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How Much Do Multicultural Residents of Greater Vancouver Know About the Internet?

Vancouver high school honors and university award lists are crowded with Asian names. But do these abilities in face-to-face settings extend to the Internet, which is the centerpiece of distributed learning? The purpose of this study was to measure the extent to which Internet knowledge varied as a function of age, sex, and language spoken at home. An Internet Quiz was administered to 3,537 residents in Greater Vancouver. Those who spoke English at home knew more about the Internet than those who spoke Chinese or other languages. The difference in English, Chinese, and other language scores possibly stemmed from relationships between Internet use and Internet knowledge, the pragmatism of Chinese in Greater Vancouver, the exigencies of immigration, and English-language dominance of the Internet.

Dans les écoles secondaires et les universités de Vancouver, les palmarès abondent de noms asiatiques. Il faut se demander par contre, si ces habiletés en face-à-face s'appliquent à l'Internet, la plaque tournante de l'apprentissage distribué. Cette étude avait comme but de mesurer à quel point les connaissances de l'Internet variaient en fonction de l'âge, le sexe et la langue parlée à la maison. On a fait passer un test portant sur l'Internet à 3 537 résidents de la région de Vancouver. Les personnes pour qui la langue parlée à la maison était l'anglais à la maison connaissaient mieux l'Internet que celles pour qui c'était le Chinois ou une autre langue. Les différences dans les résultats pour l'anglais, le chinois et d'autres langues pourraient être attribuables au rapport entre l'emploi de l'Internet et les connaissances de l'Internet, le pragmatisme des Chinois de la région de Vancouver, les exigences relatives à l'immigration et la dominance de la langue anglaise dans l'Internet.

Introduction

Isaac Pitman invented shorthand (in 1837) and soon sent out paper-based correspondence courses. It was the same when William Rainey Harper created the first university correspondence program in 1891 at the University of Chicago. Correspondence was eventually supplemented by distance education and open learning. Although new gadgets were deployed, practitioners and

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learners still depended on paper. From the learner's perspective it was (and still is) reassuring to have a ring binder or manila folders jammed with readings. However, in many Western industrialized countries, older paper-based forms of distance education are rapidly being dislodged by distributed learning, which depends on the Internet. As a corollary, large industrial-type distance education operations are being broken up and dispersed. As well, the Internet has eroded the authority of distance education because learners have easy access to information. What used to constitute education is being replaced by fluid and multifarious forms of learning.

Distance education providers in the race to develop distributed learning have placed large bets on the Internet. But some trivialize its potential by focusing on Internet use while dismissing the importance of Internet knowledge. Because the Internet is a powerful tool for education and the centerpiece of distributed learning, it is important for people to know about it. Hence Internet knowledge is as important as Internet use.

Purpose of the Study

Having regard to the above, the purpose of this study was to compare the amount of Internet knowledge of various age, sex, and language groups in Greater Vancouver (the Lower Mainland of British Columbia).

Internet Knowledge and Use

In parts of the distance education establishment, there is uncritical functionalist endorsement of Internet use and denial that knowledge even matters. In parts of North America, there is an almost obsessive preoccupation with techno-rational discourse and what works. Provided it works, who cares about knowledge that lies behind the gadget?

Consider a pilot flying a large passenger aircraft. It is one thing to pull levers or press buttons. Almost anybody could be "trained" to do it. However, having knowledge about the airfoil effect, principles of flight, navigation theory, and a host of other things is the mark of an educated pilot, and this reassures passengers. Passengers want a knowledgeable pilot, not one sent out only for skills or use training. It is the same with the Internet. Using it is one thing. Knowing about it is something else.

Narrow and utilitarian conceptions of technology undermine the importance of distance education. Despite the recent emergence of good theory and sound scholarship in distance education, the notion that use matters and knowledge does not is profoundly anti-intellectual, and if it continues it will lead to further attacks such as those that led to the closure of the BC Open Learning Agency and threatens BC's Royal Roads University.

Knowledge matters. Consider the havoc wrought by hackers. Naïve Internet users sometimes instruct everyone in their address book to delete files from their hard drive. Those sending and receiving these instructions do not know about Internet hoaxes. Deleting the "offending" file can have serious consequences. It was the same when the W32 blaster worm made its rounds in 2003. Many people wrongly thought that their equipment had to be unplugged and taken to the dealer. Shops were swamped and customers urged to learn more about the Internet.

There are also numerous examples of where having or not having knowledge has fatal consequences. For example, although the master of the fishing vessel *Pacific Charmer* had used his boat for 44 years and routinely packed 100 tonnes of hake, he did not know that herring had a different density. Hence with just over 80 tonnes of herring aboard, the *Charmer* capsized and two men died in five-degree water (Boshier, 2000). Winter driving in Canada illustrates how mere use of a vehicle counts for nothing once roads are covered with ice and snow. Knowing how to deal with these conditions is a matter of life or death. When foot-and-mouth disease struck Cumbria in the United Kingdom, isolated farmers could not leave the farm. But once they acquired Internet knowledge, the Pentalk listserv enabled them to combat the disease. Facing catastrophic losses, they hastily became educated about the Internet. The Pentalk group had 1,000 connected farmers motivated by personal misfortune and a profound need to understand the Internet (Risman, 2003). Data like this show why dwelling on Internet use is, in our view, anti-intellectual, naïve, and even dangerous.

Building Internet Knowledge

Good examples exist of affirmative action programs designed to build Internet knowledge. In Toronto, Mirchandani, Ng, Sangha, Rawlings, and Coloma-Moya (2003) and the Democratizing Workplace Learning Group teach courses for immigrant and refugee garment workers. Their program is nested in a critical feminist framework and deliberately designed to empower women disadvantaged by language and cultural barriers. The first class was composed of Cantonese-speaking women. In the first session, the focus was on Web searching and Internet use. However, it quickly moved to Internet knowledge when women asked questions like "What is cyberspace?" "What is RAM?" "What is a search engine?" "Who owns the Internet?" "Does the size of the box equate to the power of the computer?"

Organizers brought in and dismantled a computer so that learners could see the insides. Although some wished to search for jobs and prepare résumés, they had a profound need to know about the Internet and understand why their children were enthused by chat rooms, e-mail, and Web searching. Trying to use the computer would inevitably evoke a need for knowledge. "Women needed to know the basics of modems and connections ... They wanted simple answers. Yet the answers seemed to lead to more questions. Their lack of basic knowledge ... made it difficult to understand complex instructions" (Mirchandani et al., p. 157). Terms like *download*, *Adobe*, *cookie*, and *browser* added to the mystery. Issues like these would later become part of the Internet Quiz.

The present study is concerned with who knows what about the Internet. In Greater Vancouver, this is a fascinating question because casual observation suggests that certain groups seem to know plenty and others not much. The inequitable distribution of Internet knowledge would have serious consequences for civil society, democracy, and social cohesion (Lindsay & Poindexter, 2003). Following the July 7, 2005 suicide bombings in London, in contrast to their sons, parents of the bombers said that they knew nothing about the Internet. If the parents had known more about the Internet, would their sons have turned into suicide bombers?

In multicultural Greater Vancouver, high school honors lists suggest that Asian students have a particular penchant for math and science. Does this ability extend to Internet knowledge, and if so, is it spread across all age groups? What about gender? Do Asian language-speaking men know as much about the Internet as Asian language-speaking women? If so, does the relationship endure across all or only some age groups? The relevance of this emerges from understanding Greater Vancouver.

Cityscape

The Greater Vancouver Regional District consists of the City of Vancouver and adjacent municipalities such as Richmond, Coquitlam, and Surrey. The visitor to downtown Vancouver is struck by how the cityscape is being rebuilt in the image of Hong Kong. What was once an outpost of British colonialism devoted to finding fish, mining minerals, and felling fir trees has become a bustling multicultural gateway to Asia. Almost half the adults in Greater Vancouver were born outside Canada. This is twice the Canadian average and second only to that of Toronto at 53%. In addition, more than 35% of residents in Greater Vancouver have non-European origins (Ramsey, 2003).

Greater Vancouver is a favored destination for immigrants. Most used to be from Europe, but since about 1967 the focus has shifted to Asia. Although Chinese people came to British Columbia as part of gold rushes in the 1860s and were prominent among those building the transcontinental railroad (1881-1885), the greatest migration waves occurred after World War II. Today about 15% of residents in Greater Vancouver speak a Chinese language (Statistics Canada, 2001a). "Old-timer" Chinese were mostly laborers or working-class people (Ng, 1999). Recent arrivals have mostly been business immigrants. Substantial funds or high educational qualifications are now needed to migrate into Greater Vancouver.

Digitally Divided

Whereas Atlantic Canada faces Europe, Greater Vancouver looks toward Asia. Here the notion of digital divide has a particular resonance. But literature about it is inadequate because it is oriented to computer use.

The government of Canada claims to have made significant commitments to bridging the digital divide. However, these claims are firmly located in neo-liberalism. Following the July 2000 endorsement of the Okinawa Charter on the Global Information Society, Canada joined an international digital opportunities task force (DOT) that proposed a nine-point action plan. The Genoa Plan of Action urged G-8 countries to build "digital literacy," to "promote distance learning for under-served areas," and to "increase use of the Internet in the education system." The Industry Canada Web page that outlines Canadian work on the DOT is prominently headlined *Electronic Commerce in Canada* (<http://www.ecom.ic.gc.ca/English/inter/71d2.html>).

BC is the most connected of the Canadian provinces, with a telephone poll suggesting that more than six of every 10 people have access to the Internet, three of every four small businesses are connected, along with all schools, universities, and colleges. According to Statistics Canada (2001b), 58.30% of rural inhabitants and 62.70% of urban dwellers report that they use the Internet (Digital Divide in British Columbia, 2001). The BC Technology Council (2004)

noted, “if the regions were loud in their demand/need for broadband two years ago they are screaming for it today. They want broadband and they want it now.” Hence the plan was to bring broadband to all 366 communities in BC by December 2006 (BC Technology Council, 2005).

Whether the large number of people speaking an Asian or other languages at home know more or less about the Internet than English-speakers is yet to be determined.

Greater Vancouver was the scene of early experiments in cable television and with large-scale urban construction projects (e.g., Expo Lands), has become one of the most wired cities in the world. It is no big deal to have a computer at home, and residents are probably quite Internet-savvy. But little is known about their Internet knowledge. This study was designed to rectify this deficit.

Methodology

Achieving these purposes required development of an instrument to measure Internet knowledge, understanding its psychometric properties, and then administering it to a large number of residents in Greater Vancouver. Data analysis was performed with SPSS Version 11.1.

Development of the Instrument

The Internet Quiz used in this study measures what people know about the Internet. It consists of 16 items, each accompanied by five (multiple-choice) responses. The Quiz did not measure attitudes toward the Internet or motor skills associated with its use. Rather, the focus was on verbal information and intellectual skills. Eight items were loosely based on Gagné’s (1977) verbal information type of learning outcome. No particular skill was needed to answer these correctly. For example, respondents either knew or did not know the name of the person who invented the World Wide Web. The other eight items involved deductive or other kinds of reasoning. To get the item correct, the respondent had to know the rule behind it. For example, could they select the most direct way of getting software upgrades? These items involved intellectual skills (Gagné). Some items concerned what might be called *declarative* and others *procedural* knowledge.

The first item, shown here, was a filler—not scored but deliberately amusing and easy to answer—to enhance face validity and get respondents started. Total Internet knowledge scores are out of 15. Here is the first item:

What does www stand for?

- Web of Wild Women
- Web of Wise Washingtonians
- Wildlife Web of the World
- Wild Web of Workmen
- World Wide Web

Here is Item 14. This was scored.

On Sept. 11, 2001, the Internet continued running. This is because:

- Its “centre” or “mainframe” was not at the World Trade Center or Pentagon
- The software at the centre of the Internet is immune to attack
- The Internet is dispersed so taking out one part does not destroy the rest
- Most e-mail, web browsing and other Internet activities occur at night

- The crucial Internet controllers are in Europe (Bonn) and Asia (Tokyo)

Verbal information items concerned search engines, browsers, the language of the Internet, and acronyms. Intellectual skill items concerned URLs, cookies, Internet syntax, and procedures.

To better acquaint readers with the Quiz, here are some items in addition to those shown above.

The World Wide Webs is:

- A mainframe computer in Silicon Valley that controls (or is the headquarters of) the Internet
- A software language that formats “packets” of documents and pictures on the Internet
- A network of server-computers that support and make available specially formatted materials
- An alliance of US military, university and corporate interests that sells software and computers
- A series of telephone lines “webbed” into some of the most remote areas of the world

Of these e-mail addresses only one will work. Which one?

- JohnSmith@hotmail
- Yahoo.com@HarryJones
- MaryBlackcbc.ca
- JennyBrown@cbc
- LindaLu@yahoo.com

In addition to the cover page, the 16 multiple-choice items in the Quiz were on pages 2 and 3. The back page contained 10 questions that asked respondents to provide sociodemographic data about themselves. Among these questions was one that asked, “What language do you speak at home?”

Procedures

After pilot testing and elimination of unsatisfactory items, the final form of the Internet Quiz was administered to 3,537 citizens (aged 13 years or more) in Greater Vancouver. The routine was to approach people seated at, for example, Calhoun’s or Tim Horton’s coffee shops, and say “Excuse me, I’m from UBC ... We’re interested in what people know about the Internet. Could you complete this? It takes about four minutes.” The Quiz was placed on the table with a pen or pencil laid so as to point at the words “Your Name is Not Required.” on the cover page.

Members of the Technology and Education Research Network administered the Quiz. Sixty percent of quizzes were administered to individuals; 40% were administered in group (usually classroom) settings.

Effort was put into administering the Quiz to people from less affluent areas of Greater Vancouver as well as high socioeconomic-status regions such as those near the University. To provide guidance in this regard, respondents were asked for their postal code. Although it was tempting to return continually to popular coffee shops, proctors deliberately went to other areas of the Lower Mainland such as ferry terminals, seniors’ centers, and ski resorts. Hence as well as reasonably easy-to-get data from the Vancouver-Westside,

there were respondents from, for example, East Vancouver, Horseshoe Bay, Burnaby, Surrey, Richmond, Maple Ridge, and Coquitlam.

Psychometric Properties of the Internet Quiz

Below are data pertaining to the validity and reliability of the Internet Quiz.

Validity

Ten UBC graduate students with considerable knowledge of the Internet were asked to suggest items that tapped their understanding of what they thought constituted Internet knowledge. The 15 scored Quiz items were those left from a larger pool of 35 items. No respondent disputed whether the Quiz measured Internet knowledge or was comprehensive enough. Most commented on how fair it was and were anxious to know correct answers for questions where they were uncertain.

Content validity concerns the extent to which the instrument is a fair representation of the domain of content to be sampled. Construct validity is its relationship with some broad underlying construct (e.g., knowledge). Getting high face validity meant that the Quiz had to be short, well written, interesting, and fun to complete. As such it did not canvass every issue that some might think is part of Internet knowledge. What best fitted the situation were two of Gagné's (1977) five types of learning outcomes. By creating items in this way, the Internet Quiz involved 3 Rs: recall, recognition, and reasoning. Hence would respondents recall the name of the company that invented Internet Explorer? Would they recognize the name of the language for constructing a Web page? Or could they do the reasoning needed to explain why the Internet did not crash on September 11, 2001? The 16 items did not reach into every nook, cranny, or aspect of the Internet. However, at the time the Quiz was created, exceedingly well-informed superjudges (UBC faculty and graduate students) thought the items were a fair representation of their conceptions of what constituted Internet knowledge. Weschler, Spearman, Thurstone, and others responsible for defining and then attempting to measure intelligence—an even mushier concept than Internet knowledge—got tired of being asked “what is intelligence?” Eventually, they took refuge in the notion intelligence is “what this test measures.” Our situation is not comparable to theirs. However, because of rapid developments, nobody should be surprised if the current version of the Internet Quiz is soon replaced.

Reliability

The reliability of the Internet Quiz was examined by calculating Cronbach's alpha, which is the average of all possible split-half coefficients. As a general rule, alpha should exceed .80 (Bryman & Cramer, 1997), and in this case, it was .77. This showed that all items were tapping a general factor and were a reliable measure of Internet knowledge. There was considerable variation between items ($F=668.99$, $df = 14$, $p<.001$) that, we were pleased to note, concerned different aspects of Internet knowledge. For item-whole correlation purposes, five-response multiple-choice items were recoded into a binary (i.e., right-wrong) format. Corrected item-whole correlations ranged from a high of .48 to a low of .20. Hence none of the 15 scored Internet Quiz items had a lamentably low or excessively high relationship with the total score.

Results

Characteristics of Respondents

At the dawn of the 21st century, 1,967,475 residents lived in the City of Vancouver. Of this number, 1,184,495 (60.20%) cited English as their mother tongue whereas 293,065 (14.90%) told the census-taker that a Chinese language was their mother tongue (Statistics Canada, 2001a). In many parts of Greater Vancouver (such as Richmond), where more than half the residents are from Asia or descended from Canadian-born Asian people, most interactions occur in languages other than English. Numerous radio, television, and Internet broadcasters deploy languages other than English or French.

University-based researchers and even Statistics Canada staff have difficulty obtaining resources needed to engage in truly random sampling. In this study, although researchers made determined efforts to contact people in all parts of Greater Vancouver, the result was a sample of convenience. Of the 3,537 respondents, 71.30% said they spoke English at home, 10.80% spoke Mandarin, 7.90% Cantonese, and 10.0% cited languages such as French, Hindi, Farsi, and others. In significant ways, these 3,537 respondents reflected the sociodemographic make-up of the Lower Mainland.

Of the 3,537 respondents, 1,987 (56.20%) were women and 1,550 (43.80%) men. The mean age of the women was 33.73 years ($SD=14.20$ years). The mean age of male respondents was 33.97 years ($SD=4.98$ years). The sample consisted of 581 teenagers (13-19 years old), 1,394 young adults (20-34 years), 1,036 mature adults (35-50 years), and 526 older adults (51 years and over).

Of the 3,413 who responded to the question, 24.60% had an occupation coded Professional/Technical; 16.70% were University Students; 13.00% College Students; 12.20% High School Students; 9.10% were deemed to be involved with Clerical/Sales; 6.60% were Skilled Workers; 6.40% said they were Retired; 4.50% were categorized as Managerial; 3.80% Unskilled Workers; 1.90% Homemakers; and 1.20% noted they were Unemployed.

Language Spoken and Internet Knowledge

Mandarin-speakers were combined with Cantonese-speakers as *Chinese*. The 10% of respondents who reported speaking languages such as French, Japanese, or an African language were recoded as speakers of *other languages*. Most of the remaining analysis focuses on the three main groups: English, Chinese, and other languages.

English-speakers had a mean Internet Quiz score of 11.20 ($n=2,494$, $SD=2.95$); Chinese-speakers secured a mean of 9.79 ($n=653$, $SD=3.20$), whereas the mean Internet Quiz score for those speaking other languages was 9.57 ($n=350$, $SD=3.29$). Overall, English-speakers knew 9.40% more than Chinese respondents and 10.87% more than speakers of other languages. These differences between language groups were significant ($F=87.31$, $df=2$, $p<.001$).

Sex and Language Group

Figure 1 shows mean Internet Quiz scores for men and women in the three language groups.

The differences between scores for men and women were almost identical. Among English-speakers, men knew 4.20% more than women. For Chinese, men knew 6.00% more than women, and for speakers of other languages, men

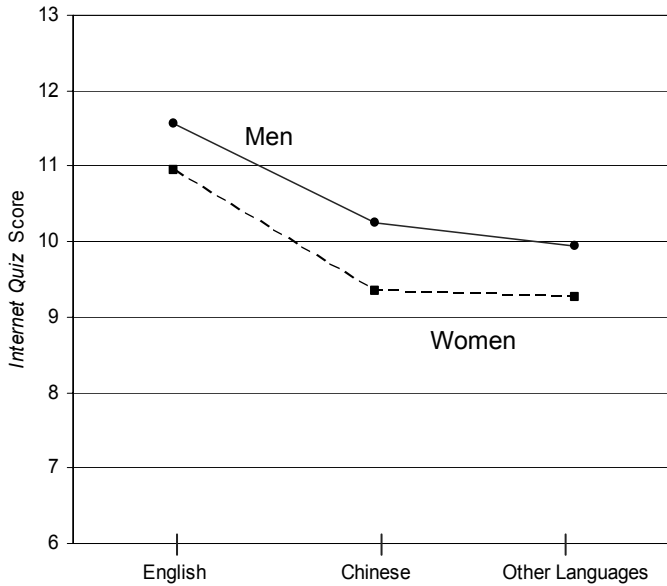


Figure 1. Mean Internet Quiz scores for respondents by sex and language spoken at home.

scored 4.47% higher than women. The differences between language groups were significant ($F=91.62$, $df=2$, $p<.001$) as were those between men and women ($F=27.35$, $df=1$, $p<.001$). However, as shown by the nearly parallel lines in Figure 1, there was no significant interaction between sex and language group.

Different-Aged English-Speakers

Figure 2 shows mean Internet Quiz scores for different-aged English-speaking men and women. The gender gap identified in Figure 1 remains. However, Figure 2 clearly shows that for men and women, young adults (aged 20-34 years) knew more about the Internet than either teenagers or older respondents. Compared with teenaged girls, young adult women knew 8.53% more about the Internet, as did young men, who knew 6.47% more than teenage boys. Among older adults, sex differences were greater than for younger groups.

Differences between age groups were statistically significant ($F=51.09$, $df=3$, $p<.001$). Differences between the mean scores of men and women were also significant ($F=38.86$, $df=1$, $p<.001$).

Different-Aged Chinese-Speakers

Figure 3 shows Internet Quiz scores for different-aged men and women speaking Chinese. Among teenagers or young adults, there was little difference in Internet Quiz scores. Mature-aged Chinese-speaking men knew 15.33% more than women of the same age. This difference was even more pronounced for older respondents (aged 51 years and over) where men knew 21.13% more than women.

The most notable feature of Figure 3 is the fact that men of different ages had about the same amount of Internet knowledge. Teenaged and young women also secured almost identical scores. However, middle-aged Chinese mothers and grandmothers knew significantly less about the Internet than men

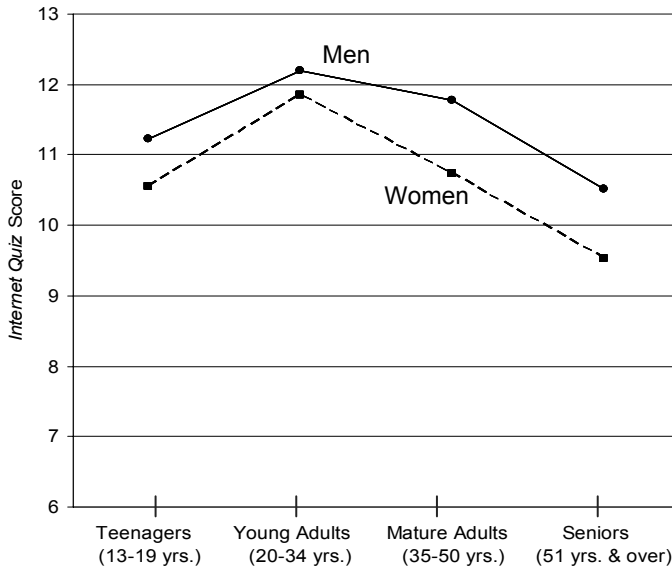


Figure 2. Mean Internet Quiz scores for English-speakers by sex and age.

of the same age and young women speaking Chinese. Hence there were significant age group ($F=15.11, df=3, p<.001$) and sex differences ($F= 16.55, df=1, p<.001$). In addition, age group interacted with sex ($F=7.64, df=3, p<.001$).

Different-Aged Speakers of Other Languages

Internet Quiz scores for those speaking other languages included 15 Germanic-speakers who scored $M=11.27 (SD=2.66)$. Those securing a mean Internet Quiz score greater than 10.00 (but less than 11.00) included respondents speaking

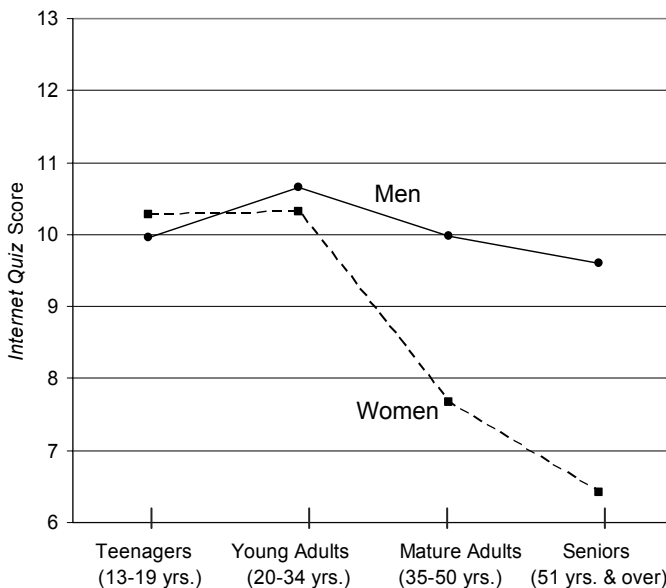


Figure 3. Mean Internet Quiz scores for Chinese-speakers by sex and age.

Balto-Slavic languages ($n=44$, $M=10.55$, $SD=2.68$), Korean ($n=29$, $M=10.38$, $SD=3.01$), Farsi ($n=34$, $M=10.03$, $SD=3.16$), Arabic ($n=7$, $M=10.00$, $SD=3.37$), and Bahasa ($n=3$, $M=10.00$, $SD=1.73$). Other language groups with Internet Quiz scores less than 10 included respondents speaking African, Tagalog, Hindi/Punjabi/Urdu, Italian, Japanese, Vietnamese, Hebrew, and French.

Figure 4 shows mean Internet Quiz scores of the 350 other language speakers—considered as a group. Like the situation for English-speakers, younger adults knew more about the Internet than older adults. However, differences by sex ($F=3.41$, $df=1$, $.05 < p < .07$) were less pronounced than in the English or Chinese language groups. The differences between scores for those in different age groups were statistically significant ($F=8.06$, $df=3$, $p < .001$), but there were no significant interactions between age and sex.

Caution Required

Overall, it appeared those speaking Chinese or other languages at home knew less about the Internet than English-speakers. However, profound caution is needed when interpreting these results because, although a Chinese-language version is now available and was used in a large-scale study in Shanghai, China (Boshier & Huang, 2006), at the time of this project in Greater Vancouver the Internet Quiz was in English. Hence the next analysis concerns the possibility that English-language proficiency accounted for language group differences.

University Students

All universities in BC provide instruction in English, and TOEFL tests are used to ensure that students understand reading and writing assignments. The Internet Quiz is written in plain language. However, because of anxiety about the possibility that differences (such as those in Figure 1) were a manifestation

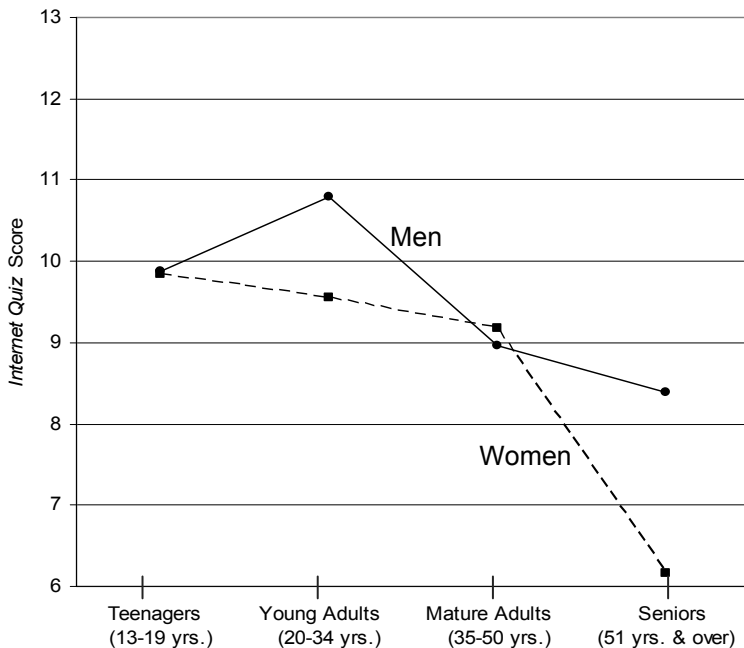


Figure 4. Mean Internet Quiz scores for speakers of other languages by sex and age.

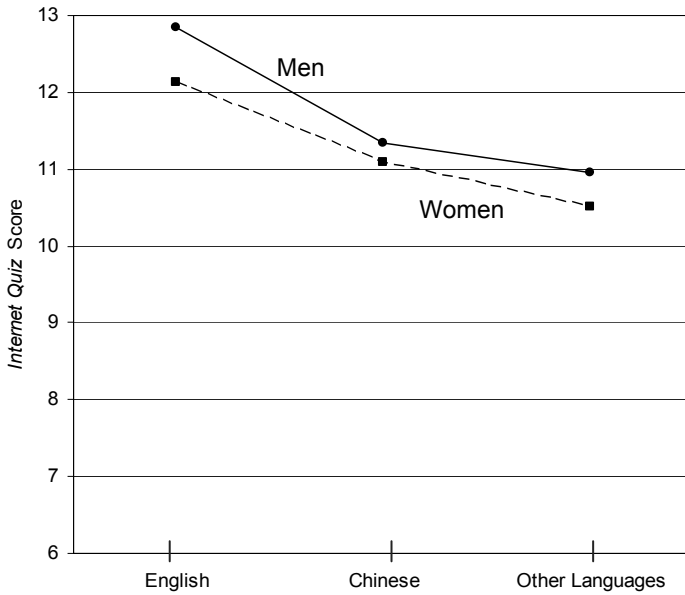


Figure 5. Mean Internet Quiz scores for university students by sex and age and language spoken at home.

of fluency in English, it was decided to examine the Internet knowledge of the 568 university students who completed the Quiz.

The 363 English-speaking university students had a mean Internet Quiz score of 12.50 ($SD=2.06$) with men in each language group scoring higher than women. The 124 Chinese-speaking students achieved a mean of 11.22 ($SD=2.45$). The mean score for the 81 speaking other languages was 10.68 ($SD=2.61$). Therefore, differences in their Internet knowledge remained among respondents. English-speaking university students scored 1.28 and 1.82 points higher, which in universities committed to connective technologies and distributed learning, gives them a 8.53% and 12.13% advantage over counterparts who speak Chinese and other languages. The difference was significant ($F=26.89, df=2, p<.001$).

Professional and Technical Workers

People occupying professional or technical positions in Vancouver routinely speak English at work. They would need high-level English skills to hold these positions. This category would largely eliminate recent immigrants struggling with English as a second language. Professional/technical workers completing the Quiz ought not to be significantly disadvantaged by the fact that they speak Chinese or some other language at home.

There were 687 English, 93 Chinese and 56 other language speaking professional/Technical Workers in this analysis. English-speaking Professional/Technical Workers knew more ($M=11.87, SD=2.69$) than speakers of Chinese ($M=10.52, SD=2.75$) or other languages ($M=10.28, SD=2.90$). This difference was significant ($F=17.39, df=2, p<.001$). English-speakers knew nearly 9.00% more than Chinese respondents and about 10.60% more than speakers of other languages.

The analysis for University Students and Professional/Technical Workers confirmed what was found before. English-speakers knew the most, with Chinese and speakers of other languages knowing less. Hence we concluded that English-speakers in this population knew more about the Internet than those speaking Chinese or other languages. However, these results did little to abate anxiety about how those speaking languages other than English responded to the Quiz. Hence Huang (2003) developed and administered a Chinese version of the Quiz. Even with this Chinese version, Mandarin- and Cantonese-speaking respondents in Greater Vancouver still scored lower than English-speakers.

Discussion

This study strongly suggests that Internet knowledge was distributed like this: English-speakers knew the most, Chinese next, and speakers of other languages the least. However, because this study involved a sample of convenience, these findings were restricted to the 3,537 respondents involved.

There are several possible explanations for these findings, and it is vital that we not indulge in what Said (1994) labeled "orientalism." It is highly likely that the difference in English, Chinese, and other language scores stemmed from a confluence of factors. The first is that the Quiz was in English. The second concerns possible relationships between Internet use and Internet knowledge. The third dwells on the pragmatism of Chinese, the fourth the exigencies of immigration, and the fifth English-language dominance of the Internet.

Quiz in English

Observers might ask why anyone is surprised to learn that those with English as a second language did less well on a Quiz than native English-speakers. This possible threat to the validity of Quiz scores was examined by comparing students in English-speaking universities. They had met TOEFL requirements. Language ought not to be a factor in determining their Quiz scores. Yet English-speakers still scored better than the other two groups.

In a second procedure, mean Internet Quiz scores for Professional/Technical Workers were examined. Professional/Technical Workers in Vancouver work in English and should have had no problems completing the Quiz. Despite this, there was a significant difference in mean scores, with English-speakers scoring higher than Chinese or speakers of other languages.

Because of these results, it was concluded the language of the Quiz did not significantly affect scores of respondents who were not native English-speakers. It appears that Chinese and other language speakers in this population knew less about the Internet than English-speaking respondents. This finding was reinforced when Boshier and Huang (2006) administered a Chinese-language version of the Internet Quiz to graduate students at East China Normal University in Shanghai and found that they knew 20% less about the Internet than university students in BC (who had completed the English version of the Quiz).

Using the Internet

Chinese-speakers in Greater Vancouver are using the Internet more and differently from English-speakers. For example, of the 652 Chinese-speakers, 579 (88.80%) said they had used the Internet (today or yesterday). This was in

contrast to 79% of English-speakers and 77.70% of those speaking other languages. Moreover, when asked how they used the Internet “yesterday or today,” 77.60% of Chinese-, but only 72.20% of English-speakers said they had used e-mail; 24.90% of Chinese-speaking respondents (compared with only 8.70% of English-speakers) reported having used chat rooms. It was the same with using the Web, transferring files, playing games, or using the Internet for other purposes. In each case, more Chinese-speakers than English-speakers (or speakers of other languages) were doing these things.

If using the Internet explained large amounts of variance in Internet knowledge, Chinese-speakers should have scored higher. However, the correlation between Internet use and knowledge was only $r=.33$. Hence only about 10.00% of Internet knowledge variance stemmed from use. The situation is comparable to the fact that some people drive thousands of kilometers in cars, but know little or nothing about them. Using the Internet does not guarantee that people know about it.

Chinese Pragmatism

There is a literature claiming that because of a refugee mentality, Chinese people tend to adopt a “pragmatic-instrumental” position about many things in life including technology. This idea has been applied to politics (Chua, 1995) and culture (Chew & Kramer-Dahl, 1999) in Singapore. It also buttresses work on the cultural practices and social psychology of Chinese learners (Watkins & Biggs, 1996) and people (Bond, 1996). It is at the center of Liu and Kuan’s (1988) analysis of the ethos of Hong Kong Chinese where the relentless and energetic search for money is fueled by pragmatic zeal.

When Chinese people arrive in Vancouver, they do not discard cultural practices or approaches to learning acquired in their place of birth. Although they are famously committed to formal education, what matters most is making the computer work. Knowing about it is not as important as having it work right.

A Chinese medical practitioner in Vancouver put it this way.

The techno-rational bent of Asian-Canadians is the strongest reason for the lower scores. Asians are more functionally oriented. I want to chat so I learn how to use it. I don’t give two hoots about who invented the Web or the bigger context. The second thing tied to this concerns young Asian-Canadians who are highly social and use technology for social purposes—friendship, romance, fun and games—rather than having deep discussions about political issues and their relationship to technology. Technology is a tool. There is little reflexive examination of its use. Technology is to be used, not dissected. (J. Kushner Kow, e-mail, 24 June, 2002)

Immigration Imperatives

Among non-English-speakers were people who had immigrated to British Columbia in recent years and had been preoccupied with getting a home, job, and social network. In these early years, using the Internet would be more important than learning about it. Knowing who, for example, invented the World Wide Web would be a low priority. If they had taken an ESL program, the focus would have been on interview and other skills rather than the political economy, meanings, procedures, or syntax of the Internet.

The Internet was invented in 1991, but in its early years was mainly found in academia and the military. Although Internet use in China is rapidly expanding, few recent Chinese immigrants (or speakers of other languages) would have learned about it before landing in British Columbia. Although using it is not a good predictor of knowledge about the Internet, because of the exigencies of immigration, many Chinese-speaking respondents would have had only limited opportunities to learn about it.

Western Origins of the Web

A fifth and final contribution to the explanation for language-group differences arises from the fact that Internet culture and operations are mostly in English. This is particularly the case with the World Wide Web. This, coupled with the tight control of the Internet in China, puts the Chinese-speaker at a disadvantage.

Distance Education

During the early years of using the Internet for distance education, there was anxiety about who could afford to buy a home computer. These days there is almost no discussion of this, and it is widely assumed that potential participants have both a computer and knowledge about the Internet. This study shows that this is a dubious assumption. Not everyone knows the same about the Internet.

In Canada it is hazardous to assume that what works with one group appeals to another. In Greater Vancouver, Asian-Canadians win numerous prizes for excelling in education, brim with motivation, and are a prominent part of the landscape in major universities, colleges, and research institutes. Yet for complex and difficult-to-determine reasons, along with citizens speaking other languages, they know less about the Internet than the English-speaking majority. Findings here evoke important questions about how to build Internet knowledge in multicultural societies.

Most adults learn about the Internet by appealing to friends, from the guardian angel in their office, teenaged children, or through trial-and-error punctuated by trauma when screens go black and a virus gobbles a manuscript. Young children are learning about the Internet in school. As they grow into adulthood, these differences may disappear. In the meantime, Chinese immigrant service agencies in Vancouver and the Democratizing Workplace Learning Group in Toronto should be commended for imparting Internet knowledge to immigrants, especially Cantonese women. Of all the groups studied here, they have the greatest need.

In many parts of the world the Internet is not about to supplant paper-based distance education. There are still good arguments for ring binders and paper readings. Yet older administrators and many distance education practitioners seem to believe that the Internet constitutes techno-utopia (Boshier & Chia, 2000). More and more courses are being put on line. However, as shown here, Internet enthusiasts in distance education might consider tailoring their expectations and processes. In immigrant areas like Greater Vancouver, what works well with one group may not be good for another.

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