Chapter 8

Skills and Information and Communications Technologies

Summary

This chapter explores the relationship between skills and Information and Communications Technology (ICT) use and familiarity. The ALL survey collected information on the use of, and familiarity with ICTs, at the individual level, including a series of self-assessment questions on ICT use, perceptions of experience, and degree of comfort with ICTs. First, access rates to computers and the Internet are considered. Second, the relationship between ICT use and literacy skills is studied. This is important because it demonstrates the fundamental relationship between ICT use and other skill sets. Third, the determinants of ICT use are examined, including income, age, gender, educational attainment and occupation. Finally, outcomes associated with the use of ICTs in combination with literacy skills are explored.

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Skills and Information and Communications Technologies

8.1 Overview and highlights

This chapter explores the relationship between skills and Information and Communications Technology (ICT) use and familiarity. The ALL survey collected information on the use of, and familiarity with ICTs, at the individual level, including a series of self-assessment questions on ICT use, perceptions of experience, and degree of comfort with ICTs. First, access rates to computers and the Internet are considered. Second, the relationship between ICT use and literacy skills is studied. This is important because it demonstrates the fundamental relationship between ICT use and other skill sets. Third, the determinants of ICT use are examined, including income, age, gender, educational attainment and occupation. Finally, outcomes associated with the use of ICTs in combination with literacy skills are explored.

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The main findings presented in this chapter are summarized below:

- Patterns of Internet and computer access confirm the existence of "digital divides" both within and between nations. Apart from Italy, differences in ICT use and access between countries are not large. Home computer access rates are about 80 per cent and home Internet access rates approximately 70 per cent for the majority of countries surveyed.
- Within countries, however, there are large divides in access and use of ICTs. Among other factors, income differentials stand out in predicting access to, and use of ICTs. Home computer and Internet access vary significantly by income and the largest drop in access rates typically occurs between the third and second income quartiles.
- Many factors including age, gender, level of education, type of occupation and level of literacy proficiency are associated with adults' use and familiarity of computers and the Internet. These factors help to predict whether a respondent is a "high-intensity" computer user.
- Age exerts a strong influence on computer use, showing a significant decline after age 45.

- Clear gender differences in computer and Internet use exist in the European countries but not in North America.
- Respondents with less than upper secondary education use computers significantly less often for task-oriented purposes. This effect is most pronounced in Bermuda and Italy.
- Those without access to ICTs also tend to have lower literacy levels than the rest of the population. Non-users tend to have significantly lower literacy skills than computer users.
- The proportion of adults in different literacy and computer use profiles varies substantially by country. In half of the countries, respondents with both low literacy (Levels 1 and 2) and "low-intensity" computer use represent the largest group. The group of respondents with both medium to high literacy (Levels 3 and 4/5) and "high-intensity" computer use is small in all countries.
- As prose, document, numeracy and problem solving levels increase, adults' perceived usefulness and attitude toward computers, Internet use, and use of computers for various tasks also increase. In most countries, respondents with medium to high literacy have between two and three times the odds of being a high-intensity computer user.
- Finally, literacy and computer use profiles are strongly related to the likelihood that respondents have high earnings. In most countries, adults who have medium to high literacy skills (Levels 3 and 4/5) and are high-intensity computer users have about three to six times the odds of being in the top quartile of personal income compared to respondents who have low literacy and are low-intensity computer users.

8.2 Connectivity and income as a key determinant

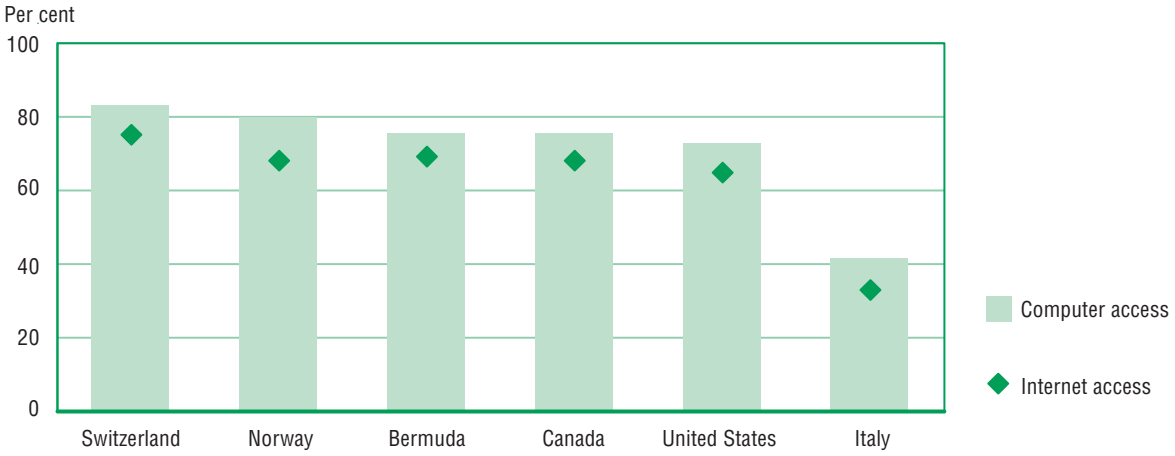
The widespread diffusion and use of ICTs, including the personal computer and the Internet, is a major source of change on many fronts. In parallel with the profound economic and social transformations underway, people have learned to develop new and rapidly changing skill sets to use ICTs effectively. This has brought to the fore the notion that ICT skills are necessary to function in today's world. Differences in the penetration and use of various ICTs, both within and between countries, have been well documented in recent years. Studies of the digital divide (e.g., U.S. Department of Commerce, 1995; 1998, 1999, 2000, 2002; OECD, 2001; Sciadas, 2002, 2003) have also identified and analyzed many factors that influence connectivity and use of ICTs, whether at the household or individual level. While income is usually a key determinant, many other factors are found to exert an influence. These include education, age, gender, area of residence (urban vs rural) and even family composition.

Results presented in Figure 8.1 confirm previous findings on the digital divide. Apart from Italy, differences in ICT use and access between countries are not large. Estimates show that computer access ranges from a high of over 80 per cent in Switzerland to just over 40 per cent in Italy. Closely related to this pattern is Internet access, where nearly three-quarters of individuals in Switzerland compared to less than one-third of individuals in Italy live in a home with Internet access.

FIGURE 8.1

Home computer and internet access at home

Per cent of adults aged 16 to 65 who report having access to a computer and the internet at home, 2003



Countries are ranked by the per cent who have access to computers at home.

Source: Adult Literacy and Life Skills Survey, 2003.

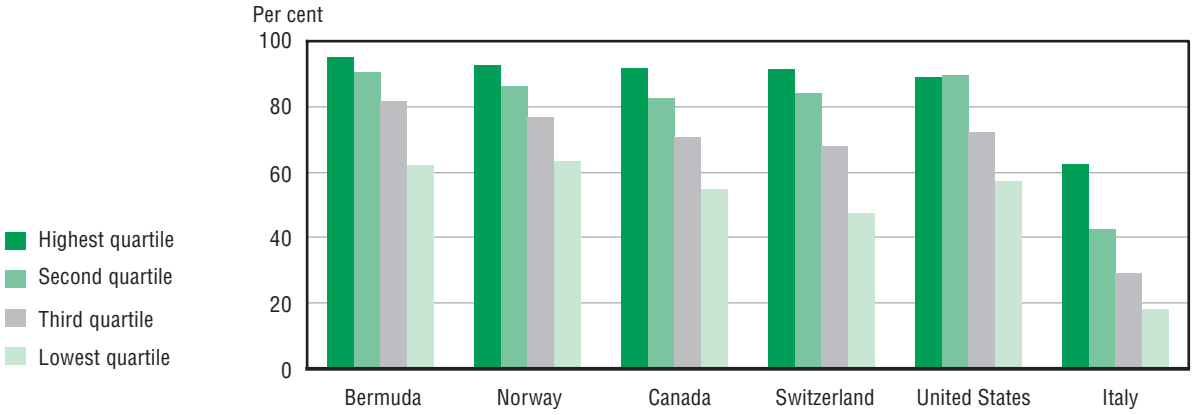
Confirming previous findings, Figure 8.2 shows the strong correlation between income and ICT use and access. Income is a key factor shaping the digital divide. It determines whether households can afford to purchase computers and access to the Internet as well as other ICTs. Use and access of computers and the Internet by income quartile varies substantially by country. These results have potentially serious consequences because individuals living in low-income households may face computer-related learning disadvantages (Felstead, Duncan and Green, 2002).

There exists little difference between the highest and second income quartiles. It is between the second, third, and lowest quartiles that differences become evident. Italy lags the other countries in terms of computer and Internet access for each quartile. In fact, computer and Internet access for users in the top income quartile living in Italy approximates the access rates of the lower quartiles of other countries. In this respect Italy is not only lagging behind the other countries, but it is subject to a greater divide within the nation in terms of computer and Internet access.

FIGURE 8.2

Home computer access by income quartiles

Per cent of adults aged 16 to 65 who report having access to a computer at home, by household income quartiles, 2003



Countries are ranked by the rate of access among those in the highest income quartile.

Source: Adult Literacy and Life Skills Survey, 2003.

8.3 ICTs and literacy skills

A key question that emerged from the IALS is the extent to which foundation skills relate to other skills such as ICT skills, which are thought to be important for workplace productivity and labour market success (OECD and Statistics Canada, 2000; McAuley and Lowe, 1999). In practice, ICT use is linked to literacy skills in a number of ways. Some studies suggest that literacy skills are essential to the development of ICT literacy (e.g., Massé, Roy and Gingras, 1998). While ICT skills may depend on technological proficiency to a certain extent, it also requires cognitive skills, such as those underlying literacy, numeracy and problem solving, which are critical for using ICTs effectively (International ICT Literacy Panel, 2002). Most ICT content, notably the Internet, remains text-based (Stewart, 2000), and the format and content of web pages often demand skills similar in nature to those assessed by the document literacy domain in ALL, namely unstructured and non-continuous texts such as tables and documents. In general, literacy is becoming increasingly important as more information is transmitted and shared through ICTs than ever before (Leu Jr., 2000).

A comparison of computer users and non-users reveals a literacy gap in all countries. Figure 8.3 shows that users consistently score higher on average by approximately 50 or more points. Thus, non-users face not only a digital divide, but also a literacy gap. Separately, among 15-year-old students, findings show a positive relationship between access to home computers and reading skills (Bussière and Gluszynski, 2004).

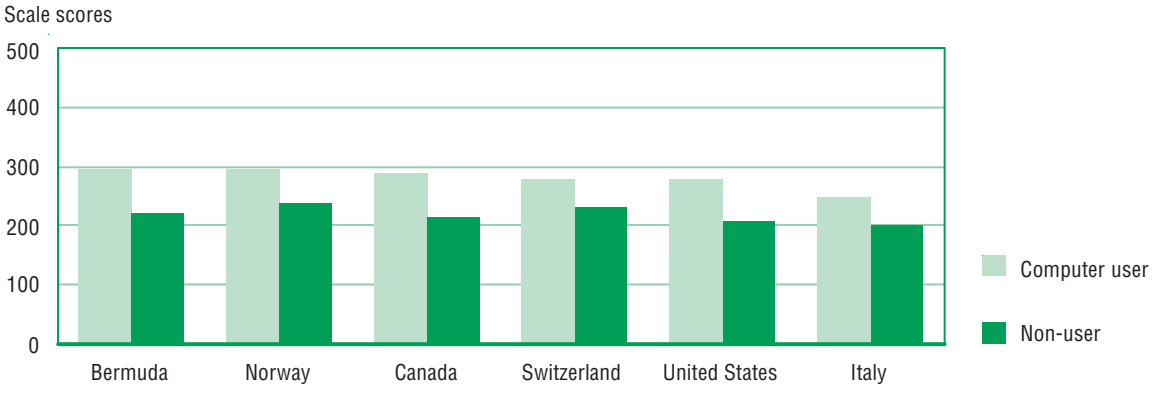
Three broad indices of ICT use and familiarity are used for further analysis. These assess the respondent's perceived usefulness and attitude towards computers, the diversity and intensity of their Internet use, and their use of computers for specific task-oriented purposes (see Box 8A). Figure 8.4 displays the average index scores by country. Bermuda emerges as a leader in all three measures, but it

is closely followed by Canada, Norway, Switzerland and the United States. Scores are substantially lower in Italy, particularly for diversity and intensity of Internet use, and use of computers for task-oriented purposes. In Switzerland, scores for the perceived usefulness of computers, and diversity and intensity of Internet use, are lower than most other countries, but together with Bermuda it is one of the leading countries for use of computers for task-oriented purposes.

FIGURE 8.3

Skills of computer users and non-users

Mean scores on the prose literacy scale ranging from 0 to 500 points, by whether respondents are computer users or non-users, populations aged 16 to 65, 2003



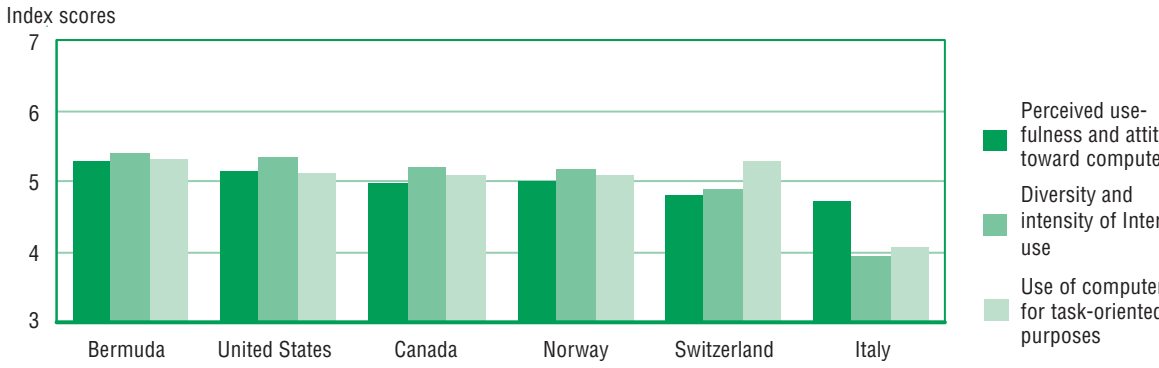
Countries are ranked by the scores of computer users.

Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 8.4

Index scores of ICT use and familiarity

Mean index scores on three scales of ICT use and familiarity, perceived usefulness and attitude towards computers, diversity and intensity of Internet use, and use of computers of for specific task-oriented purposes, populations aged 16 to 65, 2003



Countries are ranked by the sum of the mean scores on the three scales.

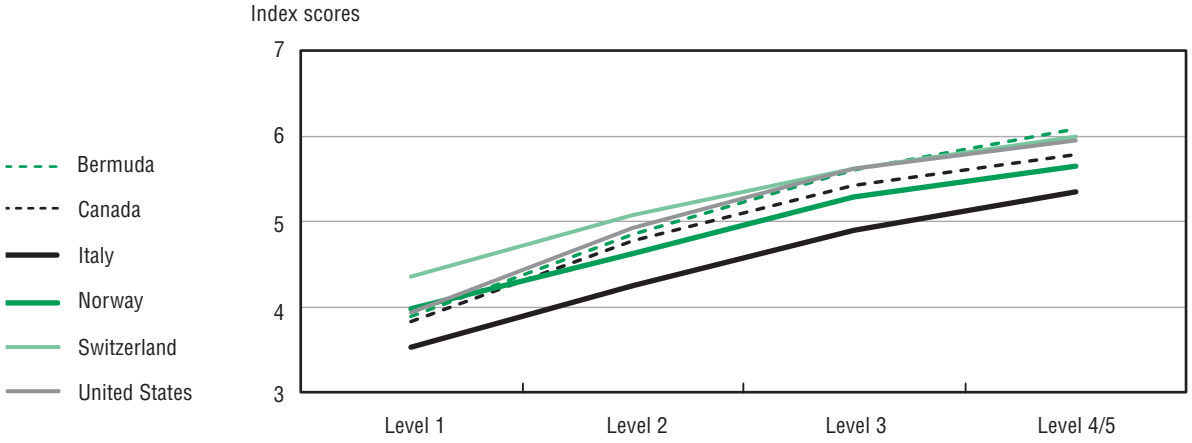
Source: Adult Literacy and Life Skills Survey, 2003.

Results displayed in Figure 8.5 demonstrate that prose literacy increases with the use of computers for task-oriented purposes. The findings are similar for the other two indices and for other skills measured in ALL. Moreover, the patterns are similar for all countries in the survey, without exceptions. These results are consistent with another study that suggests that adults with higher literacy and numeracy skills also perform better on an assessment of ICT skills (see DfES, 2003).

FIGURE 8.5

Use of computers for task-oriented purposes by literacy skills

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by prose literacy levels, populations aged 16 to 65, 2003



Source: Adult Literacy and Life Skills Survey, 2003.

Box 8A

Indices of ICT use and familiarity

Three indices of ICT use and familiarity were derived from several observed variables that were collected in the ALL survey. ICT related variables were examined using Exploratory Factor Analysis with principal components specified as the method. Confirmatory Factor Analysis was then used to validate three models that were hypothesized on the basis of the exploratory results and an interpretation of the observed variables. Index scores were derived according to the specified models using a Rasch scaling approach. Scores for each index are expressed as standardized scores on a 10-point scale, with a mean of 5 and a standard deviation of 1.5.

The underlying variables used to construct the three measures are outlined below:

1. Index of perceived usefulness and attitude toward computers

Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements:

- Computers have made it possible for me to get more done in less time

- Computers have made it easier for me to get useful information
- Computers have helped me to learn new skills other than computer skills
- Computers have helped me to communicate with people
- Computers have helped me reach my occupational (career) goals

2. Index of diversity and intensity of Internet use

In a typical month, how often did you use the Internet for the following purposes? (Daily, a few times a week, a few times a month, never)

- Electronic mail (email)
- Participate in chat groups or other on-line discussions
- Shopping (including browsing for products or services but not necessarily buying)
- Banking
- Formal education or training (part of a formal learning activity such as a course or a program of studies)
- Obtain or save music
- Read about news and current events
- Search for employment opportunities
- Search for health related information
- Search for weather related information
- Search for government information
- Playing games with others
- General browsing
- Other purposes; specify
- In a typical month, how many hours did you use a computer at home?

3. Index of using computers for task-oriented purposes

In a typical month, how often did you use a computer for the following purposes? (Daily, a few times a week, a few times a month, never).

- Writing or editing text
- Accounts, spreadsheets or statistical analysis
- Creating graphics, designs, pictures or presentations
- Programming or writing computer code
- Keeping a schedule or calendar
- Reading information on a CD-ROM or DVD
- In a typical month, how many hours did you use a computer at home?

8.4 ICT use and familiarity by key demographic characteristics

The strong relationship between income and ICT use and access was established above. This section examines other factors that are associated with using computers for task-oriented purposes (see Box 8A). In particular, these factors include age, gender, educational attainment and occupation.

Some are concerned that older workers have fewer ICT skills and that this may result in a deterioration of their position in the labour force (OECD, 2004). A 'generation gap' with respect to exposure to computers and other ICTs may

explain a reduced opportunity to learn ICT skills. Younger adults are more likely to grow up with a computer in the home than those who are older than 25 (DfES, 2003). As a result, there are fears of a growing mismatch between the skills of older workers and the demand for ICT skills. Further, a lack of skills may cause a slowdown in the introduction of ICTs in the jobs filled by older workers, hurting a company's productivity growth and competitiveness (OECD, 2004). However, to date there is no firm evidence of such a competitive disadvantage.

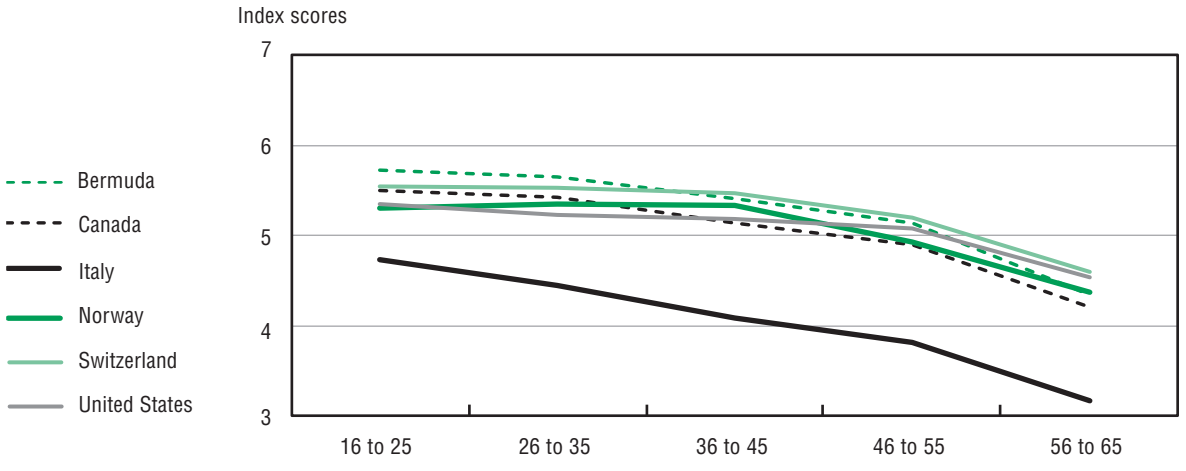
Results presented in Figure 8.6 suggest that there is a strong relationship between age and the intensity of using computers for task-oriented purposes. Moreover, the patterns are similar across countries. Older adults use computers for task-oriented purposes less intensively than younger adults. Many of the tasks used to construct the index are associated with computer use at work, such as writing or editing text, managing accounts or spreadsheets, programming, creating presentations or keeping a schedule or calendar. The largest difference in intensity of use is between the ages of 46 to 55 and 56 to 65, suggesting that older workers and retired persons are not performing these tasks regularly. While not reported here, the ICT-age relationship is even stronger with respect to the diversity and intensity of Internet use. In contrast, the index measuring the perceived usefulness and attitudes toward computers does not decrease uniformly with increasing age.

Many studies have found gender differences in patterns of computer use. For example, in Canada, one study found that with the exception of word processing, men were more likely than women to use computers for a range of common tasks (Marshall, 2001). Men have also been found to perform slightly higher than women on a practical performance assessment of ICT skills, and also to have higher awareness of ICTs (DfES, 2003). The fact that men were more likely to be frequent users of computers is suggested as a reason for much of the difference in performance (DfES, 2003). Access to ICTs is found to be lowest among unemployed women (Commission of the European Communities, 2002).

FIGURE 8.6

Use of computers for task-oriented purposes by age groups

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by age groups, populations aged 16 to 65, 2003



Source: Adult Literacy and Life Skills Survey, 2003.

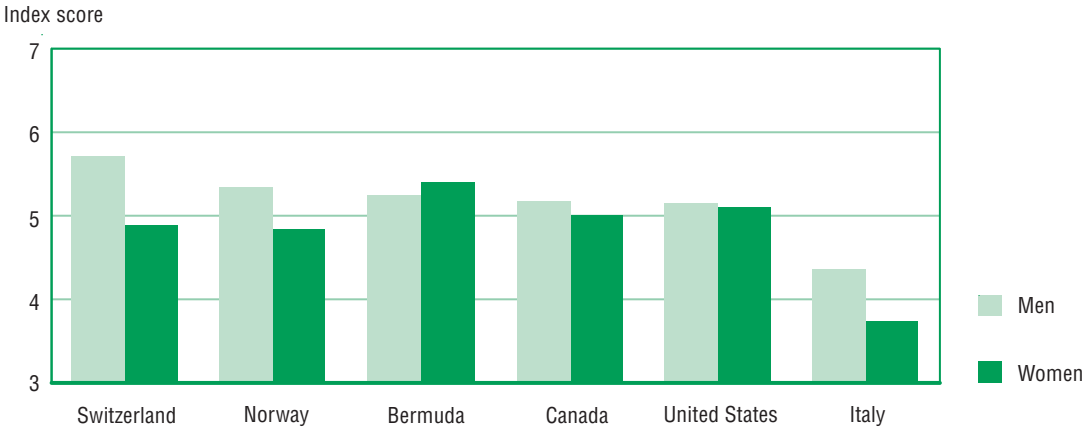
Figure 8.7 shows that differences in using computers for task-oriented purposes by gender are more pronounced in Italy, Norway and Switzerland. The results are similar for the other two measures of ICT use and familiarity. In these countries, men tend to be more familiar with and use ICTs more intensively than women. In contrast, gender differences are much smaller in Bermuda, Canada and the United States. In fact, in Bermuda, women score higher than men on all three ICT measures.

Although there appears to be a relationship between gender and ICT use, gender alone does not tell the entire story. There is ample evidence that gender differences in ICT usage are higher during the early stages of the introduction of new ICTs but decline over time. Therefore, gender differences must be analyzed in conjunction with the actual penetration of ICTs, as well as the fact that significant inter-dependencies exist with age. For example, while a Canadian study found that the gender difference increases with age, it was non-existent among 15 to 19 year olds (Silver, 2001).

FIGURE 8.7

Use of computers for task-oriented purposes by gender

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by gender, populations aged 16 to 65, 2003



Countries are ranked by mean index scores for men.

Source: Adult Literacy and Life Skills Survey, 2003.

While an individual may master certain skills — for example, the ability to produce tables and graphs using spreadsheet software — one characteristic of ICT skills is that they are often the product of a process of continuous learning (HRDC, 2002; Bertelsmann Foundation and AOL Time Warner Foundation, 2002; Committee on Information Technology Literacy, 1999; Ginsburg and Elmore, 1998). Because the learning process is continuous, learners often incorporate several methods to learn necessary computer skills, both formal and informal, and seldom rely on only one method of learning. Formal methods include courses sponsored by an employer, while less formal methods may include help from colleagues or family, the use of manuals and books, observing others, or self-teaching through trial-and-error, for example (Dryburgh, 2002; Felstead *et al.*, 2002). Skill requirements change because of the particularly rapid introduction

of new ICTs (e.g., software upgrades, new supporting hardware or interface technologies). The ability to learn and keep up with application-specific knowledge while also developing and maintaining a growing set of foundation skills therefore becomes essential to one's level of participation in a digital world.

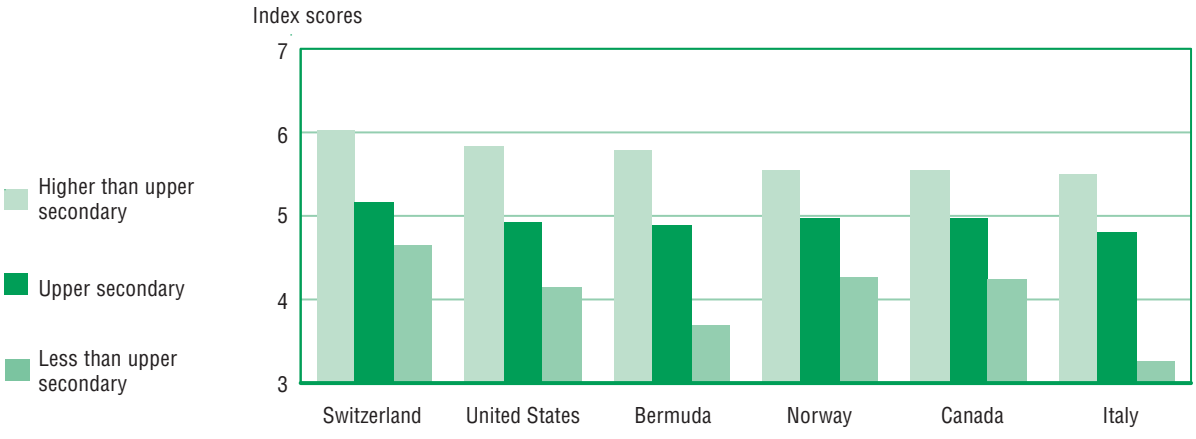
The role of formal education in building a workforce equipped with ICT skills is currently debated. While training at schools, colleges and universities may be an effective means to reach the future workforce, the rapid pace of technological change necessitates lifelong learning rather than one-time instruction. Nonetheless, education can be an important means to develop at least basic ICT skills. The relatively recent introduction of ICTs in schools may mean that as time goes by, higher proportions of people are likely to become ICT users (OECD, 2004). One study found that those with more formal education have higher proficiency in ICT skills. But because more educated people also tend to work with computers more intensively, it is difficult to determine whether education or employment has the biggest impact on ICT skills (DfES, 2003). While beyond the scope of this study, more effort is needed in future to measure ICT skills directly and gain insight into their development.

Differences in ICT use and familiarity between levels of education are largest in Bermuda and Italy and slightly smaller in Canada, Norway, Switzerland and the United States. Figure 8.8 displays the intensity of computer use by levels of educational attainment. The pattern is similar for the intensity and diversity of Internet use, but those with less education still perceive computers to be useful, even if they do not use them as much.

FIGURE 8.8

Use of computers for task-oriented purposes by educational attainment

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by educational attainment, populations aged 16 to 65, 2003



Countries are ranked by mean index scores for respondents with higher than upper secondary education.

Source: Adult Literacy and Life Skills Survey, 2003.

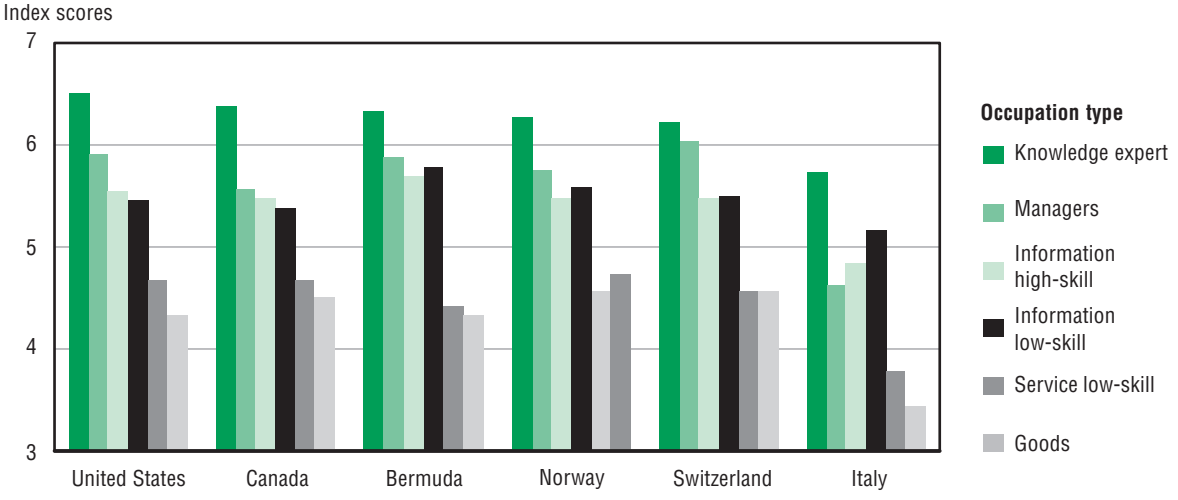
ICT skills have become necessary for a broad range of activities in many workplaces (OECD, 2002). While the introduction of ICTs has affected the workplace at many levels, the distribution of ICT-related tasks is not necessarily even. Certain types of workers, in particular "knowledge" and "information" workers, have become an important part of the knowledge economy. The intensity of ICT use can be expected to vary both by industrial sector and by type of occupation.

'Expert' knowledge workers (e.g., scientists, computing and other professionals) and managers tend to use ICTs more intensively and be more familiar with them than those in other types of occupations. But the pervasive nature of ICTs in the workplace is demonstrated by the fact that 'low-skill' information workers (e.g., office and customer service clerks) are just as likely to use ICTs as 'high-skill' information workers (e.g., professionals, teachers and most technicians). Figure 8.9 shows that managers and information workers use computers for task-oriented purposes at about the same level of intensity. The only types of jobs with substantially lower ICT use and familiarity are low-skill services and goods-related manufacturing type jobs, but even for low-skill service jobs, ICT use is becoming an important phenomenon.

FIGURE 8.9

Use of computers for task-oriented purposes by type of occupation

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by type of occupations, populations aged 16 to 65, 2003



Countries are ranked by mean index score for knowledge expert occupations.

Source: Adult Literacy and Life Skills Survey, 2003.

The following analysis considers all the above factors including age, gender, education, occupation and literacy skill in a multivariate framework. Logistic regression analysis is used to study the factors affecting the intensity of computer use for task-oriented purposes (see Box 3A — Using odds ratios). In particular, the influence of literacy on the likelihood of being a high-intensity computer user for task-oriented purposes is presented in Figure 8.10.

The results vary substantially by country. Gender, for example, exerts a particularly strong influence in some countries. While controlling for other factors, men in Italy, Norway and Switzerland are also more likely to be high-intensity computer users for task-oriented purposes. In contrast, gender differences with respect to ICTs are smaller in North America and in Italy. In fact, in Bermuda there is no difference between men and women in the odds of being a high-intensity computer user.

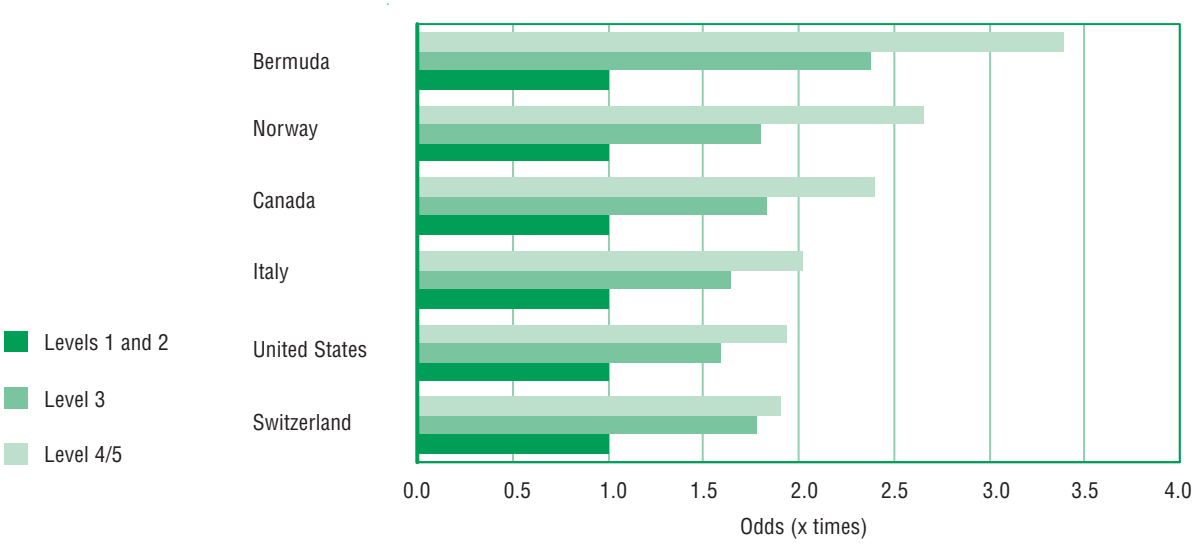
Education exerts a significant influence on computer use. In the United States and Italy, adults with more than upper secondary education have more than two times the odds of being high-intensity computer users compared to those with less education. In the remaining countries, the odds are approximately twice as high for adults with post-secondary attainment. The results also confirm that those with high levels of household income are more likely to be intense computer users. In most countries, respondents whose income falls in the top income quartile have approximately two times the odds of being high-intensity computer users.

Finally, literacy skills are also an important factor. Figure 8.10 shows that as literacy skill levels increase, the odds of being a high-intensity computer user also increase. In Switzerland and the United States, adults scoring at Level 4/5 have nearly twice the odds of being a high-intensity user compared to respondents with low literacy (Levels 1 and 2). Comparable estimates range from two to over three times for Italy, Canada, Norway and Bermuda.

FIGURE 8.10

Likelihood of being a high-intensity computer user by literacy skill levels

Adjusted odds ratios showing the likelihood of adults aged 16 to 65 of being high-intensity computer users, by prose literacy levels, 2003



Countries are ranked by the odds of those who score at Level 4/5.

Source: Adult Literacy and Life Skills Survey, 2003.

8.5 ICT use and outcomes

This section considers the possible outcomes associated with ICT use. In particular, the combined effect of literacy skills and different levels of ICT use on personal income are studied. Logistic regression analysis is used to estimate the odds of being a high-income earner, while controlling for various socio-economic characteristics, including different combinations of literacy skill and computer use profiles (see Box 8B).

Box 8B

Measuring combined literacy skill and computer use profiles

The logistic regression in this section models the effects of various socio-economic characteristics, as well as combined literacy skill and computer use profiles, on personal income. The combined profiles consist of four groups as follows:

Profile	Literacy level	Use of computers for task-oriented purposes
Group 1	Low (Levels 1 and 2)	Low-intensity (< top quartile of computer users)
Group 2	Medium/high (Levels 3 and 4/5)	Low-intensity (< top quartile of computer users)
Group 3	Low (Levels 1 and 2)	High-intensity (top quartile of computer users)
Group 4	Medium/high (Levels 3 and 4/5)	High-intensity (top quartile of computer users)

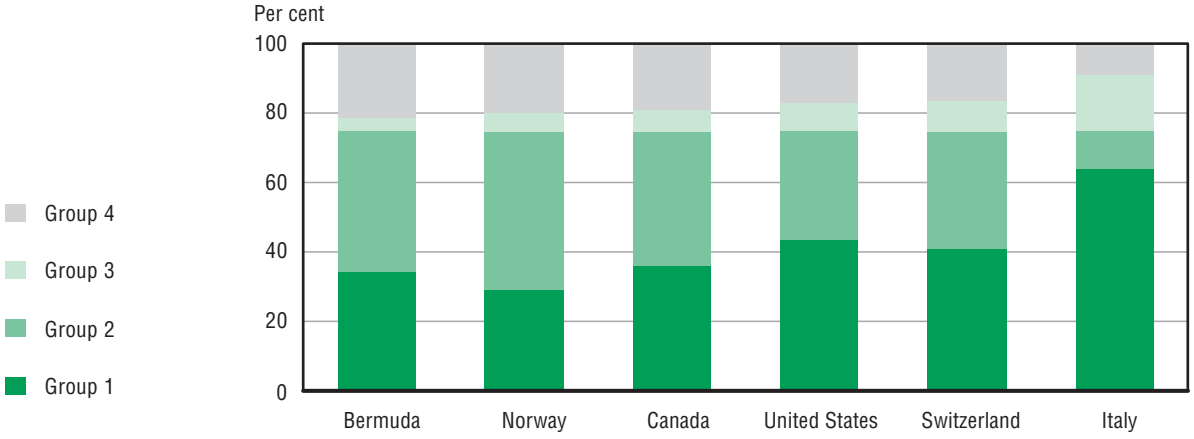
Figure 8.11 displays the distribution of different literacy and computer use profiles by country. In Italy, Switzerland and the United States, adults with a combined profile of low literacy and low intensity computer use is the largest group. In Italy this group is particularly large, reaching over 60 per cent of all adults aged 16 to 65. Conversely, in Bermuda, Canada and Norway, the largest group consists of users with medium to high literacy skills (Levels 3 and 4/5) and low intensity computer use. For all countries except Italy, adults with medium to high literacy skills and high intensity computer use represent the third largest group. The smallest group is composed of individuals with high computer use but low literacy skills.

Results of the logistic regression analysis are presented in Figure 8.12. The findings suggest that combined literacy skill and computer use profiles are strongly associated with personal income. Apart from Italy, respondents who have medium to high literacy skills and are high-intensity computer users have about three to six times the odds of being in the top quartile of personal income compared to respondents with low literacy levels and low computer use. In Italy the same group has almost twice the likelihood of being a top earner. Thus a good foundation of literacy skills combined with a high use of ICTs is associated with high income. Further research is necessary to shed more light on the economic and social outcomes associated with ICT use and literacy skills.

FIGURE 8.11

Combined literacy and computer use profiles

Per cent of adults aged 16 to 65 in each combined literacy and computer use profile[1], 2003



Countries are ranked by the per cent in Group 4.

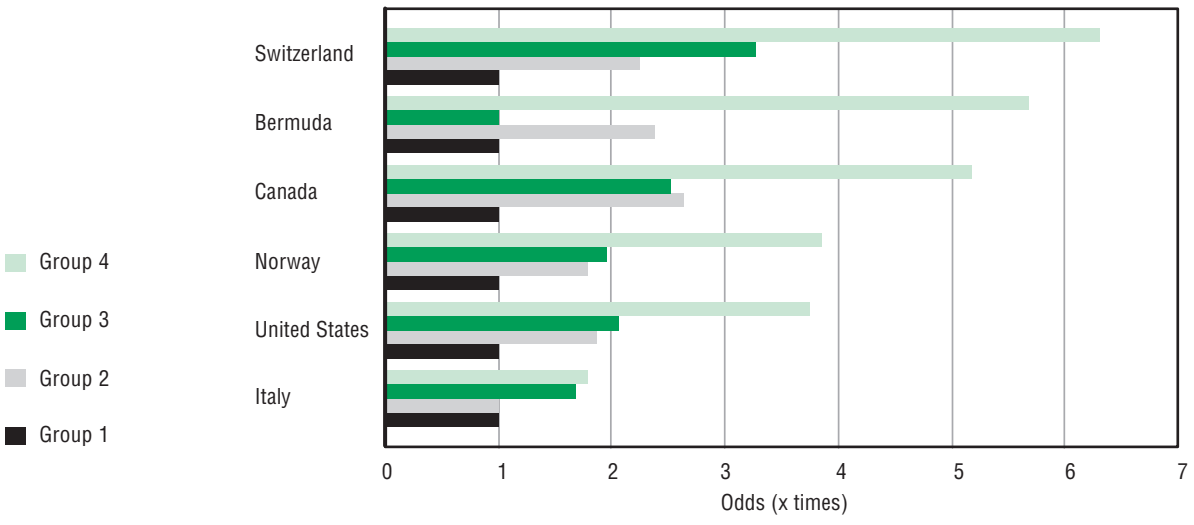
1. See Box 8B.

Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 8.12

Likelihood of being a top income quartile earner by combined skill and user profiles

Adjusted odds ratios[1] showing the likelihood of adults aged 16 to 65 of being a top income quartile earning, by combined literacy and computer user profiles[2], 2003



Countries are ranked by the odds of those in Group 4.

1. Odds estimates that are not statistically different from one at conventional levels of significance are reported as one in the figure. For the actual estimate and its corresponding significance, see Table 8.12 in the annex to this chapter.
2. See Box 8B.

Source: Adult Literacy and Life Skills Survey, 2003.

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Annex 8

Data Values for the Figures

TABLE 8.1

Per cent of adults aged 16 to 65 who report having access to a computer and the Internet at home, 2003

	Computer access		Internet access	
Bermuda	75.6	(1.0)	69.4	(1.1)
Canada	75.6	(0.6)	68.1	(0.6)
Italy	41.5	(0.8)	33.2	(0.9)
Norway	79.9	(0.7)	68.3	(0.8)
Switzerland	83.3	(0.7)	74.9	(1.2)
United States	72.8	(1.0)	64.9	(1.3)

Source: Adult Literacy and Life Skills Survey, 2003.

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TABLE 8.2

Per cent of adults aged 16 to 65 who report having access to a computer at home, by household income quartiles, 2003

	Lowest quartile		Third quartile		Second quartile		Highest quartile	
Bermuda	57.0	(2.6)	72.2	(3.3)	89.6	(1.5)	88.9	(2.3)
Canada	54.6	(1.5)	70.9	(1.3)	82.5	(1.1)	91.8	(0.9)
Italy	18.2	(2.0)	29.2	(1.8)	42.5	(2.1)	62.5	(1.7)
Norway	63.6	(1.4)	76.8	(1.7)	86.2	(1.5)	92.9	(0.9)
Switzerland	62.0	(2.7)	81.9	(1.9)	90.2	(1.4)	94.9	(1.1)
United States	47.6	(2.1)	68.2	(1.8)	84.2	(1.1)	91.3	(1.4)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.3

Mean scores on the prose literacy scale ranging from 0 to 500 points, by whether respondents are computer users or non-users, populations aged 16 to 65, 2003

	Computer users		Non-users	
Bermuda	296.9	(1.4)	221.9	(3.7)
Canada	289.1	(0.7)	214.1	(2.3)
Italy	249.3	(1.6)	202.2	(2.6)
Norway	294.1	(1.0)	238.5	(3.6)
Switzerland	279.7	(1.4)	231.5	(4.8)
United States	278.1	(1.3)	207.5	(3.5)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.4

Mean index scores on three scales of ICT use and familiarity, perceived usefulness and attitude toward computers, diversity and intensity of Internet use, and use of computers for specific task-oriented purposes, populations aged 16 to 65, 2003

	Perceived usefulness and attitude toward computers		Diversity and intensity of Internet use		Use of computers for task-oriented purposes	
Bermuda	5.3	(0.0)	5.4	(0.0)	5.3	(0.0)
Canada	5.0	(0.0)	5.2	(0.0)	5.1	(0.0)
Italy	4.7	(0.1)	3.9	(0.0)	4.1	(0.0)
Norway	5.0	(0.0)	5.2	(0.0)	5.1	(0.0)
Switzerland	4.8	(0.0)	4.9	(0.0)	5.3	(0.0)
United States	5.1	(0.0)	5.4	(0.0)	5.1	(0.0)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.5

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by prose literacy levels, populations aged 16 to 65, 2003

	Prose literacy scale							
	Level 1		Level 2		Level 3		Level 4/5	
Bermuda	3.9	(0.1)	4.9	(0.1)	5.6	(0.1)	6.1	(0.1)
Canada	3.8	(0.1)	4.8	(0.0)	5.4	(0.0)	5.8	(0.1)
Italy	3.5	(0.0)	4.3	(0.1)	4.9	(0.1)	5.3	(0.2)
Norway	4.0	(0.2)	4.6	(0.1)	5.3	(0.0)	5.7	(0.0)
Switzerland	4.4	(0.1)	5.1	(0.1)	5.6	(0.0)	6.0	(0.1)
United States	3.9	(0.1)	4.9	(0.1)	5.6	(0.1)	6.0	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.6

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by age groups, populations aged 16 to 65, 2003

	Age groups									
	16 to 25		26 to 35		36 to 45		46 to 55		56 to 65	
Bermuda	5.7	(0.1)	5.6	(0.1)	5.4	(0.1)	5.1	(0.1)	4.3	(0.1)
Canada	5.5	(0.0)	5.4	(0.0)	5.1	(0.0)	4.9	(0.0)	4.2	(0.1)
Italy	4.7	(0.1)	4.4	(0.1)	4.1	(0.1)	3.8	(0.0)	3.2	(0.0)
Norway	5.3	(0.1)	5.4	(0.0)	5.3	(0.1)	4.9	(0.1)	4.4	(0.1)
Switzerland	5.5	(0.1)	5.5	(0.1)	5.5	(0.0)	5.2	(0.0)	4.6	(0.1)
United States	5.4	(0.1)	5.2	(0.1)	5.2	(0.1)	5.1	(0.1)	4.5	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.7

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by gender, populations aged 16 to 65, 2003

	Men		Women	
Bermuda	5.2	(0.1)	5.4	(0.0)
Canada	5.2	(0.0)	5.0	(0.0)
Italy	4.4	(0.0)	3.8	(0.0)
Norway	5.3	(0.0)	4.8	(0.0)
Switzerland	5.7	(0.0)	4.9	(0.0)
United States	5.2	(0.1)	5.1	(0.0)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.8

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by educational attainment, populations aged 16 to 65, 2003

	Less than upper secondary		Upper secondary		Higher than upper secondary	
Bermuda	3.7	(0.1)	4.9	(0.1)	5.8	(0.0)
Canada	4.3	(0.1)	5.0	(0.0)	5.5	(0.0)
Italy	3.3	(0.0)	4.8	(0.1)	5.5	(0.1)
Norway	4.3	(0.1)	5.0	(0.0)	5.5	(0.0)
Switzerland	4.6	(0.1)	5.2	(0.0)	6.0	(0.0)
United States	4.2	(0.1)	4.9	(0.0)	5.8	(0.0)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.9

Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by type of occupation, populations aged 16 to 65, 2003

	Knowledge expert		Managers		Information high-skill		Information low-skill		Service low-skill		Goods	
Bermuda	6.3	(0.1)	5.9	(0.1)	5.7	(0.1)	5.8	(0.1)	4.4	(0.1)	4.3	(0.1)
Canada	6.4	(0.1)	5.6	(0.1)	5.5	(0.0)	5.4	(0.0)	4.7	(0.1)	4.5	(0.0)
Italy	5.7	(0.1)	4.6	(0.2)	4.8	(0.1)	5.2	(0.1)	3.8	(0.1)	3.4	(0.1)
Norway	6.3	(0.1)	5.7	(0.1)	5.5	(0.0)	5.6	(0.1)	4.6	(0.1)	4.7	(0.1)
Switzerland	6.2	(0.1)	6.0	(0.1)	5.5	(0.1)	5.5	(0.1)	4.6	(0.1)	4.6	(0.1)
United States	6.5	(0.1)	5.9	(0.1)	5.5	(0.1)	5.5	(0.1)	4.7	(0.1)	4.3	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.10

Adjusted odds ratio showing the likelihood of adults aged 16 to 65 of being high-intensity computer users, by prose literacy levels, 2003

	Levels 1 and 2	Level 3		Level 4/5	
Bermuda	1.00	2.38***	(0.26)	3.39***	(0.25)
Canada	1.00	1.83***	(0.12)	2.40***	(0.14)
Italy	1.00	1.64**	(0.19)	2.02**	(0.34)
Norway	1.00	1.80***	(0.19)	2.66***	(0.15)
Switzerland	1.00	1.78***	(0.19)	1.91**	(0.25)
United States	1.00	1.59***	(0.14)	1.94***	(0.15)

* p<0.10, statistically significant at the 10 per cent level.
** p<0.05, statistically significant at the 5 per cent level.
*** p<0.01, statistically significant at the 1 per cent level.
Notes: Standard errors are of the logarithm of the odds ratios.
Odds are adjusted for gender, age, educational attainment, labour force status and total household income.
Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.11

Per cent of adults aged 16 to 65 in each combined literacy and computer use profile,[1] 2003

	Group 1		Group 2		Group 3		Group 4	
Bermuda	34.2	(1.2)	40.7	(1.3)	3.9	(0.6)	21.2	(1.0)
Canada	35.9	(0.7)	39.1	(0.7)	6.0	(0.4)	19.0	(0.5)
Italy	63.7	(1.1)	11.1	(0.7)	16.0	(0.5)	9.3	(0.6)
Norway	29.1	(1.0)	45.9	(1.0)	4.9	(0.6)	20.1	(0.6)
Switzerland	40.9	(1.7)	34.1	(1.5)	8.6	(0.9)	16.4	(0.9)
United States	43.4	(1.1)	31.6	(1.1)	8.1	(0.6)	17.0	(0.9)

1. See Box 8B.
Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 8.12

Adjusted odds ratio showing the likelihood of adults aged 16 to 65 of being a top income quartile earning, by combined literacy and computer user profiles[1], 2003

	Group 1	Group 2		Group 3		Group 4	
Bermuda	1.00	2.38***	(0.25)	2.06	(0.42)	5.68***	(0.24)
Canada	1.00	2.63***	(0.08)	2.52***	(0.20)	5.18***	(0.10)
Italy	1.00	1.27	(0.22)	1.69***	(0.18)	1.80**	(0.26)
Norway	1.00	1.79***	(0.15)	1.95**	(0.29)	3.85***	(0.22)
Switzerland	1.00	2.25***	(0.16)	3.27***	(0.27)	6.30***	(0.27)
United States	1.00	1.86***	(0.17)	2.07***	(0.22)	3.75***	(0.17)

1. See Box 8B.

* p<0.10, statistically significant at the 10 per cent level.

** p<0.05, statistically significant at the 5 per cent level.

*** p<0.01, statistically significant at the 1 per cent level.

Notes: Standard errors are of the logarithm of the odds ratios.
Odds are adjusted for gender, age, educational attainment and labour force status.

Source: Adult Literacy and Life Skills Survey, 2003.

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