people? The net generation. *IEEE Communications Magazines*, pp. 32-35.
- [4] Chen, W., & Wellman, B. (2004). The global digital divide-within and between countries, *IT & Society*, 1(7), 39-45.
- [5] Dunkle, D. E., King, J. L., & Danziger J. N. (1994). Women, men and information technology: A gender based comparison of the impacts of computing experienced by white collar workers. In *Women and Technology* (pp. 31-59). Berlin: Walter de Gruyter.
- [6] Facer, K., Furlong, J., Furlong, R., & Sutherland, R. (2001). Home is where the hardware is: Young people, the domestic environment and 'access' to new technologies. In Hutchby, I., & Moron, E. J. (eds.), *children, technology and culture: the impacts of technologies in children's everyday lives*. London: Routledge.
- [7] Furuholt, B., & Kristiansen, S., (2007, May). *A rural-urban digital divide? Regional aspects of internet use in Tanzania*. Paper presented at the proceedings of the 9th international conference on social implications of computers in developing countries, São Paulo, Brazil.
- [8] Government of Malaysia. (2001). *Eight Malaysian plan, 2001-2005*. Kuala Lumpur: National printing department.
- [9] Gupta, U.G., & Houtz, L.E. (2000). High school students' perception of information technology skills and careers. *Journal of Industrial Technology* 16 (4), 1-8.
- [10] Ministry of Finance. (2002). *The knowledge-based economy master plan*. Kuala Lumpur: National Printing Department.
- [11] National Library Malaysia. (1996). *Literasi komputer in profil membaca rakyat malaysia, 1996: Laporan kajian yang dijalankan bagi pihak perpustakaan negara Malaysia*: National Printing Department.
- [12] Nor Azan Mat Zin, Halimah Badioze Zaman, Hairulliza Mohd Judi, Norhayati Abdul Mukti, Hazilah Mohd Amin, Shahnorbanun Sahran, Kamsuriah Ahmad, Masri Ayob, Salwani Abdullah & Zuraidah Abdullah (2000). Gender differences in computer literacy among undergraduate students in UKM. *The Electronic Journal of Information Systems in Developing Countries (EJISDS)* 1 (3), 1-8.
- [13] Natriello, G. (2006). *Bridging the second digital divide: what can sociologists of education contribute?* New York: Columbia University.
- [14] Nor Shahriza Abdul Karim (2009). Post-independence Malaysian women and ICT. In *an insight into post-independence Malaysian women's well-being*. Kuala Lumpur: IIUM Press.
- [15] Primo, N. (2005). *Gender equality and empowerment of women through ICT*. UN: Division for the advancement of women department of economic and social affairs.
- [16] Ramayah, T., Ignatus, J., & Bushra Aafaqi (2005). PC usage among students in a private institution of higher learning: the moderating role of prior experience. *Jurnal Pendidik dan Pendidikan*, 20, 131-152.
- [17] Robin, K. (2008). Exploring gender differences in computer-related behavior: past, present and future. In *social information technology: connecting society and cultural issues*. New York: Information Science Reference.
- [18] Schaumburg, H. (2001) *Fostering girls' computer literacy through laptop learning-can mobile computers helps to level out the gender*

- difference?* Retrieved May 15, 2010. <http://citeseerx.ist.psu.edu/viewdoc/download>
- [19] Sharifah Mariam Syed Mohammed Alhabshi. (2004). Bringing digital divide in marginalized areas: focus on IT policy, planning and implementation issues in Malaysia. In Sukhvinder Kau Multan (ed.), *ICT in rural development: an overview* (pp. 151-166). India: ICFAI.
- [20] Shashaani, L. (1994). Socioeconomic status, parents' sex-role stereotypes, and the gender gap in computer. *Journal of Research on Computing in Education* 26 (4), 443-451.
- [21] Shashaani, L., & Khalili, A. (2001). Gender and computers: similarities and differences in Iranian college students' attitudes toward computers. *Journal of Computers & Education* 37 (3-4), 41-51.
- [22] Tan, Ai Ngoh. (1998). Penggunaan komputer di kalangan guru-guru Sekolah Kebangsaan Convent Kajang. *Jurnal Pendidikan Tigaenf* 2 (2), 51-62.
- [23] Tella, A., & Mutula, S.M. (2008). Gender differences in computer literacy among undergraduate students at the University Of Botswana: Implications for library use. *Malaysian Journal of Library & Information Science*, 13 (1), 59-76.
- [24] Wong, S. L., & Hanafi Atan. (2007). Gender differences in attitudes towards information technology among Malaysian student teachers: a case study at University Putra Malaysia. *Educational Technology & Society* 10 (2), 158-169.
- [25] Zaitun Abu Bakar & Crump, B. (2005). Overcoming the digital divide-a proposal on how institutions of higher education can play a role. *Malaysian Online Journal of Instructional Technology* 2 (1). Retrieved May 15, 2010.

#### ABOUT THE AUTHOR

Khauthar Ismail is a fellow in the University of Science, Malaysia. Her research interest is on social change, youth, technology and society. She is passionate on how the technology shaped the social factors which then leads to the changes in society. Her goal is to use her research discovery to alter the youth related policies for a better and improved society.

Email: khautharismail@yahoo.com

