The Influence of Gender and Ethnicity on the use of ICT in Higher Education
A Case of Arts and Social Sciences Students in Universiti Malaya

A thesis presented to
the faculty of
the Center for International Studies of Ohio University

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of the requirements for the degree
Master of Arts

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This thesis titled

The Influence of Gender and Ethnicity on the use of ICT in Higher Education

A Case of Arts and Social Sciences Students in Universiti Malaya

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ABSTRACT

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While most studies on ICT use among students have typically focused on students in the field of science and technology, this study focuses on a group that has seldom been studied for its ICT use—students in Arts and Social Sciences. Based on a survey of 32 students conducted at the Faculty of Arts and Social Sciences at Universiti Malaya during December 2006, this study examines the relationships among gender, ethnicity, and students’ ICT use. The findings of this study suggest that the female students spent significantly more time using ICT for study purposes than males. The interviews with faculty members revealed that female students spent more time on studies and were less likely to cheat or plagiarize. However, the study found no such difference between Bumiputra and non-Bumiputra students.

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I still remember the summer of 1991, when my mother took a major decision to go back to school after a gap of 25 years. Her determination was so strong that despite some resistance from my brothers and relatives, she pursued her degree in education and started working as a primary school teacher at the same school in India where my father had served as a principal for eight years before his demise in January 1991. If it was not for the hard work my mother had put in raising my sister and myself, I would certainly not be able to pursue the academic career I have now. My mother’s sacrifices and determination to keep standing in a conventionally patriarchal society has always motivated me to study gender development across the developing world. I owe almost everything I have today to her dedication and perseverance.

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CHAPTER 1: INTRODUCTION

In the summer of 2002, after finishing my graduate program in Development Communication, I received a unique opportunity to work on a study titled ‘Engendering ICT’ (Information and Communication Technology) as a research associate at the Indian Institute of Management, Ahmedabad. This was my first experience of researching socio-cultural issues from a gender perspective, which was both challenging as well as interesting for me. I learned about the immense potential of ICTs and even simple technologies in improving the status of women in society. The global nature of the project made me aware of the importance of socio-cultural factors influencing the use of ICTs by women across different regions.

Later, between November 2003 and August 2005, I became involved in web-publishing an online newsletter titled ‘Information Technology in Developing Countries’. It was during this time that I learned about the tremendous ICT development across the Southeast Asian region, especially Malaysia. I found that the dispersion of technology has been highly uneven around the world. While many people in the developed world appeared to take the availability of computer and the Internet for granted as they had easy access, the people in a number of developing countries who considered these technologies as substantial means for their socio-economic advancement had limited ICT access. However, some of the post-colonial developing countries, like Malaysia, had been able to demonstrate a substantial socio-economic growth as well as had the ability to benefit from the advent of IT (Information Technology). During my graduate studies at Ohio University in 2005-06, I became further interested in Malaysia due to a variety of
reasons, including (but definitely not limited to) its rich wildlife and natural resources, rapid economic and technological growth, and most importantly its cultural diversity.

It was my understanding that for any country or government, education was one of the primary means of socio-economic development, especially for the economically disadvantaged or marginalized groups. Based on my understanding and personal experiences, I became curious about how the education system in Malaysia had responded to the technological advancements during the past two decades and how it related to the overall gender and ethnic development in the country. For me, one way of assessing this was to explore the extent to which the college students with different gender and ethnic backgrounds used computer and Internet in their academic work? Through this research study, I intended to seek an answer to my question.

The introduction and propagation of ICTs had clearly been receiving a lot of attention across various fields the world over. The field of education, too, had been trying to benefit from the potential of the new technology in different parts of the world. However, for some, there was a little evidence of ICT being deployed in the field of education as extensively as it had been in some other fields, such as banking. Oliver noted:

If one was to compare such fields as medicine, tourism, travel, business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the ways they operated in the past. But when one looks at
education, there seems to have been an uncanny lack of influence and far less change than other fields have experienced (Oliver, 2002, p. 1).

Thus, I got further interested in knowing what was happening in a country like Malaysia where education is indeed an important part of the overall IT strategy. I became interested in seeing how female students were making use of the technology (wherever available) for their educational advancement. I also found that while most studies on the use of ICTs so far had primarily focused either on the students in pure sciences or in the fields that typically involved the use of ICTs, such as IT Management, there was almost no accessible literature that focused on Arts and Social Sciences students. Thus, in this study, I planned to focus on the discipline of Arts and Social Sciences (an otherwise less studied group) for its use of ICT.

As mentioned earlier, I had been most interested in the cultural diversity aspect of Malaysia, something that was quite visible in my home country India as well. The Malaysian population could be broadly divided into two major groups, namely, Bumiputra (Malay word for “son of the earth”) and non-Bumiputra. The Bumiputra included Malays and indigenous peoples from the Peninsula, Sabah, and Sarawak. The non-Bumiputra included ethnic Chinese, Indians (primarily of Tamil origin), and other groups, such as Ceylonese Tamils (from Sri Lanka). Among the non-Bumiputra, who formed roughly around 35 percent of Malaysia’s total population in 2004, the Chinese were the largest ethnic group, as they formed almost 24 percent of the country’s population at the time (Jabatan Perangkaan Malaysia, 2004a, p. 37). Pan (2006) reported that Southeast Asia had the highest number of overseas Chinese immigrants in the world
and within Southeast Asia, Malaysia had the largest number of ethnic Chinese (over four million). By 2004, the number of ethnic Chinese had crossed the six million mark (Jabatan Perangkaan Malaysia, 2004a, p. 37). The Chinese were mostly based in urban-centers, especially Kuala Lumpur, and had been involved in various economic activities (Pan, 2006).

With a population of over 1.8 million or seven percent of Malaysia’s total population in 2004, the Indians formed the second largest non-Bumiputera ethnic group in the country (Jabatan Perangkaan Malaysia, 2004a, p. 37). Most of the ethnic Indians were brought to Malaya primarily as rubber-plantation workers and as civil-servants by the British during the colonial rule, many of whom remained in majority numbers near the former plantations areas (also known as the rubber-zones) and also as minorities at urban centers like Kuala Lumpur, and Melaka—an old port city in current day Malaysia famous for its significant trade and strategic location from the earlier times (Arasaratnam, 1979 & Sandhu, 1993). Although an early migration of these groups was evident, the presence of the Chinese and the Indians in large numbers in recent times was mainly a result of British colonization of Malaya and the Straits Settlements (early territories of the British East India Company in the Southeast Asian region including Penang, Melaka, modern day Singapore, and the islands of Dinding and Province Wellesley) and the increased demands for labor on rubber plantations as well as tin mines during the colonial era (between the nineteenth and mid-twentieth centuries). Also, there were “push” factors within China and “pull” factors within Malaya that encouraged many Chinese men to migrate (Suryadinata, 1997, p. 9).
Interestingly, the role of Chinese in the Malayan economy during the British colonial period was much more varied and widespread than either of the native Malays or Indians, who were primarily involved in agriculture, rubber plantation, and administration to some extent. The Chinese were involved in a host of activities ranging from tin mining, transportation, food processing, rubber production, and urban jobs (Pan, 2006). The unequal demographic composition of Malaya and the strategic importance of Chinese, who had sound knowledge of local markets and labor, enabled the Chinese to act as a strong socio-political force as well. The economic opportunities in the new Straits Settlements, thus, enabled the Chinese to take the top spot in the social structure under the British, while the Malays and the Indians followed.

Even after thirteen years of independence from the British, the Malaysian economy in 1970 was still dominated by the British companies and expatriates (63.3 percent) followed by the Chinese (27.2 percent), with a meager 2.4 percent as the Malay share (Pan, 1998). Although the British still dominated the economy, the opportunities for the Chinese to prosper in the new economy were ample. According to Munro-Kua:

At independence, in 1957, Malaya stood second only to Japan in terms of economic development although it can be argued that it had the resources capability to be ahead of the other Non Industrialized Countries (Munro-Kua, 1996, p. 1).

The Chinese were ideally placed to benefit from this situation. This continued domination of Malaysian economy by the Chinese intensified the tension across the Chinese and the native (Malay) population and contributed substantially towards the mass rioting against
the Chinese on May 13, 1969 (Sandhu, 1993; and Pan, 1998). Following the 1969 riots, the Malaysian government deployed the New Economic Policy (NEP) to end poverty and to strike some balance across different ethnic groups. Munro-Kua further noted:

The New Economic Policy was introduced through the Second Malaysian Plan (1971-76) as a strategy to increase Malay participation in the economy. UMNO (the dominant political party in Malaysia) claimed this was to resolve the alleged root cause of the 1969 riots, seen as being derived from too much accommodation to non-Malays which had in turn fostered resentment among the Malays (Munro-Kua, 1996, p. 62).

The steps undertaken within this policy primarily focused on improving the status of Bumiputra and included steps such as expansion of Bumiputra share ownership and employment in various sectors of the economy including various forms of trade (Pan, 1998). Although the Bumiputra included Malays and other indigenous groups, such as the Kadazans, the government reportedly seemed to be biased towards the Malays more than others. In any case, these efforts seemed to have little impact on the problems of lower-income Malay peasants as well as other indigenous groups in rural areas (Fenton, 1999, p. 148). Moreover:

the granting of special privileges to Malays has been opposed in the past by non-Malays such as Chinese and Indians. However, since the May 13th incident, the government has made it illegal for people to raise these issues as they are considered to be sensitive (Othman, 1983, p. 47).
While the disparities existent in the market at the time of 1969 riots eventually started reducing and the Malay share increased almost ten-fold from 2.4 to over 20 percent by the 1990s, it could not surpass the then increasing Chinese share (of almost 45 percent) (Pan, 1998). The government claimed that those improvements were a result of the NEP, but several authors, including Jomo (1994 & 2003), had argued that the pro-\textit{Bumiputra} aspect of the NEP had little to do with the phenomenal economic and technological developments in Malaysia during the past decades.

Over a period of time, especially during Mahathir Mohamad’s leadership, the pro-\textit{Bumiputra} aspect was not emphasized as much as Malaysia’s overall socio-economic progress within the NEP (Jomo, 1994). In 1991, Mahathir delivered his famous speech “Malaysia: The Way Forward” and declared “Vision 2020”—a strategy to attain the status of a developed country by the year 2020 (Jomo, 1994, p. 51). One of the key objectives of this vision was to make Malaysia “a scientific, progressive, innovative and forward-looking society” by the year 2020 (Jomo, 1994, p. 52). Keeping in line with this progressive agenda and to enhance country’s potential to gain from the IT boom Malaysia launched a large-scale IT plan during the mid-1990s. The project started with the establishment of the Multimedia Super Corridor (MSC), which included a physical location as well as a set of policies aimed at making Malaysia a “knowledge-based economy” through the means of ICTs by 2020 (McDaniel, 2002, p. 94).

One of the seven key MSC policies had been to promote the use of ICTs in education at various levels. For instance, at the institutions of primary education, an effort called “Smart School” had been initiated (MSC, 2007). Similarly, it was apparent that the
institutes of higher (especially technical) education had also been receiving growing
attention, and ICTs were becoming an integral part of the higher education system in
Malaysia. However, for some researchers, such as Kamogawa (2003), there was a need to
re-conceptualize the MSC initiative in order to increase female participation in technical
education in Malaysia during the recent times. There was clearly some disparity between
Kamogawa’s argument and Yong & Ng’s (1999) account in which the percentage of
women in IT education programs was fairly high in the early 1990s. In fact, “women
comprised 51.4 percent of total enrollment in the IT field in the seven local universities
for the 1990-1 academic year” (Yong & Ng, 1999, p. 146). This raised a question of
whether or not the implementation of MSC was providing a favorable environment in
terms of increasing or even maintaining the number of female students in IT fields,
although IT was only one of the many areas within the field of technical education.

Just like the economic development or the dispersion of technology, the gender
development also appeared to be highly uneven across different parts of the world.
Although there had been various examples of prominent woman leaders across the
developing world, the overall socio-cultural status of women across most developing
societies continued to be secondary to men due to their (societies’) patriarchal roots.
Things had changed, and were continuously changing, from a gender perspective from
time to time and with different stages of development in a society, but these changes
often appeared to be slow, made a weak impact in the rural regions, and were usually not
radical. For instance, according to UNESCO:
...despite major overall expansion in student enrolments in recent years, access and participation, especially for women, non-urban populations and members of minority groups remain a problem in the region (Asia) (UNESCO, 2003, p.19).

It, thus, seemed quite possible that the disparity reported by Kamogawa might perhaps be visible in an ethnic context, too. As Mohamad noted, Malays understood the value of education through the teachings of Quran, but were worried about the “education provided in schools and institutions of higher learning inculcate new values which are not suitable for the Malays” (1987, p. 18). This resistance, according to Mohamad, contributed towards the poor performance of Malays in technical courses as well as in the job market. Mohamad (1987) also reported that the conventional Islamic education system did not provide much scope for potential scientists or mathematicians. However, during the past few decades, the government had made substantial efforts towards overcoming this issue. For instance, the higher education (technical courses in particular) for the Bumiputra had been subsidized as a result of a pro-Bumiputra policy structure. Moreover, they could also apply for funding for overseas education (Hassan, 2001, p. 13).

As far as more recent studies on ethnicity in Malaysia were concerned, Zainab Nordin had conducted a study in 1997 on the attitude of government employees across all the ministries in Malaysia towards the MSC effort (McDaniel, 2002). Besides many other interesting findings, the study results indicated that there were “striking differences among Malaysian ethnic groups in their technical capabilities” (cited in McDaniel, 2002, p. 98). That is, only about 18 percent of Malays and 22 percent of the Indians were
experts or were very familiar with computers in terms of their skills, as opposed to 46 percent of the Chinese employees (cited in McDaniel, 2002, p. 98). However, in light of the pro-Bumiputra policy environment discussed earlier (Munro-Kua, 1996 and Hassan 2001), it could be argued that this trend might not be similar across the university level Arts and Social Sciences students in the year 2006. Likewise, I would argue that Kamogawa’s (2003) study that focused on technical education and showed low female participation was perhaps only reflective of the fact that the participation of female students in technical education was low, and not that the female students overall were not making use of the available technology in their education (especially in the field of Arts and Social Sciences).

A study carried in Israel by Soker (2005) focused on ICT, gender as well as ethnicity. The survey looked at ICT use in an Open University environment over a period of seven years and found a significant gap between male and female users. However, there had been no such studies conducted in Malaysia that focused on ethnicity, gender, higher education, as well as ICT, while focusing on Arts and Social Sciences’ students.

In sum, Malaysia appeared to be a fascinating ground to explore the relationship between ethnicity and ICT use in higher education. Also, the issue of gender equality across different ethnic groups in Malaysia offered sufficient scope for a detailed inquiry, and I was really interested in studying how female students from diverse cultural backgrounds would perceive the ICTs and their potential in their educational as well as long-term advancement. As the MSC had been implemented for over a decade, I felt it was an apt time to start assessing the social outcomes on the ground. I chose to go to
Univerisiti Malaya at Kuala Lumpur during the month of December 2006 to conduct the fieldwork for this study. Univerisiti Malaya was a national university with over 30,000 students at undergraduate and graduate levels, spread across different disciplines. Besides pure sciences, a number of students were enrolled at the Faculty of Arts and Social Sciences, which, obviously, was the focus of my study. My fieldwork included collection of feedback from students as well as instructors at the Faculty of Arts and Social Sciences, Univerisiti Malaya.

Aim

This study aimed to develop an understanding of the influence of gender and ethnicity on the use of ICT among the students in the Faculty of Arts and Social Sciences in Univerisiti Malaya in Kuala Lumpur—the capital of Malaysia.

Research Questions

The general aim of this study as well as a review of available literature presented in the next chapter led me to the following specific research questions in the context of Arts and Social Sciences’ students at Univerisiti Malaya:

1. What was the pattern shown by the self-reported use of ICT for academic purpose, in terms of weekly hours spent on computer for study purposes, across the students from different ethnic backgrounds?

2. What was the pattern shown by the self-reported use of ICT for academic purpose, in terms of weekly hours spent on computer for study purposes, across male and female students?
3. Was there a strong correlation between gender and access, defined by availability of computer at home as well as university, to ICT?

4. Was there a strong correlation between ethnicity and access, defined by availability of computer at home as well as university, to ICT?

This study tried to assess the ICT usage patterns in terms of two different groups (Bumiputra as well as non-Bumiputra, including Chinese and Indians) as well as in terms of male and female users. The analysis of results would then give a clearer picture of how the government policies and programs eventually translate at the ground. In other words, this would help understand the case of students at an Arts and Social Sciences faculty in terms of their background and ICT use. This study had been perceived as a small step and tries to supplement earlier research done in the area of gender, ethnicity, and ICT.
CHAPTER 2: REVIEW OF LITERATURE

This chapter is divided into two parts. The first part involves a review of literature on the use of ICT (Information and Communication Technology) in higher education, and also covers some studies done from gender and ethnic perspectives. The second part examines available literature pertaining to the issue of ICT, gender and ethnicity in higher education in the Malaysian setting.

ICT, Gender, and Ethnicity in Higher Education

While Oliver (2002) observed that the inclusion and dissemination of ICT in the field of education was less when compared to other fields, this trend was apparent across the developing as well as the developed countries as well. However, there seemed to be a considerable amount of research done on the use of ICT in education as far as some of the developed countries were concerned. For instance, Collis & van der Wende (2002) conducted an international comparative study on the institutional use of ICT in higher education across Australia, Finland, Germany, Netherlands, Norway, UK, and the US. The survey included decision-makers, instructors, and support-staff across the six developed countries. The findings of this study suggested a substantial use of emailing as well as web-resources as important supplements to classroom teaching. However, the study also found that the changes after the implementation of ICT in higher education were very slow and not radical. While ICTs offered more flexibility, the instructors spent more time and effort on teaching while using the technology, without any extra incentive. The study found that a major challenge for the governments as well as the educational
institutes was to develop a policy plan aimed at various groups that could potentially benefit from the technological advancements (Collis & van der Wende, 2002).

The idea of improved flexibility in learning for the students through ICT as well as the issue of incentive for the teaching staff in incorporating ICT in teaching were also apparent in another study conducted in UK by Lewis & Goodison (2004) on the pedagogic use of ICT across 12 institutes during the 1998–2001 period. The institutes for this study were chosen for being examples of “good pedagogic practice in ICT development and use” identified during 1998-2001 (Lewis & Goodison, 2004, p. i). However, according to this study, the overall staff, especially those with an interest in ICT, considered ICT to have a positive impact on their teaching. The study found that a notable improvement was in terms of an improved quality of preparation, as “materials could be easily updated and revised to suit the needs of different student groups” (Lewis & Goodison, 2004, p. iii). While the study presented some evidence of enhancement in students’ learning in quantitative terms and observations of changes in student behavior, it also found that it was difficult to observe the improvement in the students’ academic performance. This difficulty was due to limited evaluation as well as the multiplicity of the pedagogical changes of which ICT was only a part. This study included a diverse mix of disciplines, including Archaeology, Art and Design, Biosciences, Dentistry, Education, Mathematics, Nursing, Pharmacy, as well as Economics, Classics, Politics, and Sport Science. It appeared that a wide variety of disciplines mentioned here, in part, could perhaps be one of the reasons behind the problem, raised by Oliver (2002), of an overall low penetration of ICT in the field of education.
In other words, it might be difficult sometimes to have a single approach towards implementing ICT in higher education across distinct fields, such as Medicine and Classics. And the impracticality of such uniform approach may have led to overall less penetration of ICT in the education and learning sector. Interestingly, though, the determination in deploying ICT in higher education is evident especially in newly established institutes. As according to the Lewis & Goodison study, out of the 12 participating institutions, “four new universities had adopted a corporate approach to the promotion of ICT across all subject areas” (2004, p. i). Lewis & Goodison (2004) also provided sufficient food for thought for future research in the area of ICT in higher education. For instance, there was a possibility of detailed research studies focused on a single discipline in case of most of the previously mentioned disciplines, which were often not pursued by the researchers studying the impact of ICT in higher education. During the Lewis and Goodison study, some of the teaching staff agreed that ICT approaches were most appropriate for technical and scientific fields, the results of this study implied that “arts and humanities were as likely to generate innovative approaches through their use of new technology as any others” (Lewis & Goodison, 2004, p. iii). It is clearly evident from accounts such as the Lewis and Goodison study that much emphasis has been given to the incorporation of ICT within mainstream technical disciplines, such as engineering and pure sciences, as compared to other academic disciplines. The study also raised the issue of students who felt disadvantaged due to limited access to a computer, especially for the universities that used ICT as a key tool in the teaching
process. Thus, issue of ICT access to the students could be another point in question for future research.

On the one hand, the Lewis and Goodison study, while comparing the developed countries across the western world, suggested that the disciplines like arts and humanities could also benefit greatly from the advantages of ICT. On the other hand, such a thought was still non-existent across a number of developing countries. In Syria, for instance, one of the key government goals had been to increase the annual numbers of IT and engineering students by nine and 25 percent respectively (Abdul-Wahed & Al-Awa, 2006). However, there was hardly any evidence of such major initiatives across other (non-technical) disciplines in Syrian education system. Nonetheless, Syria had developed an emerging system of distance learning called Open Learning System. By the year 2005, at least 87,000 students had benefited from the system, which primarily used ICT to reach its students (Abdul-Wahed & Al-Awa, 2006).

The challenges for the conventional higher education system in Syria included poor quality of education, migration or brain-drain, increasing number of higher education aspirants, conventional education system’s incompatibility with market needs, low government investment on education, traditional style of teaching, and scores mattered more than students’ individual preferences. The Syrian plan on ICT in higher education identified ICTs as helpful in several ways, especially in terms of providing access to a rich source of information in the form of Internet, leading to a problem-centered and inquiry-based learning process, providing easy access to online material and to any world-wide e-learning (electronic learning enabled by the ICTs) program,
providing education at lower cost to the government and other donors and increasing the pool of teachers and students (Abdul-Wahed & Al-Awa, 2006). Although all the above factors were essentially true in case of e-learning projects, the benefits of ICT in supplementing the conventional education system (which involved face-to-face learning) could not be denied. For example, Forcier, while discussing one of the many advantages of computers, had suggested:

The student writing an essay on a computer is at a distinct advantage. If you consider all of the various types of computer software through which the computer can extend the user’s capability, you see that the use of this tool has a significant impact (Forcier, 1996, p. 301).

This certainly drew attention to the fact that computers and Internet had diverse uses and were definitely not confined to a small segment of technical students. In fact, Forcier’s conclusion was based on his many years’ experience with using computers in the American (primary and secondary) education system.

Another survey (Levrat, 2002) conducted on the use of ICT in higher education in Switzerland showed that both tele-teaching and tele-presence were developing fast by the year 2002. However, the students wanted to use technology to support the existing “face-to-face courses rather than replace them” (Levrat, 2002). The study also reported that Geneva had a number of ICT enabled learning projects with many developing countries at the time. The study overall focused on e-learning and had little to say about the use or role of ICT in the conventional education system. Thus, while it seemed that distance education had greatly benefited from ICT, the conventional (face-to-face) education
system was also making use of ICT, which could be studied from different perspectives, such as in a developing country setup.

A key issue that many developing countries had been facing in deploying ICT in education was one of infrastructure and access. According to UNESCO, in the Asia and Pacific regions, the:

resources to support higher education are often grossly inadequate, and difficult policy choices have to be made on priorities between funding significant higher education expansion in order to student demand and continuing to give basic education a top priority (UNESCO, 2003, p. 18).

At the same time, UNESCO mentioned that the ICTs were impacting education in the developing world in a major way, especially in terms of “course delivery, learning and teaching, and management within higher education institutes” (UNESCO, 2003, p. 18). The report, however, also stated that ICT needed to be incorporated into the curriculum across all areas of higher education. Such need had often remained unidentified in the vast pool of literature on ICT in higher education. The report also recommended contextualization of introduction and development of ICT with respect to national and local needs (UNESCO, 2003).

Another report by UNESCO (2004, p. 5) examined “the opportunities and challenges posed by globalization to higher education” and explained UNESCO’s stand that “higher education in a globalized society should assure equity of access and respect cultural diversity as well as national sovereignty” (UNESCO, 2004, p. 5). In order to assure such equity, it would be important to look into the ethnic dimension of ICT use by
university students, as it could contribute substantially to the understanding of the phenomenon of globalization of higher education in a multi-cultural society.

If the ICT efforts targeted a few specialized fields, then it was quite possible that there could be an imbalance in the demand-supply chain in the job market. According to UNESCO (2003):

The rapid expansion of higher education in some societies has the unfortunate effect of increasing graduate unemployment. Graduate unemployment is not only a serious waste of human resource potential, but it can cause social unrest in some countries in the (Asia and Pacific) region. In many cases, graduate unemployment stems not only from rapid expansion in enrolments but from other factors as labor market problems and particular disciplinary mixes of graduates (UNESCO, 2003, p. 19).

One way of dealing with such an issue could be opening up of a global work force, wherein qualified graduates could work in foreign countries. In other words, the regions having a shortage of graduates in a particular field could get them from other countries. However, there would still be a need for some balance across the disciplines, too. If all (or majority of) the students opted for the same discipline, then there was a likelihood of an unmanageable imbalance in the demand-supply cycle.

While there was no dearth of ICT experiments in higher education the world over, the studies assessing the impact of ICTs on higher education had mostly been conducted across the developed countries of the Western world. For instance, in 2002, a study was conducted in Glasgow to determine whether the Internet is an aid “or a source of
frustration” for the university students (undergraduate as well as graduate) (Lindsey & McLaren, 2002, p. 115). The results of this study showed that the students in general found the Internet useful, but the enthusiasm declined with the seniority of students. However, this study was done in 1997-98, when connecting to the Internet was still a dream for a substantial part of the developing world. Since computerization efforts had been in progress for around a decade in many parts of the world, it was perhaps more opportune to study the benefits of ICTs in education during the more recent years. Moreover, the Lindsey and McLaren (2002) study included students only from the Department of Mathematics, Science and Technological Education. It was evident that a common trend in various studies on ICT and computerization in education was to emphasize the technical fields, but Arts and Social Sciences did not get enough attention. However, it could be argued here that since a society was more likely to be comprised of different groups with people having diverse interests, it was quite important to see how each of these groups responded to a change, such as educational reform in the form of introduction of ICT in this case. Thus, there seemed to be a need to focus exclusively on the students in the discipline of Arts and Social Sciences, who were otherwise less likely to be included in studies pertaining to ICT in higher education (Lindsey & McLaren, 2000).

The idea of linking computers use with gender was certainly not very new and there was indeed a wide range of literature available on the subject. For instance, a study done in the United States in 1999 showed that the use of the world wide web and email was not “significantly different” between male and female university students in the field
of education (Clark & Wiebe, 2001, p. 15). While a number of similar studies had been conducted in the West, there seemed to be a dearth of such studies across most of the developing world, where the approaches towards the issues of gender and ethnicity were perhaps quite different as compared to the West.

Another study focusing on gender and ICT was published in 2005 depicting the patterns of ethnicity, age and socioeconomic background influencing the use of computers among six-month to six-year old children in the US (Calvert et al., 2005). The study found that at an early age there was no significant difference between boys and girls in using computers. It was only at an older age that girls started showing a little less interest. However, the study did not observe any major gender divide even in the three to 17-year age group. Thus, while ethnicity and age made a little difference, the socioeconomic differences influenced the computer usage in a major way (Calvert et al., 2005).

In terms of studies on ethnicity and ICT, there was a seven-year long research study was carried out in Israel between 1995 and 2002. This study involved a questionnaire-based survey on the use of web-based instruction conducted among the incoming students at the Open University of Israel (Soker, 2005). The results of this study showed a difference in ICT use across various ethnic groups, but the difference was not high enough to be considered as substantial. Soker (2005) found that although the numbers of both male and female users had increased the gap in terms of ICT use and skills across male and female users had remained significant.
Some other studies that emphasized on the influence of gender and class differences on IT in education included Volman & Eck (2001), who reviewed the findings of several studies on gender and IT in primary and secondary education conducted during the 1980s and the 1990s. Based on various accounts from the early 1990s, Volman & Eck reported that besides social class differences, the ethnic identity was also a determinant in defining access to computers. Following Volman & Eck, another thorough review of literature on gender, ethnicity and social class was done in 2005 (Heemskerk et. al, 2005). The research question was to determine “How and to what extent do the characteristics of educational ICT tools enhance or inhibit learning for different groups of students?” (Heemskerk et. al, 2005, p. 1).

The discussions in this study focused on the course content from an audio-visual, as well as other perspectives. While this study came up with an index of inclusiveness of educational tools towards the end, the authors accepted that it concerned only the content and not the context of its use. They also pointed out that it was important to look at ICT applications while they were actually being used (Heemskerk et. al, 2005).

### ICT, Gender, Ethnicity, and Higher Education in Malaysia

Malaysia was one of the few countries to take an early advantage from the developments in the global IT industry. As reported by Raman & Yap (1996), the IT market in Malaysia grew almost four-fold during the 1980s. Around this time, the policy structure was quite favorable for the growth of the IT sector. However, at that point, there did not seem to be a widespread use of IT in the education sector, except for the technical courses. The MSC initiative launched during the mid-1990s had been directed towards
the global ICT industry and by 2007, the MSC was hosting over 900 multinationals, foreign-owned, and domestic companies delivering communications and multimedia products, solutions, services, as well as research and development support (MSC, 2007). The MSC seemed to provide a favorable environment for a continued growth of the domestic IT sector as well as the IT exports industry. After over a decade of its implementation, the presence of MSC appeared to have a continued influence on the reputation of Malaysia as a technology leader in a major way.

In the 1980s, Ratnam had argued in the context of technological growth and industrialization in Malaysia:

Before a country can adapt comfortably to modern technology, it must first nurture a proper scientific orientation among its citizens. Such an orientation must receive support from a variety of sources, including the mass media, but its propagation will have to depend heavily on the educational system (Ratnam, 1985, p. 51).

The same was perhaps true for deployment of ICT in Malaysia. While the conceptualization of MSC involved seven flagship applications on a nation-wide scale, which included “Electronic Government (E-Government), Smart Schools, Telemedicine/Telehealth, Electronic Commerce (E-Commerce), R&D Cluster, E-business, and Technopreneur Development” (MSC, 2007), there was a felt need to re-conceptualize the MSC initiative (Kamogawa, 2003). Kamogawa found that while MSC had clearly been more successful than the strategies of other Southeast Asian countries, such as Thailand’s IT2010, IT21 in the Philippines, or the Indonesian ICT policy framework, there remained
“some serious challenges to higher education with respect to this success” (Kamogawa, 2003, p. 558).

In Malaysia, a high level of enthusiasm in setting goals was evident, but there was still a long way to go as far as the ongoing ICT projects were concerned (Abdulai, 2001; Chuan, 2002). For instance, there was a “conscious effort by the authority to train more Malaysians in the areas of science and technology” (Nordin, 2001, p. 15). However, the increase in the enrollment figures for science and technology had been moderate through 2000. According to Hassan (2001, p. 21), the Arts students in Malaysian public universities consistently formed above 50 percent of the total first degree course (undergraduate) enrollments between 1995 and 2000. Considering this large student body in non-technical fields and the MSC policy of incorporating ICT at various levels of education, it appeared important to see how ICT initiatives have influenced the students in fields like Arts and Social Sciences.

The Malaysian government had started recognizing the importance of improving the system of education from the early 1980s. It was evident that from 1980 to 89, the share of education in funds allocated for national development increased from 7.5 to 17.2 percent (Raman & Yap, 1996, p. 111). However, most of the work done in the area of developing the education system had arguably been pro-Malay; for instance, the higher education for Bumiputra (mostly Malays) had been subsidized and they were also entitled to get funding and scholarships for studying overseas (Hassan, 2001, p. 13). It was argued by many, such as Jomo (1994), that the pro-Malay stance of the policy makers in Malaysia had made a little impact on overall development of the country.
As cautioned by Ratnam during the 1980s, Malaysia was suffering from the threat of what could be termed a growing “knowledge gap” through the 2000s (Evers, 2003, p. 383). The term knowledge gap could be understood as a difference in knowledge between the socio-economically advantaged and disadvantaged people. As acknowledged by many, including the World Bank, there had been an increasing knowledge gap between nations as well as within the countries, based on regional, class or community-based differences (Evers, 2003). Evers argued that this gap was a pre-condition to development and would always exist within as well as across countries. He also noted that knowledge gap was indeed “constructed by experts and organizations” (Evers, 2003, p. 396). He saw education and information rights as key to reducing the knowledge gap. It could be argued that although these two were very important factors, mere freedoms or rights might not be able to solve the issues of equal access for all unless such rights guaranteed easy access to all and were supported by the infrastructure. However, Evers found that the knowledge gap was widening even in countries, such as Malaysia where “the governments have embarked on a vigorous programme of supporting a knowledge-based economy” (Evers, 2003, p. 396). In these countries what became important was knowledge that was practical and was market-oriented (Chio, 2005). In other words, knowledge would “now acquire its meaning in relation to the market”, which was a result of a prominent recent belief that “what is good for the market [or industry] is also good for the nation” (Chio, 2005, p. 127).

Ironically, such faith in markets could not be suitable for a country’s ICT strategy, especially when the idea was to create a knowledge society (a society based on
knowledge), as Evers had argued that the “devaluation of local knowledge” by the global experts “as well as marketing strategies of large corporations” were some of the key reasons behind an increasing knowledge gap around the world (Evers, 2003, p. 396). He suggested that overcoming the problem of an increasing knowledge gap and developing a competitive edge were possible through “high investments in knowledge production, dissemination and infrastructure” (Evers, 2003, p. 396). Here, the dissemination and infrastructure would need to be aimed at benefitting the socio-economically disadvantaged if any substantial change was envisioned.

Just like the knowledge gap or the economic development, it was apparent that the gender development was also highly uneven across different parts of the world. For instance, the education system in Malaysia was reflective of gender segregation across certain fields. Unlike many other developing countries, however, the gender disparity in enrolments at the higher level of education system in Malaysia was almost non-existent. According to Yong & Ng (1999) as well as Ng & Thambiah (1999, p. 88), while the number of women enrolling in science and technological courses had increased undeniably during the 1990s, they still constituted 65 percent of the student body in Arts stream. While the whole discussion in both the cases revolved around the female participation in science and technology courses, there were no reports available on how the female students in Arts stream were benefiting from the new technology (Ng & Thambiah, 1999).

Raman & Yap (1996) reported a continued shortage of IT professionals in Malaysia during the 1990s, and Ng & Thambiah also pointed out that the “high demand
for IT personnel” in the private as well as public sectors during that time led to the increased interest shown by women in IT education in Singapore as well as in Malaysia (Ng & Thambiah, 1999, p. 90)—something that was reflective of market pressures that also determined the nature of knowledge (discussed earlier in this section). In fact, Yong & Ng have also noted:

The entry of women into new technology jobs has been facilitated by the educational system which has encouraged the development of science and technology and information technology related academic programs (Yong & Ng, 1999, p. 145).

The fact that at least half of the staff at the Computer Science and Information Technology Faculty at the University of Technology Malaysia in 1992 was female—indeed showed the outcome of an increased participation of women in technical education in the form of an improved share for them in the ICT labor market. Another encouraging instance was of Computer and IT related courses at Universiti Utara Malaysia, where 57 percent teaching staff were women. Similarly, the Faculty of IT at the Univerisiti Malaya had 52 percent female academic staff, during the early-1990s (Yong & Ng, 1999, p. 146).

While the increased number of female students in science and related courses resulted in increasing the female share to half (or more) of the total enrolments at higher education institutes in Malaysia during the 1990s, the female share in conventional engineering courses stayed around 20 percent of the total enrolments in engineering. On the other hand, there was a 51.4 percent female presence in the total enrolment for IT and
related fields in 1990-91 across seven leading universities in Malaysia (Yong & Ng, 1999, p. 146). Yong and Ng also noted that the IT courses were popular across the students irrespective of gender. According to a survey (cited by Yong & Ng, 1999, p. 146), the Malaysian labor market was estimated to be short of required IT labor during the mid-1990s by at least 3,224 professionals. The discussion led by Yong & Ng led to a curiosity towards and laid a ground to explore the Faculty of Arts and Social Sciences in terms of gender and ICT in the Malaysian context.

According to the Seventh Malaysia Plan 1996-2000 (cited in Ng & Thambiah, 1999, p. 83), the growth of computer industry was among the fastest in Malaysia during the 1990s. There was almost a two-fold increase in the number of personal computers that went from 160,000 to 310,000. However, Ng & Thambiah argued that while the IT use was growing rapidly, neither the government nor the private sector in Malaysia were making any efforts to assess the impact of IT on work through a gender perspective (Ng & Thambiah, 1999, p. 83). Discussing the labor market trend in the IT sector, Ng & Thambiah suggested that while there had been an increase in women’s “educational attainment and the buoyancy of the job market,” the participation of women in the Malaysian IT job market was still lower than the developed countries (1999, p. 86).

On the future of IT and gender, Ng and Thambiah were unclear as to whether or not the new technology would benefit only certain social groups while marginalizing others (Ng & Thambiah, 1999). However, they recommend deployment of special efforts towards ensuring increased female participation in science and technology education. While on the one hand, this might be helpful in addressing the gender issue in
technological fields, it raised another issue of marginalizing non-technological fields, such as Arts. Also, another recommendation was made towards a “gender sensitive technical training”, but there seemed to be a lack of emphasis on equal distribution of new technologies across various disciplines, especially the ones that conventionally had a higher number of women (Ng & Thambiah, 1999, p. 97). The authors presented a different perspective that when compared to many other countries in the developing world, Malaysia had managed to attain a higher number of female students in technology courses, which had potentially resulted in an increased number of women in the technology job sector during the mid and late-1990s. However, there was a need to know whether or not this increase had been uniform across diverse ethnic groups or not. In fact, they later pointed out that “truly comparable cross-cultural statistics and experience” were lacking because “the interactions of gender, culture and information technology are very complex” (Ng & Thambiah, 1999, p. 102). They also felt a serious need for assessing advantages and disadvantages of IT (Ng & Thambiah, 1999, p. 103).

In the years after 2000, the focus was not on the IT sector alone anymore and the service sector had also started benefiting from the ICT developments. As Ng & Mitter discussed the case of call center workers in India and Malaysia, they concluded:

After all, in the New Economy, the question of gender and class inequalities remains just as valid in assessing sustainability, replicability, and indigenization of best practices, as they were in the Old Economy (Ng & Mitter, 2005, p. 156).

It was noteworthy that ICT had enabled women in Malaysia to take up home-based work. For instance, e-Homemakers network in Malaysia targeted women from low-income
Huyer also pointed out that “the strategic framework for ICT development” used by governments and policy-makers across Malaysia, India as well as the Philippines was “silent on gender issues and considerations” (Huyer, 2006, p. 28). A similar concern was echoed by Kamogawa (2003), who conducted a research in Malaysia to identify the issues and challenges in higher education reform. The study had three main objectives: first, to determine how Malaysian higher-educational policies have changed by looking at socioeconomic backgrounds; second, to examine case studies of the Malaysia Multimedia University (MMU), Malaysia National University (UKM), and University Malaysia Sarawak (Unimas); and third, to discuss whether ICT is affecting access and course selection in higher education in terms of gender equality (Kamogawa, 2003, p. 545).

As the goals suggested, the focus of Kamogawa’s research largely remained on technical education, distance learning, and gender equality in education. Kamogawa’s discussion of gender primarily revolved around the enrollment of females in technical fields and their employment in the ICT jobs, which provided a wide scope for a future inquiry focused on Arts and Social Sciences students. A key aspect lacking in Kamogawa’s research was one of ethnicity. Likewise, it could be argued that while Kamogawa’s study showed low female participation in the field of technical education, the results did not imply that the female students, overall (including other disciplines such as Arts and Social Sciences), were avoiding the use of the available technology in their
education. Hence, there seemed to be a vast scope for further research in the area of gender and ICT use in non-technical fields.

In 1997, Zainab Nordin conducted a study on the attitude of “government employees in all Malaysian ministries” towards the MSC effort (cited in McDaniel, 2002, p. 98). The study found that there were striking differences in terms of technical capabilities across the employees based on their categorization into three separate ethnic groups (Malay, Chinese, and Indian). Only about 18 percent of Malays, 46 percent of Chinese, and 22 percent of the Indians were “experts” or “very familiar” with computers (Nordin, 1997, p. 42). Nordin’s overall finding on the ethnic aspect of this study was, “the Chinese respondents were more familiar with using computers compared to the Malay and Indian respondents” (Nordin, 1997, p. 42). As mentioned in the previous chapter, it could be argued here that the trend shown by Nordin’s research might not be same as far as the ICT use by the university level Arts and Social Sciences students was concerned, especially considering the ICT-related developments in Malaysia over the past decade. Thus, it appeared timely to study the influence of ethnicity on the use of ICT across Arts and Social Sciences students.

Summary

The review of available literature suggested that there had been a substantial use of ICT in higher education in the developed world. The new technology had offered improved flexibility for students as well as instructors irrespective of academic disciplines. It was also apparent that while well-established academic institutions were embracing ICT, newly established institutions of higher education tended to be more
adaptable towards these new technologies. The review of literature also suggested a
dearth of studies pertaining to ICT use across diverse academic fields, such as humanities
and arts. The studies pertaining to the use of ICT in education in the developing world
primarily revolved around distance education. Examples included countries, such as
Syria, which had invested extensively in building IT strategy and infrastructure for their
distance learning programs. It also became apparent that there was a lack of research on
the influence of cultural background as well as gender on the use of ICT in the case of
developing countries. Moreover, there had been an increasing “knowledge gap” between
the socio-economically advantaged and disadvantaged people in countries like Malaysia,
and, although the labor market participation of Malaysian women appeared to have
increased with the advances in the IT sector, the Faculty of Arts and Social Sciences,
which was still dominated by a female majority, had not yet been studied for the use of
ICT by its female students.
CHAPTER 3: MALAYSIA: A BACKGROUND

Before exploring the influence of gender and ethnicity on ICT use, it was imperative to develop some understanding about Malaysia’s socio-cultural background and development contexts. Divided into various subsections, this chapter takes a look at demography, ethnic composition, political and economic developments, as well as the state of gender development in Malaysia.

Demography

Including around 1.7 million foreigners, Malaysia’s total population in 2004 was reported to be around 25.6 million. As discussed in the introduction chapter, this population could broadly be divided into groups—Bumiputra and non-Bumiputra. Around 61.4 percent of Malaysia’s total population was Bumiputra including over 82 percent ethnic Malays. The non-Bumiputra primarily included the Chinese, who formed 24 percent of country’s total population, and Indians, 1.8 million, besides other ethnic groups, which accounted for around 1.2 percent of country’s total population (Jabatan Perangkaan Malaysia, 2004a, p. 37). In terms of gender, a little over 50.9 percent of country’s population was male.

Ethnic Groups in Malaysia

The ethnic diversity in Malaysia seemed to have attracted numerous researchers and scholars from around the world. While diversities were fairly evident within these groups, such as between the Tamils and other Indians, or across Hindu and Muslim Indians,
the compelling fact of the social and political construction of ethnic identities in Malaysia is that these three groupings—Malay, Chinese, and Indian—supersede other categorizations in importance (Fenton, 1999, p. 143).

Thus, in order to understand the complex ethnic composition of the country, it was important to take a brief look at the history of these three ethnic groups in the region.

**The Malays**

While examining the dynamics of the Malay identity, Othman (1983) reported that there were various meanings of the term Malay depending upon different levels of ethnic interrelationships and the situational contexts. The term had been used generously in various contexts by several authors. So much so, that depending upon different contexts the meaning of the term had been quite fluid from earlier times. Ismail (2003), while explaining the concepts of Bumiputra, Malay, and Islam, also suggested that there was no definite answer to the meaning of the term Melayu and noted that both Dutch as well as the British used the term Malay in place of Melayu in most of the colonial writings.

The Malay identity in the Malaysian context was widely accepted as a set of language, religion, and customs (Shamsul, 2004). In other words, if a person spoke Malay language, embraced Islam, and practiced Adat (the customary law) then that person would be recognized as Malay. The Malays considered themselves as the indigenous, native, and owners of the Malay Peninsula (Ismail, 2003). While a number of people from other ethnic groups, including the Chinese and the Indians, had embraced Islam and were then considered Malays, the Malays were distinguishable from other indigenous
groups in the region due to distinct cultural practices. However, some of these converted Malays experienced discrimination perhaps because of their distinguishable physical features (Othman, 1983). The Malay identity had been a key aspect of Malay nationalism which had perhaps developed as a consequence of Chinese and Indian nationalism during and after the British rule, but which, according to Shamsul (2004), was more cultural than political due to its emphasis on identity. However, according to Ismail (2003), the concepts of descent and community had replaced the concept of nation for the Malays in the post-colonial era.

*The Chinese*

The first documented instance of Chinese presence in Malaya was in circa 1349 when a Chinese trader Wang Ta-Yuan described *Tumasik* (old name for Singapore) or the “Sea Town” in his notes (Purcell, 1965, p. 235). Thereafter, the Hokkien traders came to Melaka around circa 1400 and became perhaps the first group of Chinese traders to establish a small resident community there (Pan, 1998). This was at least a century before the Portuguese even touched the shores of Melaka (Purcell, 1965). The *Baba* Chinese, a trader community residing in the region, were the successors of those Hokkien traders who married local women. Most of the *Baba* Chinese adopted Malay language, food and attire, though they continued with the Chinese religious, cultural and family systems. During the British colonization of Penang and Singapore, the *Baba* traders from Melaka invested heavily in industries such as sugar, tin, and rubber. The *Babas* gained fluency in English and not only became the first mercantile but also the first professional class among the Chinese in Malaysia (Pan, 1998). During the fifteenth century, Melaka
developed closer diplomatic and trade ties with China. However, these ties started weakening a century later with the arrival of the Portuguese who tried to monopolize trade in Melaka. After the Dutch invasion of Melaka during the mid-seventeenth century, the port-city had become home to war and destruction and the Chinese population in the city was reduced to a mere 300-400, although no official evaluation was made at the time (Purcell, 1965). It was evident from a number of accounts, such as Suryadinata (1997) and Pan (1998), that the migration of the Chinese to Southeast Asia was indeed in small numbers prior to the mid-nineteenth century.

The British had already started colonizing parts of Malaysia by the eighteenth Century (Pan, 1998). There were “push” factors within China and “pull” factors from Malaya that encouraged many Chinese men to migrate (Suryadinata, 1997, p. 9). While the new economic avenues created by the British trade and administrative presence in Malaya during the second half of nineteenth century acted as one of the key pull factors, the economic and political challenges within China acted as the main push factors (Pan, 1998). Moreover, due to a treaty signed after its defeat in the Opium Wars, China had no option but to allow its people to work as contract labor in Malay Peninsula (Fairbank, 1969). The British authorities were successful in convincing the Malay Sultans (local rulers) that both the Sultans as well as the public in their territories would benefit from the whole process of inviting Chinese labor. As a result, a mass migration of Chinese took place during the eighteenth and early nineteenth centuries, which accounts for a majority of Chinese population in the country today. The Chinese labor was used extensively by the British for tin mining and agriculture, and especially after the
foundation of Penang, the Chinese immigration to Malaya increased substantially (Purcell, 1965).

During the British colonial era most Chinese intended to return to China after acquiring sufficient wealth, but a majority of these men settled in Malaya while only paying occasional visits to their homeland. Economic reasons and strict policies of the Chinese government prevented most of these men to bring their wives and children to Malaya, and as a result many Chinese men married local women. Many of these Chinese men did not return to China either as they were poor and had better opportunities in Malaya or were simply reluctant to leave their businesses and property (Purcell, 1965).

One of the driving factors behind the colonization of various countries in the East by the western powers was a requirement for raw material as well as market for the finished produce from these powers. One such instance that led to an increased demand for a raw material was urbanization in the West that increased the demand for tinned goods, especially in Britain. Malay Peninsula was rich in tin and the Chinese not only controlled the Tin mines, but also had a good knowledge of methods to extract tin from the mines. However, the labor used to be mainly Malay until the nineteenth century. Later, with the increasing British dominance in the Peninsula, the bulk of labor in tin-mining was in the form of Chinese workers, who were also involved in the mining of coal and gold (Purcell, 1965).

It was evident that the British colonizers in the Straits Settlements were primarily interested in traders, artisans, and laborers, for their economic value and were hardly concerned about their social conduct (Purcell, 1965). Moreover, the British used secret
societies, which translated into the local Chinese gangs, to make sure that the Chinese population in Malaya stayed in control. However, the civil disturbance caused by rival secret societies, their involvement in gambling and trafficking women and girls in the region, and their growing power in the mining areas, outweighed the benefits of their existence for the British, which led to a complete ban on their existence by the British in 1890 (Pan, 1998).

The Indians

According to Arasaratnam (1960), Malaya and India shared trade and cultural ties since the early centuries of the Christian era. For instance, historical evidence found in the form of scriptures in Kedah, a state in the northwestern part of Peninsular Malaysia, suggested that there was an Indian presence in Malaya since fourth century C.E. However, the trade contact with Indian traders was culturally not influential enough for Malaya until the expansion of Sri Vijaya (a South Indian empire) to the major ports on the Straits of Melaka during the ninth century C.E. Through these settlements as well as the traders, the people as well as the political and social institutions in the Malayan states were radically influenced by the Indian culture. For instance, the trading system, called Kadaram in Tamil (a South Indian language), became well established and so did the traders from the South of India. Moreover:

Hindu concepts of kingship and Hindu administrative institutions and ceremonial became so deeply embedded in Malayan courts that even after these states were Islamized many of these practices remained, some even to this day (Arasaratnam, 1960, p. 5).
In around twelfth century C.E., many Hindu traders were unable to continue trade ties, as Muslim merchants from different parts of India, who were better-equipped and more powerful, emerged as a dominating influence in the region. A number of Tamil Muslims, hailing from the Coromandel (a coastal region in the South of India) occupied influential positions in court, established marital ties with the royal Malay families, and influenced the politics (Arasaratnam, 1960). The political and commercial ties with Melaka resulted in an Indian settlement called Kampong Kling, or Kampong Palli (Palli in Tamil means mosque). The Indian influence from different sources gradually settled to become a stable part of Melaka’s culture and even continued under the control of the Portuguese, the Dutch, as well as the English (Arasaratnam, 1979). The arrival of Indian traders, Hindus as well as Muslims continued through the eighteenth century. While the Muslims continued to intermarry and become a part of the Malay tradition, the Hindus continued with their own practices and beliefs.

The British colonization of Malaya had started in 1786, when it acquired the island of Penang. In the years after the colonization of Malaya had begun, the British became involved in development projects as well as commercial agriculture (Sandhu, 1993). The agricultural produce included spices and pepper, sugar, followed by coffee, and eventually rubber (with the advent of automobile, the demand for rubber had increased phenomenally in the West). However, the British were faced with the task of finding cheap and affordable labor for working on the thousands of hectares of land they had acquired in Malaya for agricultural purposes, as the mechanical devices and methods
available at the time were neither suitable nor sufficient for use under the local conditions in Malaya.

With the Malays proving to be unmotivated, the Chinese finding other better remunerative occupations, African and European labour alike unpracticable, and the Javanese being both difficult and expensive to acquire, the Indians became indispensable (Sandhu, 1993, p. 152).

Among the Indians, the lower caste South Indian (also called Madrasi after the city of Madras in India) peasants were the obvious choice, as they had proved to be highly satisfactory, obedient and easily manageable workers for the British within India. They were unskilled, but were able to perform light, repetitive, and simple tasks, without asking for great returns. More importantly, they were amongst the politically weakest social groups in the Indian society and were least likely to get quarrelsome like the Chinese labor at the tin mines (Pan, 1998). Thus, the Madrasi became the ideal choice for being contracted as bonded labor by the British. This led to a controlled immigration of labor from South India as well as Sri Lanka (mostly Tamil in origin). Besides, some Indians were brought to work for the British government in Malaya as civil servants, as they were educated in English medium and were loyal to the British. It was believed that many of their successors were active in civil services as well as academia in modern-day Malaysia. However, since there was a control on this group, too, the overall percentage of Tamils remained below eight in country’s total population in 2004. Moreover, the Indian government, run by the British East India Company, had banned this emigration of assisted labor in 1938.
Between 1786 and 1957, over 4.2 million Indians entered Malaya and over three million of those left Malaya. Many of the remaining 1.2 million became victims of malnutrition, disease, and exhaustion. As a result, over 62 percent of the 820 thousand Indians living in Malaya at the time of its independence were actually born in Malaya (Sandhu, 1993, p. 154). Although the major portion of immigrants was in the form of bonded labor, the small streams of merchants, government officials, soldiers, bankers, shopkeepers, and various types of professionals had kept pouring into the region and this continued even in the modern times. Notable examples from the past were Chettiyar moneylenders of Tamil origin, and Sikh soldiers and policemen who came from Punjab—a state in North India (Sandhu, 1993).

Ethnic Integration and Politics in Malaysia

The aspects of socio-economic development and ethnic integration in Malaysia appeared complex and intertwined and it became important to draw a clearer picture of the process of ethnic integration in the country. It was noteworthy that like most other colonies, the socio-economic development of independent Malaya had its roots in the practices of the British colonizers. The British colonial strategy in Malaya involved formation of a dual economy and a plural society which could be manipulated by a policy of divide and rule (Ali, 1984).

The role of Chinese in the Malayan economy during the colonial period was much more varied and widespread than the native Malays or Indians, who were primarily involved in agriculture, rubber plantation, and administration to some extent. The Chinese were involved in a host of activities ranging from tin mining, transportation,
food processing, rubber production, and urban jobs (Pan, 1998). Only a small proportion of these were self-employed and the number of Chinese capitalists was not very high. Quite like the Dutch colonization of Indonesia, where the Chinese were second after the Dutch in the Indonesian economy, the Chinese seemed to hold a strong position in the Malayan economy as well. In Malaya, the unequal demographic composition of Malaya and the strategic importance of Chinese, who had sound knowledge of local markets and labor, as evident from the tin industry of the time, enabled the Chinese to act as a strong social force as well. The economic opportunities in the new Straits Settlements thus seemed to have enabled the Chinese to take the top spot in the social structure under the British, while the Malays and the Indians followed.

During the Second World War, Japan attacked and attempted to colonize several parts Malaya between 1941 and 1945. This attempt cost around 40,000 Chinese lives, as the Japanese colonizers were especially harsh on the Chinese community due to the conflict between China and Japan at the time. Thereafter, the decolonization of Malaya started in 1946 and the Chinese emerged as a major political force in the form of the Malayan Chinese Association (MCA), which remained a strong political entity for a considerable amount of time (Pan, 1998). Along with UMNO (United Malay National Organization), MCA was able to get independence for Malaya from the British rule (Goh, 1971). A major reason behind this political empowerment was that the Chinese, especially the trading community, enjoyed independent action during the British era. Although the majority of Chinese were not traders, the Chinese overall had an edge over the local population groups, such as the Indians, as they (the Chinese) were the largest
population group in the urban centers of the country at that time. This disparity was essentially a result of the British policy that encouraged the Chinese to migrate to Malaya in large numbers.

The reduced percentage of Chinese in Malaysia during 2004 showed that this disparity had diluted over a period, especially after the separation of Singapore from Malaysia, but the Chinese still formed roughly around a quarter of the total Malaysian population. However, even when their number was higher in late 1950s, the Chinese failed to dominate the Malayan politics, primarily due to the difference of ideology within themselves that led to the formation of two different political thoughts emerging from separate economic classes (Pan, 1998).

As far as the Indian political presence was concerned, the Malayan Indian Congress (MIC) joined hands with UMNO and MCA, and fought the Malayan independence movement. The Alliance Party formed by UMNO, MCA, and MIC governed the country until 1969 (Sandhu, 1993). However, the smaller number of Indians as compared to the Malays and the Chinese was also reflected in this Alliance. Moreover, the political activities of MIC during the British era were associated with the freedom fight within India—resulting in MIC’s inability to continue as a strong political force in independent Malaya. Another instance of what could become a strong political entity was the National Union of Plantation Workers (NUPW), which failed in developing or utilizing its potential (Sandhu, 1993). The emergence of internal political issues within the Indian as well as the Chinese political parties, in which the elite and working-class groups were not in agreement with each other, led to further division amongst them and
they failed to keep a very strong political presence. Overall, the inability of the two other ethnic groups to emerge as a strong political force seemed to have played in favor of UMNO. The Malays, despite presence of some extremist parties like PAS (Pan Malayan Islamic Party - supported Shari’a Islamic sacred law), were united on a common platform of Malay identity and were able to acquire a strong control on country’s administration post independence.

The Malayan states gained independence from the British rule in 1957 and the federation of Malaysia was formed in 1963. Thereafter, Singapore was voted out from this federation in 1965. During the 1969 elections, the then ruling Alliance Party formed by UMNO, MCA, and MIC, did not receive sufficient number of votes from the Sino-Indian majority areas of the Selangor state, as the Indian and Chinese communities decided to support other parties. This along with the dominance of the Chinese in the Malayan economy became key reasons behind a hostile environment which led to ethnic clashes in Kuala Lumpur on May 13th, 1969—resulting in a state of emergency and a ban on party politics (Goh, 1971). In post-colonial Malayan and Indonesian economy (after the Dutch), especially during Suharto’s reign in Indonesia, the Chinese elite clearly dominated the economy and became the target of the 1969 riots in Malaysia and ethnic riots in the late 1990s in Indonesia. However, in both the instances, more so in case of Indonesia, a majority of those affected by the violence were either middle or lower class families (Suryadinata, 1997).

Goh (1971) suggested that the May 13th incident could either be a result of the lack of confidence in democratic system or just the provocation by some non-Malays
who apparently had conveyed that Malays had lost as a race and they should transfer to reservations (something similar to the native Indians in the United States). If, according to Goh (1971), the second aspect was true then the incident:

spotlights perhaps the most thorny problem faced in operation of democracy in a plural society, namely, the problem of changing the power-configuration without disrupting its equilibrium (Goh, 1971, p. 39).

It was thus more practical for the immigrant groups to have a voluntary restraint for political stability (Goh, 1971).

The New Economic Policy

Post-1969 riots, the newly formed federal government launched a social engineering plan for the next twenty years under the aegis of the New Economic Policy (NEP) (Gomez, 2003). The NEP was introduced in 1971 to end poverty and to strike some balance across different ethnic groups. Perhaps understanding that the issues were more a result of class and economic development, the Malaysian leadership decided to give certain privileges to the groups that were conventionally disadvantaged in the economy and thereby avoiding the possibility of a future ethnic conflict. The steps undertaken within NEP primarily focused on improving the status of Bumiputra and included steps such as expansion of Bumiputra share ownership and employment in various sectors of the economy including different forms of trade (Pan, 1998 & Shamsul, 2004). With the introduction of NEP, the term Bumiputra, which stood for an indigene, was used for the first time by the federal government in a policy. The Bumiputra included
Malays and other indigenous groups—treated as the native peoples of the land (Kheng, 2003).

The introduction of NEP placed a huge constraint on the way the non-

Bumiputra operated their businesses, and a number of minority business communities, such as Chettiyar, were quite dissatisfied. Chettiyar was a Tamil money-lending community from Southern India, which became so powerful during the time of British that the Malay Reservation Act was implemented by in 1933 targeting the Chettiar community. The act indicated that the “Malay lands were not to be transferred, charged, leased, or otherwise disposed of to any non-Malay” (Collins, 1997, p. 56). The implementation of this act meant that the Chettiar could no longer have any land as the security for loans. However, the community could not mobilize itself against the policy, as it failed to garner support from any of the organized Indian groups in Malaysia—perhaps as they also opposed the business tactics of the Chettiyar. In some other cases, there were new ways of operating the old business, such as the Ali-Baba arrangement, wherein a Malay person could secure a trade license on behalf of a Chinese trader in lieu of a small share of profit or some commission (Pan, 1998).

The NEP could help reduce some of the disparities existent in the economy and increase the Malay share to over 20 percent by the 1990s, but could not surpass the increasing Chinese share (of almost 45 percent). As mentioned earlier, the Chinese are widespread in the Malaysian economy. According to the figures from the mid-1990s, as noted by Pan (1998), 36 percent Chinese were in production, manufacturing and transportation; 19.3 percent were sales workers; 11.2 percent were clerical workers; 11
percent were in fishing and agriculture; 8.9 percent were professional and technical workers; 7.8 percent were service workers; and 4.5 percent were administrative and managerial workers.

While the Chinese and the Malays seemed to have prospered considerably post-independence, primarily due to their economic position and political domination respectively, some other groups, such as the Indians, seemed to be further marginalized, especially in light of the fact that after the May 13th incident the government had made it illegal to raise ethnic issues or criticize the NEP on ethnic grounds, as these were considered highly sensitive by the government (Othman, 1983).

The issues of ethnic and (social) class differences in Malaysia appeared quite complex. The individual ethnic groups could be divided into different socio-economic classes, and within a given socio-economic class there can be different ethnic groups. Moreover, the integration among the ethnic groups had remained class-specific (Fenton, 1999). At the time of independence, the ethnic groups were concentrated in various areas depending on their economic activities. For instance, the Chinese were mostly based in urban centers like Kuala Lumpur and other west coast areas, whereas the Malays were based mainly in rural areas, especially on the east coast of the Malay Peninsula. This had been changing gradually, but despite the so-called success of the NEP in urban Malaysia, over 20 percent of the Bumiputra (mostly Malays) were poor peasants living in rural areas during the late 1990s. Fenton (1999) cited the concentration of power between the state-promoted Malay businessman and the older Malay landowners as a key reason
behind the minimal scope for the improvement in socio-economic conditions of the rural Malay peasants.

Several authors had noted and criticized the pro-Malay stance of the NEP. For instance, Munro-Kua (1996) noted:

The New Economic Policy was introduced through the Second Malaysian Plan (1971-76) as a strategy to increase Malay participation in the economy. UMNO (the dominant political party in Malaysia) claimed this was to resolve the alleged root cause of the 1969 riots, seen as being derived from too much accommodation to non-Malays which had in turn fostered resentment among the Malays (Munro-Kua, 1996, p. 62).

Despite country’s continuous economic development overall and the success of some Malays, a high proportion of poor Bumiputra had remained a key challenge for the government (Jomo, 2003). The sixth Malaysia plan (1991-95), for instance, reported an improvement of about 20 percent in the socio-economic status of the Bumiputra, but Mason & Jawan (2003) questioned this claim in the context of non-Muslims in eastern states of Malaysia. For example, in 1970, the Ibans (an indigenous group) and Malays accounted for 12 and 17 percent of professional workers in Sarawak respectively. While the Malay share increased to 30 percent by the 1990s, the Iban share observed an increase of just around two percent (Mason & Jawan, 2003, p. 183).

The pro-Malay bias was also evident in the census reporting according to Mason & Jawan (2003). In the census data post-1990, the ethnic-breakdown of figures was combined in a single Bumiputra category. And no individual categories, such as Dayak,
were included. The term *Dayak* was a colonial construct and used as a collective term for non-Muslim indigenous peoples in Sarawak, including *Iban, Bidayuh,* and *Orang Ulu*—the groups that had distinct cultural practices and beliefs from each as well as within them (such as *Orang Ulu*). While a diverse mix of indigenous groups, the *Dayaks* formed over 45 percent of Sarawak’s total population of 1.6 million, but the post-1990 census data would fail to show the economic gains by this category. Clearly, as suggested by Mason & Jawan (2003), the indigenous, non-Malay *Bumiputra* did not seem to have gained as much as the Malays, more so in urban centers, through the two decades of NEP. Moreover, as mentioned earlier, within the Malays the urban Malays could benefit much more from the NEP as compared to the rural Malay peasants (Fenton, 1999).

As noted by Mohamad (2003), language nationalism appeared to be one of the key aspects surrounding the NEP and consequently Malay replaced English as a medium in the Malaysian education system. The Chinese and Indian schools were spared at least at the elementary levels. Now perhaps as a result of such policy, the enrollment of non-Malays in national schools had come down to two percent by 2000s (Mohamad, 2003, p. 163). Despite several shortcoming raised here, the NEP had helped Malays in terms of upward mobility and also in terms of striking some balance in terms of gender equality, which was still a challenge for the Chinese and the Indians (Mohamad, 2003). One of the many implications of the language policy was the extensive use of Malay in public broadcasting (McDaniel, 1994). Such a use could mean further distance from English language for the children educated in Malay medium schools.
Following the end of NEP in 1990, the government implemented a ten year National Development Policy focused more or less on the ethnic dimension of the Malaysian social development, a continued improvement in interethnic business relations, and the creation of a dynamic and independent Bumiputra middle-class (Gomez, 2003). Over a period of time, the interethnic exchanges appeared to be improving, especially among the younger generations (Gomez, 2003). Kheng (2003) noted that the ability across communities to bargain and negotiate had perhaps led to an acceptance of special privileges to the Bumiputra as well as a continued and peaceful development of the Malaysian economy.

Malaysia’s Technological Growth

Post independence, Malaya lacked technology, infrastructure, institutions, and an industrial base (Ali, 1984). Most of country’s entrepreneurial talent was limited to expatriate or indigenous groups, but even these groups were dependent on external power centers for resources and ideas. By the early 1980s, an institutional push towards new firms in Malaysia became clearly evident. The key challenges of the era (1957-1980s) included shortage of skilled labor, technical rigidities, dependence on technological transfer from the developed world, and the need for development of indigenous technology (Ali, 1984). Ali (1984) also cited a need for cooperation and specialization across developing countries to reduce the problems linked with technological dependency—some of which was indeed evident in country’s “Look East Policy”, especially during Mahathir’s leadership during 1980-90s.
By late 1990s, many nations started to embark upon Information Technology as the means of their growth and advancement in various sectors of economy and daily life. New communication technologies including Internet and Computer were viewed as a key tool to foster development. A number of countries in the developing world, especially those like Malaysia, did not want to stay behind in the process. As a result, IT was identified as one of the five key technologies for reaching the status of a “developed nation” during the Sixth Malaysia Plan (1991-5) (Yong & Ng, 1999, p. 143).

In practice, the rapidly growing number of Internet users in Malaysia, which grew from 3.7 million in 2000 to 10.4 million in 2005, was perhaps an evidence of country’s unusual ICT growth during the past decade (Internet World Stats, 2006). In neighboring countries like Thailand and the Philippines the total Internet users accounted for around 13 and 8.7 percent of the total population respectively, whereas the Internet users in Malaysia accounted for over 42 percent of the current population (CIA, 2006). Thus, when compared with other countries in terms of the recent ICT scenario, Malaysia appeared to have an edge, which can largely be attributed to a mammoth national IT strategy that included implementation of the Multimedia Super Corridor (MSC). Figure 1 below represents an outline of the MSC vision (MSC, 2007).

The MSC provided infrastructure for research development and training at the proposed cite Putra Jaya or Cyber Jaya. A number of MSC projects focused on e-Government applications wherein the interactions between citizens and government were to be revamped using information technology for improved service delivery. One of the key MSC policies was the promotion of ICTs in education at various levels. One such
project focused on improving the Malaysian school education system was Smart Schools (Arif & Chuan, 1998).

![The MSC Malaysia Vision: From Here To 2020](image)

*Figure 1. The MSC Malaysia Vision (MSC, 2007)*

While the incorporation of ICTs across the institutes for higher education was not clearly evident on the MSC vision, but the possibilities for such incorporation could not be denied considering the growth and expansion of the MSC discussed in the first chapter of this study. In order to encourage the growth of the IT sector, the multimedia companies were encouraged to apply for MSC status. While MSC aimed at attracting local as well as international multimedia companies, Saloma-Akpedonu (2007) suggested that:

Attracting “world-class” Malaysians and non-Malaysians from high-tech locales such as Silicon Valley and Singapore is central to this goal. In the context of *bumiputera* (Malay) –first policy, the recognition that many “world-class” Malaysians are non-*bumiputeras*, requires the MSC to negotiate between these
rationalities and their translation to policy and practice (Saloma-Akpedonu, 2007, p. 7).

While Saloma-Akpedonu’s comments revealed a real challenge, they also underlined the fact that there existed the confusion among some scholars in terms of understanding the difference between the categories of Bumiputra and Malay. But as discussed in the previous section, this indeed overlooked the fact that Bumiputra actually included other indigenous groups as well.

Gender and Development in Malaysian Context

According to Stivens (1991), gender had not been covered sufficiently in the scholarly traditions focused on social relations and class movements of the (Southeast Asian) region. While a younger generation of scholars had started to look into the social relations, in terms of ethnicity, the emphasis on gender was still lacking through the 1990s (Stivens, 1991). Nonetheless, those who began to deal with gender issues in Malaysia considered the impact of development on women as very mixed. It was also acknowledged that the education and employment conditions had been conducive enough for creating an improved socio-economic environment for Malaysian women. However, assuming a linear progression to understand the status of women in Malaysia would be erroneous. While the modernity had perhaps freed women from certain oppressive traditions, it displaced them from rural production. In fact, some of the later writings on Adat seemed rather egalitarian when compared to the masculine image of a Malay person in many colonial writings. On the one hand, although the earlier writings on Malaya emphasized on women, they had essentially focused on rural Malay women. While on the
other hand, the later (more recent) writings had focused on either a global factory girl or a modern Muslim woman (a child of NEP) images (Stivens, 2000). However, the Malaysian woman had been undergoing complex changes and there was no single image to describe her (Ng & Leng, 1999). To develop a somewhat better understanding of gender and development in modern-day Malaysia, it would be useful to consider the gender roles during the earlier times, especially the colonial era as it had left a lasting impression on Malaysian society and economy.

Women in Colonial Economy

During the nineteenth century, a typical Malay village produced a majority of what it consumed. The basic unit of this rural economy was family and each member (from a small child to the elderly) contributed with labor towards the proper functioning of this unit. While there existed a traditional division of labor across men and women in this system, the role of women was considered rather crucial, as she not only provided the useful labor but also produced the children who contributed to the unit and to the economy when they grew up. Women were involved in various economic activities in the paddy cultivation, fishing, textiles, tin mining, and even the house construction sectors. These sectors witnessed a rather varying degree of participation by the women. For instance, on the one hand women were involved in supportive activities, such as mending the nets and sorting, drying, and processing, besides assisting the men in selling the fish. While on the other hand the women were the primary labor in producing the textiles in the rural economy (Kaur, 1994).
The capitalist practices during the British colonization of Malaya redefined labor as a marketable commodity. Both male as well as female workers were imported from China and India in large numbers. Despite an initial resistance, the Malays also started entering this capitalist system at later stages due to a worsening rural economy. While the colonial capitalism influenced and eventually controlled the rural economy, it radically altered the pre-existing gender roles. The role of women in the new economic system was confined to domestic labor, while the men sold their labor power to the capitalists. Nonetheless, women continued to be a part of the agricultural sector and their share remained somewhat similar to that of men’s until the early years of the twentieth century. The colonial arrangement gave more importance to men in the beginning in terms of control and financial advantages. Moreover, the mechanization of industries, such as textiles, meant that women were being marginalized further. Through the mid-1970s, the manufacturing industries were based in urban areas and that resulted in mass exodus of people, both men and women, from the rural areas. Through a comparative analysis of the census data from 1970 and 1980, Kaur (1994) demonstrated that the share of women had indeed increased across various sectors of the (Peninsular) Malaysian economy. These sectors included food manufacturing, textiles, foot ware, electrical appliances, as well as scientific and professional equipment. Yet these industries were considered more feminine than others and were not as well-paid as many other male-dominated industries and jobs (Kaur, 1994). Between 1970 and 1990, the proportion of women (primarily Malay) dropped from 67.9 to 28.2 percent and that of men dropped from 49.6 to 28.9 percent in the agriculture and forestry sector (cited in Stivens, 2000, p. 21). Mass exodus
of rural women due to urbanization and industrialization was indeed reflected in these figures.

**Gender across Ethnic Groups**

As mentioned earlier, the colonial literature often focused on rural Malay women. Therefore, the roles described in the traditional Malay rural economy were perhaps more reflective of Malay women’s position in the community and economic activities. While the Chinese women were mainly brought to Malaya as peasants, sex workers (controlled by secret societies), domestic help, factory workers, barbers, and a variety of other economic roles, the Indian women were mostly the wives of plantation workers and civil servants (Eng, 1986 & Arasaratnam, 1979). The rural Indian women mostly worked in and around the rubber estates. They lived in poor socio-economic conditions and earned lower wages than their male counterparts in other jobs. The urban-based female factory workers had a similar story, but the nature of job was somewhat more temporary for most of these women and most of them would stop working as and when they got married (Oorjitham, 2003). While measurement of the impact of development across the ethnic groups appeared to be a complex task, Stivens (2000) suggested that there had been some increase in the number of free-choice marriages over the arranged marriages. Moreover, the number of intermarriages (marriages across ethnic groups) that was non-existent in 1975 had increased, but the number was still very low.

**Women and Politics**

As Peletz (1996) noted, in the Malay world of the nineteenth century, women were hardly viewed as inferior to men although a gendered division of labor was clearly
evident. They were involved in a variety of rural economic activities such as paddy and rubber industries, wage work, petty trade, and so on. The gender roles were considered complimentary rather than hierarchal. Although women were mainly associated with domestic matters, their activities went beyond the limits of household as well as clan.

Another author suggested:

In Malaysia, amongst Malay women and men at least, women are as likely as men to join political parties, to participate in the special activities of their sections of the party, to vote, to campaign on behalf of the party of which they are members or to attend party conferences at state and national levels (Manderson, 1991, p. 51).

While Chinese and Indian communities appeared to be more patriarchal due to Confucian and Hindu influences, the Malay social structure appeared to be somewhat more egalitarian (Eng, 1986 & Arasaratnam, 1979). However, it was quite possible that non-Malay women restrained from political issues in general due to the ethnic politics in the country. Stivens, in fact, argued that the practice of veil symbolized political Islam and women were an important symbol of this politics. Moreover, in Malaysia’s case,

Admist this politicisation of Islam, extreme sensitivity about ethnic religious differences has left non-Muslim women and men (Christian, Buddhists, Hindus, Daoists and Sikhs) highly anxious but often unable to find a voice in which to express those anxieties (Stivens, 2000, p. 31).
Although the labor market participation of Malaysian women, overall, seemed to have improved post-1980s, their participation in the political arena remained low. Still, Stivens (2000) saw a more democratic future as possible.

**Women in the New Economy**

Due to civil society action and pressure from various entities, the federal government designed a National Women’s Policy in 1989 (included in the form of a chapter titled “Women and Development” in the sixth Malaysia plan). This perhaps led to an environment conducive for gender development and one of the outcomes was an increased participation of women in the labor force. The overall percentage of women participating in the Malaysian labor force increased from 25 percent in 1957 to 47.3 percent in 2004 (Ng, 1999, p. 170 & Jabatan Perangkaan Malaysia, 2004b, p. 27). Yet, as per Ng (1999), the wage differences continued to exist through the 1990s. Furthermore, the diversity across ethnic groups and the presence of classes within the individual groups meant that the elite within each ethnic group were more likely to benefit from such policy measures, as the lower classes might not be educated enough to reap the benefits of new policies. A similar class and gender polarization was visible in rural areas where men typically had stronger political control and access to resources than women.

The latest trends in the labor market in terms of gender equity were quite evident. For instance, Ng and Mitter (2005) reported that around 56 percent of the supervisory executives employed in a Malaysian teleworking company during 2004 were women and 80 percent of these women were married. This implied that despite their conventional
role as wives and mothers, these women were sufficiently skilled to perform a supervisor’s role. Ng and Mitter (2005) also reported that while the same company had employees with at least 11 years of schooling with three years’ work experience, the (college) graduates with computer and technological skills were preferred by the employers. It was evident that the percentage of women in IT education programs was fairly high in the early 1990s. In fact, women were 51.4 percent of the total students enrolled in IT courses across seven local universities during the 1990-91 academic year (Yong & Ng, 1999, p. 146). But a preference for ICT skills would also mean that if such skills were acquired during the span of (non-technical) college education, it could still give the graduates an extra edge when they entered the job market (even in the cases of graduates from non-technical disciplines).

Besides the progress noted by Ng & Mitter (2005), Oorjitham (2003) suggested some progress in the fields of higher education and health as well. In terms of higher education, although the percentage of women in higher management across Malaysian universities was low, the total proportion of women employed in these universities had increased between 1957 and the 1990s (Muhamed, 2003). The latest figures from 1990s suggested that the proportions of women across Universiti Malaya, Universiti Sains Malaysia, and Universiti Utara Malaysia were 42, 32, and 48 percent respectively (Muhamed, 2003, p. 273). Muhamed (2003) cited structural, cultural, and psychological factors involved in determining the participation of women in the academia, and considered the patriarchal heritage of the Malaysian society as the central issue that limited the progress of women.
Gender Development in Malaysia: Key Challenges

Women had been called to take part in Malaysia’s socio-economic development in Vision 2020. Salleh (1994), based on a personal interpretation of the holy Quran, suggested that while there were four domains of women’s life (including self, family, society, and environment), her life depended on the extents to which her potentials were actualized. However, her entry into the labor market had been accompanied by a number of issues, such as increasing juvenile delinquencies. But such problems were much more complex than just being an outcome of women engaging in formal economic activities (Salleh, 1994). The mass media, according to Salleh (1994) had aggravated such problems more than women’s involvement in economic activities. Other authors such as Stivens (2000) also suggested that the mass media especially print were directed somewhat against women as they kept on debating on the pressures and the costs of dealing simultaneously with work and domestic tasks. Nonetheless, the Islamic perspective suggested that women should be involved in the development (not just in economic terms) of the society as well as the country (Salleh, 1994).

While identifying the key challenges in gender development in the Malaysian context, Ng and Leng (2000) found the increased levels of materialism, individualism, and consumerism evident across various levels of the Malaysian society. The ethnic and religious differences further complicated the process of gender development. The urban-based radical middle-class women’s groups dominated the civil society (Stivens, 2000). There was a need for openness towards dialogue among the women’s organizations as
well as harmony in action around the civil society and non-governmental organizations (Ng & Leng, 1999).

Summary

The ethnic composition of its population made Malaysia a unique nation state in Southeast Asia, where people from different regions came and became a part of this multicultural society. Despite the political tensions, the country clearly demonstrated a workable economic development model through the New Economic Policy. Bargaining across diverse ethnic groups, accommodations of each other’s interests, and building a consensus had been the challenge as well as a key to success for Malaysia. Furthermore, with the implementation of the Multimedia Super Corridor, Malaysia appeared to be playing a leading role in the IT revolution.

From the arrival of Malays to the implementation of Multimedia Super Corridor, Malaysia had witnessed numerous social, cultural, political as well as economic developments. This chapter touched upon some of these developments. Based on the review of literature and the background, Malaysia appeared be a fascinating ground to explore the relationship between ethnicity and ICT use in higher education. Also, the gender disparity across different ethnic groups in Malaysia was something that seemed to have ample scope for exploration and research. However, it was evident that Malaysia had a substantial number of indigenous peoples, such as Iban who were not Malays. Thus, in order to include such groups, the categories considered for this study were Bumiputra and non-Bumiputra, wherein Bumiputra would include Malays and other indigenous groups and non-Bumiputra would include Indian, Chinese, and other
immigrant groups. As the MSC had been implemented for over a decade at the time of this study, it appeared to be the apt time to start assessing the social outcomes on the ground. This study was a small step in this direction and tried to supplement earlier research done in the area of gender, ethnicity, and ICT.
CHAPTER 4: RESEARCH METHODOLOGY

This chapter describes the research method used for this study. The aim of this study was to develop an understanding of the influence of gender and ethnicity on the use of ICT among the students in the Faculty of Arts and Social Sciences at Universiti Malaya in Kuala Lumpur—the capital of Malaysia. One way of doing this was to assess the ICT usage patterns in terms of different ethnic groups (Bumiputra as well as non-Bumiputra, primarily Chinese and Indians) as well as in terms of male and female users. The analysis of findings would then give a clearer picture of how the government policies and programs eventually translate at the ground. This study was perceived as a small step in the area of gender, ethnicity, and ICT related research in a non-Western setting.

Based on the questions raised in the introduction chapter and the literature reviewed, this study sought to test the following hypotheses:

**Hypothesis 1:**

_Bumiputra_ students will use ICT, in terms of weekly hours spent on computer for study purposes, less than non-_Bumiputra_ students (Based on: Nordin, 1997, p. 42).

**Hypothesis 2:**

Female students will use ICT, in terms of weekly hours spent on computer for study purposes, less than male students (Based on: UNESCO, 2003, p. 19).

**Hypothesis 3:**

_Bumiputra_ students will have less access to ICT, in terms of computer access at home, compared to non-_Bumiputra_ students (Based on: Nordin, 1997, p. 42).
**Hypothesis 4:**
Female students will have less access to ICT, in terms of computer access at home, compared to male students (Based on: UNESCO, 2003, p.19).

**Hypothesis 5:**
*Bumiputra* students will report being Advanced users of ICT less than non-*Bumiputra* students (Based on: Nordin, 1997, p. 42).

**Hypothesis 6:**
Female students will report being Advanced users of ICT less than male students (Based on: UNESCO, 2003, p. 19).

**Method**

In order to test the first two hypotheses, it was important to know the total number of hours spent on computer (including internet access) for studies per week by students representing different ethnicities and gender. Similarly, the rest of the hypotheses demanded answers which could be found out only by the means of asking questions to the target population of students. This was done through a survey and a questionnaire was used as the survey tool.

**Proxies**

The patterns of ICT use could be determined through a number of factors, such as the amount of time (in hours) spent on computer (including internet access) in doing schoolwork, major activities on computer, as well as the helpfulness of computer in achieving the academic tasks successfully as identified by the respondents. The data on
age, gender, and ethnicity were collected so as to classify the respondents into different categories in order to understand the current pattern in ICT use across the student body.

On the one hand, the knowledge of time spent on computer, Internet, and studies per week could help test the first two hypotheses on the pattern showed by the self-reported use of ICT for academic purposes, in terms of weekly hours spent on computer for study purposes, across male and female students as well as across different ethnic groups. While on the other hand, additional information, such as knowledge of different applications, age of starting computer use, and respondents’ own assessment of their computer literacy, could be collected in order to understand some of the ways in which ICT has touched upon the lives of students in Arts and Social Sciences. The knowledge of places for ICT access and the difficulty in accessing a computer or Internet could help define the relationship between gender and access as well as ethnicity and access (raised in third and fourth hypothesis).

Survey Tool

A pre-test of the questionnaire was first conducted in Ohio University, Athens during November 2006. The survey conducted at Ohio aimed at exploring ICT usage patterns across two groups, namely graduate students from developing countries and from high-income countries, as well as across male and female graduate students enrolled at Ohio University, Athens Campus. This study involved a telephone survey with 15 male and 15 female respondents. Tools like paper-pencil questionnaire and qualitative interviewing were eliminated due to limited time. An email survey was also not considered due to a risk of low response rate. The results of this study indicated that
patterns varied significantly across male and female students, but the study failed to show any significant difference between students from developing and high-income countries. The study also revealed that all the respondents found ICT helpful in successful completion of their academic tasks.

The pre-test was helpful in several ways in determining a workable survey tool for fieldwork in Malaysia. For instance, the questionnaire sought basic information, such as respondent’s age, gender, nationality, program of study, and places for Internet access. Further questions sought information on the number of hours spent on computer (including Internet access) in preparing assignments per week, total number of hours spent on Internet per week, as well as the number of hours spent on Internet doing schoolwork per week. In order to understand the respondent’s familiarity with computers, the programs/applications that they were familiar with and felt confident using for academic tasks (e.g. MS Word, Excel, Power Point, Internet Explorer, etc) as well as their major activities on computer (e.g. desktop publishing, presentations, Internet search, presentation development, report compilation, note taking, etc) were asked. In order to have some idea of respondent’s time commitment to studies and their experience with computers, information on total time (in hours) spent on schoolwork during a week and the lengths (in years/months) of computer as well as Internet use by the respondent was sought. Moreover, information was sought on respondent’s self reported level of their computer literacy (with relation to its use in their field of study), difficulty in accessing computers/Internet and how they think it could be addressed, and difficulty in using computer/Internet and how they think it could be addressed. The last question asked the
respondents if they were financially capable—“would they like to spend on acquiring a computer and Internet connection? Why?” While most of the above questions were open-ended, the survey also included some questions that used a likert-scale, as follows:

1. “Do you think Internet is helpful in your academic and research work?”
2. “Do you think computer has helped you significantly in your studies?”
3. “Do you think computer has helped you achieve your academic tasks successfully?”
4. “Do you think Internet has helped you achieve your academic tasks successfully?”
5. “Do you think that Internet has often been a source of frustration for you?”
6. “Do you think that Computer has often been a source of frustration for you?”

The pre-test experience demonstrated that the telephone survey was not the most convenient means for gathering the information sought in the questionnaire. Thus, it was decided to deploy a self-administered paper-pencil questionnaire as the primary tool for this study (see Appendix A). Based on the earlier experience, the language in the questionnaire to be used in Malaysia was simplified further. The possibility of conducting unstructured interviews with students as well as instructors was also considered.

The modified questionnaire included 17 open-ended questions, six questions that used likert-scales, and one close-ended question. While many questions were the same as in the pilot study, “Nationality” was changed to “Ethnic Background” (e.g. Malay, Chinese, Indian, Other). The program of study spelled out whether bachelor or masters, and department (major) was also included, so as to have a greater clarity about their
academic background. The ordering of questions was also changed after a pre-test of the questionnaire in Kuala Lumpur. For instance, after the basic information-related questions on age, gender, ethnicity, the first question was “What is the total time (in hours) that you spend on your studies per week (the latest that you can remember; include readings, preparing assignments, research and other study-related activities)?” The next question was: “Out of the time mentioned in the above answer, how much time (in hours) is spent on Computer (including Internet access) for your studies (the latest week that you can remember)?” The questions that followed regarding Internet use were: “How much time (in hours) do you spend on the Internet per week (the latest week that you can remember; include all your activities on the Internet)?” and “Out of the time mentioned in the above answer, how much time (in hours) do you spend on Internet as a part of your studies per week (the latest week that you can remember)?”

The questions that remained almost the same were: the programs applications that the respondent was familiar with and felt confident using for studies and academic tasks, major activities on computer, the lengths (in years/ months) of computer as well as Internet use by the respondent, and respondent’s self reported level of their computer literacy (compared to other students in their field of study). The responses to the questions—on difficulty in accessing computers/ Internet and possible solutions, and on difficulty in using computer/ Internet and possible solutions—were used as basis for short-interviews with some of the respondents. The question on purchasing ability was also framed differently after the pre-tests, and it read: “If you are financially capable, how much would you like to spend on purchasing a computer and Internet connection?”
The options provided were “RM 500-RM 1000, RM 1000–RM 2000, or Above RM 2000” (RM = Malaysian Ringgit; 1 US dollar = 3.6 RM). Likewise, the questions on difficulty in access and use were presented as “Do you have any difficulties in gaining access to Computer or Internet? If yes, what are they? And how do you think these difficulties could be resolved?” and “Do you face any difficulties in using Internet or Computer? If yes, what are they? And how do you think these difficulties could be resolved?”

Since the study heavily depended on respondents’ self-reported assessment of their beneficial use of computers, it was important to ensure that people usually had a good knowledge of their capacities. In order to address this issue, data were obtained from the respondents on different aspects, such as: the duration for which they had used computers and the internet; the level of their computer use (with relation to the use of computers by others in the field of their study); the computer applications and programs that they were familiar with; and any difficulties that they faced in using the computer or Internet. Some of the respondents who volunteered to give additional feedback were interviewed in this regard. The paper-pencil method proved helpful in getting interview responses and it also provided scope for explanation by the researcher if a respondent needed any clarification.

**Sampling**

The University of Malaya (or Universiti Malaya) located in Kuala Lumpur, Malaysia, was chosen for conducting this study due to its reputation as one of the oldest and most highly regarded institutions of higher education in the region. As the review of
literature suggested, while well-established academic institutions are embracing ICT, newly established institutions of higher education tend to be more adaptable towards these new technologies, especially across various disciplines (Lewis & Goodison, 2004). Thus, this study tried to find out the ways in which ICT had penetrated the Faculty of Arts and Social Sciences in a well-established public university. The study involved field research at *Universiti Malaya* between December 1 and 20, 2006. The universe for this study included students and lecturers at the Faculty of Arts and Social Sciences in *Universiti Malaya*.

Since the study took place during the month of December, a significant number of student respondents were not readily available for feedback. This was not known at the time of planning this research. The sample was stratified on the basis of ethnicity, and an equal number of male and female student were drawn for obtaining feedback for the study. The sample-frame was a quasi-list of residential colleges (on-campus dormitories) provided by the Arts and Social Sciences faculty registrar’s office. *Universiti Malaya* provides on-campus housing in the form of residential colleges to its graduate and undergraduate student body. There is no pre-determined pattern of allotment of the dorm rooms in these colleges. The students sign a contract as per the availability and their own preference. The whole system provides scope for students from diverse faculties to live together across these residential colleges. For the purposes of this study, the colleges were shortlisted on the basis of higher number of students on the basis of information provided by the Faculty of Arts and Social Sciences. The college presidents (or student representatives) of these colleges were then contacted in person as well as through phone.
Finally, through the networking of these representatives and from the faculty premises, 32 respondents (16 male and 16 female students) spread across different residential colleges volunteered to participate in the survey. A fair representation of students from diverse ethnic groups was a key concern and challenge in this study. Thus, the ethnic ratio of these respondents was maintained through stratified sampling. Five faculty members were also interviewed for further qualitative feedback. The interviews were kept unstructured with a hope to get an unconditioned feedback. Besides these tools, field notes were also maintained.

About Universiti Malaya

*Universiti Malaya* (UM) was established with the unification of the King Edward VII College of Medicine (founded 1905) and Raffles College (founded 1928) in April 1949 and is the oldest institution of higher education in Malaysia today. The term “Malaya” is old name for the region covering peninsular Malaysia (including Singapore). As a result of rapid growth during the first decade of UM’s establishment, two autonomous divisions, in Kuala Lumpur and Singapore, were born by 1959. Finally, in January 1962, while *Universiti Malaya* attained the status of a national university in Malaysia, University of Singapore became the National University of Singapore.

In 1948, the Carr-Saunders Commission recommended in its report that:

The *Universiti Malaya* would provide for the first time a common centre where varieties of race, religion and economic interest could mingle in joint endeavour . . . For a University of Malaya must inevitably realise that it is a university for Malaya (*Universiti Malaya*, 2007).
Currently spread over a 750 acre campus in southwest Kuala Lumpur, UM indeed attracts students from diverse ethnic and economical backgrounds. Over 20,800 undergraduate and 8,500 graduate students are currently enrolled at thirteen faculties (which are further divided into academic departments) across UM. The university also has over 1,250 international students from countries like Australia, China, Indonesia, Pakistan, Saudi Arabia, etc. In terms of its academic resources, UM has around 1,940 teaching staff and its library holdings exceed 1.4 million volumes (*Universiti Malaya*, 2007).

About the Faculty of Arts and Social Sciences

The Faculty of Arts and Social Sciences at UM enjoys a high reputation in the region and is known for the development of arts and social science studies. Since its inception in 1959, the faculty has been a leading teaching and research facility in Malaysia. Besides the regular teaching staff, the faculty invites visiting professors and fellows to enhance the learning environment as they share their unique experiences in teaching and research. The Faculty of Arts and Social Sciences has sixteen departments that offer Bachelor of Arts (BA) with some of the departments offering graduate degrees as well. These departments include Administration and Social Justice, Anthropology and Sociology, East Asian Studies, English, Environmental Studies, Gender Studies, Geography, History, Indian Studies, International and Strategic Studies, Mathematics, Media Studies, Population Studies, South East Asia Studies, Chinese Studies, and Township and Urban Planning Studies.
PTM: Centre for IT

_Pusat Teknologi Maklumat_ (PTM), meaning the Centre for Information Technology, caters to UM’s ICT needs by providing infrastructure and technical support. PTM’s functions vary from managing the Internet and Intranet throughout UM to providing ICT resources across different faculties to maintaining UM’s online presence and university-wide applications. Besides, PTM is responsible for the security and integrity of the systems used on campus, particularly UM’s research and development work. As a part of its policies, PTM provides each faculty with a technical support person for the regular upkeep of ICT resources within the faculty. The vision of PTM is:

To provide excellent service mindset through an ICT infrastructure that is comprehensive, responsive, intuitive, reliable, available and up-to-date (_Universiti Malaya_, 2007).

Analysis

The first two hypotheses were tested after the analysis of responses to the question: “What is the total number of hours that you spend on computer (including internet access) for your studies per week (the latest week that you can remember)?” on the basis of ethnicity and gender. Non-repeated independent t-tests were conducted to test these hypotheses. For the third and fourth hypotheses, the findings from question on “places for Internet access” were used. For analysis, the data were arranged in separate contingency tables as suggested by Bruning and Kintz (1968) for the remaining four hypotheses to be tested. The value of Chi-square then helped determine whether a hypothesis was supported or not in each of these cases.
Summary

The methodology described in this chapter primarily included administering a paper-pencil questionnaire survey at Universiti Malaya in Kuala Lumpur between December 1 and 20, 2006. The respondents included 16 Bumiputra and 16 non-Bumiputra students studying at the Faculty of Arts and Social Sciences. There were eight male and eight female students in each category. The analysis of the data gathered from the survey helped determine whether the hypotheses stated at the beginning of this chapter are supported or not.
CHAPTER 5: RESEARCH FINDINGS

Divided into two parts, this chapter analyzes data obtained through the survey using statistical tools, such as t-test, correlation and chi-square. The first part tests the hypotheses laid out in the previous chapter. The second part reports other findings from the survey. The results obtained in this chapter are further discussed in the final chapter.

Testing the Hypotheses

Table 1 shows the mean of total number of hours spent using a computer (including Internet access) per week by each respondent in terms of ethnicity. The total time (in hours) spent on computer was found to be higher in case of non-Bumiputra as proposed by the first hypothesis. However, the results of an independent-samples t-test based on the above data resulted in a $t$ value of 0.320, indicating that the difference is not statistically significant. Thus, the findings failed to support the first hypothesis that the Bumiputra students would use ICT, in terms of weekly hours spent on computer for study purposes, less than non-Bumiputra students (Based on: Nordin, 1997, p. 42).

The mean of total number of hours spent on a computer (including Internet access) per week by each respondent based on gender is shown in Table 2. Contrary to the second hypothesis, the time (in terms of total number of hours) spent on computer was higher in case of females. Moreover, the results of an independent-samples t-test showed that this difference was statistically significant. Thus, the analysis did not support the second hypothesis that the female students would use ICT, in terms of weekly hours spent on computer for study purposes, less than male students (Based on: UNESCO,
Table 1

Mean of total weekly hours spent on computer (including Internet) for studies by ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra</td>
<td>13.25</td>
<td>16</td>
<td>7.39</td>
</tr>
<tr>
<td>Non-Bumiputra</td>
<td>12.34</td>
<td>16</td>
<td>8.60</td>
</tr>
</tbody>
</table>

$t = 0.320, p > 0.05, NSD$

Table 2

Mean of total weekly hours spent on computer (including Internet) for studies by gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>10.28</td>
<td>16</td>
<td>6.51</td>
</tr>
<tr>
<td>Female</td>
<td>15.31</td>
<td>16</td>
<td>8.55</td>
</tr>
</tbody>
</table>

$t = -1.872, p < 0.05$

Table 3

Mean of total weekly hours spent on studies by gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>20.12</td>
<td>16</td>
<td>10.52</td>
</tr>
<tr>
<td>Female</td>
<td>28.00</td>
<td>16</td>
<td>13.66</td>
</tr>
</tbody>
</table>

$t = -2.35, p < 0.05$
Rather, the findings showed that the female students used ICT, in terms of weekly hours spent on computer for study purposes, more than the male students.

A major reason for this difference could perhaps be that the girls overall spent more time on studies than boys. As suggested by Table 3, there was indeed a significant difference between the total hours spent on studying in each case. Since both Table 2 as well as Table 3 showed a significant difference, it led to the question whether or not there was a correlation between the study hours and the hours spent on computer (including Internet). The value of correlation coefficient was found to be 0.605 ($P < 0.01$), which suggests that the correlation between the amount of study hours and the number of hours spent on a computer was positive. Table 4, on the other hand, failed to show such a difference (as Table 3) in terms of ethnicity.

According to the third Hypothesis, *Bumiputra* students were expected to have less access to ICT, in terms of computer access at home, compared to non-*Bumiputra* students (Based on: Nordin, 1997, p. 42). In order to test this, the data on access at home were inserted in a 2 x 2 contingency table (Table 5). As the table shows, there was no significant difference in terms of ICT access at home between the *Bumiputra* and non-*Bumiputra* students and the findings failed to support the third hypothesis.

In case of Table 6, however, the value of Chi-square was found to be 4.571 ($p < 0.05$), which meant that there was indeed a significant difference between male and female students in terms of access to computer at home. Hence, contrary to the fourth hypothesis, which stated, “Female students will have less access to ICT, in terms of computer access at home, compared to male students (Based on: UNESCO, 2003, p.19),”
Table 4

*Mean of total weekly hours spent on studies by ethnicity*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Mean</th>
<th>N</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra</td>
<td>24.12</td>
<td>16</td>
<td>12.44</td>
</tr>
<tr>
<td>Non-Bumiputra</td>
<td>24.00</td>
<td>16</td>
<td>13.25</td>
</tr>
</tbody>
</table>

$t = 0.028, p > 0.05, NSD$

Table 5

*Computer access at home across Bumiputra and non-Bumiputra students*

<table>
<thead>
<tr>
<th>Access</th>
<th>No access</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Non-Bumiputra</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>18</td>
</tr>
</tbody>
</table>

*Chi-square = 2.032, $P > 0.05, NSD$

Table 6

*Computer access at home across female and male students*

<table>
<thead>
<tr>
<th>Access</th>
<th>No access</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>18</td>
</tr>
</tbody>
</table>

*Chi-square = 4.571, $P < 0.05$ (the condition of a minimum cell value of 5 was not met)*
the ICT was found to be more accessible at home for the female students than their male counterparts.

This finding led to the curiosity if the access to computer at home contributed towards spending more time on ICT. For this, an independent-samples t-test was conducted to see if there was a significant difference in terms of time spent on computer between those who had computer access at home and those who did not have such access. The result of the t-test indicated that there is indeed a significant difference, as the value of $t$ was 2.359 ($p < 0.05$).

According to the fifth hypothesis, the Bumiputra students were expected to report being advanced users of ICT less than non-Bumiputra students (Based on: Nordin, 1997, p. 42). In fact, none of the Bumiputra students claimed to be an advanced computer user during the survey. As shown in Table 7, all the Bumiputra students opted to be termed either a beginner or a medium-level user. The chi-square value was 7.835 ($p < 0.05$), although one of the cell had zero value which does not satisfy the condition of a minimum cell value of 5 for the chi-square test. Nonetheless, the difference in skill level was clearly significant and the finding supported the fifth hypothesis.

Table 8 fails to suggest any significant difference in terms of gender. Hence, although the number of male advanced users is greater than that of female advanced users, the finding failed to support the sixth hypothesis that the female students would report being advanced users of ICT less than male students (Based on: UNESCO, 2003, p. 19).
### Table 7

*Self-reported level of computer use across Bumiputra and non-Bumiputra students*

<table>
<thead>
<tr>
<th></th>
<th>Advanced</th>
<th>Medium or Beginner</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra</td>
<td>0</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Non-Bumiputra</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>26</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 7.385, P < 0.05 (the condition of a minimum cell value of 5 was not met)*

### Table 8

*Self Reported Level of Computer Use across female and male students*

<table>
<thead>
<tr>
<th></th>
<th>Advanced</th>
<th>Medium or Beginner</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>2</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>26</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 0.821, P > 0.05, NSD (the condition of a minimum cell value of 5 was not met)*
Other Findings

One of the questions asked in the survey was about the willingness to spend on new technology. On calculating the Chi-square value for the contingency table (Table 9), it was found that there was no significant difference between the Bumiputra and non-Bumiputra students in terms of willingness to spend on computer and Internet. While fewer Bumiputra students were willing to spend above 2,000 Malaysian Ringgits on computer and Internet compared to their non-Bumiputra colleagues, the value of Chi-square (0.125) was not significant. Just like Table 9, Table 10 failed to show any significant difference across male and female students in terms of willingness to spend on ICT.

On the issue of difficulty in accessing a computer, there was no significant difference between the number of those reporting a difficulty and the number of those reporting no difficulty in terms of gender as well as in terms of ethnicity (Tables 11 and 12). Similarly, there was no significant difference in terms of either ethnicity or gender between the number of those reporting a difficulty and the number of those reporting no difficulty in using a computer (Tables 13 and 14).

As shown in Figures 2 and 3, all the respondents either agreed or strongly agreed with the statement that computer was helpful in their studies. However, as suggested by Figure 4, 18.75 percent respondents agreed with the statement that computer was often a source of frustration. A majority (over 83 percent) of those reporting frustration were non-Bumiputra. Thus, although the Bumiputra students did not claim to be advanced users
Table 9

*Willingness to spend on ICT across Bumiputra and non-Bumiputra students*

<table>
<thead>
<tr>
<th></th>
<th>Above RM 2000</th>
<th>Below RM 2000</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bumiputra</em></td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td><em>Non-Bumiputra</em></td>
<td>8</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td><em>Total</em></td>
<td>15</td>
<td>17</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 0.125, P > 0.05, NSD*

Table 10

*Willingness to spend on ICT across female and male students*

<table>
<thead>
<tr>
<th></th>
<th>Above RM 2000</th>
<th>Below RM 2000</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Female</em></td>
<td>9</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td><em>Male</em></td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td><em>Total</em></td>
<td>15</td>
<td>17</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 1.129, P > 0.05, NSD*

Table 11

*Difficulty in computer access across Bumiputra and non-Bumiputra students*

<table>
<thead>
<tr>
<th></th>
<th>Difficulty</th>
<th>No difficulty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bumiputra</em></td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td><em>Non-Bumiputra</em></td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td><em>Total</em></td>
<td>13</td>
<td>19</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 0.129, P > 0.05, NSD*
### Table 12

**Difficulty in computer access across female and male students**

<table>
<thead>
<tr>
<th></th>
<th>Difficulty</th>
<th>No difficulty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Male</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>19</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 0.129, P > 0.05, NSD*

### Table 13

**Difficulty in using computer across Bumiputra and non-Bumiputra students**

<table>
<thead>
<tr>
<th></th>
<th>Difficulty</th>
<th>No difficulty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bumiputra</td>
<td>4</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Non-Bumiputra</td>
<td>7</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
<td>21</td>
<td>32</td>
</tr>
</tbody>
</table>

*Chi-square = 1.247, P > 0.05, NSD (the condition of a minimum cell value of 5 was not met)*
Table 14

<table>
<thead>
<tr>
<th>Difficulty in using computer across female and male students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Chi-square = 0.138, P > 0.05, NSD

of technology, they were also the ones reporting frustration with computer less than the non-Bumiputra students. The frustration with computer was also evident in case of female students as over 66 percent of those reporting frustration were girls (Figure 5).

As far as frustration with Internet is concerned (Figures 6 and 7), over 21.8 percent of respondents agreed with the statement that the Internet is often a source of frustration. Out of those who agreed, over 85 percent were non-Bumiputra. In terms of gender, over 85 percent of those reporting frustration were girls. A majority of students (91 percent) agreed, while three percent disagreed that Internet is helpful in academic work (Figure 8).
Figure 2. Opinion on computer being helpful in studies (by ethnicity)

Figure 3. Opinion on computer being helpful in studies (by gender)
Figure 4. Opinion on computer often being a cause of frustration (by ethnicity)

Figure 5. Opinion on computer often being a cause of frustration (by gender)
Figure 6. Opinion on Internet often being a cause of frustration (by ethnicity)

Figure 7. Opinion on Internet often being a cause of frustration (by gender)
Figure 8. Opinion on Internet being helpful in academic work (by ethnicity)
CHAPTER 6: DISCUSSION AND CONCLUSIONS

This is the final chapter of this study. The chapter is broadly divided into two parts. The first part discusses the quantitative findings in light of the qualitative interview data, field notes, and the available literature. The second part presents the conclusions along with the limitations of this study. The second part ends with some recommendations for future research based on this study.

Discussion

At the time of this study, the Malaysian higher education system was around five decades old, which was substantially less than a number of developed countries. *Universiti Malaya* had established itself as one of the most highly regarded universities in Malaysia (Muhamed, 2003). For example, in 1997, it pioneered the use of teleconferencing technology for distance learning courses in engineering (Ng & Thambiah, 1999, p. 85). Although there were a number of emerging universities of high academic repute and technological edge, *Universiti Malaya* remained a top national university attracting bright students from around the country as well as other parts of the world, such as China, Pakistan, Indonesia, and even some of the African countries. While Kamogawa (2003) suggested that access to public higher education had been limited to the elite in Malaysia, this research found that *Universiti Malaya* had students from diverse ethnic and socio-economic backgrounds. Whether these students had equal amount of engagement with the technology was another question, which brings us to the first hypothesis of this study:
Bumiputra students will use ICT, in terms of weekly hours spent on computer for study purposes, less than non-Bumiputra students (Based on: Nordin, 1997). Clearly, the quantitative findings failed to support this hypothesis. During the qualitative feedback, the instructors unanimously stated that the differences, in terms of ICT use, were not visible in terms of ethnic groups, but perhaps in terms of socio-economic or “class” backgrounds. In one instance, a Tamil girl reported having access problems and expressed the desire to own a computer, but it was difficult for her due to financial constraints. Further interaction with students revealed that ICT access and use varied in terms of socio-economic backgrounds. Moreover, those from lower income families were more likely to be non-Malay Bumiputra or Indian students.

Besides economic background, the geographical location also appeared to be a key factor in creating the difference. The Bumiputra (predominantly Malay) students were more likely to be from rural areas than either the Chinese or the Indian students and mostly they felt unconfident while using a computer. Thus, while most non-Bumiputra were urban educated, and their families perhaps used English at home, especially in case of some Indian students, the Bumiputra expressed their discomfort with the technology, primarily due to lack of competency in English. Although there was no significant difference found in terms of computer usage hours between the Bumiputra and non-Bumiputra students, many Bumiputra students were concerned that their lack of knowledge of English stands as a key challenge. For instance, an Iban student from rural Malaysia reported that lack of English education was a key issue for him in being able to use a computer well. Including the Malays as well as non-Malays, the Bumiputra students
typically considered the Chinese and the Indian students to have a “better” proficiency in English (some of them later expressed that they were perhaps shy to participate in this research at first as they were trying to avoid a long conversation in English). During my stay in Kuala Lumpur, I observed that the language of interaction between the Chinese and Indian students was almost always English, perhaps due to their educational background or even due the use of English at home. This, however, was hardly the case when Bumiputra students were involved in a conversation with either Chinese or Indian students, perhaps as they were mostly educated in Malay medium schools and were not comfortable in using English for informal communication. During the interviews, I realized that while the stereotype suggested a lack of (English) language skills among the Bumiputra, a number of Bumiputra students clearly appeared to be quite self-conscious while talking in English, although they were usually able to understand all the questions in the questionnaire quite easily.

Fenton (1999) noted that the ethnic integration in Malaysia was class specific. The qualitative interviewing in this research suggested that the same was true at least in case of Universiti Malaya students, where the Bumiputra and non-Bumiputra got along more easily if they belonged to the same social class. However, the ethnic integration was seldom visible on the university campus during the course of this research. This, I surmised, might lead to a continuation of certain stereotypes, as for instance, during one interview, a male Malay student mentioned that the Chinese students were more efficient and “better” users, “because they are more hard-working than Malays or Indians”, which clearly reflected a stereotype and to some extent supported Nordin’s findings that showed
a disparity in skill levels across the government officials from ethnic groups (Nordin, 1997).

The instructors at first denied the existence of any ethnic differences, but later indicated that such gaps (if any) narrowed down during the course of their (the students’) studies in the faculty. Most instructors, however, expressed that the difference in terms of gender was quite visible. Thus, based on both quantitative as well as qualitative findings, the second hypothesis could be reworded as:

Female students use ICT, in terms of weekly hours spent on computer for study purposes, more than male students.

Some instructors as well as students suggested that while the total time spent on computer might be similar across boys and girls, girls seemed to spend a much higher proportion of time on ICT doing schoolwork compared to leisure activities. Moreover, more girls considered ICT skills as an important part of their education than boys during the interactions. While the faculty had a higher female enrollment compared to other departments on campus, and girls easily outnumbered boys, the girls were also considered to be “better” students in general by the instructors. One instructor went to the extent of saying that the boys usually use the Internet for porn and gaming. Gaming was considered as a major activity for boys by some girls, who did not consider themselves very skilled in gaming.

Plagiarism was a key issue raised by some female students and almost all the instructors interviewed. They suggested that male students were more likely to get involved in plagiarizing—thanks to the new technology and easy access to material/
articles on the Internet—as they (boys) usually had less time for studies due to gaming and other leisure activities. The instructors complained that this put them in a difficult situation, as they had to start checking the content that the students submitted more closely, which consumed a lot of time.

I found gender roles in Malaysian society to be quite diverse as well as relaxed, especially considering the comparatively more patriarchal societies across the Asian region. A professor at the department of Women’s Studies acknowledged that the Malay social structure “empowered the women, more than either the Indian or the Chinese social environments”. The interviews with other instructors and students as well as personal observation revealed that although (stereotypically) the Chinese were considered wealthiest across the three groups and the Indians academically well established, the Malays had an upper hand in terms of gender equality, which paralleled Mohamad’s (2003) point that the Malays had achieved some balance in terms of gender equality through NEP. Malay women, many of whom while willingly following the traditional code, which included covering the head in public, as a sign of their upbringing in an Islamic environment, had a fair representation across the faculty, including higher levels of administration. For instance, beside the Faculty of Arts and Social Sciences, the head as well as the managing staff at the PTM (IT division at Universiti Malaya) were female. This appeared quite unusual as compared to most other developing country environments.

Kamogawa (2003) noted an increased demand for ICT among women, which was indeed evident during the course of this study as well. For instance, a Malay graduate student complained about limited access and skill-related issues and hoped that she could
derive maximum benefit from the technology. A Chinese undergraduate student felt that her male counterparts were better off in making use of ICT, especially the latest software and applications, and that she “would love to get better with computers.” In the third instance, a Tamil girl acknowledged her lack of access to ICT but understood that ICT “is inevitable in the present scenario” and was keen “to join a computer course” once she completed her undergraduate program in History. She aspired to be a teacher someday and was optimistic that learning computer operations in detail would boost her career prospects.

Overall, I would agree with Kamogawa’s idea that while Vision 2020 suggested a shift from labor-based to knowledge-based economy to attain the status of a developed nation, there was a need to analyze higher education reform both nationally as well as internationally from a gender perspective (Kamogawa, 2003). Nationally—to serve the increasing demand for ICT access among women better, and internationally—to encourage other developing countries to learn from the Malaysian experience.

The third and fourth hypotheses were based on the issue of access. The quantitative findings clearly show that there was no difference in terms of ethnic backgrounds, but there was a significant difference in terms of gender. However, just like several other issues that were raised during this research study, the issue of access was also not very straightforward. While Bumiputra students were usually not wealthy enough to own a laptop or have access to a computer at home, a number of Tamil students also reported facing access-related issues. For instance, a Tamil male graduate student complained about the insufficient number of computers for a large number of
students in the faculty. As reported by the instructors during the interviews, *Universiti Malaya* students were academically more successful compared to most students across other not-so-developed parts of Malaysia. However, the students who lacked access at home complained that the insufficient infrastructure at the faculty to serve the needs of a large number of students had contributed to the limited access for many.

On visiting the faculty computer lab, I found 47 personal computers with latest (Pentium 4, 2.8 GHz processor and 256 MB RAM) configuration at the time for faster performance and almost all the programs required for academic work, including statistical software (SPSS), a variety of Microsoft® applications for desktop publishing tasks, as well as Internet connectivity. The Internet speed was high enough and I had no problem accessing different websites, including the Ohio University webpages. The students, primarily undergraduates, were allowed to use this facility through a special metric-card issued by the university for RM 10 per semester. The printing service was also available for 20 Malaysian sen (1 US cent = 3.6 Malaysian sen) per page. The lab managers told me that the lab was hardly busy, except during assignment submission times, when it was “fully-packed”. Besides, there were two computer labs in the library, which served students from different faculties including the Arts and Social Sciences with over 100 PCs. The first lab was exclusively for graduate students. The computers in this lab worked faster and seemed better maintained than the ones in the undergraduate lab in the library. The infrastructure seemed rich as per developing country-standards (for instance, Gujarat University in India), but definitely looked inferior to what I had witnessed in a developed country (at Ohio University in the United States). Nonetheless,
a continued emphasis on developing infrastructure could be hoped to contribute towards improved skills among the students (Oliver, 2002).

The interviews revealed two important aspects. First, the socio-cultural norms prevented girls from visiting cyber cafés frequently or late at night, which might explain why girls had a better access at home. Second, an instructor indicated that while boys had more freedom to go outside and use cyber cafés, some of them did not want to use the computers at home—either because they were afraid of getting caught while they were playing games or accessing porn, or their parents were aware of such activities and did not let them use the computer at home. However, socio-economic class emerged as the most common factor during interactions with the students.

The fifth and the sixth hypotheses pertained to the self-reported level of expertise among the surveyed students—first, in terms of ethnic group, and second, in terms of gender. Although the analysis violated the rule of a Chi-square table with a value equal to zero in one cell, which represented the number of Bumiputra students who considered themselves to be “Advanced Users”, the finding showed a significant difference. This difference could be related to the abovementioned factors of class, geography and language. Since a majority of Bumiputra (who perhaps belonged to a disadvantaged social class or lived in rural areas) lacked competency in understanding English, they did not acquire as much competency in ICT use as they expected. However, such reasoning emerged from qualitative inquiries and would require further hypothesizing and research.

As far as newly available literature was concerned, a number of authors, such as Guan (2007), had explained the changes in and implications of pro-Malay (language) policy of
the government. Before World War II, the state was bilingual and the education was multilingual, this changed after independence, especially during the 1970s and continued until the end of 1990s, as Malay was the official language of instruction in the education system. It was only in 2003 that the government decided to switch back to English as a medium of instruction for teaching science and technical subjects in wake of globalization and a continuously increasing popularity of English the world over (Guan, 2007). This study also pointed towards the question of the influence of the use of English in mass media on students’ English speaking abilities, although some research had been done in terms of the use of English within the electronic media (Ibrahim & Rafik-Galea, 2006), and the growing popularity of English words in modern Malay songs (Ariffin, Husin & Musahar, 2006). Guan (2007) also suggested that while English was being promoted, Chinese was also gaining popularity in Malaysia due to China’s emergence as an economic and regional superpower.

Other findings of this research indicated that while fewer Bumiputra students reported frustration with either computer or Internet compared to the non-Bumiputra students, a majority of students overall found Internet and computer helpful in their studies. The reasons behind these findings would also require further hypothesizing and research.

Conclusion

This study aimed at developing an understanding of the influence of gender and ethnicity on the use of ICT among the students in the Faculty of Arts and Social Sciences in Univerisiti Malaya in Kuala Lumpur. The study found that while there was some
significant difference, in terms of weekly hours spent on computer for study purposes, between girls and boys, there was no significant difference between the Bumiputra and non-Bumiptra students. The qualitative interviewing that was used to supplement the quantitative findings also supported these findings.

The findings of this study also suggested that while Universiti Malaya is not a high-end technology university, nor did the Faculty of Arts and Social Sciences provide a state-of-the-art infrastructure to all its students at the time of this research, there had been a gradual yet significant incorporation of ICT in the process of higher learning. This incorporation was evidently more visible in case of female students, who spent significantly more time on studies than boys and had better access to ICT at home. In terms of ethnicity, there were no significant differences. However, the differences in ICT use and access depended upon geographical, financial, and social factors at individual levels.

Lee (2004) had indicated that higher education was elitist in colonial and post-independence Malaya, mostly attainable by either Chinese or in some cases Indians, but that trend has been changing post-1970. This research supports that view—especially in terms of gender development. Rashid, Hasan and Ng (2006) reported low use of ICT and a low participation in the ICT labor market among the Malaysian women—clearly pointing towards a digital divide. While the percentage of women in ICT labor market had increased to 30 percent, Rashid et al (2006) strongly felt the need to address the issue of digital divide, as the Malaysian women would have bigger roles to play in the
knowledge economy. This research showed that with higher use of ICT among girls, the development towards narrowing this divide was clearly visible on the ground.

They (Rashid et al, 2006) also discussed two case studies to demonstrate the positive and negative outcomes of introduction of ICT in people’s daily lives. The first case study demonstrated the usefulness of ICT in terms of engaging Malaysian women (mostly housewives) in telework, which did not require them to leave their homes, but still generated income. The second case study showed that the sudden explosion of cyber-café had resulted in negative cultural influences, such as accessing pornographic material, and negative social outcomes, such as spending more time on computer and Internet for entertainment, which left the users (predominantly youth and adolescents) with less or no time for social interactions as well as other constructive activities. This research gave a positive sign in terms of higher amount of time spent on ICT as well as studies by the girls. This was confirmed by the instructors—who also found the girls academically more successful than boys. This could be considered as a fairly conducive ground for these girls to become economically independent in future, as they could potentially take up income generating activities, such as telework, once they complete their education—even if they were housewives and have family responsibilities.

The second case study (Rashid et al, 2006) presented a real picture of social ill-effects of technology, which are sometimes unavoidable. The interviews with faculty and some students for this research also revealed that boys spent a lot of time on gaming and accessed porn, too, which as explained by one instructor was a primary reason behind some of them lagging behind in studies and some others plagiarizing.
Limitations & Recommendations

While the qualitative findings clearly helped explain the reasons behind the patterns noted here, they also raised the question of class differences in Malaysia, which calls for further research. This study had certain limitations of time and resources. Moreover, the timing of this research clashed with the winter holiday at Universiti Malaya, which was not known to me until after I reached Kuala Lumpur. Fortunately, there were a number of students present on campus at the time, who volunteered to participate in the research through the residential college presidents’ help. A larger sample size is clearly one improvement which could lead to results that could be generalized more confidently. This study lays groundwork for further research that could explore in detail the reasons behind actual differences in ICT access and use. Moreover, a majority of the qualitative data collected during this research was lost due to a hard drive failure. Thus, scope for a detailed qualitative inquiry on the subject is still quite open. Plagiarism is another issue, which I feel was insufficiently explored and researched area, especially across the Asian universities. Thus, another research theme could be—to explore the relationship between Internet, plagiarism and gender. In order to have a better understanding of these issues, I would recommend a mixed-method approach/triangulation technique for these kinds of research inquiries.
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APPENDIX A: QUESTIONNAIRE

Use of ICT in Higher Education

QUESTIONNAIRE

(Please fill in English)

1. Age: ______

2. Gender: ______

3. Ethnic Background: e.g. Malay, Chinese, Indian, Other (Please Specify)
   ____________________

4. Program of Study (Bachelor or Masters):
   ______________________________________________

5. Department (Major):
   ______________________________________________

6. Places for Internet access (you can tick more than one, if applicable):
   - Home
   - University Lab
   - Library
   - Cyber Café
   - Others (Please Specify) ______________________

7. What is the total time (in hours) that you spend on your studies per week (the latest that you can remember; include readings, preparing assignments, research and other study-related activities)? ____________________
8. Out of the time mentioned in the above answer, how much time (in hours) is spent on Computer (including Internet access) for your studies (the latest week that you can remember)? ______________

9. How much time (in hours) do you spend on the Internet per week (the latest week that you can remember; include all your activities on the Internet)? ______________

10. Out of the time mentioned in the above answer, how much time (in hours) do you spend on Internet as a part of your studies per week (the latest week that you can remember)? ______________

11. What are the programs or applications you are familiar with and feel confident using for your studies and other academic tasks (e.g. MS Word, Excel, Power Point, Internet Explorer, etc)?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

12. What are your major activities on computer (e.g. Word Processing, Presentations, Internet Search, Note Taking, etc)?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

13. For how long have you used computers (years/ months)?

_______________________________
14. For how long have you used the Internet (years/months)?
______________________________

15. What do you think is the level of your computer and Internet use compared to their use by other students in your field of study (choose one)?

___ Beginner  ___ Medium  ___ Advanced

16. Do you think computer has helped you significantly in your studies (circle one)?

Agree Strongly / Agree / Can’t Say / Disagree / Disagree Strongly

17. Do you think computer has helped you achieve your academic tasks successfully (circle one)?

Agree Strongly / Agree / Can’t Say / Disagree / Disagree Strongly

18. Do you think Internet is helpful in your academic and research work (circle one)?

Agree Strongly / Agree / Can’t Say / Disagree / Disagree Strongly

19. Do you think Internet has helped you achieve your academic tasks successfully (circle one)?

Agree Strongly / Agree / Can’t Say / Disagree / Disagree Strongly

20. Do you think that Computer has often been a source of frustration (or strong dissatisfaction) for you (circle one)?

Disagree Strongly / Disagree / Can’t Say / Agree / Agree Strongly

21. Do you think that Internet has often been a source of frustration (or strong dissatisfaction) for you (circle one)?

Disagree Strongly / Disagree / Can’t Say / Agree / Agree Strongly
22. If you are financially capable, how much would you like to spend on purchasing a computer and Internet connection?

_____ RM 500 - RM 1000  ____ RM 1000 – RM 2000  ____ Above 

RM 2000

Descriptive Answer-type Questions

1. Do you have any difficulties in gaining access to Computer or Internet? If yes, what are they? And how do you think these difficulties could be resolved?

Response/Answer:

2. Do you face any difficulties in using Internet or Computer? If yes, what are they? And how do you think these difficulties could be resolved?

Response/Answer: