Akademika 81(1) 2011: 93-100

Nota Penyelidikan / *Research Note*

Ethnic-based Digital Divide and Internet Use Amongst Malaysian Students

Jurang Digital Berdasarkan Etnik dan Penggunaan Internet di Kalangan Pelajar Malaysia

Patrick C-H, Soh, Kok Wai, Chew, Chettiar Arumugan, Veeri, & Peng Hwa, Ang

ABSTRAK

Kajian telah menunjukkan bahawa bukan sahaja terdapat jurang digital berdasarkan pendapatan, tetapi juga berdasarkan etnik. Isu etnik adalah penting semenjak kelahiran negara Malaysia. Oleh kerana lebih daripada 90 peratus remaja yang tinggal di bandar mempunyai kemudahan Internet, adalah dijangkakan bahawa tidak terdapat perbezaan etnik dari segi jurang digital dalam kalangan mereka. Kajian ini dijalankan untuk mengetahui sama ada terdapat jurang digital berdasarkan etnik dalam kalangan remaja bandar di Malaysia setelah mengambil kira pendapatan isi rumah. Satu soal selidik telah ditadbirkan secara rawak ke atas 959 pelajar sekolah daripada dua negeri termaju di Malaysia, iaitu Pulau Pinang dan Wilayah Persekutuan (Kuala Lumpur). Hasil kajian menunjukkan terdapat perbezaan ketara di antara etnik dari segi pemilikan komputer peribadi di rumah and jenis sambungan Internet. Bagaimanapun, kesan perbezaan ini telah dikurangkan melalui kemudahan Internet di kafe siber, sekolah, rumah kawan dan saudara-mara. Kajian ini juga menunjukkan bahawa tidak terdapat perbezaan di antara tiga etnik utama dari segi penggunaan Internet. Terdapat jurang digital berdasarkan jumlah dan kualiti penggunaan Internet. Data menunjukkan bahawa remaja Cina menggunakan Internet dua kali lebih lama jika dibandingkan dengan remaja Melayu dan India. Walau bagaimanapun, penggunaan Internet yang lebih lama tidak semestinya positif kerana merangkumi risiko dan aktiviti negatif seperti permainan Internet yang bersifat ganas, menonton gambar lucah dan perjudian. Artikel ini juga membincangkan cara-cara untuk mengurangkan risiko penggunaan Internet.

Kata kunci: Internet, Malaysia, jurang digital, etnik, pelajar

ABSTRACT

Research had documented the existence of a digital divide not only on the basis of income, but also ethnicity. The issue of ethnicity has always been of paramount importance in Malaysia ever since its birth as a nation. With more than 90 percent of urban youths in Malaysia accessing the Internet, one would not expect to find any ethnic-based differences in digital divide amongst these youths. This study verifies whether any ethnic-based differences in digital divide exist amongst urban school-going youths in Malaysia with and without controlling income levels. A random survey among 959 students from two of the most developed states in Malaysia, Penang, and Federal Territory (Kuala Lumpur) was undertaken. Statistical analysis indicates significant ethnic-based differences exist with regard home personal computer ownership and Internet connection, even with household income accounted for. However, these differences were bridged through alternative places for Internet access like cyber cafés, schools and homes of friends and relatives. This study finds that there are no significant differences in the Internet penetration rate amongst the main three ethnic groups. Nevertheless, there are concerns that a new digital divide could be opening, one that is based on the quantity and quality of access. The data reveals that Chinese youths are online for twice the duration of Malays and Indians. Higher Internet usage may not necessarily be positive as they 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: Internet, Malaysia, digital divide, race, students

INTRODUCTION

The term *digital divide* refers to the inequalities of access and usage to Information and Communication Technologies (ICT), particularly with regards to the Internet between individuals, households, businesses, and geographical areas (OECD 2001). Digital divide warrants serious attention because people, communities and countries without access to ICT face severe economic and social deprivation with little prospects

of catching up. Research has shown that online users gained considerable academic, economic, financial, and social benefits from the Internet (Anderson 1995; Jackson 2006). The issue of digital divide had assumed critical importance in many nations and international organisations concerned with development, such as the World Bank, the United Nations and the Group of 8 (G8) Nations (United Nations 2007; G8 2000).

Despite the considerable resources allocated to bridging the digital divide, it seems that the most effective solution to bridge the digital divide remains undiscovered (Jones et al. 2009). Access to the Internet does not denote usage of the Internet (Selwyn 2004). Hence, differential access is only one aspect of the digital divide. Even when gaps in access are bridged, differences in usage may continue to perpetuate the digital divide (Jackson 2007). A new digital divide could be opening up, one that is based on the quantity and quality of use (Livingston & Bober 2005). Those who use the Internet more and are more proficient will reap greater benefits. Conversely, those who do not use the Internet or are less proficient are at risk of being left behind economically and socially.

RACE AND INTERNET USE

More than a decade of research has documented the existence of a ethnic-based digital divide in Information Technology and Internet use (Hoffman et al. 2000). For example, data from the United States indicated that a very large gap in Internet penetration between different ethnic groups existed. Asian Americans have the highest penetration rates, slightly higher than white citizens. Hispanics and African Americans have considerably much lower access (OECD 2001). Although ethnic-based digital divide in the United States had narrowed through the years, the gap continued to persist even when access is no longer an issue and factors related to Internet usage such as income and education are controlled (Jackson et al 2001; Cooper 2006; Hoffman & Novak 1998; Mullis et al. 2007).

With surveys indicating more than 90 percent of youths are using the Internet (USC ASCDF 2005; Livingstone & Bober 2005; Liau et al. 2005; Zamaria & Fletcher 2007), one would not expect to find ethnic-based digital divide differences amongst youths. Nevertheless, studies suggest there such differences exist (Jackson 2008). For example, a study providing home Internet access to low-income households found African American children using the Internet less than their Caucasian counterparts (Jackson et al. 2006).

Ethnic-based digital divide issues among children have important implications. Research report that media use habits formed early in life persisted throughout adulthood (Roberts et al. 2004). Furthermore, the most devastating consequences of the digital divide could be the long-term impact on today's youths. Lacking access to technology and computer skills could disempowered an entire generation from realising their full potential to contribute to society (Koss 2001).

Malaysia is a country in South-East Asia with a population of 28 million people (Department of Statistics 2009). Ethnicity has always been of paramount interest in Malaysia. To appreciate the depth of Malaysia's fixation on ethnicity, an appreciation of the historical context of the country's birth and subsequent development is required. Prior to independence, the British colonist brought large immigrant minorities from India and China into Malaysia. This resulted in the populations of Malay and non-Malays being almost equal in number when Malaysia became independent. The Chinese (together with the British colonists) dominated the newly independent country's economy, while Malays dominated the government and politics.

Almost every government policy was crafted with preferential priority for the Malays (Crouch 2001). The ethnic discrimination resulted in complaints from the Chinese and Indians, while Malays continued to be deeply frustrated with their continuing economic backwardness. It was in this atmosphere that the May 13, 1969 racial riots broke out in the fledging country resulting in hundreds of lost lives (*The Star* 2008). As a result, the government aggressively launched the New Economic Policy (NEP) to redistribute wealth, employment and educational opportunities amongst the various ethnic groups (Crouch 2001). The NEP was credited to successfully socially re-engineering the Malaysian economy and society (Abdullah 1997). Inevitably, the NEP resulted in restricting Chinese businesses and limiting employment opportunities for non-Malays. For example, the expansion of Chinese business into various industries are restricted (Hara 1991), firms are required to use Malay distributors for a minimum of 30 percent of turnover, 30 percent of the equity of firms producing for the domestic market had to be set aside for Malays, employment quotas were setup requiring companies to hire Malays (Hart). 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 program of racial discrimination in favour of one group naturally created deep resentment among the others (Crouch 2001).

As with education, so access to Information Technology could be a key determinant to future economic prosperity. The Malaysia government had been keenly aware of the need to bridge the digital divide and to its credit, has been proactively doing so (Malaysia Economic Planning Unit 2006). In order to bridge the Digital Divide, Malaysia had invested RM2.4 billion (about US$700 million) in the Eight Malaysian Plan and RM3.7 billion (about US$1 billion) in the Ninth Malaysian Pelan (Malaysia Economic Planning Unit 2006). In the Tenth Malaysian Pelan (Malaysia Economic Planning Unit 2010), bridging the digital divide continues to remain a key focus, though there was no specific amounts directly allocated.

To date much of the Malaysian government's focus has been to promote the penetration of the Internet and little attention had been given to racial-based digital divide. Nevertheless, the issue of race-based digital divide is an enormously critical issue in Malaysia. Serious socio-economic inequalities could undermine political and social stability, given the unique political, ethnic and geographical dimensions of equity issues in Malaysia. Thus, this study seeks to investigate ethnic-based digital divide and Internet use amongst urban youths in Malaysia.

METHODOLOGY

Data was collected from 959 students in eight randomly selected urban schools from two of the most developed states in Malaysia, Penang and the Federal Territory (Kuala Lumpur). These two states have among the highest Internet usage rates in Malaysia (Malaysian Communication and Multimedia Commission 2008). The researcher administered the survey face-to-face at the schools and obtained a 100 percent response rate. The respondents comprise of 15 – 17 years old school children. Stringent data clean up was carried out by eliminating incomplete answers and suspicious responses. This resulted in 914 valid responses for analysis. Parent education level is used as the proxy for household income.

DATA ANALYSIS

The demographic profile of respondents is shown in Table 1, while home computer ownership and Internet usage is reported in Table 2. The number of boys and girls respondents was roughly equivalent (boys 48.7 percent, girls 51.3 percent). The ethnic composition in Malaysia as a whole is as follows: Malays and indigenous people 65 percent, Chinese 26 percent, Indians 8 percent and others 1.0 percent (Department of Statistics 2000). In the data collected in this study, there were higher proportions of Chinese and Indians because these two ethnic groups tend to reside in urban areas in Malaysia (Colletta et al. 2001; Anand 1983). There were marginally older children (40.6 percent aged 17 and above, compared with 31.7 percent aged 16 years, and 27.7 percent aged 15 years and below). The proportion of Science Stream students is about the same as the non-Science Stream students. On average, the respondents were online for 12 hours a week (std deviation = 16) and have four years of Internet experience (std deviation = 2.5). 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. Some 60 percent of the respondents had home Internet access, with 50 percent having broadband access. The students' home was the most frequent place of access to the Internet (55 percent), followed by cybercafés (30 percent). In all, 25 percent of the teenagers used the Internet 5 to 7 days a week for more than 14 hours a week, while 18 percent of them were online for more than 20 hours a week.

TABLE 1. Demographic Profile of Survey Respondents

Demographic Variables	N	%
Gender		
Boys	445	48.7
Girls	469	51.3
Age (years)		
14	13	1.4
15	240	26.3
16	290	31.7
17	365	39.9
18	6	0.7
Ethnicity		
Malay	448	49.0
Chinese	329	36.0
Indian	119	13.0
Others	18	2.0
Form		
3	257	28.1
4	284	31.1
5	373	40.8
Class Stream		
Science	331	36.2
Non-Science	328	35.9
Form 3	255	27.9
Parent's Highest Education Level		
None	8	0.9
Primary	33	3.6
Secondary	332	36.3
Certificate/ Diploma	138	15.1
Degree and Above	149	16.3
Don't Know	254	27.8
States		
Kuala Lumpur	461	50.4
Penang	453	49.6

Almost all urban youths in Malaysia use the Internet. However, 58 percent of Malay youths compared with only a mere 15 percent Chinese youths do not have an Internet connection at home. Some 30 percent of Malay youths, compared with only 6 percent of Chinese youths, do not own a computer in their homes (Table 3). Even when controlled for household income, these ethnic-based digital divide in terms of home computer ownership ($F(3,648) = 38.881$; $P < 0.001$; Adjusted R Squared = 0.149) and home Internet connection ($F(3,648) = 87.719$, $P<0.001$; Adjusted R Squared = 0.287) persist.

TABLE 2. Home Computer Ownership and Internet Use Profile

Variables	N	%
Have computer at home		
Yes	713	78
No	201	22.0
Have Internet Connection at home		
Dial-up	93	10.2
Broadband	459	50.2
No Internet connection	362	39.6
Ever used Internet		
Yes	858	93.9
No	56	6.1
Most Frequent Place of Use		
Home	503	55.0
Cybercafé	274	30.0
School	32	3.5
Friend/ Relative's home	45	4.9
Unspecified (including those who do not use the Internet)	60	6.6

On average, Chinese youths spend almost 18 hours online a week, versus 7 hours for Indian and 9 hours for Malay youths (Table 4). The Chinese also accessed the Internet more frequently (4.4 days a week compared with 2.7 days a week for the Malays and 3.35 days a week for the Indians). In addition, the Chinese had more online experience (4.5 years compared with 3.6 years for the Malays and 3.9 years for the Indians). When controlled for household income, these ethnic-based differences continued to persist; The univariate analysis for frequency using Internet ($F(3,643)=29.948$; $P<0.001$; Adjusted R Squared= 0.119), for duration online ($F(3,643)=20.274$; $P<0.001$; Adjusted R Squared= 0.083) and for online experience ($F(3,623)=27.681$; P,0.001; Adjusted R Squared= 0.114). The Chinese were online twice the duration of the Malays and Indians (17.8 hours compared with 8.7 hours for the Malays and 7.1 hours for the Indians). These figures seem to indicate a substantial digital divide amongst the various ethnic groups in Malaysia.

Nevertheless, a deeper examination reveals that the digital divide may not be as disparate as feared. There were no significant differences in the Internet penetration rate between the Malays and Chinese, though some differences existed between Malays and Indians (Table 5). In Malaysia, alternative places of Internet access play a significant role in bridging the digital divide. While Chinese accessed the Internet more often at home, Malays accessed the Internet more at cybercafés and schools (Table 6). On the other hand, Indians use friends or relatives' homes to access the Internet significantly more than the Malays.

TABLE 3. Home Computer Ownership and Internet Connection (%)

	Malays	%	Chinese	%	Indians	%	Chi-Square
Computer at home?							
Yes	700	70	439	94	105	81	$\lambda^2 = 58.831$, df = 2,
No	294	30	28	6	24	19	$p < 0.001$
Internet Connection at home?							
No	261	58	49	15	46	39	$\lambda^2 = 171.306$,
Dial-Up	51	11	29	9	13	11	df = 4, $p < 0.001$
Broadband	136	31	251	76	60	50	

TABLE 4. Internet Use by Ethnicity

	Mean Values			Anova
	Malays	Chinese	Indians	
Days use Internet (a week)	2.65	4.37	3.35	$F(2,830) = 52.673$; $P < 0.001$
Duration Online (a week)	8.65	17.81	7.07	$F(2,826) = 38.551$; $P < 0.001$
Online Experience (in years)	3.59	4.50	3.87	$F(2,804) = 12.368$; $P < 0.001$

TABLE 5. Internet Penetration by Ethnicity

Use Internet?	Malays	%	Chinese	%	Indians	%	Chi-Square
Yes	411	92	311	95	117	98	$\lambda^2 = 7.894$,
No	37	8	18	5	2	2	df = 2, $p < 0.05$

Analysing the types of Internet activities reveals there was no significant difference in online duration for Information-retrieval purposes between the ethnic groups. Chinese spend 1.8 hours on online information gathering, compared with 1.6 hours for Malays and 1.3 hours for Indians. The Chinese participated in online gaming and chatting more than twice the duration of Malays and Indians (Table 7). Chinese youths were also spending significantly more time visiting social-sites and listening to online music than Malays and Indians. On average, Chinese youths spend 5.6 hours on online games, 5.3 hours on chatting, 4 hours on social sites and 3 hours on online music. In comparison, Malays spend 1.5 hours on online games, 1.5 hours on chatting, 2.6 hours on social sites, and 1.8 hours on online music. These time estimates are not concurrent activities as the respondents had been asked to divide the duration for concurrent activities. Profiling the youths on their attitudes towards the Internet reveals that the Malays and Indians ranked the Internet helpful to studies higher than the Chinese. The Chinese ranked the Internet as more helpful to friendship than the Malays (see Table 8). The Chinese participated more in intentional violent games and non-intentional gambling than the Malays and Indians (Table 9).

TABLE 6. Place of Access by Ethnicity

	Mean Values (Likert Scale)			Anova
	Malays	Chinese	Indians	
Used Internet at home?	2.47	4.07	2.96	$F(2,800) = 92.104$; $P < 0.001$
Use Internet at cybercafés	2.81	1.93	2.49	$F(2,792) = 48.758$; $P < 0.001$
Use Internet at schools	2.11	1.65	1.59	$F(2,761) = 28.763$; $P < 0.001$
Use Internet at friends/relatives homes	1.99	2.15	2.29	$F(2,765) = 4.591$; $P < 0.05$

TABLE 7. Type of Internet Use by Ethnicity

	Mean Values (hrs used)			Anova
	Malays	Chinese	Indians	
Gaming	1.53	5.61	1.69	$F(2,830) = 52.673$; $P < 0.001$
Chatting	1.55	5.34	1.97	$F(2,814) = 21.191$; $P < 0.001$
Social Sites	2.61	4.19	2.39	$F(2,814) = 33.573$; $P < 0.001$
Information	1.57	1.81	1.33	$F(2,816) = 0.765$; $P > 0.05$
Music	1.79	3.34	1.58	$F(2,809) = 7.614$; $P < 0.05$

TABLE 8. Attitudes Towards the Internet by Ethnicity

	Mean Values (Likert Scale)			Anova
	Malays	Chinese	Indians	
Help Studies	4.11	3.86	4.12	$F(2,830) = 8.722$; $P < 0.001$
Help Friendship	3.60	3.88	3.81	$F(2,828) = 7.555$; $P < 0.05$
Help Family	3.22	3.09	3.08	$F(2,822) = 1.574$; $P > 0.05$
Purchase Intention	2.96	3.06	3.17	$F(2,826) = 1.646$; $P > 0.05$

TABLE 9. Negative Internet Usage by Ethnicity

	Mean Values			Anova
	Malays	Chinese	Indians	
Intentionally playing violent games	1.98	2.35	1.99	$F(2,836) = 7.110$; $P < 0.05$
Intentionally viewing pornography	1.61	1.65	1.72	$F(2,832) = 0.521$; $P > 0.05$
Intentionally chatting with strangers	2.24	2.36	2.27	$F(2,825) = 1.437$; $P > 0.05$
Intentionally gambling	1.18	1.28	1.20	$F(2,829) = 1.730$; $P > 0.05$
Unintentionally playing violent games	1.81	1.99	1.57	$F(2,831) = 5.529$; $P < 0.05$
Unintentionally viewing pornography	1.88	1.84	1.82	$F(2,829) = 0.211$; $P > 0.05$
Unintentionally chatting with strangers	2.16	2.16	1.98	$F(2,831) = 1.142$; $P > 0.05$
Unintentionally gambling	1.24	1.43	1.16	$F(2,829) = 6.691$; $P < 0.05$

DISCUSSION

Given the key role of the Internet for future economic prosperity as well as the significance of ethnicity in Malaysia, ethnic-based digital divide is a critical issue that should be studied and managed. The findings of this study reveal that alternative places of access play an important role in bridging the ethnic-based digital divide in Malaysia. Although Malays lag far behind the Chinese in home computer ownership and Internet access, because they can access the Internet from cybercafés and schools, the Internet penetration rate amongst the Malays is almost on par with the Chinese (92 percent compared to 95 percent respectively).

Despite the parity in Internet penetration among the races, a new digital divide could be opening up, one that is based on the quantity and quality of use (Livingstone & Bober 2005). The data from this study reveals that Chinese youths used the Internet more frequently and are online for twice the duration of Malays and Indians (17.8 hours a week for the Chinese compared to 8.7 hours and 7.1 hours for the Malays and Indians respectively). This racial-based discrepancy persists even when controlled for household income.

However, the issue may not be simply resolved by increasing access or usage. Increased usage might lead to greater benefits for online users, but also entails more risks. Heavy online users are at greater risks for sexual solicitation (Mitchell et al. 2003). The Internet had lead to an increasing number of unfortunate incidents (Agence France-Presse 2009; The New Paper 2009) such as sexual liaisons, teenage pregnancies, and even rapes (Chong 2008; Finkelhor et al. 2001; Reuters 2007; *The Nation* 2008; *The Straits Times* 2009). For instance after viewing cyber-pornography, three boys aged between 8 and 12 year-old 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 (Karus & Russell 2008). The rising trend of negative incidents associated with the Internet warrants serious attention. Data from this study shows that Chinese are significantly more liable to participate in online violent gaming and unintentional gambling. Chinese also spend twice the duration on online games and music than Malays and Chinese, and also significantly more time on social sites as well as online chatting. Thus, while policy makers should think of how to increase the Internet usage of Malay and Indian youths, they should also consider how to minimise 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 (*The Star* 2009; Lee 2007; *The Sun* 2008). 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 minimise 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 organisations to minimise 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 only 24 hours daily, 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 et al. 2001). Furthermore, many studies have indicated that some people use the Internet too much and become addicted to it (Soh et al. 2008; Young 1998; Choi 2001; Young 1996). In particular, young people are vulnerable to the Internet (Finkelhor et al. 2000, 2001).

Finally, this study found that six percent of urban youths are not using the Internet. Of an estimated population of 1.3 million urban secondary schooling youths, this constitutes 76080 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.

CONCLUSION

In conclusion, this study reveals that while there are huge discrepancies on the various ethnic groups' home computer ownership and Internet connections, the percentage of online youths between the various ethnic groups are about the same. This is due to the vital role played by cybercafés, schools, and access via friends or relatives' homes. Nevertheless, a new digital divide amongst urban youths between the three ethnicities could be opening. This new digital divide is based on the quantity and quality of online access. 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.

Agence France-Presse (AFP). 2009. *South Korea Unveils Steps to Stop Internet-Linked Suicides*, in *AsiaOne*. Singapore.

Anderson, R. et al. 1995. *Universal Access of E-Mail: Feasibility and Societal Implications*. Rand Corp.: Santa Monica, California.

Anand, S. 1983. *Inequality and Poverty Measurement in Malaysia: Measurement and Decomposition*. World Bank Research.

Choi, Y.J. 2001 Investigating Koreans' Internet Use Patterns and Motivations, and Exploring Vulnerability of Internet Dependency, in *Graduate School*. The University of Southern Mississippi.

Chong, E. 2008. Underage Girl Pregnant After Sex with Man on Sentosa beach. *The Strait Times*. Singapore.

Cooper, J. 2006. The Digital Divide: The Special Case of Gender. *Journal of Computer Assisted Learning* 22: 320-334.

Colletta, N.J., Lim T.G. & Kelles-Viitanen, A. 2001. *Social Cohesion and Conflict Prevention in Asia: Managing Diversity Through Development*. Washington, D.C.: World Bank.

Crouch, H. 2001. Managing Ethnic Tensions Through Affirmative Action: The Malaysian Experience. In *Social Cohesion and Conflict Prevention in Asia: Managing Diversity Through Development*. Colletta N.J., Lim T.G., & Kelles-Viitanen, A. (eds.). World Bank: Washington, D.C.

Department of Statistics Malaysia. *Population (Updated 31/07/2009)*. 2009 [cited 2009 15th Oct 2009]; Available from: http://www.statistics.gov.my/portal/index.php?option=com_content&view=article&id=50%3Apopulation&catid=38%3Akaystats&Itemid=11&lang=en.

Department of Statistics Malaysia, 2000. *Census of Population and Housing Malaysia 2000*. Kuala Lumpur: Department of Statistics.

Finkelhor, D., Mitchell K.J., & Wolak, J., *On-line Victimization: A Report on the Nations' Youth.* 2000, National Centre for Missing and Exploited Children, 699 Prince Street, Alexandra VA: Alexandra VA.

_____ . D., Mitchell K.J., & Wood, J. *Highlights of the Youth Internet Safety Survey*. 2001. U.S. Department of Justice: Washington, DC.

G8. 2000. *Okinawa Charter on Global Information Society*.

Hara, F. 1991. *Malaysia's New Economic Policy and the Chinese Business Community.* The Developing Economies, XXIX.

Hart, G. 1994. The New Economic Policy and Redistribution in Malaysia: A Model for Post-Apartheid South Africa? *Transformation* 23: 44-59.

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., & 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).

Hoffman, D. L. & Novak, T. P. 1998. *Bridging the Racial Divide on the Internet. Science* 280: 390-391.

Jackson, L.A., et al. 2006. Does Home Internet Use Influence the Academic Performance of Low-Income Children? *Development Psychology* 42(3): 429-434.

_____ et al. 2006. Children's Home Internet Use: Antecedents and Psychological, Social and Academic Consequences. In *Computers, Phones, and the Internet: Domesticating Information Technology.* R.E. Kraut, Brynin M., & Kiesler S. (eds.). Oxford University Press: New York.

_____ et al. 2001. *The Racial Digital Divide: Motivational, Affective, and Cognitive Correlates of Internet Use. Journal of Applied Social Psychology* 31(10): 2019-2046.

_____ . 2008. *Adolescents and the Internet*, in *The Changing Portrayal Of American Youth In Popular Media.* Oxford University Press: New York.

Jackson, M., 2007. Exploring Gender, Feminism and Technology from a Communication Perspective: An Introduction and Commentary. *Women's Studies in Communication* 30(2): 149-156.

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.

Koss, F.A. 2001. Children Falling Into Digital Divide. *Journal of International Affairs* 55(1): 75-90.

Khoo, A. Lim C.P. & Williams, M. 2001. *Parents and Children's Perceptions of the Dangers of the Internet*. Australian Association for Research in Education.

Kraus, S.W. & Russell, B. 2008. Early Sexual Experiences: The Role of Internet Access and Sexually Explicit Material. *CyberPsychology & Behavior* 11(2): 162-168.

Lee, M. 2007. *China Clamps Down On Teenage Internet Gamin*. Singapore: Asiaone.

Liau, A.K., Khoo A. & Ang, P.H. 2005. Factors Influencing Adolescents' Engagement in Risky Internet Behavior. *CyberPsychology & Behavior* 8(6): 513-520.

Livingstone, S. & Bober, M. 2005. *UK Children Go Online.* Department of Media and Communications. The London School of Economics and Political Science: London.

Malaysia Economic Planning Unit 2006. *Eighth Malaysia Plan*. Malaysia Economic Planning Unit, KL, Malaysia.

_____ . 2006. *Ninth Malaysia Plan*, Malaysia Economic Planning Unit KL, Malaysia.

_____ . 2010. *Tenth Malaysia Plan 2011-2015*. Malaysia Economic Planning Unit: KL, Malaysia.

Malaysian Communications and Multimedia Commission. 2008. *Household Use of the Internet Survey 2008*. Cyberjaya: Malaysian Communications and Multimedia Commission.

Mitchell, K.J., Finkelhor D. & Wood, K. 2003. The Exposure of Youth to Unwanted Sexual Material on the Internet: A National Survey of Risk, Impact, and Prevention. *Youth & Society* 34(3): 330 - 358.

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.

Nie, N.H. & Erbring, L. 2000. *Internet and Society.* Q.S.o. Society, Editor. Standford: Stanford University.

OECD, 2001. *Understanding the Digital Divide*. Organisation for Economic Co-operation and Development (OECD): Paris.

Roberts, D., Foehr, U. & Rideout, V. 2004. *Kids and Media in America*. New York: Cambridge University Press.

Reuters. 2007. Internet Blamed for Shanghai Teen Pregnancies. Beijing: Reuters.

Selwyn, N. 2004. Reconsidering Political and Popular Understandings of the Digital Divide. *New Media & Society* 6:341-362.

Soh, P.C.H., Chew, K.W. & Ang, P.H. 2008. Internet Usage and Addiction Amongst Urban Youths in Malaysia. *The International Conference on Communication and Media 2008*. Kuala Lumpur, Malaysia.

Subrahmanyam, K. et al. 2001. *The* Impact of Computer Use on Children's and Adolescents' Development. *Applied Developmental Psychology* 22:7-30.

The Sun. 2008. Suicide Sites to be Investigated. UK: London, UK.

The Star. 2008. May 13, 1969: Truth and Reconciliation. Kuala Lumpur, Malaysia.

The Star. 2009. *China Closes Down 1,250 Sites in Online Porn Crackdown.* Kuala Lumpur, Malaysia.

The New Paper. 2009. Singapore's Brazen Buayas. Singapore.

The Nation. A. 2008. *Kids Imitating Sex Acts Seen on Web Arrested*. [cited 2008 29/4/2008]; Available from: http://www.nationmultimedia.com/breakingnews/read.php?newsid=30071609.

The Straits Times. 2009. Rise in Teen Sex? Blame the Internet, Says Experts. Singapore.

United Nations. 2007. *World Summit on the Information Society*. [cited 2007 Feb 13]. Available from: http://www.itu.int/wsis/basic/about.html.

USC ASCDF. 2005. *The Digital Future Report 2005: Surveying the Digital Future: Year Five*. University of Southern California: Los Angeles.

Young, J.R. 1998. Students are Unusually Vulnerable to Internet Addiction, Article Says. *The Chronicle of Higher Education* 44(22): A25.

Young, K.S.1996. *Internet Addiction:* The Emergence of A New Clinical Disorder. *104th Annual Meeting of the American Psychological Association*. Toronto, Ontario, Canada.

Zamaria, C. & Fletcher, F. 2007. *Canada Online: Year Two Highlights, 2007*. Canada Internet Project.

Patrick C-H, Soh
Faculty of Management
Multimedia University,
Persiaran Multimedia, 63100,
Cyberjaya, Selangor, Malaysia
HP: 016-2876-266
Chinhooi8@gmail.com

Kok Wai, Chew
Faculty of Management
Multimedia University,
Persiaran Multimedia,
63100 Cyberjaya, Selangor, Malaysia

Chettiar Arumugan, Veeri[a,]
Faculty of Management
Multimedia University,
Persiaran Multimedia,
63100 Cyberjaya, Selangor, Malaysia

Peng Hwa, Ang
Nanyang Technological University
Singapore