# Chapter V. ICT in education and government

Previous chapters have explored the diffusion of ICT among individuals and businesses. This chapter uses available indicators based on official statistics to describe the uptake of new technologies in schools and public administrations.

The contribution of the information economy to overall economic growth assumes that the population has the skills needed to use the technology. Access to ICT in schools and use of ICT in education are extremely important for raising ICT awareness and for developing an ICT skills base in the economy. For this reason, it is useful to monitor ICT developments in education systems. The first indicators in this chapter make use of international studies undertaken at the OECD to compare some basic indicators of student access to and use of computers.

ICT also affects governments by improving responsiveness, increasing efficiency and enhancing governance practices. Governments can encourage the diffusion of ICT through their supply of on-line services and their own use of new technologies. For these reasons, Member countries have expressed much interest in measuring and comparing government use of ICT. Unfortunately, there are as yet no harmonised official statistics on e-government in OECD countries., Therefore, this chapter only presents indicators for a limited number of countries. One of the problems with collecting internationally comparable statistics in this area is the heterogeneity of government units both within and across countries. Government organisations are quite varied in size and function, ranging from very small entities to huge government departments, hence it is difficult to harmonise the unit to be surveyed. With the increase in interest in the measurement of e-government, more official data will be collected over the coming years and hopefully a certain degree of comparability will be achieved.

# ICT in education

- Economies increasingly depend on technological knowledge and skills, and ICT skills are particularly important. The use of computers at an early age helps students to learn ICT skills which can then be used as a tool in the education process. For example, 77% of Swiss students reported using a computer several times a week to prepare their courses. Only 3% reported never using a computer for course preparation (Office fédéral de la statistique, Neufchatel, 2002).
- The average number of students per computer is an indicator of students' access to new technologies. Data in OECD's *Education at a Glance* show that the percentage of students with access to a computer varies from 25% in Italy to 90% or more in Canada, Finland and New Zealand. Computer use also varies by level, with students in secondary schools generally having greater access to computers than pupils in primary schools. In recent years, the number of students per computer has been decreasing.
- Among the 13 countries for which data are available, Canada, New Zealand and Denmark have the smallest number of students per computer, with fewer than 12 lower secondary students per computer, whereas there are over 35 students per computer in the Czech Republic and Hungary.
- *Education at a Glance* also provides statistics on the link between availability and use of computers. In secondary schools where the available computers were not in use, the reason most often given was that the computers were outdated. In addition, many respondents mentioned broken and incompatible computers. Lack of knowledge on how to use a computer was not generally considered a significant problem.
- The second source of international statistics on education, the OECD's Programme for International Student Assessment (PISA), shows that most students generally feel comfortable or very comfortable with using a computer. Most claimed to use a computer more at home than at school, except in Mexico, Ireland and Hungary. On average, less than 40% of students used a computer at school a few times or more a week. Hungarian students appear to have the highest use, with at least six in ten claiming to have used a computer at school at least a few times a week. On average, approximately one student out of two in OECD countries uses the Internet. Internet usage rates are the highest in Sweden and Canada, where over 70% of students claimed to have used the Internet at least a few times a week.

**Box 5.1. OECD statistics on education**

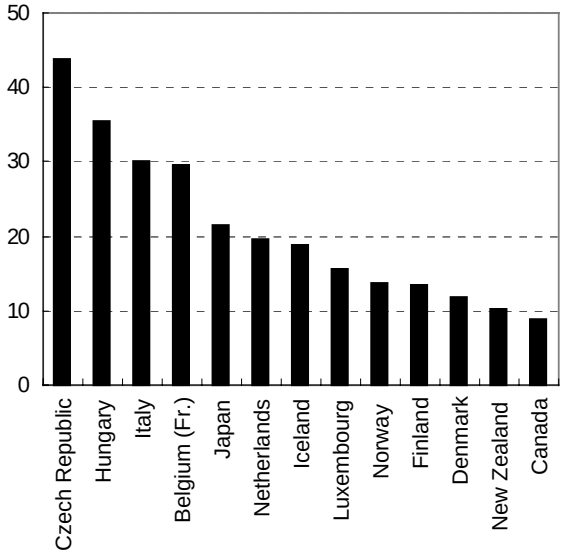
The OECD collects a large range of internationally comparable statistics on education. A main outcome of this work is the publication *Education at a Glance*, which provides statistics on OECD member countries and also 18 non-member countries. To ensure comparability, data for all countries are reported on the basis of common OECD definitions and methods. However, Belgium, Canada, Finland, Italy and New Zealand do not meet all the sampling criteria.

A second source of data on education is the OECD's Programme for International Student Assessment (PISA). It is based on a large-scale survey of 15-year old students in OECD member countries. The first survey, an Adult Literacy Survey, was carried out in 2000, and is reported on in the publication *Knowledge and Skills for Life.*

The PISA survey will be repeated every three years. In 2000, 265 000 students in 32 countries took part. Students sat pencil and paper assessments in their schools. Students and principals also answered questions about themselves and their schools. This allowed PISA to identify factors associated with performance.

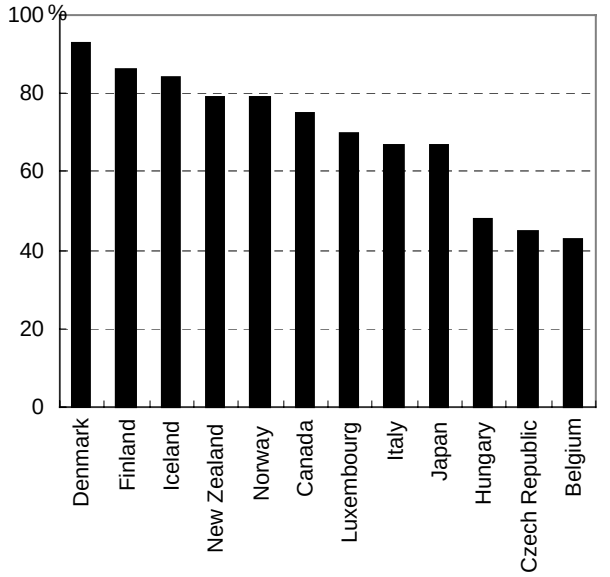
# ICT in education

**Ratio of students to available computers in lower secondary education, 1998/99**



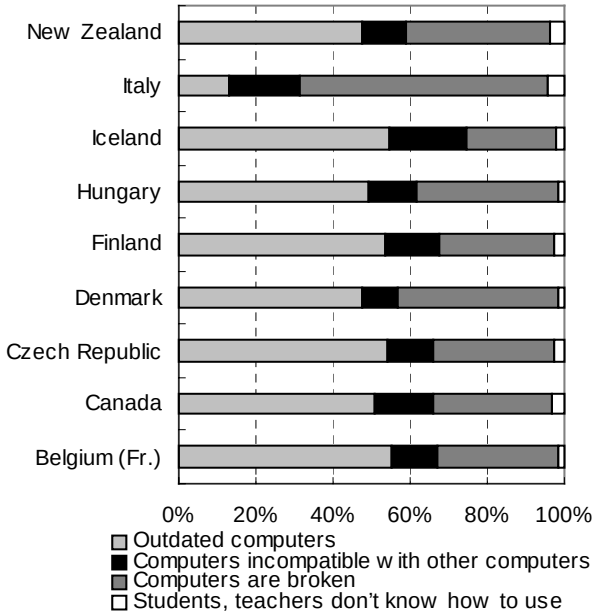

Source: *Education at a Glance*, OECD 2001.

**Percentage of lower secondary students using the available computers, 1998/99**



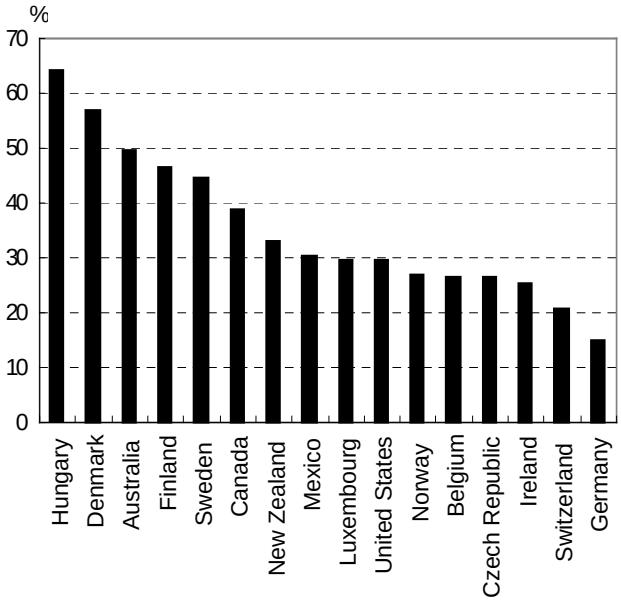

*Source*: *Education at a Glance*, OECD 2001.

**Reasons for not using available computers in lower secondary schools**




*Note*: Belgium (Fr.) refers to the part of Belgium where French is spoken.
*Source*: *Education at a Glance*, OECD 2001.

**Percentage of 15-year old students using a computer at school at least a few times a week**




*Source*: *Knowledge and Skills for Life*, OECD 2002.

# ICT in government

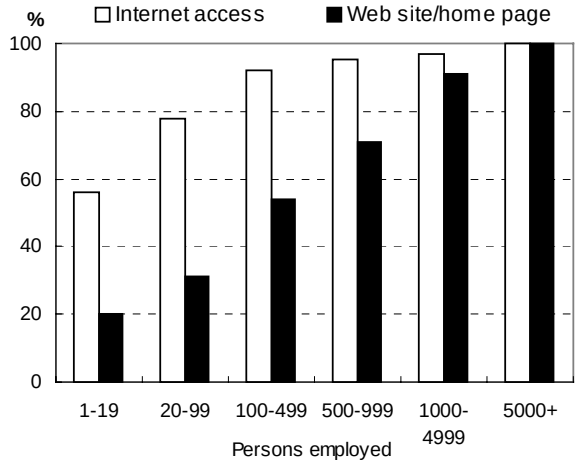
- The Internet gives governments the opportunity to offer public services and to provide information and policies more efficiently. The more public services can be delivered through electronic media, such as the Internet, the larger the potential savings. Processing documents, such as licences, or collecting taxes electronically are examples of such possibilities.
- Few countries currently provide official data on ICT in government, however. The Australian Bureau of Statistics conducted a survey of government use of IT in 1997/98 and again in 1999/2000. The earlier results showed that the larger the government department or agency, the more likely it was to have Internet access and a Web site or home page.
- Statistics Canada surveyed Internet and e-mail access in the public and private sectors in 2000 and found that public sector enterprises were more likely to have a Web page. Use of e-mail and the Internet was also more prevalent among employees in the public sector.
- Statistics published by the Japanese Statistics Bureau show that the number of employees per PC in the Japanese central government fell from 1.5 in 1996 to 0.8 in 2000. There is considerable variation across government functions, however. In 2000, local branch offices of the central government still had, on average, 1.5 employees per PC, whereas facilities and institutes (such as national universities) had 0.5 employee per PC.
- Data from Statistics Finland suggest that the use of ICT increased significantly from 1995 to 2000. Access for civil servants increased from 36% to 85%, the share of government PCs with multimedia capability increased from 5% in 1995 to 42% in 2000, and in 2000 10% of all government PCs were laptops.

**Box 5.2. ICT in government**

Governments in member countries recognise the benefits of ICT, in particular for enhancing good governance practices, being more responsive and governing more effectively. However statistics on ICT use in government are scarce. Countries such as Australia, Canada, Denmark, Finland, Japan, and the United Kingdom are collecting data on government use of ICT but, because of differences in the focus and timing of the surveys and the phrasing of the questions, the data currently available are not always internationally comparable. It will only become possible to draw valid international comparisons when agreement is reached on core indicators in this area.

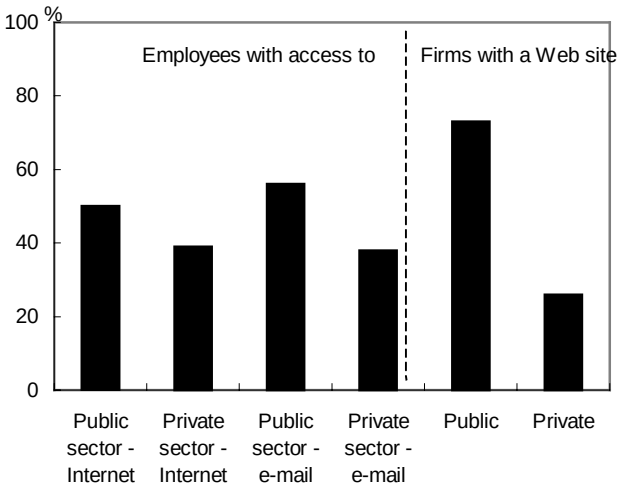
# ICT in government

**Government Internet access and Web sites in Australia, 1997/98**



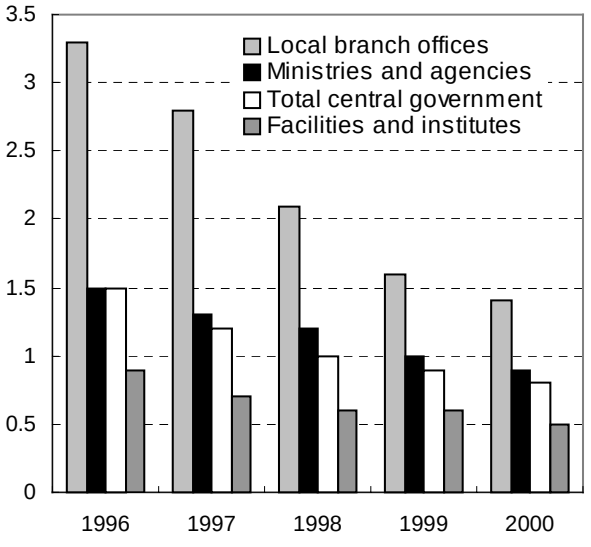

*Source*: Australian Bureau of Statistics (1999), "Government Use of Information Technology", 8119.0, Canberra.

**Internet and e-mail access in Canada's public and private sectors, 2000**



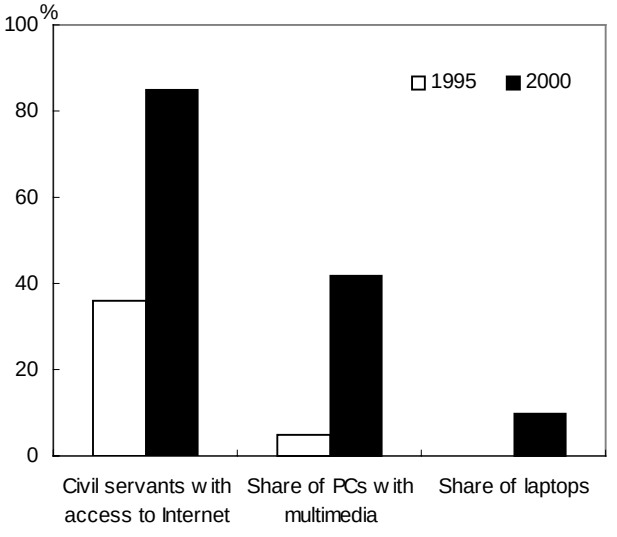

*Source*: Statistics Canada (2001), "Electronic Commerce and Technology Use", Connectedness Series, Ottawa, September.

**Employees per PC in Japan's central government, FY 1996-2000**




*Source*: Administrative Management Bureau (2001), *Basic Survey on the Progress of Government ICT Use*, Tokyo.

**ICT use in the Finnish government, 1995 and 2000**




*Source*: Statistics Finland (2001), *On the Road to the Finnish Information Society III*, Helsinki.