

# Digital Divide amongst Urban Youths in Malaysia – Myth or Reality?

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## Abstract

The Digital Divide is an important issue with serious consequences, both for the individuals affected and society. With 90% of youths in urban areas using the Internet, there is a myth that the Digital Divide no longer exists amongst urban youths. Based on a random survey of 1639 youths, this study analyses the possibility of a digital divide along ethnic lines in Malaysia. Findings indicate there are significant ethnic-based differences in home PC ownership and Internet connection. There are further concerns that the digital divide is further widening because of the quantity and quality of access. Multivariate analysis reveals that Chinese youths are online for twice the duration of Malays and Indians. However, higher Internet usage may be a two-edged sword as higher Internet use are intertwined with higher risks and negative activities such as violent games, pornography, and gambling. The article also discusses various means to mitigate the risks of Internet usage.

**Keywords:** digital divide, Malaysia, urban youths, myth, reality

## 1. Introduction

Tremendous rapid changes in technology are taking place and these changes typically occur in an uneven fashion. Given the pervasive impact of the Internet society, there is grave concern about whether the rapid and uneven spread of Internet will further widens the “digital divide” that has already emerged between haves and the have-nots. Empirical studies reveal that the digital divide – the disparities in access to personal computers (PCs), and the Internet across demographic groups – not only exists, but is widening significantly. The gap between the haves and have-nots in terms of owning computers and enjoying access to the Internet had grown wider by differences in education, income, and ethnicity (Livingstone & Helsper, 2007). Inequalities in society had been traced to the different level of access to information. It has been discovered that the root cause of the inequality is not just access to information, but knowledge, which is the comprehension and application of information. In fact, knowledge is now regarded as the main driving force of innovation and development (Evers & Gerke, 2004). Often cited in support of this premise is the countries of Ghana and the Republic of Korea (World Development Report of 1998/98). Both countries started independence with almost the same GNP/cap in 1960. Thirty years later, while the Korean GNP/cap had risen more than six times, the Ghanaian was still remaining at the same level (in 1985 prices). Half the difference could be explained in terms of the ‘traditional’ factor inputs, the other half, according to World Bank experts, was attributed to ‘knowledge’ as a factor of production (World Bank 1999). Hence, it is claimed, perhaps with some exaggeration that only the people who benefited from the “Gutenberg Revolution” can now benefit from the Information and Communication Technology revolution. With 90% of people in the urban areas in Malaysia having computers and Internet access at home, this paper examines firstly whether there is a digital divide amongst the ethnicities of youths. The paper also attempts to provide a deeper understanding of the nature of Internet use by these youths of different ethnicities, as it may have important ramifications not just for themselves, but for the country of Malaysia.

In this paper, *Digital divide* refers to the inequalities of access and usage to Information and Communication Technologies (ICT), particularly with the access to the Internet amongst individuals, households, businesses, and geographical areas (OECD, 2001). Digital Divide is an important issue with grave consequences for individual, communities and countries because those without access to ICT are likely to be deprived of knowledge and could face severe economic and social deprivation with little prospects of catching up. In this current digital age, online users gain considerable academic, economic, financial, and social benefits from the Internet (Anderson,

Bikson, Law, & Mitchell, 1995; L. A. Jackson et al., 2006b; USC ASCDF, 2005). The issue of the digital divide and how to bridge it had attracted considerable attention and resources by not just governments, but also international organizations as the World Bank, the United Nations and the Group of 8 Nations (G8, 2000; United Nations, 2007).

Despite the importance of the issue of digital divide and the considerable resources allocated to bridging the divide, no one has yet discovered an effective solution to bridge the digital divide (Jones, Johnson-Yale, & Millermaier, 2009). In fact, even if the differential access has been bridged, the digital divide may continue to perpetuate and widen through differences in terms of the quality and quantity of usage (Selwyn, 2004; Jackson, 2007; Livingstone & Bober, 2005). Online users who are more proficient stand to reap greater benefits from the Internet (see Lei & Zhou, 2012).

### *1.1 Ethnicity and Internet Use*

The existence of a digital divide in Information Technology and Internet use along ethnic lines has been documented more than a decade ago in the United States of America (Hoffman, Novak, & Schlosser, 2000). Data from early 2000 indicated that White and Asian Americans have the highest Internet penetration rates, while Hispanics and African Americans have considerably lower access (OECD, 2001). Through the years, the digital divide in terms of access to the Internet had narrowed in the United States. Nevertheless, there are fears that the digital gap continues to persist amongst the ethnic groups in terms of the quality and quantity of Internet use, even after controlling for Internet access, income and education (Cooper, 2006; Hoffman & Novak, 1998; L. A. Jackson, Ervin, Gardner, & Schmitt, 2001; Mullis, Mullis, & Cornille, 2007).

This study focusses on youths in Malaysia. This group of young people has been called the “digital generation” (Jenkins, 2004). The myth of the digital generation implies that digital technologies have developed a status of such paramount importance among the youth in their everyday lives that there is no longer a digital divide within this generation. This myth is supported by surveys indicating that more than 90% of youths are using the Internet (Liau, Khoo, & Ang, 2005; Livingstone & Bober, 2005; USC ASCDF, 2005; Zamaria & Fletcher, 2007). Even in Malaysia, 90% of urban youths are using the Internet (Soh, Chew & Ang, 2008). However, there are indications that the digital divide still persists amongst youths, even though 90% of them enjoy Internet access (Livingstone and Helsper, 2007; L. A. Jackson, 2008). For instance, a study that provided free home Internet access to low-income households found that African-American children use the Internet less than their Caucasian counterparts (L. A. Jackson et al., 2006a). This article seeks to explore the existence of the digital divide among urban youths in Malaysia, despite 90% of the youths having access to the Internet.

Digital divide among children have serious long-term consequences both for the individuals affected as well as the society. As mentioned previously, knowledge is a key factor of development and prosperity for people and countries. According to research, media use habits formed early in life persist throughout adulthood (Roberts, Foehr, & Rideout, 2004). The most devastating consequences of the digital divide could be the long-term consequences. Lacking access to technology and computer skills could disempower an entire generation from realizing their full potential (Koss, 2001).

Malaysia is a developing multi-racial country with a population of 28 million people (Department of Statistics Malaysia, 2009). Ethnicity is an integral part of the individual Malaysian psyche and demarcates his/her social life style (Lee, 2000). In fact, ethnicity has always been the most potent force in Malaysia from the days of its independence (Lee, 2000). In order to understand the depth of Malaysia's concern about ethnicity, we need to appreciate the historical context of the birth of the country and its subsequent development. Prior to independence, the British colonist brought large numbers of immigrant minorities from India and China into Malaysia for rubber plantation and tin mining. A sizeable number of the immigrants settled down and began to consider Malaya their home. This resulted in the populations of Malay and non-Malays being almost equal in number when Malaysia became independent. The cultural terrain was a fiercely contested arena in this era of 1960s. This was because, during this period, the majority of Malays and non-Malays held diametrically opposing stances on the cultural, religion and language issues. On the one side, the popular Malay opinion strongly backed the dominant and privileged position of Malay culture in the new nation and expected the state to uphold and promote Malay culture and the official status of Malay language. Consequently, the perceived slow progress made by the state in advancing Malay culture and language led to increasing numbers of Malays, especially the Malay cultural nationalists to become disenchanted with the leadership of the ruling party. On the other side, the majority of Chinese vigorously and persistently advocated the equality of status for every culture in the society (Lee, 2000). The Chinese (together with the British colonists) dominated the newly independent country's economy, while Malays dominated the government and politics. It did not help matters that virtually all

government policy were crafted with preferential priority for the Malays (Crouch, 2001). The simmering frustrations resulted in racial riots breaking out on May 1969 in the fledgling country resulting in hundreds of lost lives (The Star, 2008). Consequentially, the preeminence of Malay culture in the society became a non-negotiable proposition, and questioning it could result in prosecution under the Sedition Act (Lee, 2000). The government aggressively launched the New Economic Policy (NEP) to redistribute wealth, employment and educational opportunities (Crouch, 2001).

The NEP was credited to have successfully socially reengineered the Malaysian economy and society (Abdullah, 1997). Inevitably, the NEP resulted in restricting Chinese businesses and limiting employment opportunities for non-Malays. As education is seen as a key determinant of future economic prospect, the NEP also emphasised heavily on providing preferential educational opportunities for Malays. The systematic government program of ethnic discrimination in favour of one group naturally created deep resentment among the others (Crouch, 2001).

With knowledge being a key determinant to economic prosperity, both education, and ICT will play crucial roles. The importance of education had been recognized by The Malaysia government resulting in its education system (reputed) to be heavily biased with up to 90% of public university places allocated to the Malays and other bumiputeras (sons of the soil). The importance of ICT to the country has also been recognized by the Malaysian government. In 1991 Malaysia's Prime Minister proposed in a much-publicised speech that Malaysia should become a fully industrialised country by the year 2020. Meanwhile the transition from a newly industrialising to a fully industrialised country has become less attractive. The "Wawasan 2020 (Vision 2020)", as the Prime Minister's speech is known, was updated to move towards a knowledge-based society and economy its primary target (Dr. Mahathir bin Mohamad, Putrajaya 8 March 2001 – advertisement in the New Straits Times 13-04-2001). Malaysia has also been proactive bridging the Digital Divide between the rural and urban areas, investing M\$2.4 billion (about US\$700 million) in the Eight Malaysian Plan and is further allocating M\$3.7 billion (about US\$1 billion) in the Ninth Malaysian Plan (Malaysia Economic Planning Unit, 2006b). There seems to be a lack of interest in studying the digital divide along ethnic lines in Malaysia.

Given the unique political, ethnic and geographical dimensions of equity issues in Malaysia, serious socio-economic inequalities could also undermine political and social stability. Hence, the issue of ethnic-based digital divide in Malaysia is of critical significance. To date, much of the Malaysian government's focus has been to promote the penetration of the Internet particularly amongst its rural community (where half its population resides) and rightly so. Only 10% of rural school children in Malaysia had used the Internet compared to 90% of urban school children (Soh, Chew, & Ridhwan, 2007). Nevertheless, the issue of ethnic-based digital divide in Malaysia warrants serious attention. This study seeks to investigate the ethnic-based digital divide amongst urban youths and to analyse the nature of Internet usage amongst the different ethnic groups in Malaysia.

## 2. Theoretical Background

The myth of the digital generation is empirically described in the so-called "diffusion hypothesis" (explained in Peter and Valkenburg, 2006). Rogers (2003)'s Diffusion of Innovations is hailed as a widely used framework is claimed to be most appropriate in the area of technology diffusion and adoption, particularly in the educational environment (Dooley, 1999). According to Rogers (2002), adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (p. 177). Rogers defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

According to this "diffusion" hypothesis, sociological background variables no longer play a role in explaining the digital divide because of the current pervasiveness of new technologies in the lives of young people. On the other hand, the differentiation hypothesis claims that sociological variables continue to be important predictors, including for the digital generation. Empirical research on young people (Peter and Valkenburg, 2006; Livingstone and Helsper, 2007; Hargittai and Hinant, 2008) indicates that the differentiation hypothesis seems more plausible than the diffusion hypothesis, even among young people.

Internet use can be seen as a form of cultural capital. According to North, Snyder and Bulfin (2008, p. 898), "Cultural capital [...] consists of academic qualifications, achievements and credentials awarded for people's efforts in education and occupation." For youths whose parents have higher cultural capital, acquiring cultural capital is easier and this often translates to a better social and economic position. Internet use can be related to cultural capital and forms as such a part of the possibilities of social mobility among young people. This article assesses whether PC ownership, Internet access and use among youth in Malaysia are influenced by social and cultural variables. It will therefore be possible to identify whether PC ownership, Internet access and use indeed

imply a reproduction of the existing social and cultural situation.

### 3. Methodology

2,083 surveys were collected from 16 randomly-chosen schools in four randomly selected states (Penang, Kuala Lumpur, Melaka and Kelantan) in Peninsular Malaysia. The researcher administered the survey face-to-face at the schools and obtained a 100% response rate. The respondents comprise mainly of 15 – 17 years old school children. Stringent data cleanup was carried out by eliminating incomplete answers and suspicious responses. This resulted in 1,639 valid responses for analysis.

SPSS software is used to conduct univariate analysis and where possible, multivariate analysis. Multivariate analysis, MANOVA is used to analyse the data as we want to analyse several dependent variables simultaneously.

### 4. Data Analysis

The profile of the sample data is shown in Table 1. The number of boys and girls respondents was roughly equivalent (boys 47%, girls 53%). The ethnic composition in Malaysia as a whole is as follows: Malays and indigenous people 61.4%, Chinese 23.7%, Indians 7.1% and others 7.8% (Central Intelligence Agency, 2004). There were higher proportions of Chinese in the data collected because they tend to reside in urban areas in Malaysia (Anand, 1983; Crouch, 2001). There were marginally older children (40.6% aged 17 and above, compared with 31.7% aged 16, and 27.7% aged 15 and below). There were more Science Stream students represented in the study data. On average, the respondents were online for 10 hours a week (std deviation = 14) and have three and the half years of Internet experience (std deviation = 2.4). This is comparable to the Malaysian Communications and Multimedia Commission's (2008) survey, which reported that Malaysian home user spend an average of 12 hours a week online. Almost 60% of the respondents had home Internet access, with virtually 50% having broadband access. Home was the most frequent place of access to the Internet (52%), followed by cybercafés (34%). In all, 22% of the teenagers used the Internet 5 days or more a week for more than 14 hours a week, while 15% of them were online for more than 20 hours a week.

Table 1. Profile of survey respondents

Demographic Variables	n	Valid %
<b>Gender</b>		
Boys	857	46.6
Girls	882	53.4
<b>Age</b>		
< 15	22	1.2
15	559	30.5
16	558	30.4
17	695	37.9
<b>Ethnicity</b>		
Malay	1163	63.4
Chinese	521	28.4
Indian	122	6.6
Others	29	1.6
<b>Religion</b>		
Islam	1097	63.6
Buddhism	426	24.7
Hinduism	88	4.8
Christianity	100	5.4
Others	15	0.9
<b>Form</b>		
3	575	31.3
4	559	30.4
5	700	38.2
<b>Class Stream</b>		
Science	864	48.6
Non-Science	351	19.8
Form 3	562	31.7

**Parent's Highest Education Level**

None	20	1.1
Primary Education	99	4.8
Secondary Education	609	33.1
Certificate/ Diploma	252	13.7
Degree and above	279	15.2
Don't Know	590	32.1

**Use Internet**

Yes	1581	86.1
No	255	13.9

**Have computer at home**

Yes	1260	78.1
No	353	21.9

**Have Internet Connection at Home**

Dial-Up	199	12.3
Broadband	726	45
No connection	688	42.7

**Most Frequent Place of Use**

Home	843	52.3
Cybercafé	546	34
School	127	7.9
Friend/Relative's House	92	5.7
Unspecified	5	0.3

**States**

Kelantan	483	26.3
Kuala Lumpur	459	25
Melaka	518	28.2
Penang	379	20.6

21% of the youths do not have computer at home. There is a significant difference in PC home ownership and type of Internet access between the three ethnic groups of youths (Refer to Table 2). Of these youths who do not have computer at home, 86% of them are Malays. 42% of the youths have no access to the Internet at home, of which Malays make up 84.9%. Only 30% of Malays enjoyed broadband Internet access, compared to 74% Chinese and 51% Indians. Multivariate Manova analysis indicates that there is a statistically significant difference in the nature of Internet usage, specifically frequency, duration and experience between the different ethnic groups ( Pillai's trace ( $p < 0.001$ ) and Roy's largest root ( $p < 0.001$ )). Post-hoc analysis indicated there are significant differences in the frequency accessing Internet between the three main races. Indeed, the Chinese accessed the Internet more frequently; almost double the frequency of Malays (4.2 days a week compared with 4.2 days a week for the Malays and 3.3 days a week for the Indians; refer to Table 3). For the online duration, post-hoc analysis indicated significant differences between the Chinese and two main races. The Chinese were online more than double the duration of the Malays and Indians (16.2 hours compared with 7.17 hours for the Malays and 6.7 hours for the Indians). For the online experience, post-hoc analysis indicated significant difference between the Chinese and the Malay (but not the Indian). The Chinese had more online experience (4.0 years compared with 3.2 years for the Malays and 3.8 years for the Indians). These figures seem to indicate a substantial digital divide both in terms of access to the Internet as well as the extent of usage, exists amongst the various ethnic groups in Malaysia, which may not bode well for the country.

Table 2. Non-internet use by ethnicity

	Malays	Chinese	Indians	Chi-Square
Computer at home?				
Yes	700 (70%)	439 (94%)	89 (81%)	$\lambda^2=1.117E2$ , df=2, p<0.001
No	294 (30%)	28 (6%)	19 (19%)	
Internet Connection at home?				
No	541 (59%)	57 (12%)	39 (36%)	$\lambda^2=2.91E2$ , df=4, p<0.001
Dial-Up	105 (11%)	63 (14%)	14 (13%)	
Broadband	272 (30%)	338 (74%)	55 (51%)	

Table 3. Internet use by ethnicity

	Mean Values			Multivariate Test
	Malays	Chinese	Indians	
Days use Internet (a week)	2.48	4.2	3.3	Pillai's trace p<0.001
Duration Online (a week)	7.17	16.2	6.7	Wilks' lambda p<0.001
Online Experience (in years)	3.2	4.0	3.8	Hotelling's trace p<0.001 Roy's largest root p<0.001

Table 4 indicates there is a significant difference in the Internet penetration rate between the Malays and Chinese, with more than 90% of non-Malays compared to 83% Malays online. Of the youths who are not online, 78% of them are Malays. Multivariate Manova analysis indicates that there are significant differences between the races in terms of places of access to the Internet (refer to Table 5). While Chinese accessed the Internet more often at home, Malays accessed the Internet more at cybercafés and schools (refer to Table 5.0).

Table 4. Internet penetration by ethnicity

	Malays	Chinese	Indians	Chi-Square
Use Internet?				
Yes	964(83%)	472(91%)	116(95%)	$\lambda^2=26.734$ , df=2, p<0.001
No	199(78%)	49 (9%)	6 (5%)	

Table 5. Place of access by ethnicity

	Mean Values (Likert Scale)			Multivariate Test
	Malays	Chinese	Indians	
Used Internet at home?	2.26	3.97	2.99	Pillai's trace p<0.001
Use Internet at cybercafés	2.70	1.89	2.42	Wilks' lambda p<0.001
Use Internet at schools	2.14	1.69	1.70	Hotelling's trace p<0.001
Use Internet at friends/ relatives homes	1.95	2.14	2.16	Roy's largest root p<0.001

Analysing the types of Internet activities reveals there was significant difference in the types of online activities between the ethnic groups (refer to Table 6). Chinese used more than double the time in online gaming, chatting and music, and significantly more time in social sites and gathering online information. Multivariate analysis indicates there were significant differences in the youths' attitudes towards the Internet and involvement in risky online activities (refer to Table 7 & 8). Posthoc analysis also reveals that the Chinese participated significantly more in intentional violent games and gambling (both intentional and unintentional) than the Malays and Indians. However, there were no differences detected in the online pornography (both intentional and unintentional) activities between the three ethnic groups. Possibly due to the limited usage of the Malays and Indians, posthoc comparison reveals that the Malays and Indians ranked the Internet significantly more helpful to studies higher than the Chinese.

Table 6. Type of internet usage by ethnicity

	Mean Values (Hrs Used)			Multivariate Tests
	Malays	Chinese	Indians	
Gaming	1.36	4.9	1.5	Pillai's trace $p < 0.001$
Chatting	1.2	4.8	1.8	Wilks' lambda $p < 0.001$
Social Sites	2.1	4.0	2.2	Hotelling's trace $p < 0.001$
Information	1.3	1.9	1.4	Roy's largest root $p < 0.001$
Music	1.6	3.4	1.8	

Table 7. Attitudes towards the internet by ethnicity

	Mean Values (Likert Scale)			Multivariate Tests
	Malays	Chinese	Indians	
Help Studies	4.1	3.8	4.1	Pillai's trace $p < 0.001$
Help Friendship	3.6	3.8	3.7	Wilks' lambda $p < 0.001$
Help Family	3.3	3.1	3.0	Hotelling's trace $p < 0.001$
Purchase Intention	3.1	3.0	3.2	Roy's largest root $p < 0.001$

Table 8. Negative internet usage by ethnicity

	Mean Values			Multivariate Tests
	Malays	Chinese	Indians	
Intentionally playing violent games	1.9	2.2	2.0	
Intentionally viewing pornography	1.6	1.6	1.7	
Intentionally chatting with strangers	2.0	2.3	2.1	Pillai's trace $p < 0.001$
Intentionally gambling	1.1	1.3	1.2	Wilks' lambda $p < 0.001$
Unintentionally playing violent games	1.8	1.9	1.6	Hotelling's trace $p < 0.001$
Unintentionally viewing pornography	1.8	1.8	1.8	Roy's largest root $p < 0.001$
Unintentionally chatting with strangers	2.0	2.2	1.9	
Unintentionally gambling	1.2	1.4	1.1	

## 5. Discussion

Given the key role of the Internet to future economic prosperity as well as the significance of ethnicity in Malaysia, ethnic-based digital divide is a critical issue that should be studied. The findings of this study reveal that even in urban areas, a digital divide exists between Malays and Chinese and Indians. The digital divide is not just in terms of access, but also in terms of the extent of usage. The data from this study reveals that Chinese youths used the Internet more frequently, have more experience and are online for twice the duration of Malays and Indians (16 hours a week for the Chinese compared to 7 hours for the Malays and Indians).

Nevertheless, more online usage may be a two edged sword. The Chinese youths also spend significantly more time on productive activities such as gathering online information as well as seemingly non-productive activities such as online gaming, chatting, social sites and music, playing violent games and gambling. In terms of viewing the Internet as a tool to help in studies, Malays and Indians hold a higher perspective than the Chinese. Heavy online users are reported to be at greater risks for sexual solicitation (K. J. Mitchell et al., 2003). An increasingly number of unfortunate incidents are been attributed to the Internet (SkyNews, 21012; AFP, 2009; Khoo et al., 2001; The New Paper, 2009; The Sun, 2008). Sexual liaisons, teenage pregnancies, and even rapes have been attributed to the Internet (Chong, 2008; Finkelhor et al., 2001; Reuters, 2007b; The Nation, 2008; The Strait Times, 2009b). In one incident, three boys aged between 8 and 12 year-old after viewing cyber pornography, raped a 7 year-old girl (The Nation, 2008). A study on 437 participants concluded that Internet access significantly influenced the earlier initiation of sexual intercourses amongst youths (Kraus & Russell, 2008). The rising trend of negative incidents associated with the Internet warrants serious attention (The Strait Times, 2009b). This study shows that Chinese are significantly more liable to participate in online violent gaming and

gambling. This may or may not be a cultural biasness, and such socially negative activities may influence other youths. Thus, while policy makers should think of how to increase the Internet usage of Malay and Indian youths, they should also consider how to minimize the negative online consequences.

Perhaps, schools, colleges, and universities could incorporate the Internet into their curriculum and as part of their teaching channel. For instance, some school homework could be designed such that students are required to gather information online. This would increase the online information motivation of adolescents. Furthermore, in the current H1N1 flu epidemic, some educational institutions had to close classes. With the incorporation of the Internet into the education curriculum, lessons could still be conducted while the schools remain close.

Intervention by authorities might be required to curb online pornography and gambling. Some government or non-governmental organizations in China and Britain has already taken action such as UK's Internet Watch Foundation (Lee, 2007; Staff Reporter, 2008; The Star, 2009). The UK Internet Watch Foundation allows members of the public to report potential illegal online content, specifically on child sexual abuse and racial hatred websites. The Foundation works in partnership with the online industry, law enforcement, government, the education sector, charities, international partners and the public to minimize such contents. Likewise, Malaysia could set up such a body to allow members of the public to report inappropriate sites and to work in partnership with such organizations to minimize inappropriate online content and shutdown offensive sites. Agreement and coordination will be required at international levels, particularly the United Nations to enforce such actions.

Nevertheless, there is a limit to the effectiveness of external censorship and parental monitoring. The Internet is a neutral technology instrument that could be used positively or negatively. The key determinant whether the Internet is used positively or negatively is the motivations of users. Perhaps, a more effective way would be to impart the right moral and religious values to children. Conscience, core values and internal compass can provide better guidance and motivation, compared to external monitoring. This is a vital area that parents, religious organisations, and schools need to be aware of so that they can cultivate right values into their children. This would resonate with the conservative beliefs of Malaysia, particularly Muslims.

As everyone has 24 hours each day, online activities could reduce participation in other healthy activities such as physical sports and outdoor games. Some studies have suggested that the time displacement effects of the Internet result in loneliness, poor posture, lower academic results, vision problems, and obesity (Healy, 1998; Nie & Erbring, 2000; Subrahmanyam, Greenfield, Kraut, & Gross, 2001). Furthermore, many studies have indicated that some people use the Internet too much and become addicted to it (Choi, 2001; K. S. Young, 1996; P. C. H. Soh, Chew, & Ang, 2008; Young, 1998). Young people are particularly vulnerable to the Internet (Finkelhor, Mitchell, & Wolak, 2000; 2001).

This survey has highlighted the digital divide by ethnic groups. It is unclear whether the digital divide could be primarily driven by income levels. A number of studies in America had found that there are differences in Internet usage amongst ethnic groups even after removing financial barriers to Internet access (L. A. Jackson et al., 2005; Kraut, Scherlis, Muckhopadhyay, Manning, & Kiesler, 1996). Further studies and analysis could be undertaken in Malaysia to determine whether the ethnic-based digital divide persists when controlling for income.

Finally, this study found that 6% of urban youths are not using the Internet. Of an estimated population of 1.3 million urban secondary schooling youths, this constitutes 76,080 young Malaysian lives. Studies should be undertaken to understand the reasons they are not taking up the Internet, whether it is due to the lack of interest, the language medium, or poverty.

## 6. Conclusions

Comparative research worldwide (Hasebrink et al., 2009, p. 21) shows that there is evidence supporting the hypothesis of a correlation between digital access and ethnicity in many countries. Our research adds evidence to this finding: ethnicity is also importantly related to the digital divide. In conclusion, this study reveals that although 90% of urban youths in Malaysia use the Internet, a Digital Divide continues to persist along ethnic lines. There are huge discrepancies on the various ethnic groups' home computer ownership and Internet connections. Furthermore, the Digital Divide could be widening based on the nature of access and usage. Given the key role of the Internet for economic prosperity as well as the significance of ethnicity in Malaysia, more studies of ethnic-based digital divide should be undertaken. Digital divide is a complex issue and more research can illuminate why the gaps exist and how they create differences in communication practices and benefits for various ethnic groups.

## References

- Abdullah, F. (1997). *Affirmative action policy in Malaysia: To restructure society, to eradicate poverty*. International Centre for Ethnic Studies.
- Anand, S. (1983). *Inequality and poverty measurement in Malaysia: Measurement and decomposition*. World Bank Research.
- Anderson, R., Bikson, T., Law, S., & Mitchell, B. (1995). *Universal access of e-mail: feasibility and societal implications*. Santa Monica, California: Rand Corp.
- Central Intelligence Agency. (2004). *The world fact book*. Retrieved March 23, 2009, from <https://www.cia.gov/library/publications/the-world-factbook/print/my.html>
- Choi, Y. J. (2001). Investigating Koreans' internet use patterns and motivations, and exploring vulnerability of internet dependency. Unpublished Doctor of Philosophy, The University of Southern Mississippi.
- Cooper, J. (2006). The digital divide: The special case of gender. *Journal of Computer Assisted Learning*, 22, 320-334. <http://dx.doi.org/10.1111/j.1365-2729.2006.00185.x>
- Crouch, H. (2001). Managing ethnic tensions through affirmative action: The Malaysian experience. In N. J. Colletta, T. G. Lim, & A. Kelles-Viitanen (Eds.), *Social cohesion and conflict prevention in Asia: Managing diversity through development*. Washington, D.C.: World Bank.
- Department of Statistics Malaysia. (2009). *Population (Updated 31/07/2009)*. Retrieved October 15, 2009, from [http://www.statistics.gov.my/portal/index.php?option=com\\_content&view=article&id=50%3Apopulation&catid=38%3Aakaystats&Itemid=11&lang=en](http://www.statistics.gov.my/portal/index.php?option=com_content&view=article&id=50%3Apopulation&catid=38%3Aakaystats&Itemid=11&lang=en)
- Dooley, K. E. (1999). Towards a holistic model for the diffusion of educational technologies: An integrative review of educational innovation studies. *Educational Technology & Society*, 2(4), 35-45.
- Evers, H-D, & Gerke, S. (2004). Closing the Digital Divide: Southeast Asia's Path towards a Knowledge Society paper presented at Focus Asia, Centre for East and South-East Asian Studies public lecture series, 25-27 May, 2004.
- Finkelhor, D., Mitchell, K. J., & Wolak, J. (2000). *On-line victimization: A report on the nations' youth*. Alexandria VA: National Centre for Missing and Exploited Children, 699 Prince Street, Alexandria VA.
- Finkelhor, D., Mitchell, K. J., & Wood, J. (2001). *Highlights of the youth Internet safety survey*. Washington, DC: U.S. Department of Justice.
- G8. (2000). *Okinawa charter on global information society*. G8.
- Hargittai, E., & Hinant, A. (2008). Digital inequality. Differences in young adults' use of the internet, *Communication Research*, 35(5), 602-621. <http://dx.doi.org/10.1177/0093650208321782>
- Hasebrink, U., Livingstone, S., Haddon, L., & O' Lafsson, K. (2009) *Comparing children's online opportunities and risks across Europe: Cross-national comparisons for EU Kids Online*. LSE: London: EU Kids Online (Deliverable D3.2, 2nd edition).
- Healy, J. M. (1998). Failure to connect: How computers affect our children's minds: for better or worse. *The Phi Delta Kappan*, 81(5), 1-11.
- Hoffman, D. L., & Novak, T. P. (1998). Bridging the racial divide on the Internet. *Science*, 280, 390-391. <http://dx.doi.org/10.1126/science.280.5362.390>
- Hoffman, D. L., Novak, T. P., & Schlosser, A. (2000). The evolution of the digital divide: How gaps in Internet access may impact electronic commerce. *Journal of Computer-Mediated Communication*, 5(3).
- Jackson, L. A. (2008). Adolescents and the Internet. In R. D., & J. P. (Eds.), *The changing portrayal of American youth in popular media* (pp. 377-410). New York: Oxford University Press.
- Jackson, L. A., Ervin, K. S., Gardner, P. D., & Schmitt, N. (2001). The racial digital divide: Motivational, affective, and cognitive correlates of Internet use. *Journal of Applied Social Psychology*, 31(10), 2019-2046. <http://dx.doi.org/10.1111/j.1559-1816.2001.tb00162.x>
- Jackson, L. A., Von Eye, A., Biocca, F. A., Barbatsis, G., Zhao, Y., & Fitzgerald, H. E. (2005). How low-income children use the Internet at home. *Journal of Interactive Learning Research*, 16(3), 259-272.
- Jackson, L. A., Von Eye, A., Biocca, F. A., Barbatsis, G., Zhao, Y., & Fitzgerald, H. E. (2006a). Children's Home Internet Use: Antecedents and Psychological, Social and Academic Consequences. In R. E. Kraut, M.

- Brynin, & S. Kiesler (Eds.), *Computers, phones, and the Internet: Domesticating Information Technology*. New York: Oxford University Press.
- Jackson, L. A., Von Eye, A., Biocca, F. A., Barbatsis, G., Zhao, Y., & Fitzgerald, H. E. (2006b). Does home Internet use influence the academic performance of low-income children? *Development Psychology, 42*(3), 429-434. <http://dx.doi.org/10.1037/0012-1649.42.3.429>
- Jackson, M. (2007). Exploring gender, femininism and technology from a communication perspective: An introduction and commentary. *Women's Studies in Communication, 30*(2), 149-156.
- Jenkins, H. (2004). The myths of growing up online. Alarmist and polarized rhetoricis distorting important new findings about the risks and benefits of children's use of the Internet. *Technology Review*. Retrieved from <http://www.technologyreview.com/Biotech/13773/>
- Jones, S., Johnson-Yale, C., & Millermaier, S. (2009). U.S. college students' Internet use: Race, gender and digital divides. *Journal of Computer-Mediated Communication, 14*, 244-264. <http://dx.doi.org/10.1111/j.1083-6101.2009.01439.x>
- Young, K. S. (1996). Internet Addiction: The emergence of a new clinical disorder. Paper presented at the 104th Annual Meeting of the American Psychological Association, Toronto, Ontario, Canada.
- Koss, F. A. (2001). Children falling into Digital Divide. *Journal of International Affairs, 55*(1), 75-90.
- Kraut, R., Scherlis, W., Muckhopadhyay, T., Manning, J., & Kiesler, S. (1996). The HomeNet field trial of residential Internet services. *Communications of the ACM [online], 39*(12), 55-63. <http://dx.doi.org/10.1145/240483.240493>
- Lee, G. E. (2000). Social and Cultural Issue No. 1, Institute of Southeast Asia Studies. ISSN- 0218-8961.
- Lee, M. (2007, July 17). China clamps down on teenage Internet gaming. *Asiaone*.
- Lei, J., & Zhou, J. (2012). Digital Divide: How do Home Internet Access and Parental Support affect student outcomes? *Education (Basel), 2*, 45-53.
- Liau, A. K., Khoo, A., & Ang, P. H. (2005). Factors influencing adolescents engagement in risky Internet behavior. *CyberPsychology & Behavior, 8*(6), 513-520. <http://dx.doi.org/10.1089/cpb.2005.8.513>
- Livingstone, S., & Bober, M. (2005). *UK Children Go Online*. London: The London School of Economics and Political Science.
- Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: children, young people and the digital divide. *New Media and Society, 9*(4), 671-696. <http://dx.doi.org/10.1177/1461444807080335>
- Malaysia Economic Planning Unit. (2006a). *Eighth Malaysia Plan*. KL, Malaysia: Malaysia Economic Planning Unit.
- Malaysia Economic Planning Unit. (2006b). *Ninth Malaysia Plan*. KL, Malaysia: Malaysia Economic Planning Unit.
- MCMC. (2008). *Household use of the Internet Survey 2008*. Cyberjaya: Malaysian Communications and Multimedia Commission.
- Mullis, R. L., Mullis, A. K., & Cornille, T. A. (2007). Relationships between identity formation and computer use among black and white emerging adult females. *Computers in Human Behavior, 23*, 415-423. <http://dx.doi.org/10.1016/j.chb.2004.10.019>
- Nie, N. H., & Erbring, L. (2000). *Internet and society*. Stanford, CA: Stanford University.
- North, S., Snyder, I., & Bulfin, S. (2008) Digital tastes: Social class and young people's technology use. *Information, Communication and Society, 11* (7), 895-911. <http://dx.doi.org/10.1080/13691180802109006>
- OECD. (2001). *Understanding the digital divide*. Paris: Organisation for Economic Co-operation and Development (OECD).
- Peter, J., & Valkenburg, P. M. (2006). Adolescents' internet use: Testing the 'disappearing digital divide' versus the emerging digital differentiation' approach'. *Poetics, 34*, 293-305. <http://dx.doi.org/10.1016/j.poetic.2006.05.005>
- Roberts, D., Foehr, U., & Rideout, V. (2004). *Kids and media in America*. New York: Cambridge University Press.
- Rogers, E. M. (1983). *Diffusion of Innovations*. New York: Free Press.

- Selwyn, N. (2004). Reconsidering political and popular understandings of the digital divide. *New Media & Society*, 6, 341-362. <http://dx.doi.org/10.1177/1461444804042519>
- Soh, P. C-H., Chew, K. W., & Ridhwan, F. (2007, November 19-21). Preliminary findings of Internet usage amongst youths in Malaysia. Paper presented at the Conference of the Asia Pacific Sociological Conference, Penang, Malaysia.
- Soh, P. C. H., Chew, K. W., & Ang, P. H. (2008, June 14-16). Internet usage and addiction amongst urban youths in Malaysia. Paper presented at the The International Conference on Communication and Media 2008, Kuala Lumpur, Malaysia.
- Staff Reporter. (2008, January 26). *Suicide sites to be investigated*. The Sun, UK.
- Sky News. (2012, February 3). *Gamer dies at Web Café- But noone notices*. Retrieved from <http://news.sky.com/story/924152/gamer-dies-at-web-cafe-but-no-one-notices>
- Subrahmanyam, K., Greenfield, P., Kraut, R., & Gross, E. (2001). The impact of computer use on children's and adolescents' development. *Applied Developmental Psychology*, 22, 7-30. [http://dx.doi.org/10.1016/S0193-3973\(00\)00063-0](http://dx.doi.org/10.1016/S0193-3973(00)00063-0)
- The Star. (2008). *May 13, 1969: Truth and reconciliation*. The Star.
- The Star. (2009, January 23). *China closes down 1,250 sites in online porn crackdown*. The Star.
- United Nations. (2007). *World summit on the information society*. Retrieved February 13, 2007, from <http://www.itu.int/wsis/basic/about.html>
- USC ASCDF. (2005). *The digital future report 2005: Surveying the digital future: Year five*. Los Angeles: University of Southern California.
- World Bank. (1999). *World Development Report 1998-99: Knowledge for Development*. New York, Oxford University Press.
- Young, J. R. (1998). Students are unusually vulnerable to Internet addiction, article says. *The Chronicle of Higher Education*, 44(22).
- Zamaria, C., & Fletcher, F. (2007). *Canada Online: Year Two Highlights, 2007*. Canada Internet Project.