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PISA 2003 Australia: ICT Use and Familiarity at School and Home

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EXECUTIVE SUMMARY

As countries continue to invest in ICT and it becomes even more common in the workplace, there is an increasing demand for schools to produce technologically literate students. Information and communication technologies have changed the ways in which students access and process information and the ways in which they communicate with each other, providing educators with an impetus to modify and adapt curriculum to ensure capitalisation on the power of these technologies and the engagement of students with them. Students themselves have strong views on how technology should or could be incorporated more fully into education.

This report presents results from the *Programme for International Student Assessment* (PISA) 2003, and examines how extensive access to ICT is in schools, homes and other places, how familiar students nearing the end of compulsory education are with ICT and how well they feel they use the technologies that are available. This report complements the 2005 OECD report *Are students ready for a technology-rich world?: What PISA studies tell us*, which provided a profile of ICT use for the OECD and partner countries who participated in the ICT Literacy option in PISA 2003. This Australian report also looks at aspects of the so called 'digital divide', examining access and use of ICT in Australia by state[1], by gender, by Indigenous background, by socioeconomic background and by geographic location. These characteristics are compared to how well students performed in mathematics, the main area of student performance in PISA 2003.

The report shows that all Australian students have access to a computer at school, and most also have access to a computer at home. However fewer Indigenous students and fewer students from the lowest level of socioeconomic background have access at home. Students with access to a computer at home and those who used their computer at home frequently achieved at a higher level in mathematics than those students with no such access.

It should be noted, however, that reporting the association between computer access and usage with performance cannot provide evidence of the impact of computers on learning, since the PISA data do not demonstrate causation. The data do, however, raise issues for further investigation. In particular, the evidence shows that the minority of students who still lack access to computers, or who do not use them, are more likely to underperform at school. The data also show that these students are not randomly scattered within the population, but are more likely to belong to particular subgroups of the population. This raises equity issues that need to be addressed.

This report shows that Australian students use computers frequently, and while entertainment is a large part of this, they use computers for a wide range of functions. Three-quarters of the students surveyed use the Internet frequently as a tool for finding information, and almost this many use it frequently for the purposes of communication. Of all the applications, word processing was the one most frequently used by all students, and it was the only application which more females than males reported that they used frequently. Male students reported considerably greater use than females of all forms of software and held more positive attitudes.

Australian students were highly confident of being able to perform routine ICT tasks such as opening, saving and deleting files by themselves, and they were amongst the most confident in the world at performing Internet tasks. Far fewer students were confident of performing high-level tasks, such as writing a computer program or constructing a web page, however most believe that they could do so given some help.

While there was some variation between states in all areas, there were no glaring differences in the provision, use, or confidence in using ICT. A number of gender differences can be seen. Female students were less confident overall of their skills when it came to higher level tasks, and it appears from their answers to a number of items that they see computers more as a tool than males, who see them as both a tool and a source of entertainment. Socioeconomic background

[1] Throughout this report the Australian states and territories will be collectively referred to as the states.

does not appear to have a great effect on use of computers or confidence. Although fewer students from low socioeconomic backgrounds had access to a computer at home, there was little difference between students from low and high socioeconomic backgrounds in their use of computers and their confidence in using computers.

Another interesting finding is that although Indigenous students have more limited access to computers at home and their levels of confidence were lower overall, there appeared to be no widening gap in their confidence levels compared to those of non-Indigenous students in the progression from low level to high level computer tasks. However, as this is self-report data, this finding should be treated with some caution. Both of these findings warrant further investigation, and future reports will examine changes from PISA 2003 to PISA 2006.

PISA 2003 Australia:
ICT Use and Familiarity at School and Home

1. INTRODUCTION

What is PISA?

The Programme for International Student Assessment (PISA) represents a desire by governments to monitor the outcomes of education systems in terms of student achievement on a regular basis and within an internationally accepted common framework. PISA was developed by the OECD to provide regular and reliable information about educational outcomes across countries.

An international consortium, led by the Australian Council for Educational Research (ACER), has managed the design and implementation of PISA since its inception. Other consortium partners for the PISA 2003 data collection, on which this report is based, were the National Institute for Educational Measurement (CITO) in the Netherlands, WESTAT and the Educational Testing Service (ETS) in the United States, and the National Institute for Educational Policy Research (NIER) in Japan.

The main goals of PISA

The overall aim of PISA is to measure how well 15-year-olds approaching the end of their compulsory schooling are prepared for meeting the challenges they will face in their lives beyond school. PISA focuses on the following issues:

- How well are young adults prepared to meet the challenges of the future? What skills do they possess that will facilitate their capacity to adapt to rapid societal change?
- Are some ways of organising schools and school learning more effective than others?
- What influence does the quality of school resources have on student outcomes?
- What educational structures and practices maximise the opportunities of students from disadvantaged backgrounds? How equitable is education provision for students from all backgrounds?

PISA was designed to help governments not only understand but also enhance the effectiveness of their educational systems. PISA collects reliable information on a regular basis (every three years) and derives educational indicators that can monitor differences and similarities over time.

Who participates in PISA?

The population chosen for PISA is students aged 15 years. National random samples of at least 4500 15-year-old students are chosen from 150 or more schools in each country to participate in PISA. In 2003, students from 41 countries took part in PISA. In Australia 12,500 students from 321 schools nationally participated in PISA. This larger sample was taken in Australia to ensure that smaller states and Indigenous students were adequately represented in the sample, and also so that the cohort participating in PISA could become a cohort of the Longitudinal Surveys of Australian Youth.

What skills does PISA assess?

With its goal of measuring competencies that will equip students to participate productively and adaptively in their life beyond school education, PISA assessment focuses on young people's ability to apply their knowledge and skills to real-life problems and situations. In such situations, are students able to analyse, reason and communicate their ideas effectively? How well do they make use of technological advances? Do they have the capacity and are they equipped with strategies to continue learning throughout their lives?

> PISA uses the term 'literacy' to encompass this broad range of competencies relevant to coping with adult life in today's rapidly changing societies. In such a context, adults need to be literate in many domains, as well as in the traditional literacy areas of being able to read and write. The OECD considers that mathematics, science and technology are sufficiently pervasive in modern life that personal fulfilment, employment, and full participation in society increasingly require an adult population which is not only able to read and write, but also mathematically, scientifically and technologically literate.
>
> (OECD, 2000, p. 9)

PISA assesses competencies in each of three core domains - reading literacy, mathematical literacy and scientific literacy. During each PISA cycle, taking place on a three yearly basis, one domain is tested in detail. The remaining time is allocated to assessing the minor domains. In 2000, the major domain was reading literacy, with mathematical literacy and scientific literacy making up the minor domains. In 2003, the major emphasis moved from reading literacy to mathematical literacy and also incorporated problem solving. In 2006, the major focus is on scientific literacy, with reading literacy and mathematical literacy forming the minor domains.

The domains covered by PISA are defined in terms of the content that students need to acquire, the processes that need to be performed, and the contexts in which knowledge and skills are applied. The core assessments have been based on the assessment frameworks, which provide a common language and a vehicle for discussing the purpose of the assessment and what it is trying to measure. The construction of the frameworks is a collaborative effort between the participating countries in the project, through the PISA Governing Board (PGB) established by the OECD.

What other data are collected?

All countries that participated in PISA 2000 or PISA 2003 were given the option of administering a short questionnaire on students' familiarity with Information and Computer Technology (ICT). This questionnaire is in addition to the student questionnaire which is routinely administered along with the PISA tests in order to collect demographic data on the students and their families, as well as information relating to students' perceptions of school and how they learn, their motivation, engagement and attitudes. The responses to the ICT familiarity survey, in association with student performance and student characteristics obtained from the other assessment and survey, are presented in this report.

Thirty-two countries participating in PISA 2003 took part in the ICT questionnaire. These are listed in Table 1.1.

Table 1.1 Countries participating in the ICT questionnaire

OECD countries			
Australia	Austria	Belgium	Canada
Czech Republic	Denmark	Finland	Germany
Greece	Hungary	Iceland	Ireland
Italy	Japan	Korea	Mexico
New Zealand	Poland	Portugal	Slovak Republic
Sweden	Switzerland	Turkey	United Kingdom
United States			
Partner countries			
Latvia	Liechtenstein	Russian Federation	Serbia and Montenegro[2]
Thailand	Tunisia	Uruguay	

[2] Throughout the report Serbia is used as a shorthand for the Serbian part of Serbia and Montenegro.

Why ICT in schools?

At a national level, OECD reports show increased gains in GDP directly attributable to investment in ICT (OECD, 2004), suggesting that countries will continue to invest in ICT and that ICT will become even more common in the workplace. This provides an increasing demand for schools to produce technologically literate students. Information and communication technologies have also changed the ways in which students access and process information and the ways in which they communicate with each other, providing educators with an impetus to modify and adapt curriculum to ensure capitalisation on the power of these technologies and the engagement of students with them.

However the demand comes not only from governments and employers, but also from students themselves. For example the NetDay survey[3] (2004) showed that students of all ages have strong views on how technology should or could be incorporated more fully into education. The main focus of the ideas expressed by students in that survey was the need for increased use of computers in the classroom, including greater access to the Internet and a wider range of educational software available and in use. In interviews with American teenagers, Levin & Arafeh (2002) found that the Internet was used for a wide range of education-related purposes, including research and corresponding with teachers and classmates about school projects. Other reports such as the Canadian Inter@ctive Reid Report, have found that for many teenagers the majority of Internet use was for the purpose of activities related to socialising (e.g., e-mailing and using instant messaging) rather than education, suggesting that these two areas cannot be viewed as independent from one another.

This report

This report presents results from PISA 2003, examining ICT within the PISA framework – that is, how familiar students were with ICT as they near the completion of compulsory schooling and how well do they use the technologies that are available. The report also looks at aspects of the so called 'digital divide', examining access and use of ICT in Australia by state, by gender, by Indigenous background, by socioeconomic background and by geographic location. These characteristics are compared to how well students performed in mathematics, the main area of student performance in PISA 2003. The data on which this report is based are largely self-report data, obtained from the student questionnaire, and there are some points in the report where the reader is alerted to the possibility of cultural bias in the manner in which questions are answered. As well, in the intervening four years there have been major advances in such things as the availability and reliability of broadband internet, however this report provides a baseline from which we can gauge change in ICT usage using the data from PISA.

[3] A survey in which students from 3000 schools in the USA submitted 210,000 surveys regarding student views on technology and education (NetDay, 2004).

READER'S GUIDE

Data underlying the figures

The data referred to in this report, and presented in Figures, are presented in Appendix A of this report.

OECD average

An OECD average was calculated for most indicators in this report and is presented for comparative purposes. The OECD average takes the OECD countries as a single entity, to which each country contributes with equal weight. The OECD average is equivalent to the arithmetic mean of the respective country statistics.

Rounding of figures

Because of rounding, some figures in tables may not exactly add to the totals. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation. When standard errors have been rounded to one or two decimal places and the value 0.0 or 0.00 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05 or 0.05 respectively.

Reporting of student data

The report uses "15-year-olds" as shorthand for the PISA target population. In practice, this refers to students who were aged between 15 years and 3 (complete) months and 16 years and 2 (complete) months at the beginning of the assessment period and who were enrolled in an educational institution, regardless of the grade level, and of whether they were attending full-time or part-time.

Confidence intervals and standard errors

In this and other reports, student achievement is often described by a mean score. Each mean score is calculated from the sample of students who undertook the PISA assessment, and is referred to as the *sample* mean. These sample means are an approximation of the actual mean score, known as the population mean, had *all* students in Australia actually sat the PISA assessment. Since the sample mean is just one point along the range of student achievement scores, more information is needed to gauge whether our sample mean is an underestimation or overestimation of the population mean. The calculation of confidence intervals can assist our assessment of a sample mean's precision and accuracy as a population mean. Confidence intervals provide a range of scores within which we are 'confident' that the population mean actually lies. For example, in this report, estimates of population means are presented with an associated standard error. The confidence interval which can be calculated reflects a 95 percent chance that the estimation of a population mean lies within plus or minus 1.96 standard errors of the sample mean.

However, the degree of variation around a mean is related to sample size. The larger a sample population, the more precise our confidence intervals and estimations of population means become. Sometimes there appear to be differences in scores between different groups of students. If the differences are not statistically significant, they could well be an artefact of sampling or measurement error. It is only when there is a significant difference that we are able to say that, with 95 per cent probability, the differences reflect actual differences in the population under consideration.

PISA scores

To facilitate the interpretation of the scores assigned to students, the scale was constructed to have an average score among the OECD countries of 500 points, with about two-thirds of students across OECD countries scoring between 400 and 600 points.

Proficiency levels

To summarise data from responses to the PISA test instruments, a five-level described performance scale was created (Masters, Adams & Wilson, 1999). The scale is used to describe the nature of the performance by classifying the student performance of different countries in terms of the five described performance levels, and thus provides a frame of reference for international comparisons.

At the lowest mathematics proficiency level, students typically carry out single-step processes that involve recognition of familiar contexts and mathematically well-formulated problems, reproducing well-known mathematical facts or processes, and applying simple computational skills.

At higher mathematics proficiency levels, students typically carry out more complex tasks involving more than a single processing step. They also combine different pieces of information or interpret different representations of mathematical concepts or information, recognising which elements are relevant and important and how they relate to each other. They typically work with given mathematical models or formulations, which are frequently in algebraic form, to identify solutions, or they carry out a small sequence of processing or calculation steps to produce a solution (OECD, 2006).

PISA indices

The measures that are presented as indices summarise student responses to a series of related questions constructed on the basis of previous research. In describing students in terms of each characteristic (e.g. interest in mathematics), scales were constructed on which the average OECD student was given an index level of zero, and about two-thirds of the OECD population were given values between -1 and +1 (i.e. the index has a mean of 0 and a standard deviation of 1). Negative values on an index do not necessarily imply that students responded negatively to the underlying questions. Rather, a student with a negative score responded less positively than students on average across OECD countries.

National definitions

There are a number of definitions used in this report that are particular to the Australian context, as well as many which are international. This section provides a explanation for those that are not self-evident, and proportions for all variables for which analysis is conducted.

Gender: In the PISA 2003 sample, 51% of the sample was male, 49% female.

Indigenous status: Indigenous status is derived from students' self-identification as being of Australian Aboriginal or Torres Strait Islander descent. For the purposes of this report, data for the two groups are presented together as for Indigenous Australian students, and six per cent of the population identified as such.

Socioeconomic status: For this report, the measure used is the HISEI. The ISEI, or international socioeconomic index of occupational status, is derived from students' responses on parental occupation. Responses were coded in accordance with the International Standard Classification of Occupations (ISCO, 1988). The index captured the attributes of occupations that convert parents' education into income, and was derived according to a methodology described by Ganzeboom, De Graaf & Treiman (1992). The highest international socioeconomic index of occupational status (HISEI) corresponds to the highest ISEI of either the mother or father, and is divided into quartiles.

Geographic location: The PISA participating schools were coded with respect to the MCEETYA schools geographic location classification. For the analyses in this report, only the broadest categories are used: Metropolitan – mainland state capital cities and major urban districts; Provincial-provincial cities and other non-remote provincial areas; and Remote – remote and very remote areas. In PISA 2003, 70 per cent of schools were located in a metropolitan area, 27 per cent in a provincial area and three per cent in a remote area.

Further documentation:

PISA 2003 Technical Report
Facing the future: A focus on mathematical literacy among Australian 15-year-old students in PISA 2003. Thomson, Cresswell & De Bortoli, 2004.
Learning for tomorrow's world: First results from PISA 2003. OECD, 2004.
Are students ready for a technology-rich world: What PISA studies tell us. OECD, 2005a.

2. UPTAKE OF ICT TECHNOLOGY IN AUSTRALIA

Australians continue to have a rapid uptake of new technology. As the use of information and communication technologies in our society becomes more pervasive, people need or want access to such technology in their homes. Access to a computer at home increased from 30 per cent in 1996 to 67 per cent in 2004-05, and in both cases the percentage of households with home computer access was significantly higher for households with children under 15 years of age (ABS, 2005; OECD, 1997). However other reports have shown that access varies by parental occupation, and geographic location or state of residence. This chapter examines students' reports of their access to and use of ICT, looking at the proportion of 15-year-olds with access to ICT, gender differences in access, differences in accessibility by geographic location and differences by Indigenous background. These are compared to the international results from PISA 2003.

Students' use of computers

In the majority of countries, almost all students have previously used a computer. Across all OECD countries, fewer than two per cent of students have never used a computer, and around 20 out of the 32 countries reported less than one per cent of students who indicated they had never used a computer. Australia is included in this group with only a very small proportion (0.15%) of Australian 15-year-old students responding that they had never used a computer. Students in developing countries such as Tunisia, Turkey and Mexico had the highest proportion of students who had never used a computer with 39 per cent, 14 per cent and 13 per cent of students respectively in this category.

In approximately three quarters of the countries there were no gender differences in the percentage of students who had never used a computer. For those countries with significant gender differences, the largest were found in Turkey, where nine per cent of males and 21 per cent of females reported never having used a computer. In Tunisia, with a substantial proportion of students in this category, 35 per cent of males compared with 42 per cent of females had never used a computer. While there were some other significant gender differences within the remaining countries, they were differences of two per cent or lower. In three countries, the United States, Canada and Japan, slightly more males than females had indicated they had never used a computer; otherwise it was females who were more likely to be novices.

Length of time students have been using computers

PISA collected information about the length of time students had been using a computer. As access to computers has increased children are exposed to ICT at an earlier age. It would be expected that the earlier students experience ICT, the more at ease and proficient they would be using computers.

International

Figure 2.1 shows that the length of time students have used computers differs quite substantially between countries. In seven countries (Australia, Canada, the United States, Sweden, New Zealand, Denmark and Finland) more than half the students have used computers for longer than five years. However, in the Russian Federation, Serbia, Tunisia and Mexico, more than 70 per cent of students have used computers for less than three years.

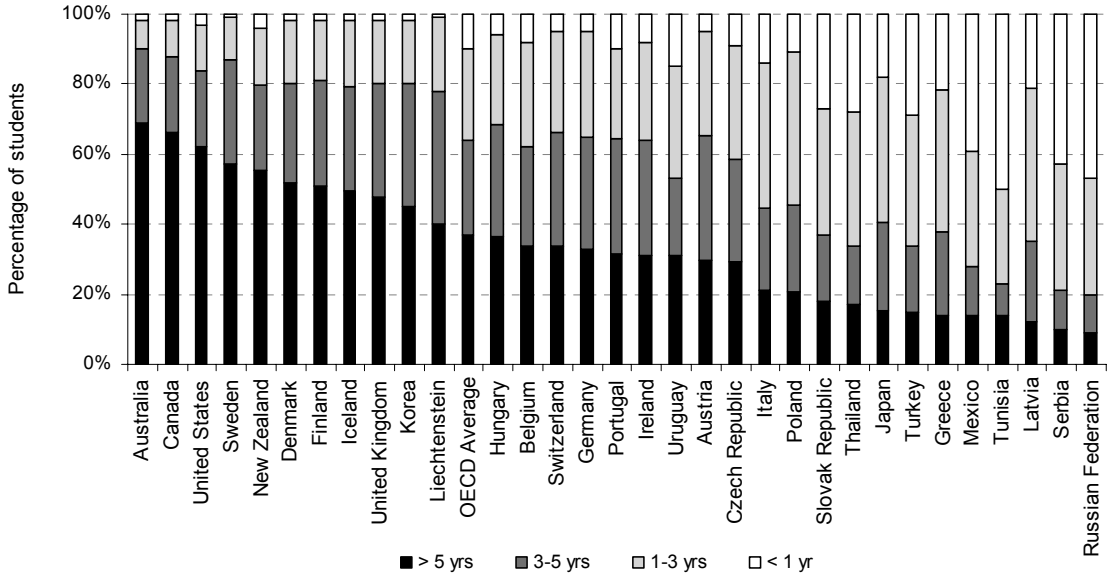

Figure 2.1 Length of time students have been using a computer by country[4]

Australian states

More than 70 per cent of students from South Australia, the Australian Capital Territory, and Victoria have used computers for longer than five years, and more than 60 per cent of students from the remaining states have been using computers for this period. Approximately 10 percent of students from New South Wales, the Northern Territory, Queensland and Western Australia have used computers for 3 years or less (Figure 2.2).

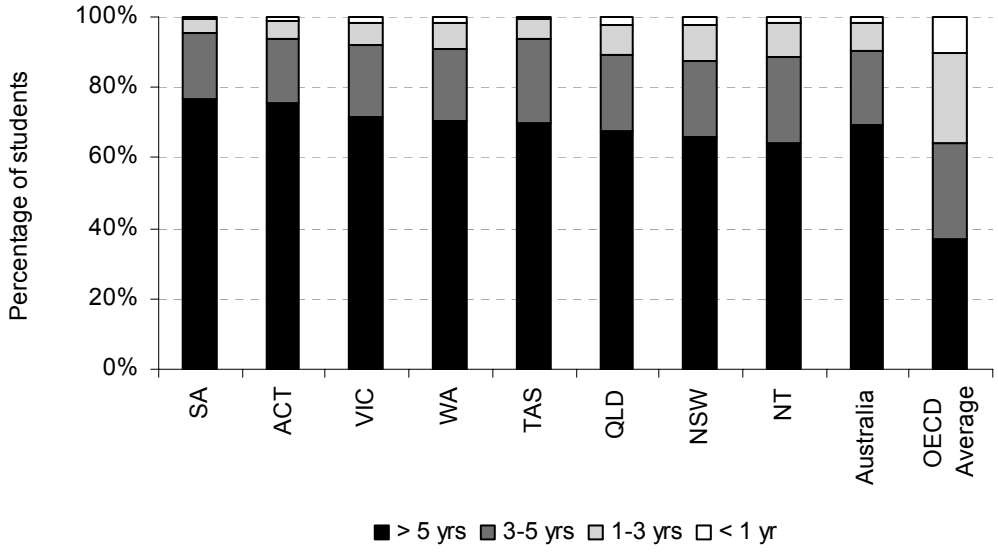

Figure 2.2 Length of time students have been using a computer by state

[4] In PISA 2003, the United Kingdom did not meet the required school and student response rates. Consequently their data cannot reliably be compared with those of other countries.

Gender

Overall, Australian females and males reported that they have been using computers for the same length of time. This was also reflected at a state level with very little difference (no higher than four per cent) between the percentage of females and males using computers within each state. The exception was in South Australia, where more males (80%) than females (74%) had been using computers for longer than five years.

Indigenous

Indigenous students, on average, have less experience using computers than non-Indigenous students. Compared to 70 per cent of non-Indigenous students, only approximately half of the Indigenous students have been using computers for more than five years. Even though this is low, it is still higher than the OECD average of 37 per cent.

Interestingly, and in contrast to the general trend, Indigenous females reported being more experienced with computers than Indigenous males, with almost 60 per cent of females but less than 50 per cent of males reporting that they had used computers for more than five years. However the differences between Indigenous and non-Indigenous students remain substantial. Ten per cent fewer Indigenous female than non-Indigenous female students had used a computer for more than five years and 25 per cent fewer Indigenous male compared to non-Indigenous male students had used a computer for more than five years (Figure 2.3).

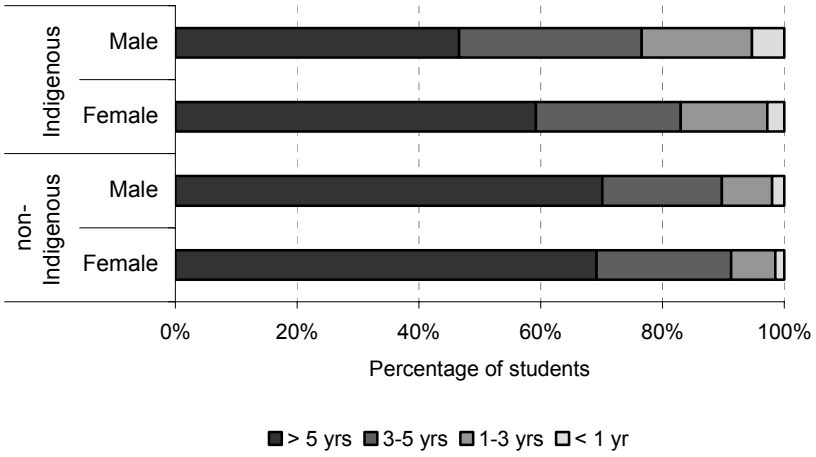

Figure 2.3 Length of time Indigenous and non-Indigenous students have been using a computer by gender

Geographic location

A slightly higher proportion of students who live in remote areas (76%) reported having used computers for more than five years compared to students living in metropolitan (70%) or provincial (68%) areas. There were few differences found between females and males living in different geographic locations (Figure 2.4). The most noticeable difference is that a greater proportion of females (8%) living in remote areas had used computers for a longer period compared to their male counterparts.

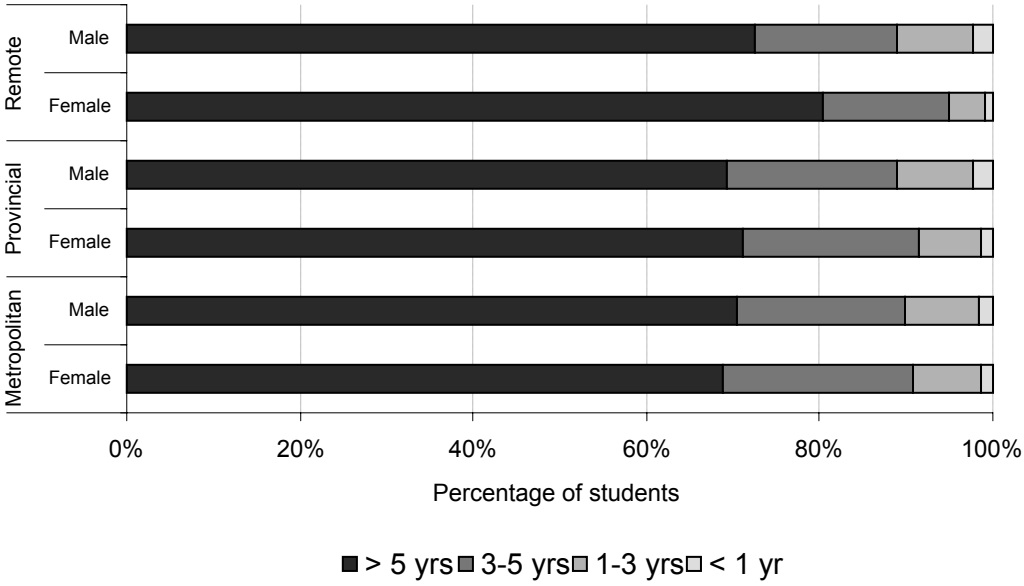

Figure 2.4 Length of time students have been using a computer by geographic location

Socioeconomic background

Parental characteristics such as occupational background influence the presence of ICTs in households, largely through their impact on income. Early reports on household penetration of ICTs showed that there was a strong relationship in Australia between occupational status and having a computer in the home (e.g. OECD, 1997). The data presented in Figure 2.5, showing the length of time students from different socioeconomic backgrounds have been using a computer, support this, although the gap is smaller from these data than has been previously reported. Almost 80 per cent of students from the highest quartile of socioeconomic background have used a computer for more than five years compared to 60 per cent of those students from the lowest quarter of socioeconomic background. Perhaps as prices for home computers have declined relative to average income, the presence of ICTs in the home has become a much more realistic proposition for those in the lower levels of socioeconomic background.

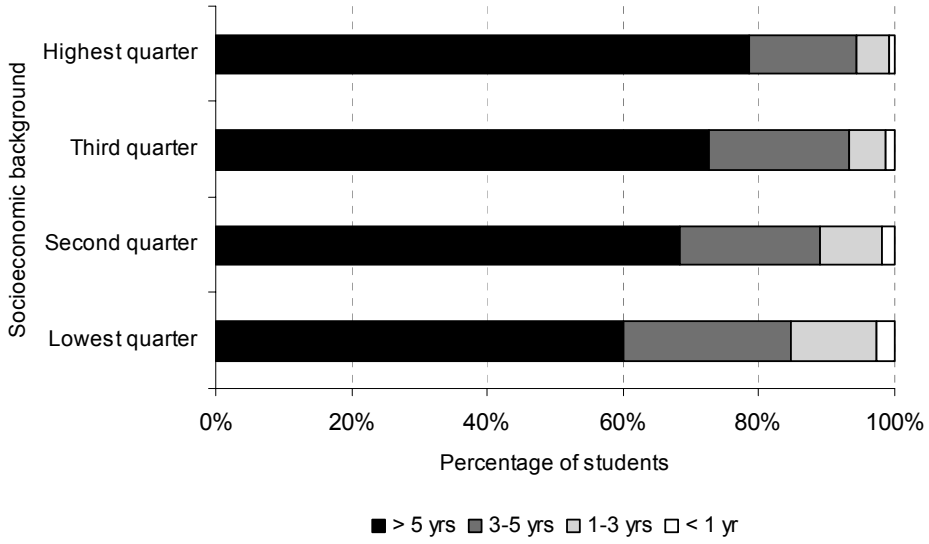

Figure 2.5 Length of time students have been using a computer by socioeconomic background

Access to computers

International

In many countries school plays an important role in providing equitable access to ICTs. As can be seen in Figure 2.6, access to computers at home in some countries is still very low. While almost all Australian 15-year-old PISA students indicated they have used computers, it is important to understand the extent to which schools are playing such a role for different equity groups and within different states. The PISA ICT questionnaire investigated the locations students had access to a computer – at home, at school or in other places.

In 22 of the 32 countries surveyed, more than 90 per cent of students indicated they have access to a computer at school. All students from Australia, Denmark and the OECD partner country, Liechtenstein, indicated they had a computer available to use at school. Students from Turkey and Tunisia reported the lowest access with approximately half and 35 per cent of the students respectively having access to a computer at school.

More than 90 per cent of students from 14 of the 32 countries indicated they have access to a computer at home. Included in this group was Australia as well as Korea, the only Asian country and Liechtenstein, the only partner country. Fewer than 40 per cent of students from Turkey and the partner countries, Tunisia, the Russian Federation and Thailand indicated they have access to a computer at home. Within Australia, 94 per cent of students reported that they had access to a computer at home to use for schoolwork, and 67 per cent reported that they had educational software available at home.

Only four countries (Australia, Canada, New Zealand and Sweden) reported more than 90 per cent of students with access to a computer in other places. Figure 2.6 shows the percentage of students who have access to a computer at school, home or other places.

Australian states

Almost all of the Australian PISA 2003 students indicated they had excellent access to computers. All students indicated that they had access to a computer at school. Overall, 97 per cent of Australian students also had access to a computer at home; this ranged from 93 per cent in Tasmania and the Northern Territory to 98 per cent in the Australian Capital Territory and Victoria (Figure 2.7). Ninety-three per cent of Australian students had access to a computer at other places; however information was not collected on the specific location (for example ‘other places’ could be a friend’s home or a local library).

Gender

The differences found between females and males and their access to computers at school or at home were negligible.

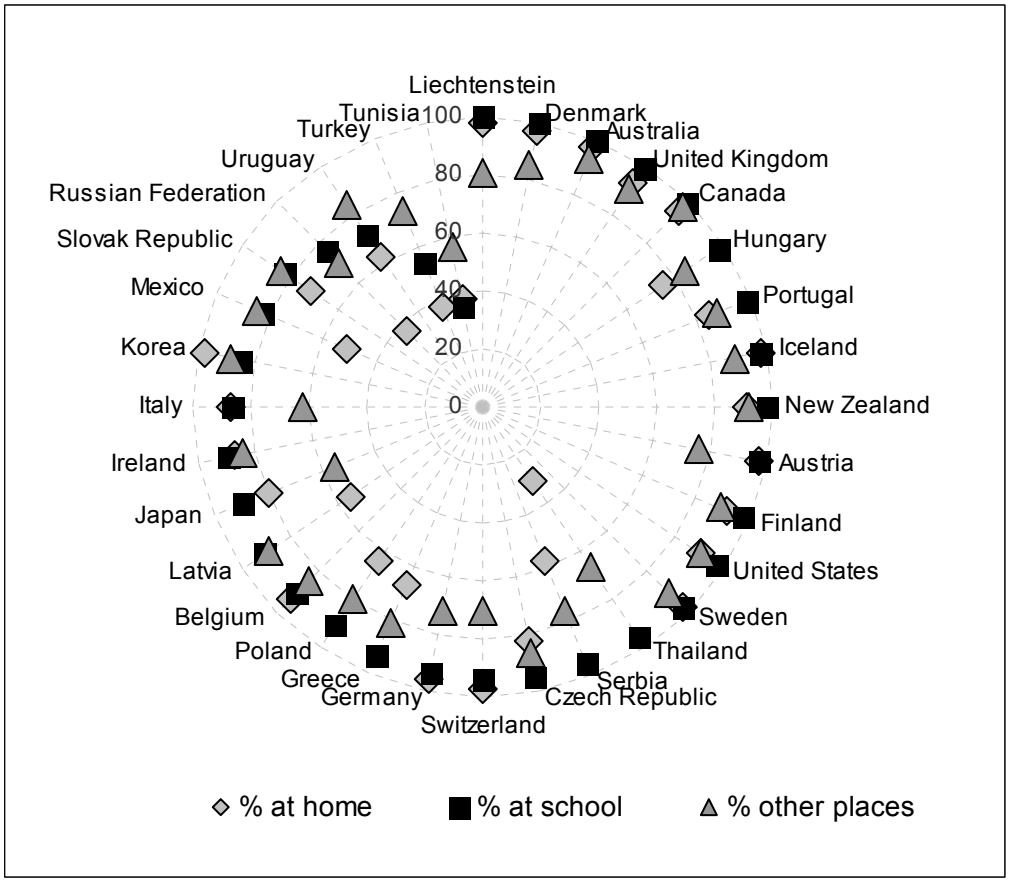

Figure 2.6 Students' access to a computer at school, at home or other places, by country

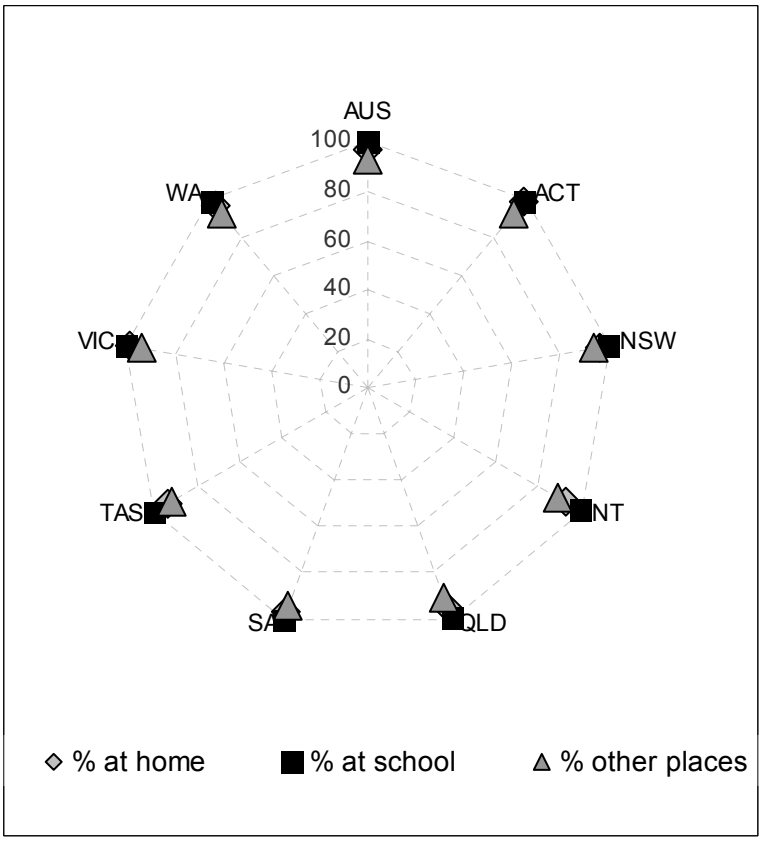

Figure 2.7 Students' access to a computer at school, at home or other places, by state

Indigenous students

A large proportion of Indigenous students also have access to a computer at different locations. All PISA 2003 Indigenous students reported having access to a computer at school. The vast majority of Indigenous students (92%) also reported having access to a computer at other places.

Although Indigenous students indicated that they had the same access as non-Indigenous students to computers at school and at other places, this was not the case for access to computers at home. Only 82 per cent of Indigenous students (slightly lower than the OECD average of 85 per cent) had access to a computer at home compared to the 97 per cent of non-Indigenous students. There were virtually no gender differences for non-Indigenous or Indigenous students with regards to access to a computer at home, school or other places (Figure 2.8).

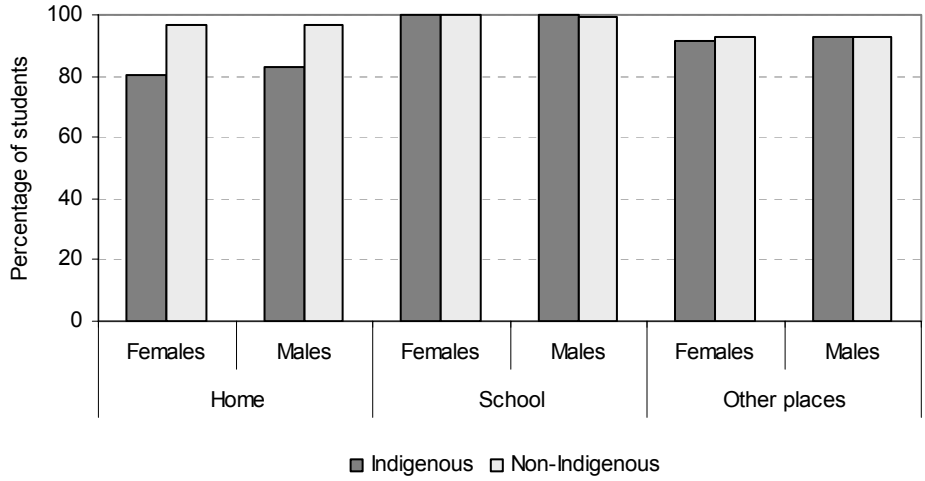

Figure 2.8 Indigenous and non-Indigenous students' access to a computer at school, at home or other places, by gender

Geographic location

There were also very few differences between students' access to computers and their geographic location. As well as universal access at school, most students in remote areas reported access to a computer at home (93%) or at other places (90%).

Socioeconomic background

Internationally, socioeconomic background is a strong predictor of whether a student had access to a computer at home. This is examined using quartiles of the PISA index of economic, social and cultural status (ESCS). In some countries a high overall rate of access masks wide socioeconomic differences. For example in Italy, 87 per cent of students overall have access to a computer at home, but two-thirds of students in the lowest quartile have such access compared to 98 per cent of those in the highest quartile. In other countries, there are similar levels of access to computers irrespective of the socioeconomic background of the students. Australia falls somewhere in-between these two, with around 88 per cent of students in Australia in the lowest quartile of ESCS, compared to 100 per cent in the highest quartile, having access to a computer in their home. There were no differences in access at school.

Student performance in mathematics and access to computers

Internationally, of all the individual background/contextual factors examined in PISA 2003, the factor with the largest impact on mathematics performance was access to a computer at home. "In most countries, given that the great majority of students do now have access to a computer, the biggest difference from the country average is seen among those who lack access, whose scores are everywhere below average." (p. 53, OECD, 2005b). Amongst OECD countries, students with computers available for use at home scored an average of 514 score points, whilst those without computers scored on average 453 score points, a performance gap of 61 score points, or one full proficiency level.

This section of the report looks at the relationship between student performance in mathematics and access to a computer at home within the states of Australia and for the different groups. It should be noted, however, that reporting the association between computer access and usage with performance cannot provide evidence of the impact of computers on learning, since the PISA data do not demonstrate causation.

The data do, however, raise issues for further investigation. In particular, the evidence shows that the minority of students who still lack access to computers, are more likely to underperform at school. The data also show that these students are not randomly scattered within the population, but are more likely to belong to particular subgroups of the population. This raises equity issues that need to be addressed. As has been shown, access to a home computer can be a reflection of socioeconomic background, although less so in Australia now than previously with home computers now more affordable to a larger cross-section of the population.

Internationally, significant and positive correlations were found between having a computer at home and parent's educational background, and between parent's educational background and achievement. To what extent, therefore, are performance differences between those with and without a computer at home just another reflection of social advantage or disadvantage? Analysis found that even after accounting for socioeconomic background, the performance difference in Australia was still moderately large at 35 score points, around half a proficiency level. The relationships between computer access and student performance are ambiguous, and continued research would be needed to investigate how computer use actually impacts on student performance.

Figure 2.9 shows the differences in mathematics scores between students with and without access to a computer at home. The top bar shows the observed difference; that is the raw difference in average scores between those students with a computer at home and those without. These differences are large and significant in all states, ranging from 99 score points in the ACT to 65 score points in Tasmania. The second bar shows the difference after adjusting for socioeconomic background as measured by the ESCS, with darker bars showing significant differences. After accounting for socioeconomic background, the performance advantage of having a computer at home remains significant in four of the eight states. In the Australian Capital Territory, Victoria, South Australia and Tasmania, the performance advantage of having a computer at home is not significant.

The state in which socioeconomic background had the least effect was the Northern Territory, where even after accounting for differences in socioeconomic background, the performance advantage for students with a computer at home was still 69 score points, the equivalent of one proficiency level. The state in which socioeconomic background had the most effect was Tasmania, where, after accounting for differences in socioeconomic background, the performance advantage for students with a computer at home was a non-significant 14 score points. It is noteworthy that these are the two states with the highest proportion of students without computers at home (7%). A possible explanation for such differences may lie in the ways that schools promote computer use in school to compensate for the lack of access at home. This would be a useful point for further investigation.

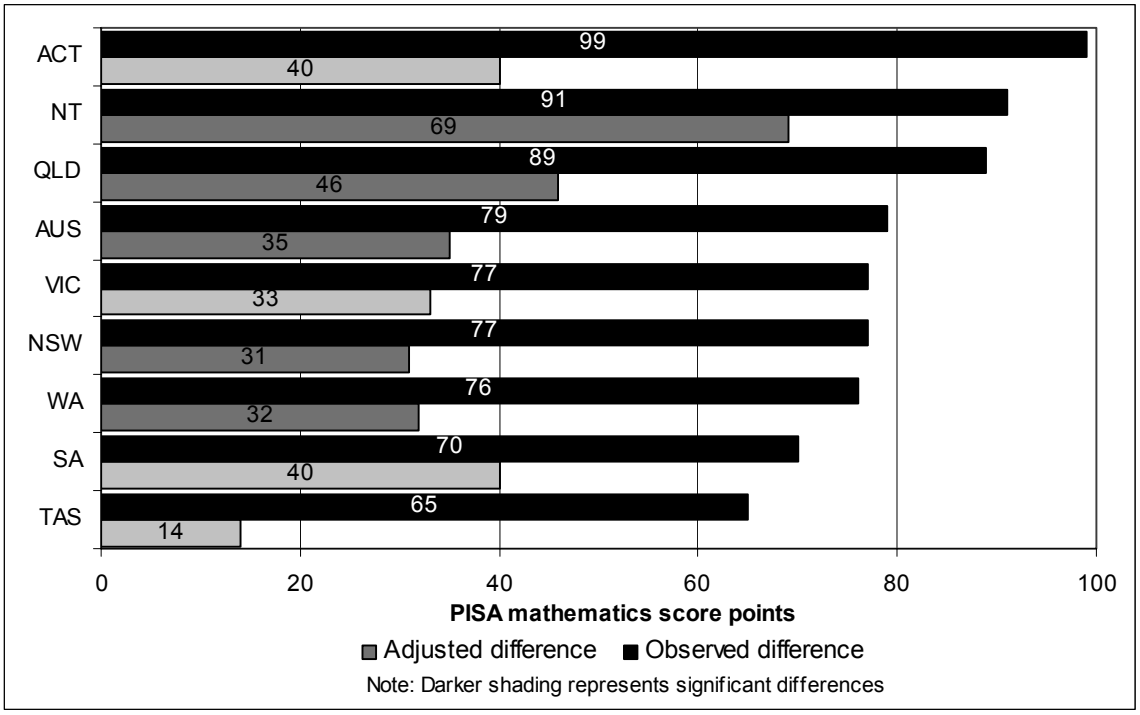

Figure 2.9 Differences in mathematics performance associated with students' access to a computer at home

Summary

This chapter has presented evidence from self-reports in PISA 2003. This evidence showed that in terms of experience using computers:

- Very few Australian students reported that they had never used a computer;
- Around 70 per cent of Australian students reported using computers for more than five years;
- Indigenous students are, on the whole, less experienced with computers than non-Indigenous students, with around 50 per cent reporting using computers for more than five years;
- Indigenous female students are more experienced with computers than Indigenous male students;
- A higher proportion of students in remote areas than in metropolitan and provincial areas reported using computers for more than five years;
- There is a marked impact of socioeconomic background on experience using computers: nearly 80 per cent of those in the highest quartile of socioeconomic background have been using a computer for more than five years, compared to 60 per cent of those in the lowest level of socioeconomic background.

In terms of access to computers:

- All Australian students reported having access to computers at school;
- 97 per cent of Australian students overall reported having access at home;
- Access at home ranged from 98 per cent in Victoria and the Australian Capital Territory to 93 per cent in Tasmania and the Northern Territory;
- Only 82 per cent of Indigenous students reported access to a computer at home. This is lower than the OECD average;

- Twelve per cent of those in the lowest quartile of socioeconomic background reported not having access to a computer at home; all students in the highest socioeconomic background reported having a computer at home.

In terms of the relationship with performance in mathematics:

- Nationally, students with access to computers at home scored, on average, 79 score points higher than those without such access;
- The largest difference between the two groups was in the Australian Capital Territory, where there was a gap of 99 score points. The smallest gap was in Tasmania, with a gap of 65 points;
- After adjusting for socioeconomic background, the performance advantage for students with a computer at home remained significant nationally, although the magnitude decreased by about 50 per cent. In four of the eight states, the performance advantage was non-significant after adjusting for socioeconomic background.

3. HOW PISA STUDENTS USE ICT

The previous chapter illustrated that a large proportion of students have access to ICT at school and at home, and to a lesser extent at other places. Having access to a computer is a first step; this chapter explores how the PISA students report their usage of ICT – focusing on the amount of time they use their computers and the various activities they pursue on these computers.

How often do students use computers?

PISA 2003 students were asked how often they used a computer at home, at school and at other places using the following five categories:

- Almost every day
- A few times each week
- Between once a week and once a month
- Less than once a month
- Never

Students who indicated they used a computer 'almost every day' or 'a few times each week' were considered to be frequent users. A moderate user was defined by those students who used a computer 'between once a week and once a month'. A student who used a computer 'less than once a month' or 'never' was categorised as having rare or no use of computers.

International

Figure 3.1 shows the percentage of students who frequently use a computer at home, school or other places. In almost half of the surveyed countries, more than 80 per cent of the students use computers frequently at home: the OECD average was 74 per cent. Ninety per cent of Canadian students reported using their computers frequently, followed by Liechtenstein, Sweden, Iceland with 89 per cent of their students and in Australia, 87 per cent of students indicated they use computers frequently at home. Fewer than half the students from Latvia, Mexico, Turkey and the Russian Federation, and approximately a third of students from Japan and Thailand indicated they use their computers frequently at home.

Hungary (80%), the United Kingdom (71%), Denmark (68%) and Australia (59%) had the highest proportions of students reporting frequent computer use at school. Fewer than 30 per cent of students from Belgium, Uruguay, Japan, Ireland, Germany and Tunisia reported using computers frequently at school. The OECD average for students using computers frequently at schools was 44 per cent. Students from only four countries (Thailand, Hungary, Serbia and Mexico) reported using computers more frequently at school than at home.

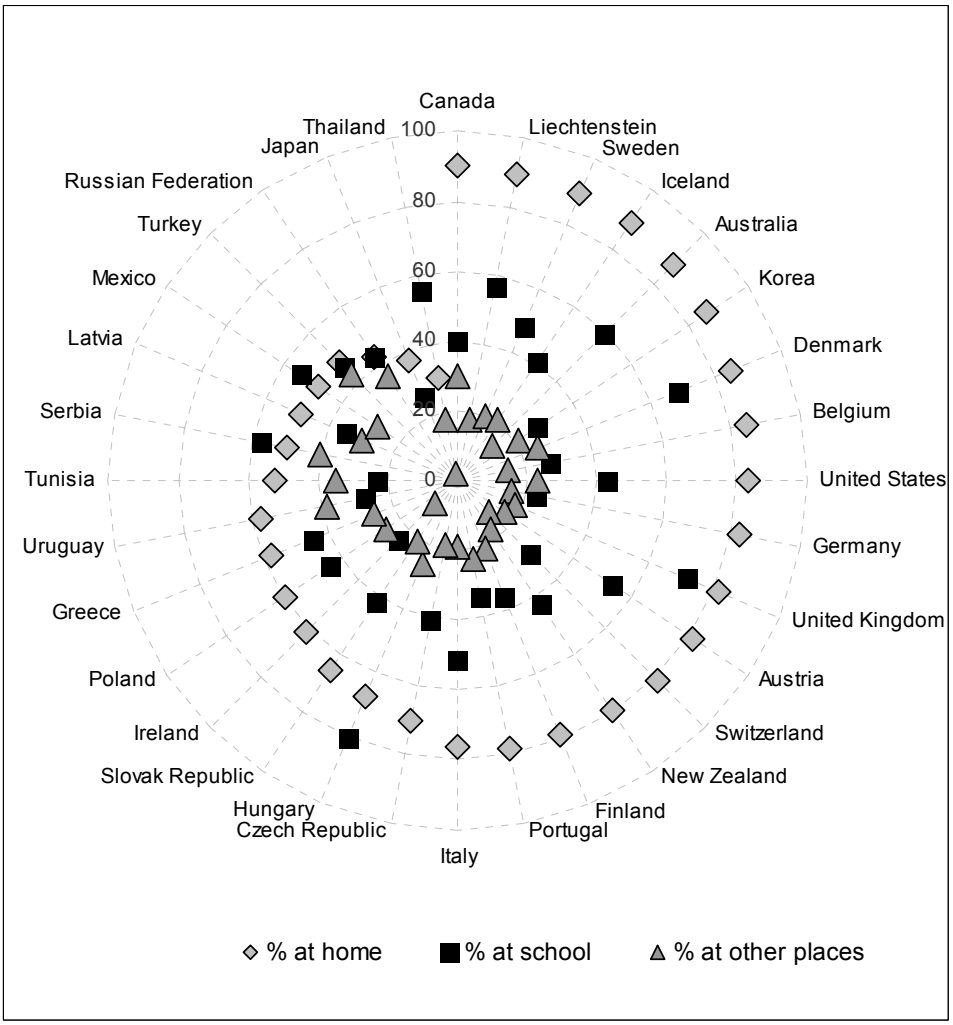

Figure 3.1 Students frequently using a computer at home, school or other places by country[5]

The percentage of students reporting that they frequently used a computer at places other than home or school is much lower than that for using a computer at home or at school. The proportion of students who frequently use a computer at other places ranged from 43 per cent of students in Turkey to just 2 per cent of students in Japan. Only 14 per cent of Australian students reported frequently using a computer at other places, which was lower than the OECD average of 21 per cent. This is not surprising given the high level of home ownership of computers and the blanket availability of computers in schools in Australia.

Australian states

On average, 87 per cent of Australian students frequently used a computer at home. Figure 3.2 shows that the percentage of students frequently using a computer at home ranged from 94 per cent in the Australian Capital Territory to 83 per cent in Tasmania.

Students from Tasmania and South Australia reported the highest proportion of students using computers frequently at school. However in New South Wales, less than half the students indicated using computers frequently at school. This was lower than the Australian average (59%).

[5] From 'Are students ready for a technology-rich world?' OECD, 2005, p. 37.

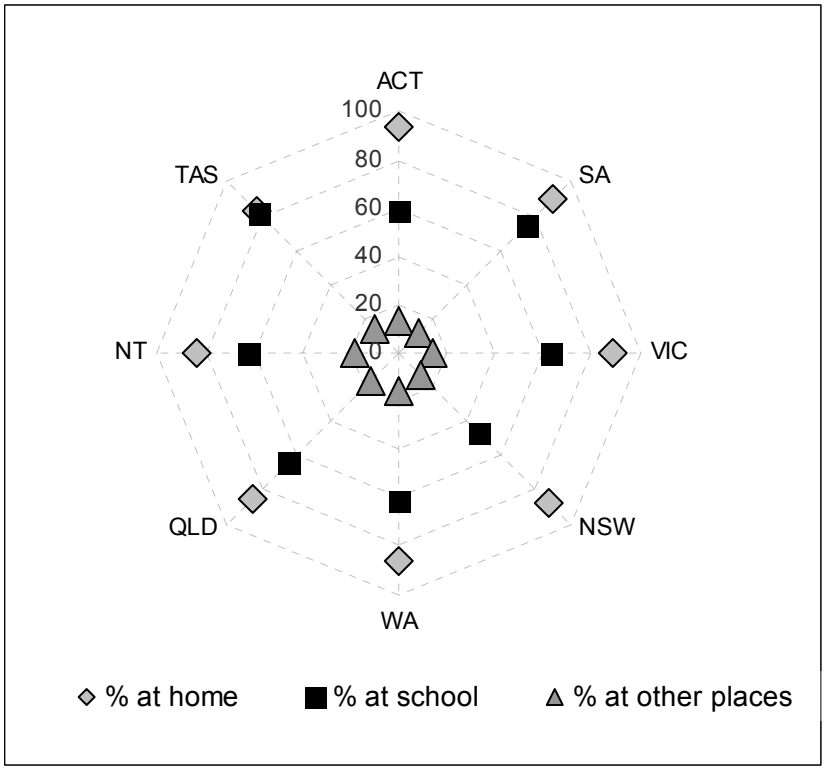

Figure 3.2 Students frequently using a computer at home, school or other places by state

Students from all states except Tasmania used computers more frequently at home than at school or other places. In Tasmania, a similar percentage of students frequently used computers at home as they did at school. Overall, 14 per cent of students frequently accessed a computer at other places, with percentages ranging from 11 per cent in Tasmania to 19 per cent in the Northern Territory.

There were gender differences evident in the reported proportions of students' usage of computers at home, at school and at other places. Males reported using computers to a greater extent than females in each situation. A suggested explanation for this is that many students in this age group frequently use computers at friend's homes, to play games or collaborate on project work.

Indigenous

Although Indigenous students have the same access to a computer at school as non-Indigenous students, Indigenous students indicated they use computers slightly more frequently (67%) at school than non-Indigenous students (59%).

Not only do fewer Indigenous students have access to a computer at home, those who do access these computers do so less frequently (70%) than non-Indigenous students (88%). Indigenous students use the computer at home less frequently than the OECD average (74%).

Figure 3.3 shows the percentage of Indigenous and non-Indigenous students who frequently use a computer at home and at school by gender. Males more than females, regardless of Indigenous background, reported using a computer at home or school on a frequent basis, and seven per cent more Indigenous males than Indigenous females use a computer at home and school frequently.

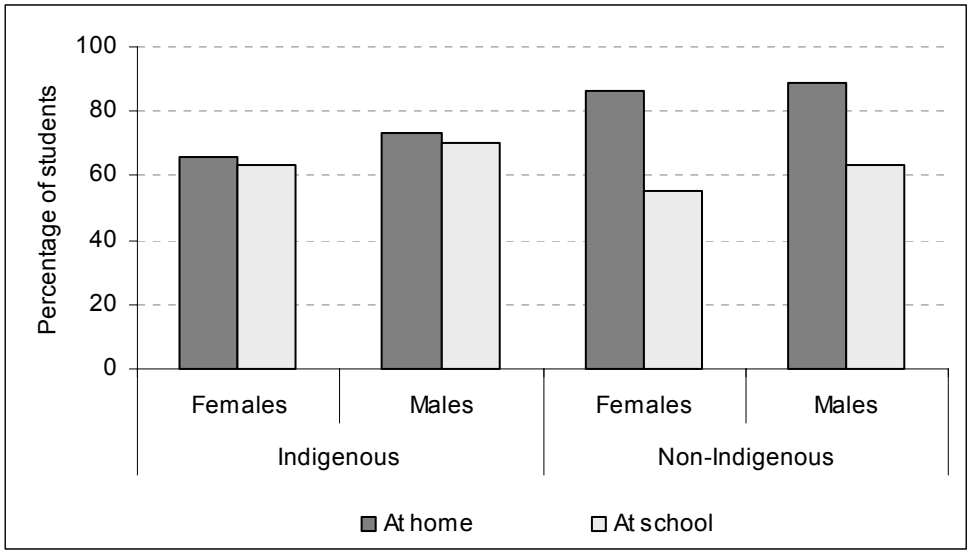

Figure 3.3 Students who frequently use computers at home and school, by Indigenous background and gender

Geographic location

The PISA 2003 data showed that of those students who have a computer at home, students in remote areas reported using a computer at home less frequently (82%) than students in metropolitan areas (89%, Figure 3.4). On the other hand, students in remote areas reported using a computer at school more frequently (86%) than students in metropolitan areas (57%). In all geographic areas the percentage of males who frequently use a computer at home or at school was slightly higher than for female students.

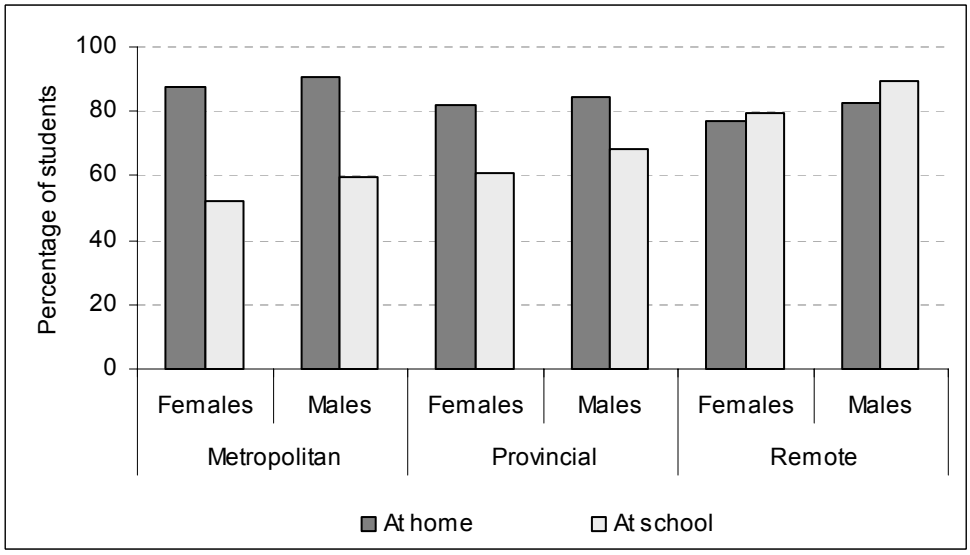

Figure 3.4 Students who frequently use computers at home and school, by geographic location

Socioeconomic background

Students from a higher socioeconomic background reported using computers at home slightly more frequently than students from a lower socioeconomic background (Figure 3.5). At school, a similar percentage of students used a computer frequently, regardless of socioeconomic background.

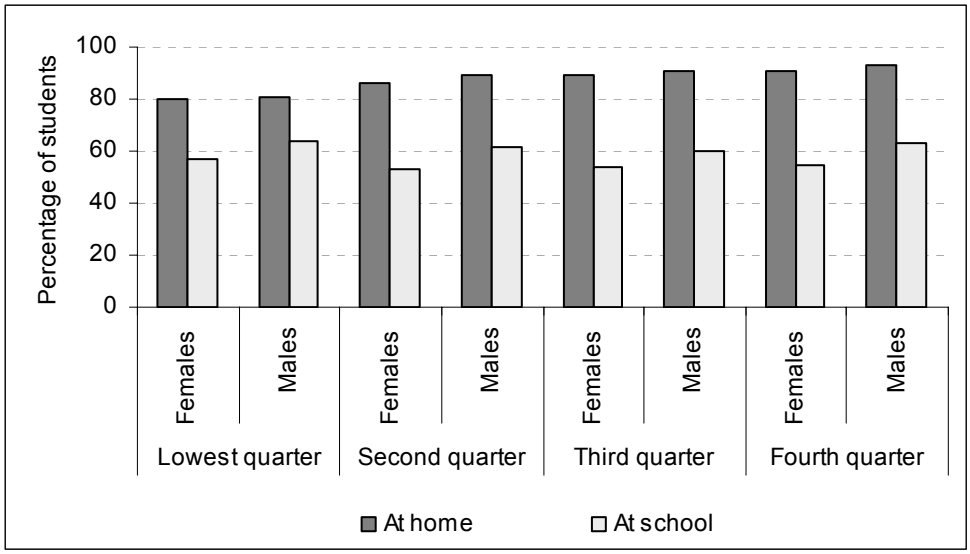

Figure 3.5 Students who frequently use computers at home and school, by socioeconomic background

Who taught the PISA students to use computers and the Internet?

The PISA students were asked who had taught them how to use computers and the Internet. This is an interesting issue, and one which warrants attention. Prensky (2001) describes the students of today as 'digital natives' – they have been brought up in an age in which they are exposed to innumerable hours of digital technology, and he proposes that this has changed the ways in which the students of today think and process information. In contrast, teachers of ICT will be themselves 'digital immigrants' – having been brought up in a largely non-digital era they might be adopters of technology but will always speak it with an 'accent', never fluently as will their students. Perhaps it is not too surprising then, that a large majority of students report as self-taught.

As can be seen in Table 3.1, almost half of the males in the sample compared to one-third of the females said they had taught themselves how to use computers. Almost one-third of the females, but only 18 per cent of the males, said that they had been taught at school, and twice the proportion of males as females had been taught by friends. As access to computers at home is the same for males and females, this could provide some evidence of a greater drive on the part of male students to learn to use computers. It also provides evidence for a greater need on the part of females for being taught to use computers at school – or an understanding on the part of teachers that males and females in the classroom might be at quite different stages of ICT development, and therefore need to be taught quite differently.

In this table, the proportions of students in the highest and lowest quartiles of socioeconomic background are also reported. As with females, it can be seen that students in the lowest quartile of socioeconomic background exhibit more of a reliance on school for teaching them how to use a computer.

Once the skills of how to use a computer have been mastered, perhaps learning to use the Internet, for whatever purpose, is a little easier. Table 3.2 shows that more than half of the male students and 41 per cent of the female students identified as self-taught internet users, with a further quarter of females and 17 per cent of males being taught by their family. Fewer students were taught to use the internet at school, although the proportion of females is still higher than that of males, and the proportion of students from lower socioeconomic backgrounds is greater than that of higher socioeconomic background students.

Table 3.1 Who taught these students to use computers?

	My school	My friends	My family	I taught myself	Others
Females	31	8	27	32	2
Males	18	15	20	46	2
Lowest SES Q	30	17	17	34	2
Highest SES Q	22	9	30	38	1
Australia	24	12	24	39	2

Table 3.2 Who taught these students to use the Internet?

	Don't know how to use	My school	My friends	My family	I taught myself	Others
Females	1	16	17	24	41	1
Males	1	11	15	17	54	1
Lowest SES Q	1	18	21	16	42	2
Highest SES Q	1	11	13	26	49	1
Australia	1	13	16	21	48	1

How are students using computers?

PISA 2003 students were asked 12 questions about the frequency they used computers to perform different tasks. Students provided their response using one of the following categories:

- Almost every day
- A few times each week
- Between once a week and once a month
- Less than once a month
- Never

Two indices were created to summarise the student responses – the index of ICT use for the Internet and entertainment and the index of ICT use for programs and software. On these indices, the mean for all students in all OECD countries is zero with a standard deviation of one. About two-thirds of students score between +1 and -1.

Use of ICT for the internet and entertainment

The index of ICT use for the Internet and entertainment was based on students' responses to how frequently they used a computer to perform the following tasks:

- Use the Internet to look up information about people, things, or ideas;
- Play games on a computer;
- Use the Internet to collaborate with a group or team;
- Use the Internet to download software (including games);
- Use the Internet to download music;
- Electronic communication (e.g. email or chat rooms).

International

Figure 3.6 shows the frequency of use of ICT for the Internet and entertainment. Countries have been ordered from left to right, with those countries on the left using ICT less frequently for Internet and entertainment than those countries on the right hand of the figure. In addition to the mean index for each of the countries, a mean index has been included for females and males as well as the lowest quarter and highest quarter of students (indicating those students who use ICT to perform Internet and entertainment functions the least and most respectively).

Countries with the highest usage of ICT for the Internet and entertainment were Canada, the United States, Korea, the United Kingdom, Liechtenstein, Sweden, Australia, New Zealand and Iceland, each with a mean index of over 0.26 points. On the other hand, countries who reported the lowest usage of ICT for the Internet and entertainment (with a mean index of more than -0.43 points) were Japan, the Russian Federation, Thailand, Serbia, Tunisia, Ireland and the Slovak Republic.

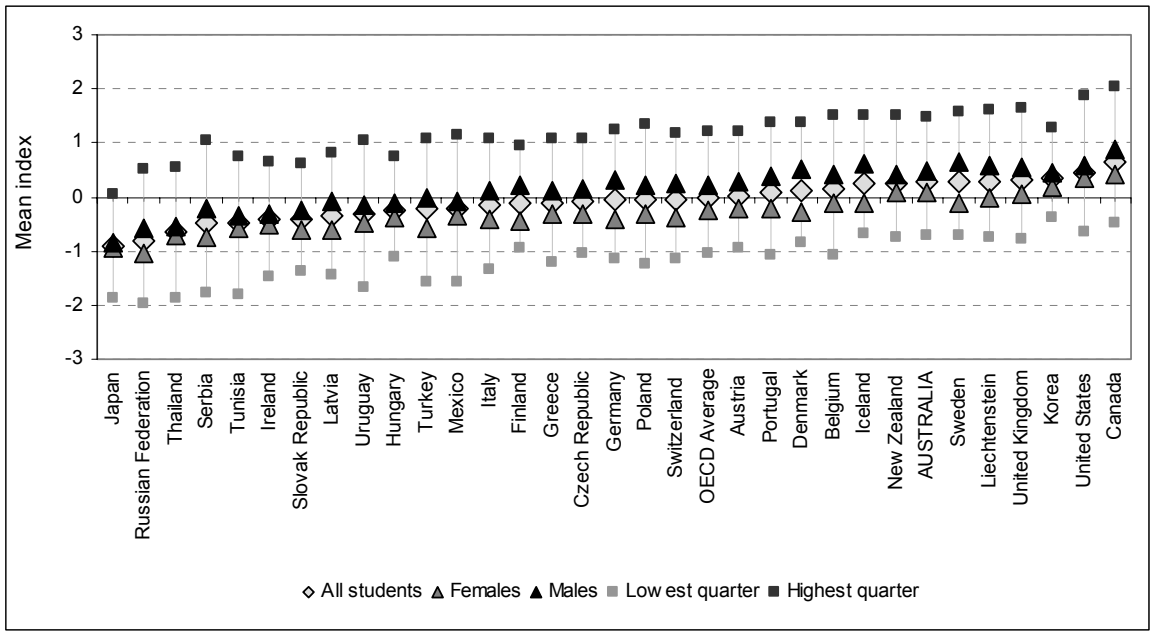

Figure 3.6 Students' use of ICT for the Internet and entertainment by country

In all countries, males used ICT for the Internet and entertainment significantly more frequently than females. The largest differences (of more than seven-tenths of a standard deviation) were found in Denmark, Sweden, Iceland and Germany. The mean index for Australian females was 0.07 points compared to the mean index for males of 0.47 points. Countries with the smallest differences between gender and the use of ICT for the Internet and entertainment were from Japan and Thailand with less than a fifth of a standard deviation difference.

Comparing students who use ICT the least and those who used it the most for Internet and entertainment, the largest differences of 2.6 index points or more, were found in Turkey, Uruguay, Mexico and Serbia. For Australia, the difference between the lowest and highest quarter of students was 0.4 points, slightly less than the OECD average of 0.47 points.

Australian states

Australian students used ICT for the Internet and entertainment more frequently than the OECD average. The mean index for Australian states ranged from 0.21 index points in South Australia to 0.34 index points in the Australian Capital Territory (Figure 3.7).

Australian males used ICT frequently for the Internet and entertainment more than females. The larger gender differences were found in Queensland and Tasmania (with a difference of a half a standard deviation). South Australia and the Northern Territory reported the smallest gender differences of all states, with a difference of about a third of a standard deviation.

Figure 3.7 also shows the mean index for students who use ICT the least and most, within each state, for Internet and entertainment use. The gap between students from the lowest and highest quarter ranged from 2.29 index points in Queensland to 2.10 index points in South Australia.

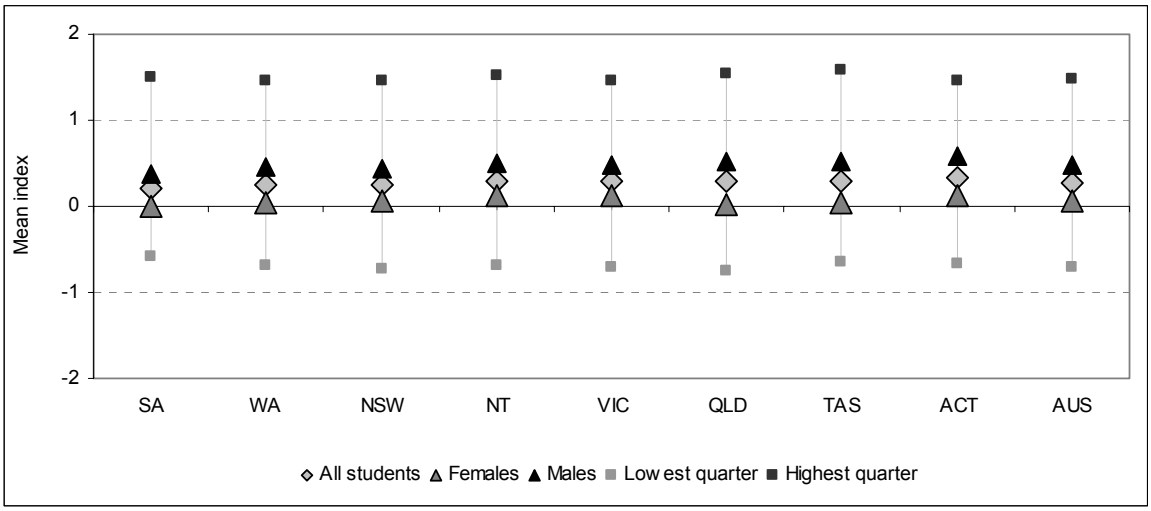

Figure 3.7 Students' use of ICT for the Internet and entertainment by state

Table 3.3 shows the percentage of students reporting frequent use of the specific tasks included in the Internet and entertainment index, by state and for Australia as a whole. No one state stands out as having more active student Internet users than any other state. In all states around three-quarters of students use the Internet at least a few times each week to look up information, which, even if not used directly for educational purposes, is an activity that will have a wide range of benefits in an information society. Similarly, a substantial proportion of students use the Internet frequently for the purposes of communication via email or chat rooms (or more likely using instant messaging, blogging or social networking sites such as MySpace or Facebook). The proportion of Australian students using computers for these purposes frequently is, in most cases, well above the OECD average.

The proportion of students using computers for games on a frequent basis hovers around 50 per cent for each state, with slightly more Tasmanian students and slightly fewer students in New South Wales and Western Australia spending a substantial amount of time on such activities. According to these self-reports Australian students overall spend less time playing games on their home computers than is the OECD average, and substantially less time than their counterparts in Canada (59%), the USA (62%) and New Zealand (56%).

Use of the Internet to collaborate with a group or team is substantially above the OECD average for each state, although less so for South Australia. Downloading of software, including games, and music, is a popular pastime, with an Australian average of almost 50 per cent of students downloading software and almost 60 per cent downloading music at least a few times a week.

Table 3.3 Percentage of students reporting frequent[1] use of ICT for the Internet and entertainment by state

	The Internet to look up information about people, things or ideas	Games on a computer	The Internet to collaborate with a group or team	Internet to download software (including games)	Internet to download music	A computer for electronic commun-ication (eg. email or chat rooms)
NSW	74	48	41	45	57	69
VIC	73	50	45	50	61	69
QLD	70	53	45	48	58	68
SA	76	52	36	42	50	62
WA	75	48	45	46	57	69
TAS	78	55	45	45	56	71
NT	75	53	43	45	58	71
ACT	80	52	45	47	57	76
Australia	**74**	**50**	**43**	**47**	**58**	**69**
OECD Average	**55**	**53**	**31**	**38**	**49**	**56**

1. Students reported that they used computers "Almost every day" or "A few times each week"

Table 3.4 shows the breakdown of these percentages by gender. Not surprisingly, perhaps, there are some clear gender divisions. Whilst using the Internet for the purposes of research is an activity pursued equally frequently by males and females, playing games is a frequent pastime of around twice the proportion of males than females. Similarly, although the differences are not quite as stark, using the Internet to download software is also a particularly male-gendered activity, while using the Internet to download music or chat to friends is largely non-gendered. Communication is the only area in which a greater proportion of girls than boys in a majority of states (New South Wales, South Australia, Tasmania, the Northern Territory and the Australian Capital Territory) participate on a frequent basis, although it is still the case that more than two-thirds of 15-year-old males in all states other than South Australia communicate with others at least a few times each week!

Table 3.4 Percentage of students' frequent[1] use of ICT for the Internet and entertainment by state, by gender

		The Internet to look up information about people, things or ideas	Games on a computer	The Internet to collaborate with a group or team	Internet to download software	Internet to download music	A computer for electronic communication (eg. email or chat rooms)
NSW	Females	72	34	38	36	53	71
	Males	76	63	45	56	62	68
VIC	Females	70	34	41	40	58	68
	Males	76	67	48	60	63	69
QLD	Females	68	33	41	33	50	66
	Males	72	69	48	61	66	70
SA	Females	73	30	34	30	45	69
	Males	78	71	37	52	54	56
WA	Females	74	30	44	33	51	69
	Males	76	68	47	59	64	70
TAS	Females	75	36	37	28	47	78
	Males	81	72	53	60	63	66
NT	Females	74	40	44	32	53	74
	Males	76	68	42	60	64	66
ACT	Females	79	37	43	33	51	78
	Males	81	69	47	62	64	74
AUS	**Females**	**72**	**33**	**40**	**35**	**53**	**69**
	Males	**76**	**67**	**46**	**58**	**62**	**68**
OECD Average	**Females**	**50**	**35**	**36**	**25**	**40**	**55**
	Males	**59**	**70**	**27**	**51**	**56**	**56**

1. Students reported that they used computers "Almost every day" or "A few times each week"

Indigenous

Usage of ICT for Internet and entertainment by Indigenous and non-Indigenous students was almost identical, with a mean index of 0.25 and 0.27 respectively (Figure 3.8). Indigenous females used ICT for the Internet and entertainment more frequently than non-Indigenous females. This was not the case for males, where non-Indigenous males used ICT for the Internet and entertainment more frequently than Indigenous males. The difference was 0.12 index points.

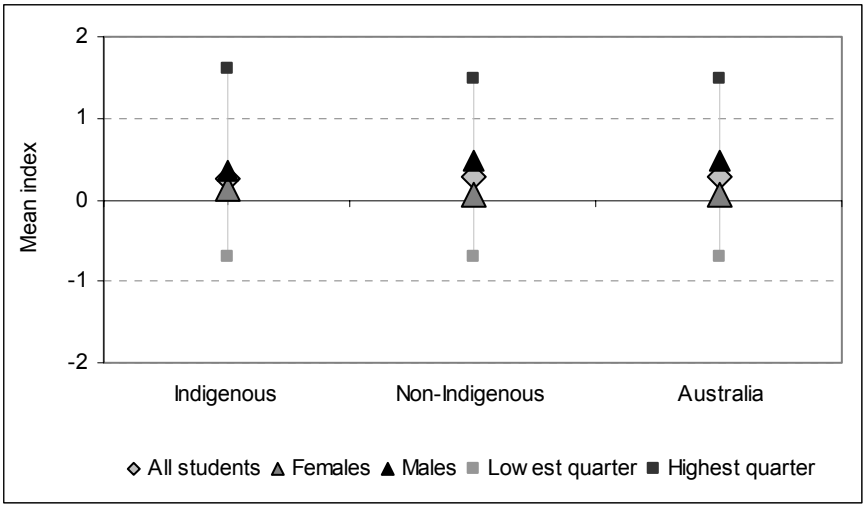

Figure 3.8 Indigenous and non-Indigenous students' use of ICT for the Internet and entertainment

Table 3.5 illustrates a couple of differences in the way that Indigenous students use ICT in terms of the Internet and entertainment. There appears to be a higher proportion of Indigenous students than non-Indigenous students who frequently use the Internet for the purposes of collaboration with others, and a lower proportion of Indigenous students than non-Indigenous that use their home computer for electronic communication of other sorts.

Table 3.5 Percentage of Indigenous and non-Indigenous students' frequent[1] use of ICT for the Internet and entertainment

		The Internet to look up information about people, things or ideas	Games on a computer	The Internet to collaborate with a group or team	Internet to download software	Internet to download music	A computer for electronic communication (eg. email or chat rooms)
Indigenous	Females	72	57	50	48	59	58
	Males	70	48	47	42	56	61
	All	**74**	**64**	**53**	**53**	**61**	**55**
Non-Indigenous	Females	74	50	43	47	58	69
	Males	72	33	40	35	53	70
	All	**76**	**67**	**46**	**58**	**62**	**68**

1. Students reported that they used computers "Almost every day" or "A few times each week"

Geographic location

Overall, students living in provincial areas use ICT for the Internet and entertainment less frequently than students living in metropolitan or remote areas, as shown in Figure 3.9. Although the mean index for females living in metropolitan or remote areas was similar (0.08 and 0.06 points respectively), males living in remote areas used ICT for the Internet and entertainment slightly more frequently (with a mean index of 0.78 points) than males living in metropolitan areas (with a mean index of 0.49).

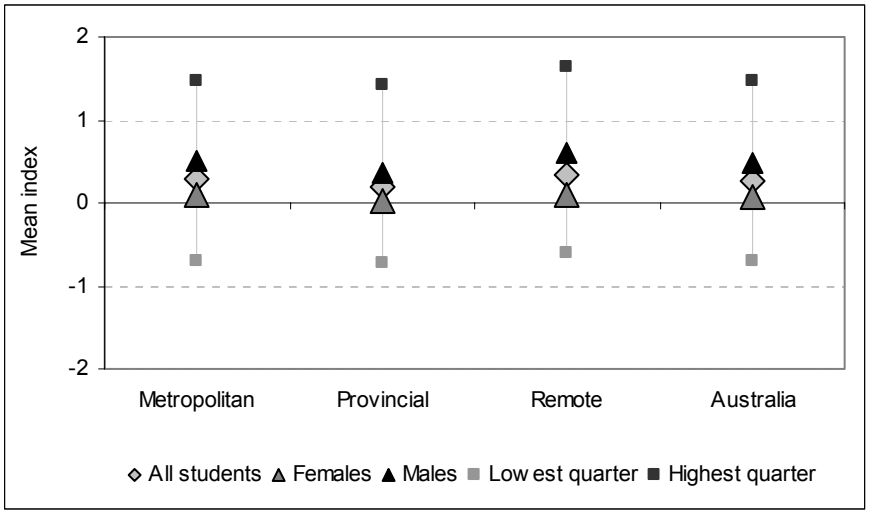

Figure 3.9 Students' use of ICT for the Internet and entertainment by geographic location

Socioeconomic background

Figure 3.10 shows the mean index for those students in the lowest quartile of socioeconomic background is 0.20 points. This is only slightly lower than that of students in the other three quartiles, whose mean index is around 0.30 index points, and is probably what one would expect, given that the Internet is a further financial burden for those from this socioeconomic background. ICT use for Internet and entertainment is lower for females than males across all socioeconomic backgrounds.

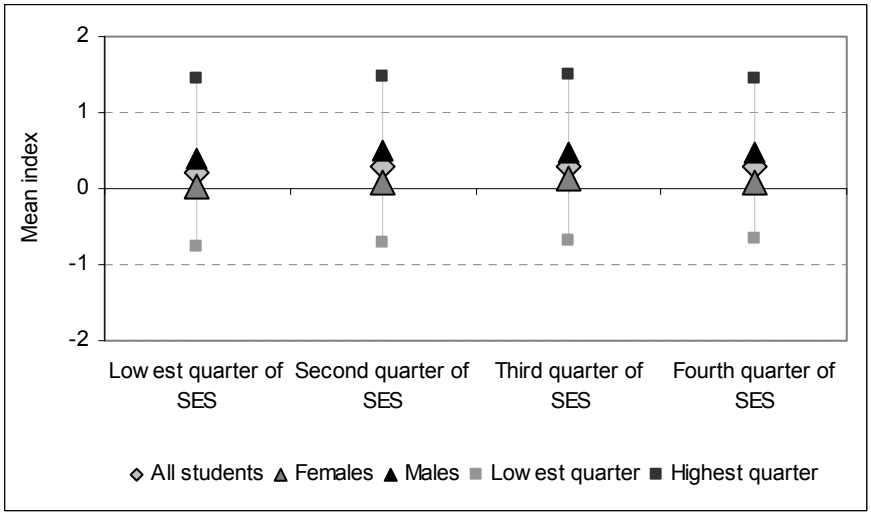

Figure 3.10 Students' use of ICT for the Internet and entertainment by socioeconomic background

Use of ICT for programs and software

Another focus of ICT use examined was the frequency with which students use different programs and software. The index of students' use of ICT for programs and software was based on students' responses to how frequently they used a computer to perform the following tasks:

- Word processing (e.g. Microsoft Word or WordPerfect);
- Spreadsheets (e.g. Microsoft Excel or Lotus 123);

- Drawing, painting or graphics programs on a computer;
- Educational software such as mathematics programs;
- Programming.

International

Australia (with a mean index of 0.23 points) was one of the countries, along with the United States, the United Kingdom, Uruguay, Portugal and Italy that reported the most frequent student use of ICT for programs and software (Figure 3.11). At the other end of the index, students from Japan, Ireland, Korea, the Russian Federation and Finland reported the lowest use.

In most countries, males indicated they used ICT for programs and software more often than females. The largest gender differences, of about half a standard deviation, were found in Liechtenstein and Denmark. The mean difference between Australian females and males was a fifth of a standard deviation, which was also the OECD average. Female students from Ireland, Japan, Korea and Thailand reported higher usage of ICT for programs and software than males.

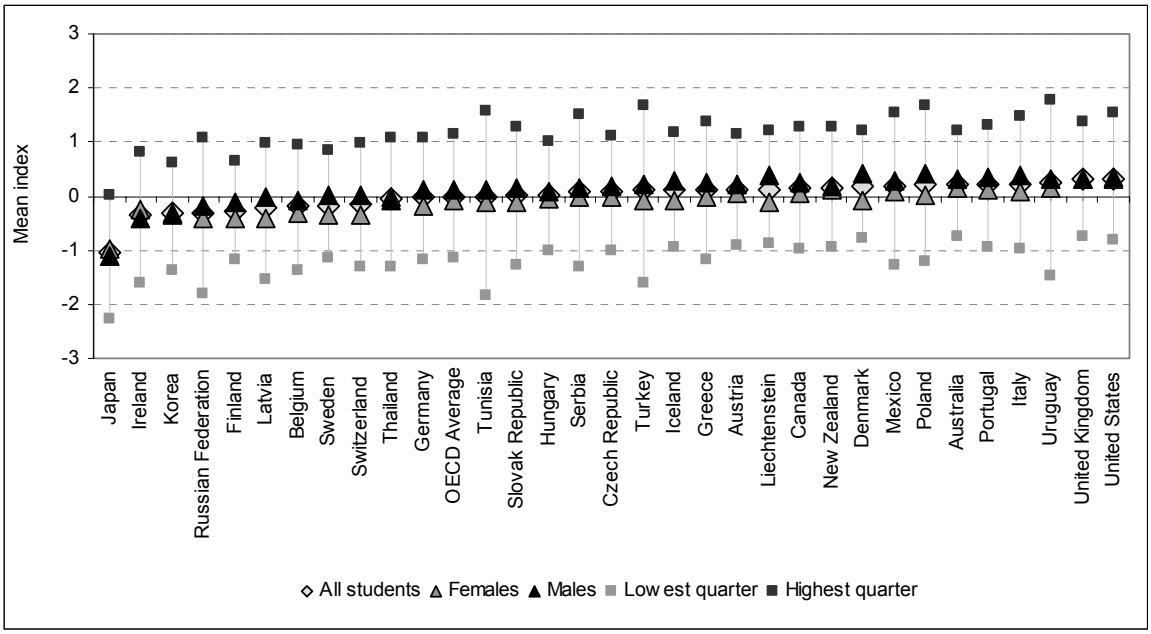

Figure 3.11 Students' use of ICT for programs and software by country

Australian states

Students from the Northern Territory, Australian Capital Territory and Tasmania indicated they used ICT for programs and software more frequently than other states. The mean index ranged from 0.19 index points in New South Wales to 0.39 index points in the Northern Territory (Figure 3.12).

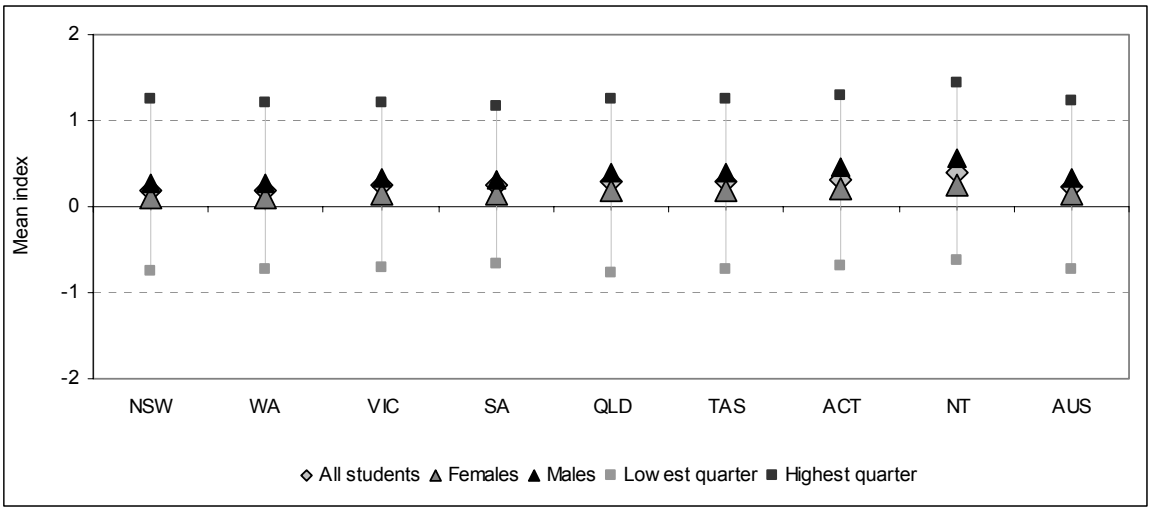

Figure 3.12 Students' use of ICT for programs and software by state

Overall, fewer students report frequent use of programs and software compared to their reported use of the Internet and entertainment. As Table 3.6 illustrates, word processing software is the only type of program or software used on a frequent basis for a majority of students (the item did not specify whether this was at home or at school, so it is assumed that it has been answered referring to usage at both). This is a similar finding across all countries in PISA but Australia had the highest proportion of students reporting frequent use of word processing. This is an interesting finding given that the use of all other forms of software and programs by Australian students is similar to the OECD average and in many cases much lower than the rate of usage in a number of other OECD countries.

Table 3.6 Percentage of students' frequent[1] use of ICT for programs and software by state

	Word processing (eg. Microsoft Word or WordPerfect)	Spreadsheets (IBM Lotus 1-2-3 or Microsoft Excel)	Drawing, painting or graphics programs on a computer	Educational software such as mathematics programs	The computer to help you learn school material	The computer for programming
NSW	64	20	31	9	31	23
VIC	72	24	33	11	30	24
QLD	70	26	35	12	32	29
SA	81	22	30	7	30	23
WA	68	20	30	10	36	22
TAS	78	21	41	11	39	28
NT	75	26	37	17	37	30
ACT	80	25	33	10	36	24
AUS	**70**	**22**	**32**	**10**	**32**	**25**
OECD Average	**48**	**21**	**30**	**13**	**30**	**23**

1. Students reported that they used computers "Almost every day" or "A few times each week"

As with students' use of ICT for the Internet and entertainment, a higher proportion of males indicated they used ICT for programs and software. The largest differences were found in the Northern Territory and the Australian Capital Territory (with a mean index difference of 0.31 and 0.26 respectively). Students in Western Australia, South Australia and New South Wales had the lowest gender differences, which were similar to that for Australia overall. Table 3.7 presents the proportion of male and female students in each state who reported frequently using the particular suite of software. In each state, males are more likely than females to be frequent users of programs and software than females, with the exception of word processing software.

Table 3.7 Percentage of students' frequent[1] use of ICT for programs and software by state, by gender

		Word processing (eg. Microsoft Word or WordPerfect)	Spreadsheets (IBM Lotus 1-2-3 or Microsoft Excel)	Drawing, painting or graphics programs on a computer	Educational software such as mathematics programs	The computer to help you learn school material	The computer for programming
NSW	Females	67	17	27	7	29	17
	Males	62	24	35	12	34	30
VIC	Females	74	20	27	9	28	17
	Males	70	28	39	14	33	31
QLD	Females	73	24	28	9	30	19
	Males	67	27	41	15	33	38
SA	Females	85	20	23	5	30	15
	Males	78	24	35	8	31	29
WA	Females	74	19	25	8	34	14
	Males	62	21	35	11	39	30
TAS	Females	84	19	31	10	37	17
	Males	73	23	49	12	41	37
NT	Females	77	21	28	12	34	21
	Males	72	31	49	22	41	40
ACT	Females	84	21	26	8	34	16
	Males	74	30	42	13	39	34
AUS	**Females**	**73**	**20**	**27**	**8**	**30**	**17**
	Males	**67**	**25**	**38**	**13**	**34**	**32**
OECD Average	**Females**	**49**	**18**	**26**	**11**	**29**	**16**
	Males	**48**	**24**	**34**	**15**	**31**	**32**

1. Students reported that they used computers "Almost every day" or "A few times each week"

Indigenous

Figure 3.13 shows that a greater proportion of Indigenous students (mean index of 0.5) than non-Indigenous students (mean index of 0.2) reported using ICT frequently for programs and software. Indigenous males reported a more frequent use of ICT for programs and software than their female counterparts, other than for word processing.

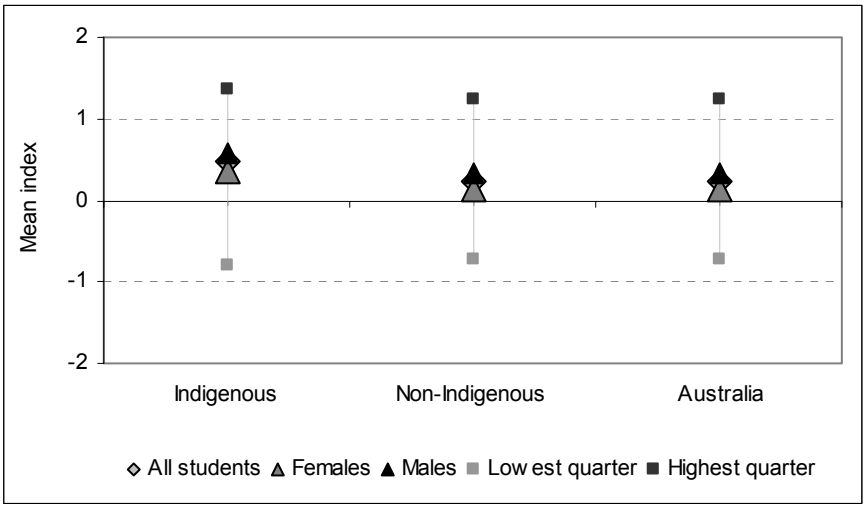

Figure 3.13 Indigenous and non-Indigenous students' of ICT for programs and software

Table 3.8 Percentage of Indigenous and non-Indigenous students' frequent[1] use of ICT for programs and software

		Word processing (eg. Microsoft Word or WordPerfect)	Spreadsheets (IBM Lotus 1-2-3 or Microsoft Excel)	Drawing, painting or graphics programs on a computer	Educational software such as mathematics programs	The computer to help you learn school material	The computer for programming
Indigenous	Females	74	32	38	18	40	28
	Males	65	44	42	28	50	46
	All	70	38	40	23	45	37
Non-Indigenous	Females	73	19	26	8	30	17
	Males	67	25	38	12	34	32
	All	70	22	32	10	32	24

1. Students reported that they used computers "Almost every day" or "A few times each week"

Table 3.8 shows that a large part of the focus for Indigenous students appears to be using the computer at home for educational purposes. Percentages for use of educational software, the computer for programming, to help learn school material, and, for some reason, spreadsheets, on a frequent basis are substantially higher than for non-Indigenous students.

Geographic location

Students from all geographic locations in Australia reported using ICT for programs and software more frequently than the OECD average. Figure 3.14 shows that regardless of geographic location, there is little difference between ICT use for programs and software for students living in different geographic locations.

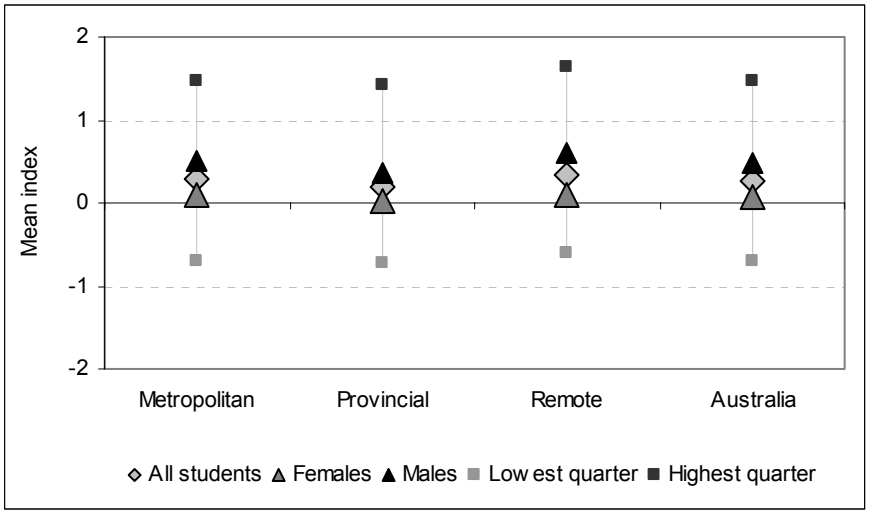

Figure 3.14 Students' use of ICT for programs and software by geographic location

Socioeconomic background

Figure 3.15 shows that there was very little difference in usage of computer programs and software for students at different socioeconomic levels.

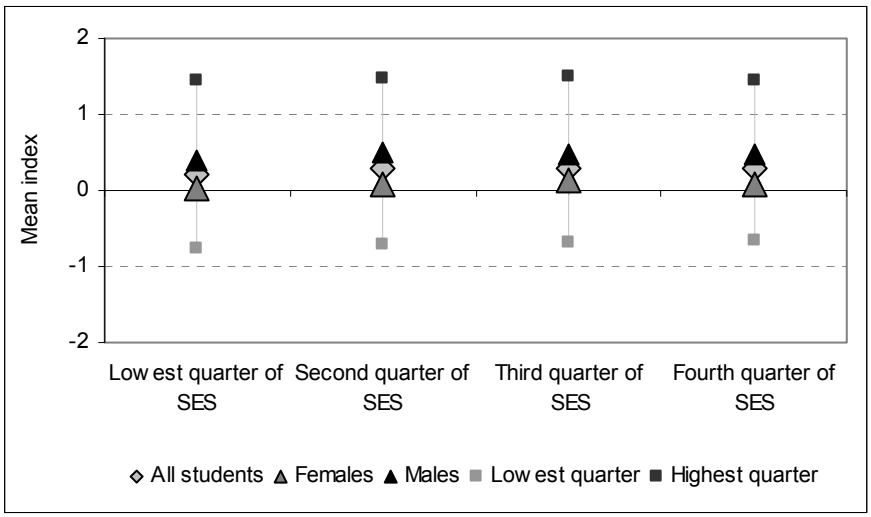

Figure 3.15 Students' use of ICT for programs and software by socioeconomic background

Summary

The first part of this chapter looked at the frequency that students use computers. This indicated that:

- 87 per cent of Australian students say that they use a computer at home on a frequent basis, and this ranged from 94 per cent in the Australian Capital Territory to 83 per cent in Tasmania;
- 59 per cent of Australian students use a computer frequently at school, ranging from 82 per cent in Tasmania to just 47 per cent in New South Wales;
- Indigenous students report more frequent use of computers at school than non-Indigenous students;
- Fewer Indigenous students have access to computers at home, and those who do access them less frequently than non-Indigenous students;
- Australian students reported a high usage of ICT for accessing the Internet and for entertainment;
- Males reported higher usage of ICT for these purposes than females;
- Usage was highest in the Australian Capital Territory and lowest in South Australia, but was larger in all states than the OECD mean;
- All gender differences were in favour of males; the largest were found in Queensland and Tasmania, the smallest in South Australia and the Northern Territory; and
- There were no differences in terms of frequency of use of ICT at school frequently for students from different socioeconomic backgrounds.

The second part of this chapter explored what students actually used computers for at home and at school. This found that:

- Australian students were among the 'heaviest' users internationally of the Internet and entertainment software, as well as educational programs and software;
- 74 per cent of Australian students report frequent use of ICT for the purposes of using the Internet to look up information, and almost 70 per cent for electronic communication;
- The most marked gender divisions were in the areas of playing games (67% of males and 33% of females) and using the Internet to download software (58% males and 35% of females);
- Word processing software was listed as that used most frequently by all students in Australia, with 70 per cent of Australian students, compared to the OECD average of 48 per cent, saying that they used such software frequently;
- Male students used all forms of programs and software, other than word processing, to a greater extent than females. This was particularly the case with programming software;
- Indigenous students report using educational software at home to a greater extent than non-Indigenous students; and
- There was no difference in use of ICT for students from different socioeconomic backgrounds.

4. STUDENTS' ATTITUDES TOWARDS ICT

Do Australian 15-year-old students have positive experiences using ICT? Are they interested and do they enjoy using computers? This chapter examines students' attitudes towards computers and discusses the differences found between different groups, such as males and females and Indigenous and non-Indigenous students.

Students were asked to think about their experiences with computers and indicate to what extent they agreed with the following statements:

- It is very important to me to work with a computer
- To play or work with a computer is really fun
- I use a computer because I am very interested
- I lose track of time when I am working with the computer.

Using the student responses to these questions, an attitude towards computer index was created. A positive score on the index indicates students have more positive attitudes to computers than on average for students in OECD countries. A negative score indicates students have a less positive (rather than a negative) attitude to computers than the OECD average.

International

Surprisingly given the amount of exposure that Australian students have to computers, their attitudes are not globally positive. Perhaps computers have become so much a part of their daily lives that they have become blasé compared to students in other countries in which this might not be the case. The overall attitude of Australian students towards computers (along with students from New Zealand and Sweden) was less positive than the OECD average, of the magnitude of a tenth of a standard deviation (Figure 4.1). However this finding should be examined by gender: female students reported attitudes 0.26 standard deviations less positive than the OECD mean, while the attitudes of males was 0.07 standard deviations more positive than the OECD mean. Of course, if the OECD mean represents a strongly positive attitude towards ICT then this simply reflects a less positive attitude. This will be examined in the following sections of this chapter.

Students in Serbia, Tunisia and Austria expressed more positive attitudes towards computers with mean scores of over a third of a standard deviation higher than the OECD mean. Students from Japan, Finland and Ireland reported the least positive attitudes towards computers, with mean scores larger than a third of a standard deviation lower than the OECD mean.

In almost all countries males have significantly more positive attitudes towards computers than females. The most pronounced gender differences were found in Denmark, with a mean score difference of 0.86, followed by Sweden, Iceland and the Czech Republic, with a mean score difference of almost 0.60. The mean score difference for Australian students was a third of a standard deviation, slightly lower than the OECD average gender difference of 0.38. Students from Thailand and Tunisia were the only countries to report females having significantly more positive attitudes towards computers than males.

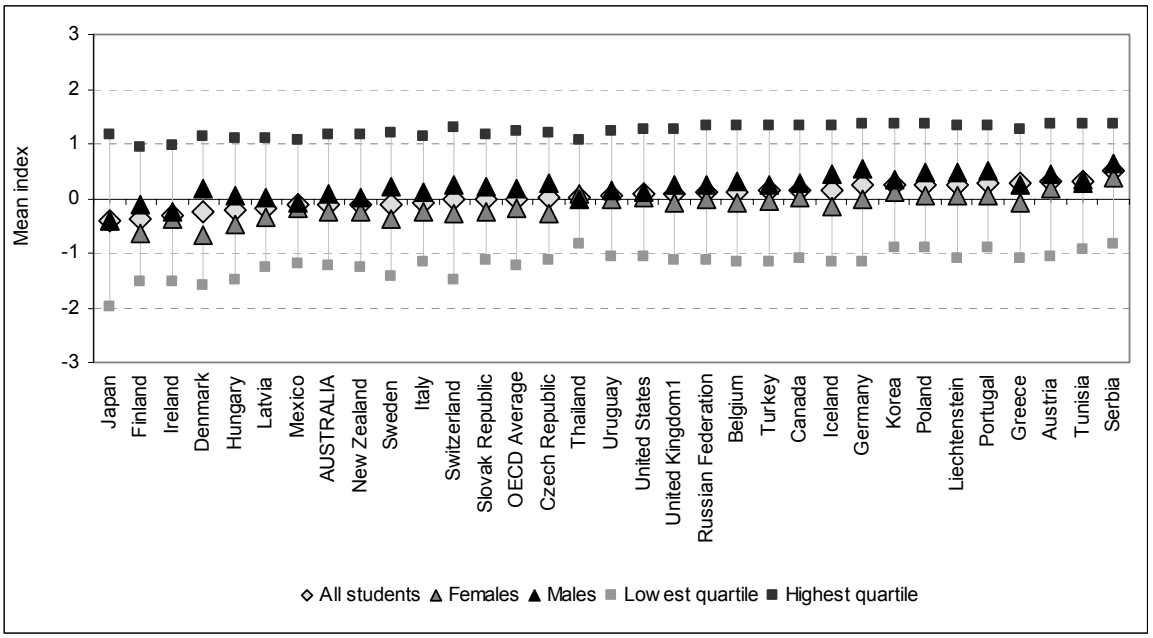

Figure 4.1 Students' attitudes towards computers by country

In addition to the mean index for all students and by gender, Figure 4.1 also shows the mean index for the lowest and the highest quartile of students. The largest differences between students in the lowest quartile and students in the highest quartile were found in Japan, Switzerland and Denmark (with a mean score difference of between 2.7 and 3.1), whereas the smallest differences were reported in Thailand, Serbia, Portugal and Korea (with a mean score difference of around 2.0). In Australia, as well as in the United Kingdom and New Zealand, the mean score difference was around 2.4 mean score points.

Australian states

Within Australia, students from Western Australia had the lowest mean on the index (-0.20 or a fifth of a standard deviation lower than the OECD average), followed by students from Victoria with a mean of -0.15. Students from all other states had approximately the same mean as that of the OECD as can be seen in Figure 4.2.

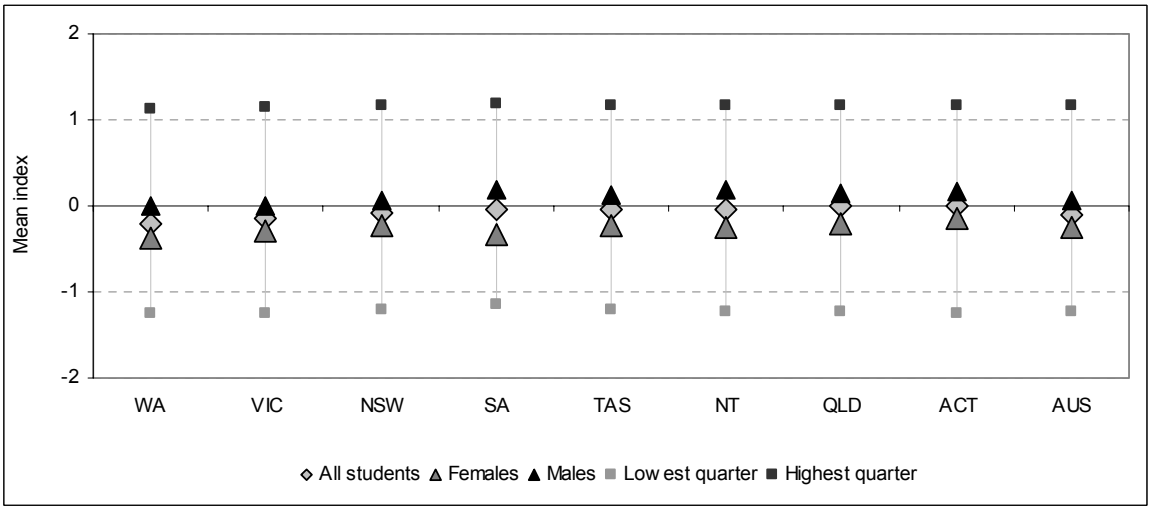

Figure 4.2 Students' attitudes towards computers by state

Within each state, Australian males were found to have more positive attitudes towards computers than Australian females. The mean score differences in gender ranged from 0.51 in South Australia and 0.44 in the Northern Territory to 0.27 in New South Wales.

Earlier in this chapter, it was noted that the attitude of female Australian students towards ICT was less positive than that represented by the OECD average. Table 4.1 shows the proportion of male and female students in Australia who agreed or strongly agreed to each of the four statements that comprise the attitudes towards computers index. As this table shows, while the index shows that females are less positive in their attitudes, this is only relative. A very high proportion of both male and female students recognise the importance of them working with computers, and an overwhelming proportion find working or playing with computers fun. Males are certainly more interested in using computers than females, but only slightly more likely to lose track of time when working with computers. As the previous chapter has shown, there is a large proportion of these students' time spent on the computer researching or communicating via various programs, and it appears that this is time that they enjoy.

Table 4.1 Proportion of Australian students agreeing that…

	It is very important to me to work with a computer	To play or work with a computer is really fun	I use a computer because I am very interested	I lose track of time when I am working with the computer
Females	86	85	67	69
Males	89	92	82	74

Indigenous

Figure 4.3 shows that the mean score for Indigenous students (-0.16) on the attitudes towards computers index was similar to the mean score for non-Indigenous students (-0.09). This was also the case when comparing the mean scores of Indigenous females and Indigenous males. Indigenous males were more positive in their attitudes towards computers than Indigenous females. The mean score for Indigenous males was close to the OECD average and the mean score for Indigenous females was almost a third of a standard deviation lower than the OECD average.

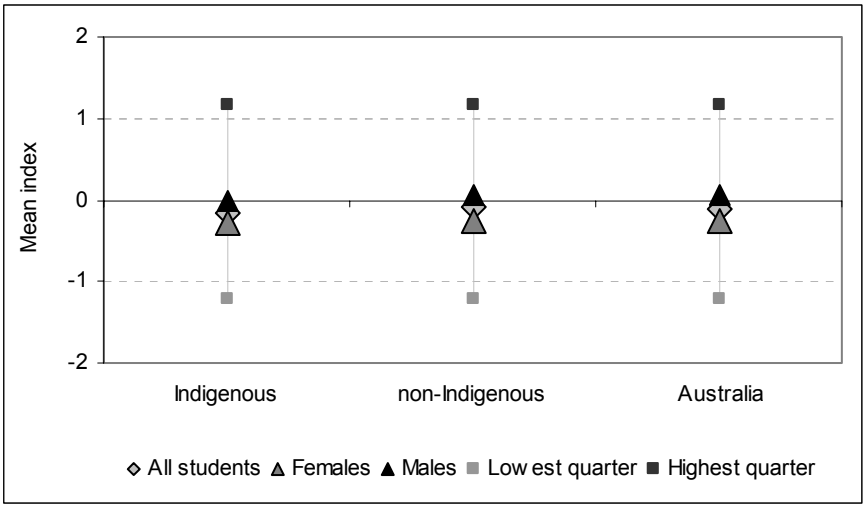

Figure 4.3 Indigenous and non-Indigenous students' attitudes towards computers

Geographic location

Figure 4.4 shows there is also little variation between the mean index of students' attitudes towards computers by geographic location. The mean index for each geographic location was slightly lower than the OECD average.

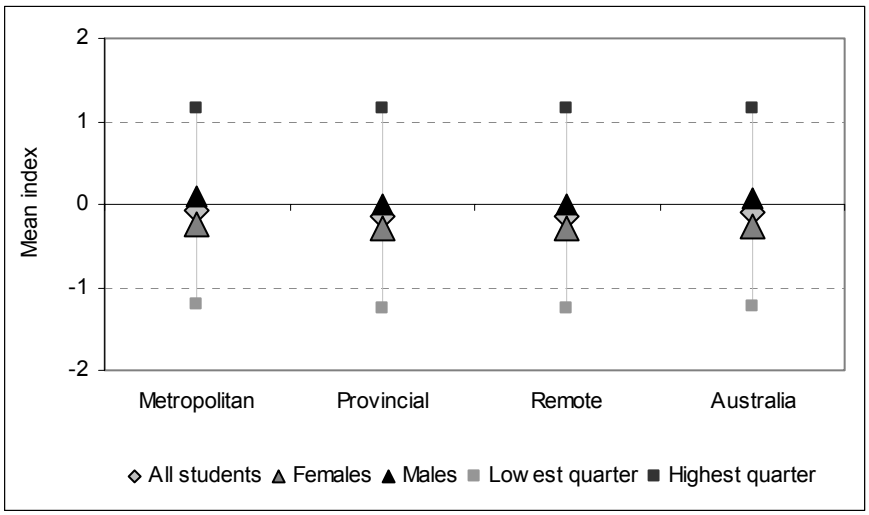

Figure 4.4 Students' attitudes towards computers by geographic location

Socioeconomic background

There was also very little difference in the mean index of students' attitudes towards computers by socioeconomic background (Figure 4.5). The mean index was about -0.1 index points for all students, regardless of socioeconomic background. The mean index scores for both females and males were similar across the socioeconomic quartiles.

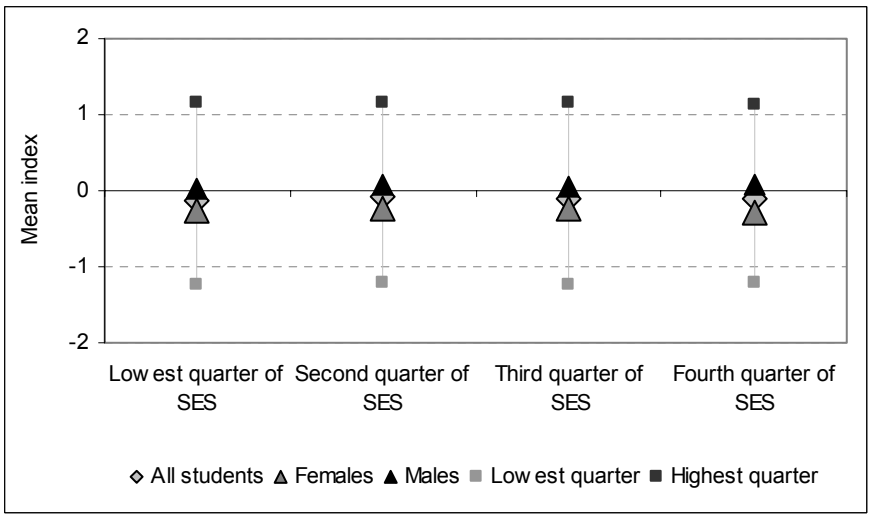

Figure 4.5 Students' attitudes towards computers by quartiles of socioeconomic background

Students' confidence in using ICT

In PISA 2003, students were asked a series of questions about how well they could perform 23 different tasks using a computer, for example how well they could save a computer game or how well they could get onto the Internet.

Students were asked to respond to each question by indicating the relevant category:

- I can do this very well by myself
- I can do this with help from someone
- I know what this means but I cannot do it
- I don't know what this means

Student responses were used to ascertain how confident they were using ICT. Three indices of confidence in ICT tasks were created to summarise students' confidence in routine tasks, Internet tasks and high-level tasks.

This chapter examines how confident students are performing certain computer tasks and reports these results by state as well as describing the differences found between gender, Indigenous and non-Indigenous students, geographic location and socioeconomic background. Australian students generally exhibited high levels of confidence in most areas, and of course there may be cultural differences evident in self-reports on such things. For students in some countries it may not be appropriate to express high levels of confidence, whereas in Australia and similar Western countries there may be an element of bragging about one's talents.

Routine tasks

An index of student confidence with using routine tasks was created using responses (as shown above) for the following 11 statements:

- Start a computer game
- Open a file
- Create/edit a document
- Scroll a document up and down a screen
- Copy a file from a floppy disk
- Save a computer document or file
- Print a computer document or file
- Delete a computer document or file
- Moves files from one place to another on a computer
- Play computer games
- Draw pictures using a mouse

International

Students from Australia and Canada were among the most confident on average, in performing routine tasks with a mean index score of over 0.3 index points (Figure 4.6). Other countries in which students were more confident than the OECD average were the United States, the United Kingdom and the partner country Liechtenstein (with a mean index over 0.2 and up to 0.26 points). Those countries (except for Poland and the Czech Republic), with a mean score higher than the OECD average indicated over 90% of their students frequently use a computer at either home or school. The countries whose students have the least confidence with routine tasks, Tunisia, Thailand and Turkey, are also the countries in which students indicated that they use computers less frequently at home than students from other countries. Japan was also included in the list of countries whose students were least confident. However, their levels of confidence may not be related to the lack of experience performing routine tasks (as they access computers more frequently at home than Tunisia, Thailand and Turkey) but to their own rating of their confidence in being able to perform these routine tasks.

While there are likely to be cultural differences in the self-reporting of confidence levels across countries, it is nevertheless very encouraging to know that Australian students feel relatively satisfied with their computer skills.

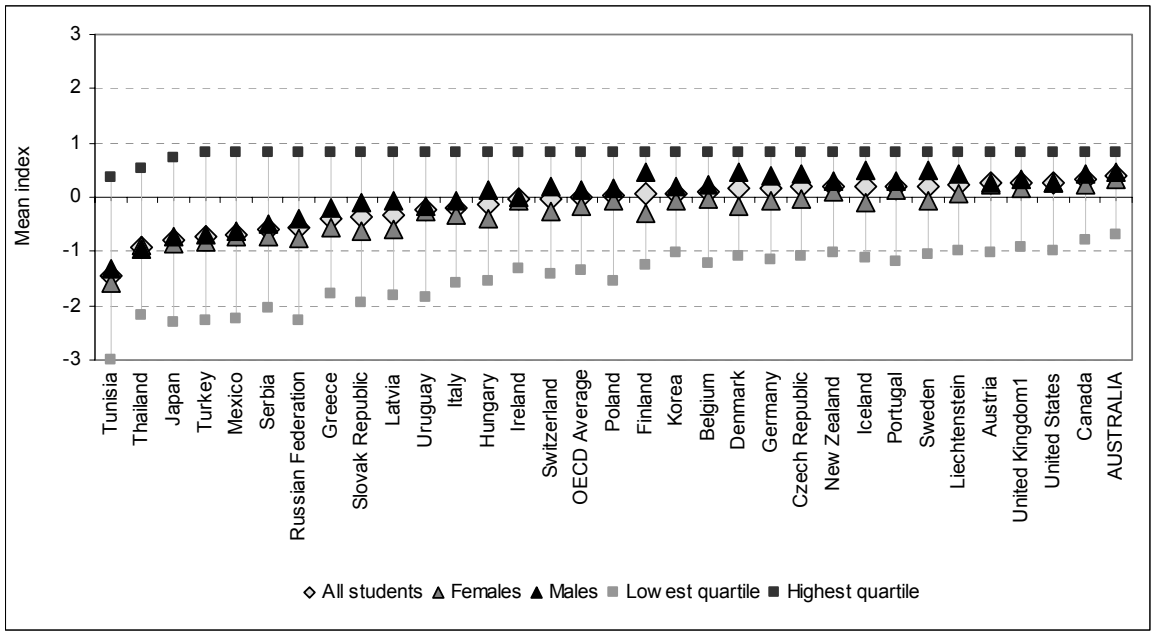

Figure 4.6 Students' confidence in performing routine tasks by country

Almost 90 per cent of the countries reported significant gender differences in favour of males. The gender difference was largest in Finland (with a difference of 0.76 index points), followed by Denmark (with a difference of 0.62 index points), Iceland, the partner country Latvia, the Slovak Republic, Sweden and Hungary (all with a gender difference of 0.5 index points or more). Australia, along with Japan, Mexico and the United States had the smallest significant gender differences of around 0.14 index points, with males more confident with routine tasks than females.

Australian states

Students from South Australia were the most confident in Australia in performing routine tasks, with a mean index score of 0.48, followed by the Australian Capital Territory. Males from each state reported higher levels of confidence than their counterparts (with a mean difference of about 0.1 index points). The range between students in the lowest and highest quarter was around 1.5 index points (Figure 4.7).

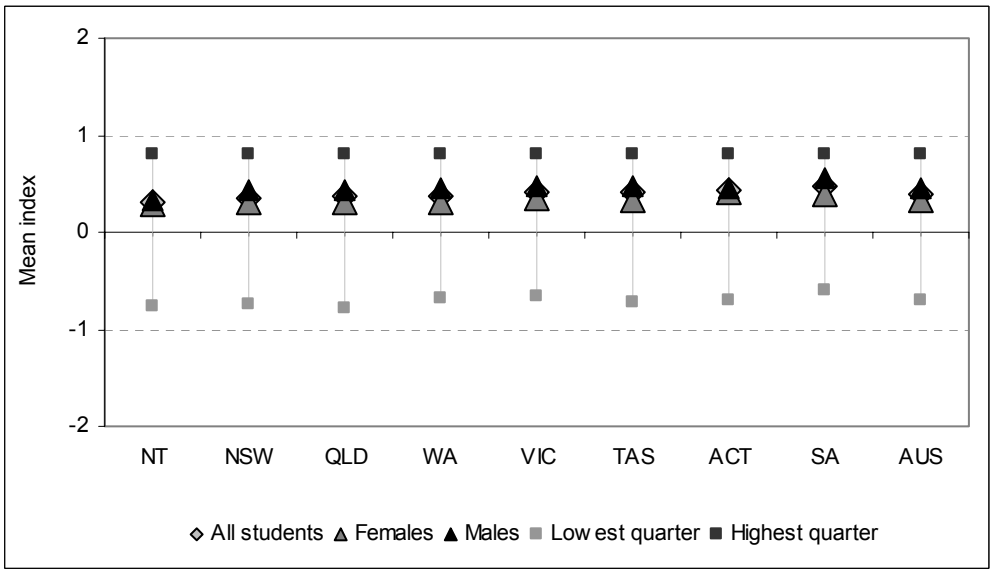

Figure 4.7 Students' confidence in performing routine tasks by state

Over 95 per cent of Australian students reported they could confidently open a file, save, print or delete a computer document or file or scroll a document up and down a screen. Over 90 per cent of students could start and play a computer game and create or edit a document and 89 per cent of students could copy a file from a floppy disk, move files from one place to another on a computer or draw pictures using a mouse.

Indigenous

Figure 4.8 shows that the confidence levels of Indigenous students performing routine tasks using ICT is the same as the OECD average, but is substantially lower than the average for non-Indigenous students. The mean scores of Indigenous females and males are very similar. The Figure also shows that regardless of Indigenous background, the mean score for students in the top quarter is the same. However, the mean index score for Indigenous students in the lowest quarter is 0.4 mean index points lower than that of non-Indigenous students.

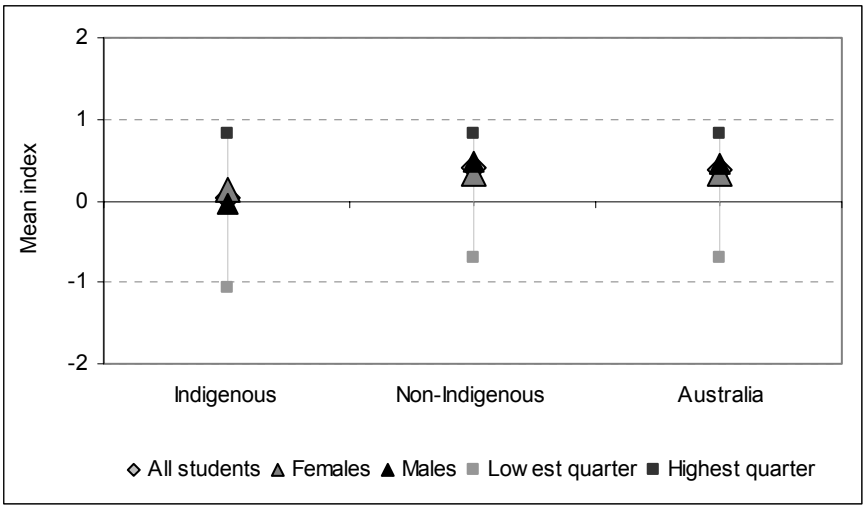

Figure 4.8 Indigenous and non-Indigenous students' confidence in performing routine tasks

Geographic location

The mean index score for students in metropolitan areas was slightly higher (0.40 mean index points) than for students in provincial or remote areas (0.36 and 0.31 mean index points respectively). Males in metropolitan and provincial areas were more confident in performing routine tasks than females in these areas. However females in remote areas reported being more confident performing routine tasks than males from remote areas. Students in the highest quarter for confidence in routine tasks in each geographic location had the same mean index score. Students from remote areas in the bottom quarter were less confident (with a mean index score of -0.70 points) compared to students in metropolitan areas and in the bottom quarter (-0.69 mean index points) (Figure 4.9).

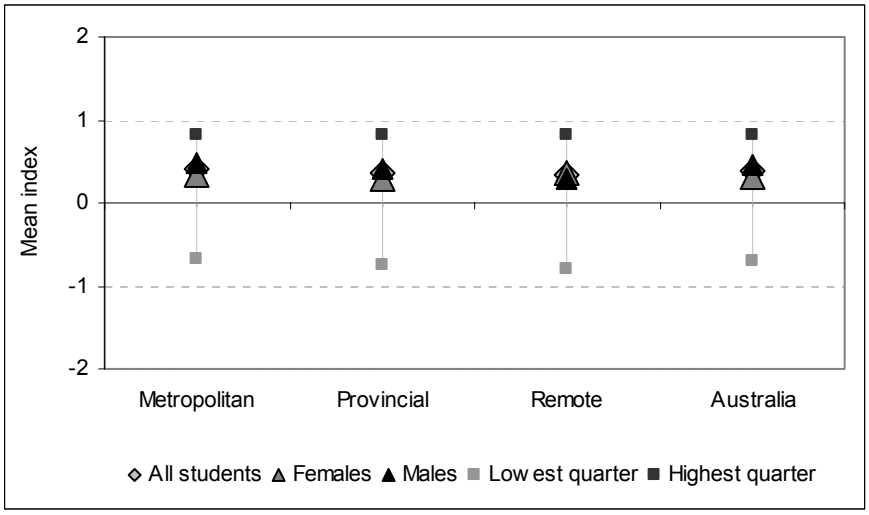

Figure 4.9 Students' confidence in performing routine tasks by geographic location

Socioeconomic background

Figure 4.10 shows that students reported slightly higher levels of confidence in performing routine tasks in using ICT as the level of socioeconomic background increased. For the lowest level of socioeconomic background the index of confidence was 0.37, while for those in the highest quarter the index was 0.46, representing a difference of about one-tenth of a standard deviation. There was almost no change in the index for females for differing levels of socioeconomic background (0.18 – 0.21); instead the difference in overall index is a reflection of the change in the scores of the males in the sample – from 0.56 in the lowest quartile of socioeconomic background to 0.69 in the highest quartile. As students in the highest level of socioeconomic background are more likely than those in the lower levels to have a computer at home, this is not surprising, however it would be expected that this advantage would be evident for females as well as males, whereas the confidence index for females in the highest quartile of socioeconomic background is still lower than that of males in the lowest socioeconomic quartile.

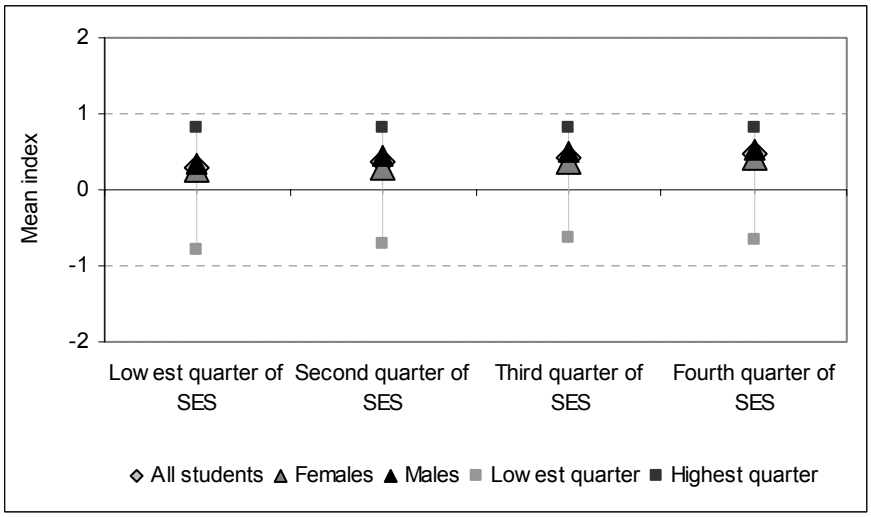

Figure 4.10 Students' confidence in performing routine tasks by socioeconomic background

Internet tasks

The PISA 2003 index of confidence in Internet Tasks using ICT was derived from students' reports of how easily they could:

- Get on to the Internet
- Copy or download files from the Internet
- Attach a file to an email message
- Download music from the Internet
- Write and send emails

International

Students from Korea, Canada (with a mean of over 0.57 index points), Liechtenstein and Iceland (with a mean of over 0.41 index points) were among the most confident performing tasks using the Internet, on average. Australian students also reported high scores on this index (with a mean of 0.41 index points). On the other hand, students in Tunisia, Thailand and the Russian Federation have among the lowest mean levels of reported confidence performing tasks using the Internet, with an average of more than 1.25 index points below the OECD average (Figure 4.11).

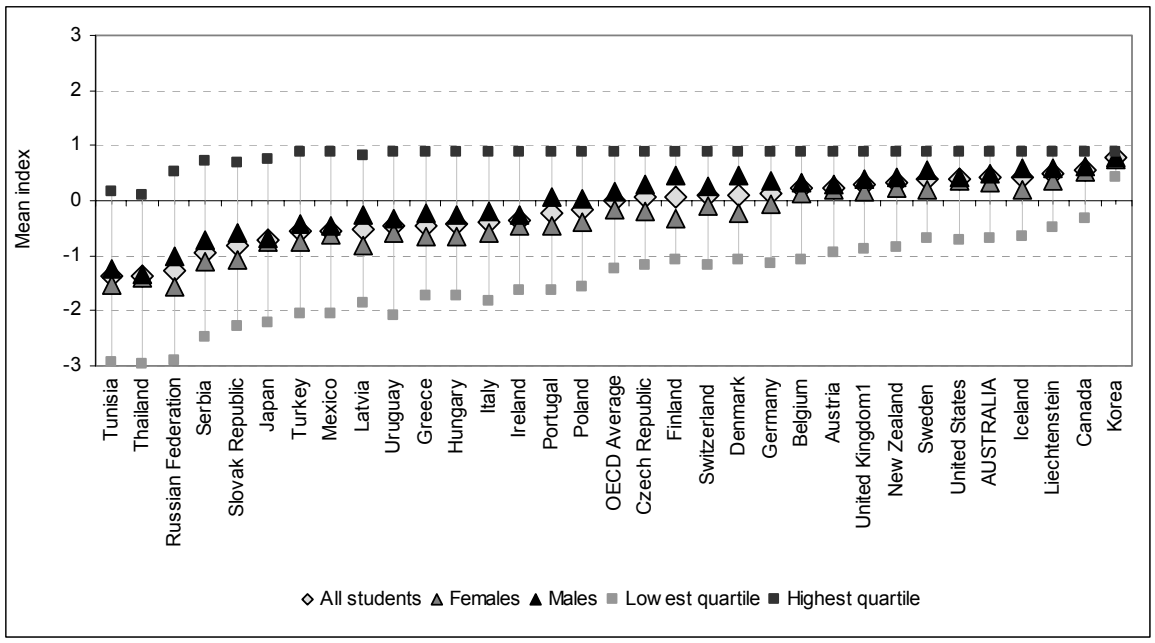

Figure 4.11 Students' confidence in performing Internet tasks by country

Significant gender differences, in favour of males, were reported in 28 of the 32 countries. Similar to the gender differences on the index of confidence in routine ICT tasks, Finland, Denmark and Latvia reported the largest differences (with a gender difference of 0.55 index points or more). Australia, along with New Zealand, Mexico, Canada, Austria and Japan reported among the lowest significant gender differences (0.17 index points) in student confidence in performing Internet tasks.

Australian states

Australian students are confident in performing tasks using the Internet, with mean index scores ranging from 0.46 in the Australian Capital Territory to 0.37 in New South Wales. As shown in Figure 4.12, males from all states were slightly more confident than females performing tasks using the Internet. The overall mean index gender difference was 0.17.

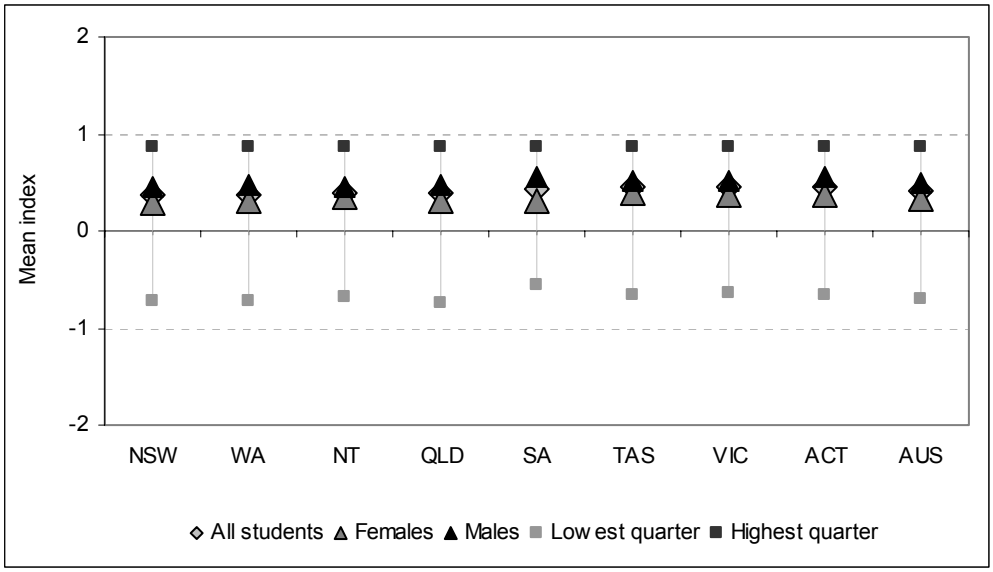

Figure 4.12 Students' confidence in performing Internet tasks by state

Indigenous

Overall, Indigenous students were not as confident using the Internet to perform different tasks as non-Indigenous students, but their confidence levels were the same as the OECD average. Figure 4.13 shows Indigenous females were not as confident performing tasks associated with the Internet as their non-Indigenous counterparts. This was also the case when comparing Indigenous and non-Indigenous males but the difference was slightly larger.

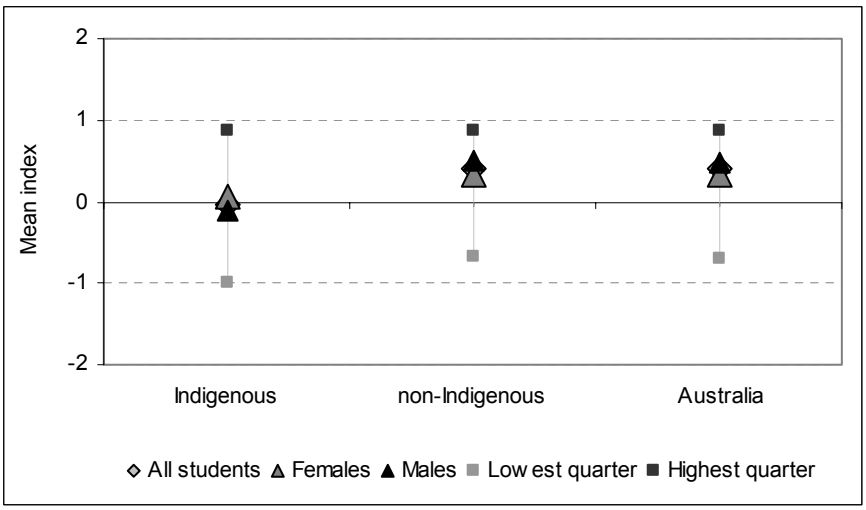

Figure 4.13 Indigenous and non-Indigenous students' confidence in performing tasks using the Internet

Geographic location

Students in metropolitan areas are slightly more confident in performing tasks associated with the Internet than students in provincial or remote areas. There were only very small (index of no more than 0.2 points) gender differences, with males being slightly more confident than females (Figure 4.14)

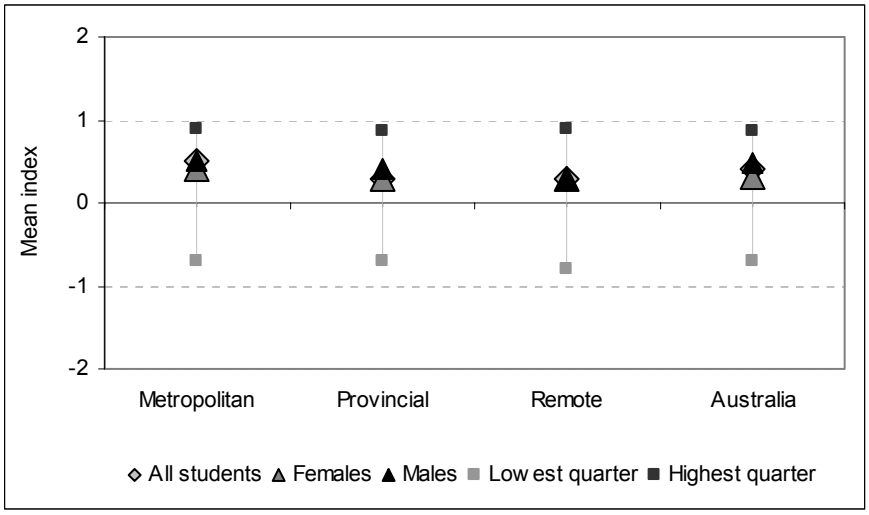

Figure 4.14 Students' confidence in performing Internet tasks by geographic location

Socioeconomic background

Figure 4.15 shows that there is a slight increase in students' confidence on tasks using the Internet with an increase in socioeconomic background. Female students in all socioeconomic quartiles were less confident than males, with a difference of 0.2 mean index points.

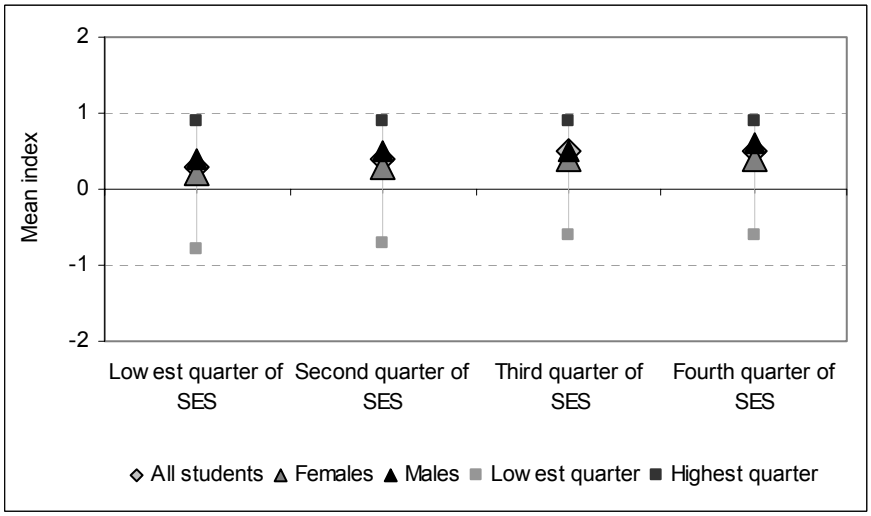

Figure 4.15 Students' confidence in performing Internet tasks by socioeconomic background

High-level tasks

The third index related to students' confidence using ICT to perform high-level tasks. These tasks are defined as high-level because students require knowledge of specific programs as well as the ability to manipulate data, create files or construct pages. This index was derived from students' responses to the following seven items:

- Use software to find and get rid of computer viruses
- Use a database to produce a list of addresses
- Create a computer program (eg. in Logo, Pascal, Basic)
- Use a spreadsheet to plot a graph
- Create a presentation (eg. using Microsoft PowerPoint)
- Create a multi-media presentation (with sound, pictures, video)
- Construct a web page

International

Overall, students are not as confident in performing high-level tasks using ICT as they are performing routine tasks or tasks involving the Internet (Figure 4.16). However Australian students, along with those in Liechtenstein, the United States, the United Kingdom and Canada, were among the most confident on average in performing high-level tasks, with a mean of over 0.3 index points. Conversely, students from Japan, Thailand, Tunisia, the Slovak Republic and the Russian Federation were the least confident with a mean of more than -0.5 index points. All but one country (Thailand) had significant gender differences in favour of males. The largest gender differences were in Finland, Denmark and Iceland (with a mean score difference of more than 0.88 index points). The mean gender difference in Australia was also larger for this index compared to the other indices related to students' confidence, with a difference of 0.46 mean index points, compared to an OECD average of 0.49 index points. OECD countries reporting the smallest gender differences were Japan, Ireland, Mexico and Korea.

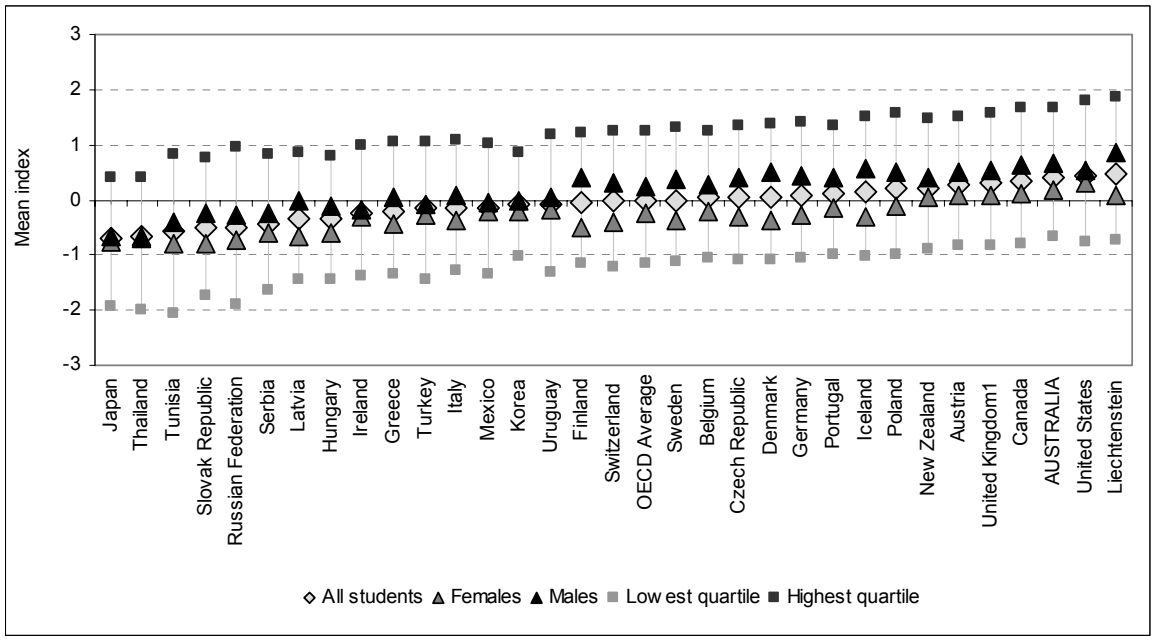

Figure 4.16 Students' confidence in performing high-level tasks by country

Australian states

Australian students are more confident in performing high-level tasks compared to the OECD average. Students from Queensland had the highest mean score (of 0.51 index points). Students from New South Wales, the Northern Territory and Western Australia had the lowest mean score of around 0.35 index points (Figure 4.17).

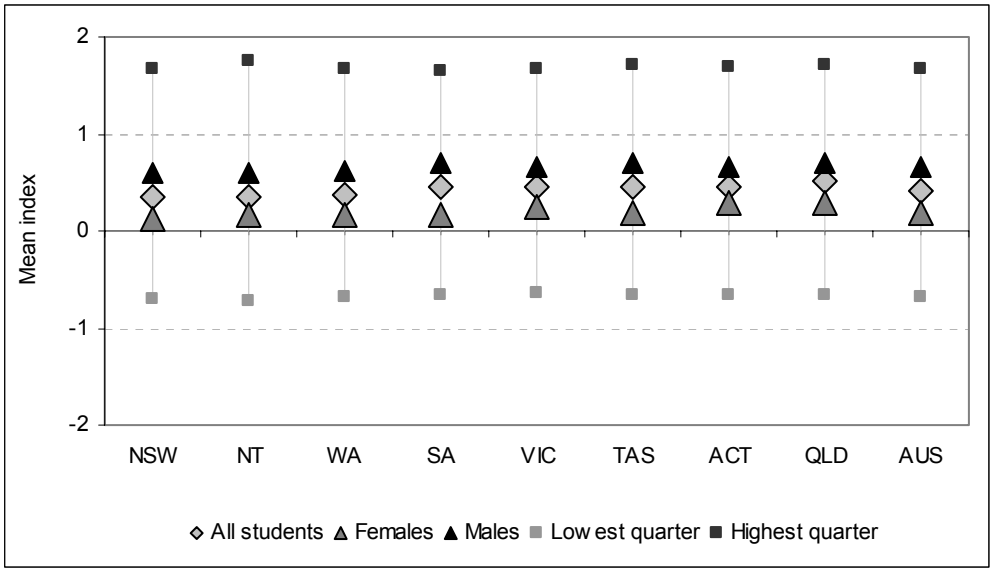

Figure 4.17 Students' confidence in performing high-level tasks by state

As stated before, the largest gender differences were found internationally in the index representing confidence in performing high-level tasks than with the other indices related to student confidence. As would be expected, this was the same in each of the Australian states. Males were more confident than females performing high-level tasks with an overall mean of 0.46 index points: scores for males ranged from 0.54 in South Australia to 0.38 in the Australian Capital Territory. Large differences were also found between students in the highest quarter and students in the lowest quarter of confidence, with a mean difference of 1.7 index points.

The breakdown of students' confidence by particular high-level tasks shows males are significantly more confident performing almost all of the high-level tasks using ICT except the task of creating a presentation using software such as PowerPoint.

Indigenous

Non-Indigenous students are more confident in performing high-level tasks than Indigenous students with the mean index for non-Indigenous students double that for Indigenous students. Figure 4.18 shows there is a large difference (0.4 index points) between the confidence levels of non-Indigenous and Indigenous males. The difference between non-Indigenous male and female students is large (0.46 index points), whereas the difference in the confidence levels of Indigenous females and males performing high-level tasks is negligible.

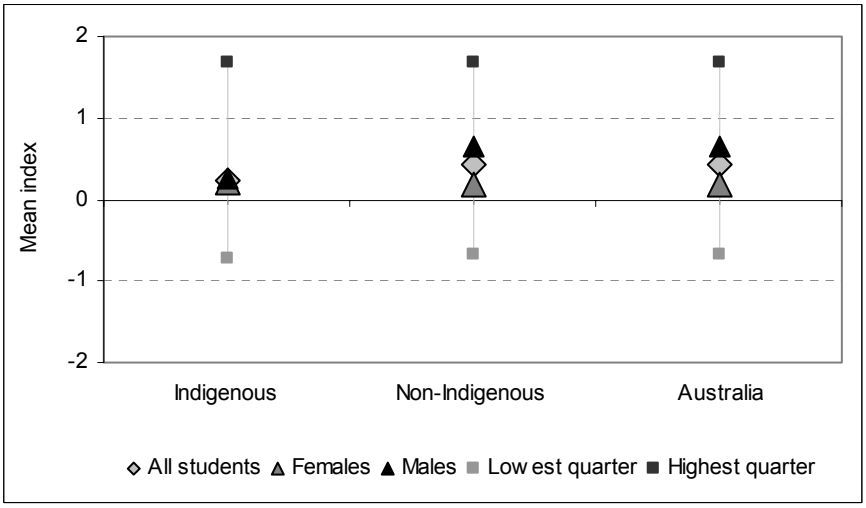

Figure 4.18 Indigenous and non-Indigenous students' confidence in performing high-level tasks

Geographic location

Figure 4.19 shows that regardless of geographic location, students report similar confidence levels in performing high-level tasks. There is also very little difference between the mean index scores by gender across geographic location.

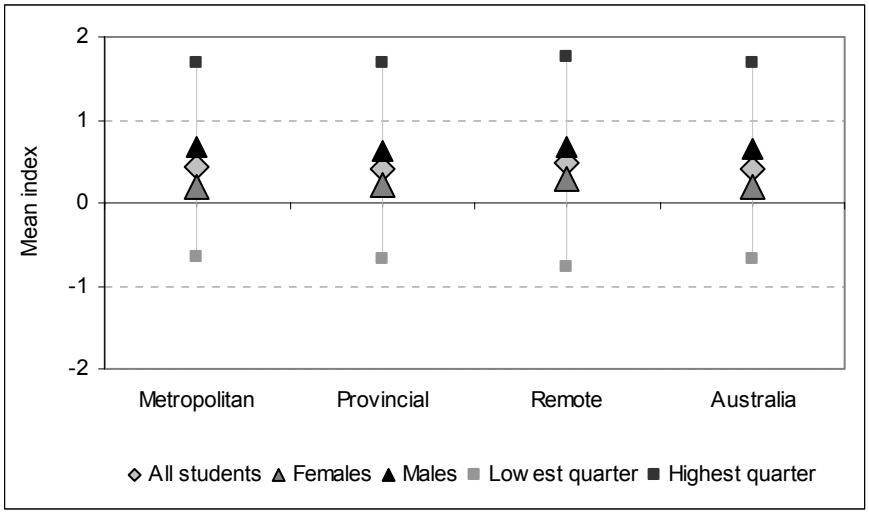

Figure 4.19 Students' confidence in performing high-level tasks by geographic location

Socioeconomic background

Figure 4.20 shows the mean index scores for students' confidence in performing high-level tasks by socioeconomic background. The mean index scores for students across the quartiles are very similar.

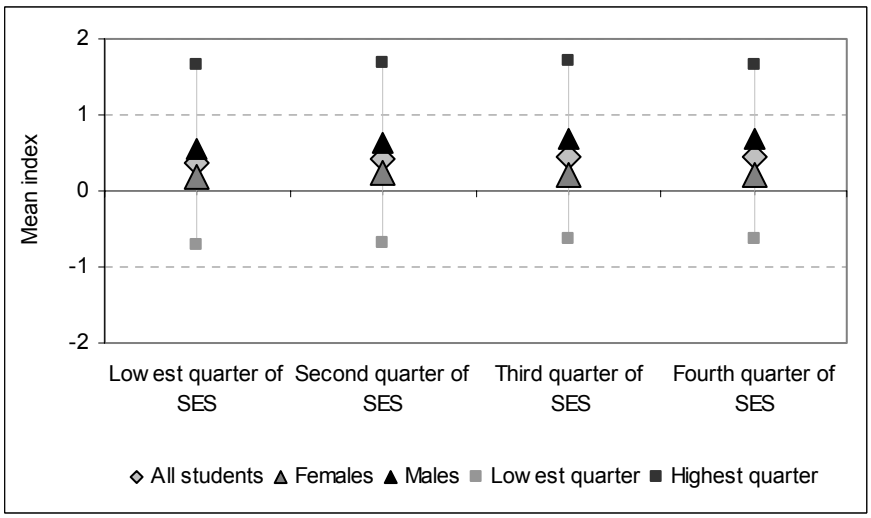

Figure 4.20 Students' confidence in performing high-level tasks by socioeconomic background

What tasks do students feel confident doing using a computer and what are they not sure about? Table 4.2 summarises the PISA 2003 students' responses to all of the ICT items – for routine tasks, Internet tasks and high-level tasks – for male and female students, for Australian students overall, and for the OECD as a comparison.

Table 4.2 Percentage of students reporting how well they can perform routine, Internet and high-level tasks on a computer, by gender

	I can do this very well by myself				I can do this with help from someone				I know what this means but I cannot do it				I don't know what this means			
	Female	Male	AUS	OECD	Female	Male	AUS	OECD	Female	Male	AUS	OECD	Female	Male	AUS	OECD
Routine tasks																
Print a computer document or file	98	96	97	86	2	3	2	9	<1	1	<1	3	<1	<1	<1	2
Open a file	96	95	96	90	3	3	3	7	<1	1	1	2	<1	<1	<1	1
Scroll a document up and down a screen	97	96	96	87	2	3	2	8	<1	<1	1	3	<1	<1	<1	3
Save a computer document or file	98	96	96	88	2	3	2	8	<1	<1	1	3	<1	<1	<1	2
Delete a computer document or file	96	96	96	88	3	3	3	8	1	1	<1	3	<1	<1	<1	2
Play computer games	91	95	93	90	8	4	6	7	1	1	1	2	<1	<1	<1	1
Create/edit a document	93	92	92	80	5	6	6	13	1	2	2	4	<1	<1	<1	2
Start a computer game	88	94	91	86	10	5	8	10	2	1	1	3	<1	<1	<1	1
Copy a file from a floppy disk	86	92	89	75	10	6	8	16	4	2	3	7	<1	<1	<1	3
Moves files from one place to another on a computer	86	92	89	76	11	6	8	17	3	2	2	6	<1	<1	1	2
Draw pictures using a mouse	90	88	89	85	8	9	8	10	2	2	3	3	<1	1	<1	1
Internet tasks																
Get on to the Internet	98	96	97	88	2	3	2	7	<1	1	<1	3	<1	<1	<1	1
Write and send emails	94	91	92	79	4	6	5	12	2	2	2	6	<1	1	1	3
Copy or download files from the Internet	82	90	86	70	13	8	10	19	4	2	3	8	1	<1	1	3
Download music from the Internet	72	85	78	66	19	10	15	21	8	4	6	11	1	1	1	3
Attach a file to an email message	71	80	76	58	20	14	17	24	7	4	6	13	2	2	2	5
High-level tasks																
Create a presentation (eg. using Microsoft PowerPoint)	75	80	78	47	19	15	17	27	5	4	4	15	1	1	1	10
Use a database to produce a list of addresses	64	72	67	52	25	20	23	30	8	6	7	11	3	2	3	7
Use a spreadsheet to plot a graph	53	64	58	44	31	25	28	31	13	8	10	17	3	3	3	9
Create a multi-media presentation (with sound, pictures, video)	39	57	48	35	40	31	35	35	19	10	14	23	2	2	2	7
Use software to find and get rid of computer viruses	29	58	44	37	35	26	31	29	32	13	22	26	4	3	3	7
Construct a web page	29	44	37	28	42	36	39	39	26	17	22	27	3	3	3	6
Create a computer program (eg. in Logo, Pascal, Basic)	18	36	27	21	34	34	34	35	37	23	30	31	11	7	9	14

As can be seen in Table 4.2, Australian students are, in general, very confident that they can do many of the tasks by themselves, particularly routine and basic Internet-related tasks. However there are several areas in which gender differences are apparent, and some areas in which the proportion of Australian females responding positively is only equal to or even lower than the OECD mean.

Female students report a high level of confidence using ICT at a basic level: opening files, creating, editing, saving and deleting documents, getting onto the Internet and sending emails. This is consistent with the findings of previous chapters which suggested that females were more inclined to use ICT for particular purposes – word processing and communications being primary of these. Whilst there are still very large proportions of females with high levels of confidence in more complex tasks, such as copying files, downloading from the Internet, and attaching files to email messages, these proportions are lower than those of males reporting high levels of confidence. When the tasks become those classified as high-level tasks, for example creating a multimedia presentation, using software to find and get rid of viruses, constructing a web page and creating a computer program, females fall even further behind. For two of these in particular, the skills of using software against viruses and creating a computer program, the proportion of females confident of doing it by themselves was lower than the OECD average, perhaps concerning given the high levels of access to and frequent use of computers by students in Australia.

The summary presented in Table 4.2 points to a gender divide in the use of ICT. It appears from these data as well as findings in previous chapters that although females see working with computers as important, they don't find it as intrinsically interesting or fun as do males.

Table 4.3 summarises Indigenous and non-Indigenous students' responses to the questions on ICT familiarity. While Indigenous numbers are small, these findings indicate that there is a consistent gap between the confidence levels of Indigenous and non-Indigenous students, and this is to be expected given that fewer Indigenous students have access to a computer at home. What is interesting is that the gap is consistent, and that in general there is no increased gap with an increase in the complexity of the task. A conclusion that could be drawn from this finding is that if Indigenous students have the same amount of exposure to computers and the Internet as non-Indigenous students there is no reason to expect that they will not have the same levels of self-confidence.

Table 4.3 Percentage of students reporting how well they can perform routine, Internet and high-level tasks on a computer, by Indigenous background

	I can do this very well by myself		I can do this with help from someone		I know what this means but I cannot do it		I don't know what this means	
	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous
Routine tasks								
Print a computer document or file	97	87	2	10	1	3	<1	<1
Open a file	96	87	3	10	1	2	<1	<1
Scroll a document up and down a screen	97	87	2	10	1	2	<1	1
Save a computer document or file	97	86	2	10	1	3	<1	1
Delete a computer document or file	96	86	3	10	1	3	<1	1
Play computer games	93	86	6	11	1	2	<1	<1
Create/edit a document	93	80	5	15	2	3	<1	2
Start a computer game	91	82	7	15	1	2	<1	1
Copy a file from a floppy disk	89	77	8	15	3	7	1	2
Moves files from one place to another on a computer	89	77	8	17	2	5	<1	1
Draw pictures using a mouse	89	81	8	14	3	4	<1	1
Internet tasks								
Get on to the Internet	97	83	2	13	1	3	<1	1
Write and send emails	92	76	5	16	2	6	1	2
Copy or download files from the Internet	86	72	10	21	3	6	1	1
Download music from the Internet	79	70	15	22	6	7	1	1
Attach a file to an email message	76	58	17	28	6	10	1	4
High-level tasks								
Create a presentation (eg. using Microsoft PowerPoint)	78	64	16	26	4	8	2	2
Use a database to produce a list of addresses	68	56	23	31	7	8	3	5
Use a spreadsheet to plot a graph	59	47	28	34	10	15	3	5
Create a multi-media presentation (with sound, pictures, video)	48	44	35	38	14	13	2	5
Use software to find and get rid of computer viruses	44	34	31	33	22	25	3	8
Construct a web page	37	33	39	41	22	22	3	4
Create a computer program (eg. in Logo, Pascal, Basic)	27	31	34	35	30	26	9	8

Summary

This chapter has examined PISA students' attitudes towards and experiences with using computers, and their confidence in using ICT. Students in Australia were less positive in their attitudes towards computers than was the average for the OECD, however the level of enthusiasm varied a great deal by gender.

- Male students were, on average, slightly more positive than the OECD average, while females were substantially more negative;
- While both male and female students regarded it as very important to work with computers, a greater proportion of males than females considered playing or working with computers to be fun and did so to a greater extent because they were interested;
- The average index score for attitudes towards computers was slightly lower for Indigenous than non-Indigenous students;
- There was little variation on the attitudes towards computers index by either geographic location or socioeconomic background;

Students were asked a set of questions designed to elicit their confidence on three sets of tasks – those that could be labelled as routine, those that were Internet-related tasks, and those that were high-level tasks. These analyses found that on the scale measuring confidence in performing routine tasks:

- Australian students were amongst the world's most confident, on average;
- While 90 per cent of countries reported significant gender differences, Australia was an exception to this, with the difference between males and females being only 0.14 index points;
- Students in all states reported higher levels than the OECD average;
- The confidence levels of Indigenous students was lower than that for non-Indigenous students, but was the same as the OECD average;
- Students in metropolitan areas showed slightly higher levels of self-confidence than those in other geographic locations;
- Students from a higher socioeconomic level showed slightly higher levels of confidence in performing such tasks, but this was only evident for males.

On the scale measuring confidence in Internet tasks using ICT:

- Australian students were amongst the most confident internationally, although those in Korea and Canada were more confident;
- Significant gender differences were reported in almost 90 per cent of countries, but not in Australia;
- Students from all states showed higher levels of confidence in performing Internet tasks than the OECD average;
- Indigenous students were not as confident as non-Indigenous students, however they achieved confidence levels the same as the OECD average;
- Students in metropolitan areas showed slightly higher levels of self-confidence than those in other geographic locations;
- Students from a higher socioeconomic level showed slightly higher levels confidence in performing such tasks, but this was again only evident for males.

The scale measuring confidence in high-level tasks was very informative, providing a strong distinction between the confident and not-so-confident:

- Australian students were still amongst the most confident in the world on this index;
- Larger gender differences were found on this index in Australia and internationally, with males reporting confidence levels of almost half a standard deviation above females;
- Indigenous students exhibited much lower levels of confidence than non-Indigenous students, but Indigenous males and females reported similar levels of confidence to each other;
- There were little differences in reported confidence levels for different geographic locations or for different levels of socioeconomic background.

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APPENDIX A: DATA TABLES

This appendix contains the data tables underlying the figures for the chapters.

Table A2.1 Length of time students have been using a computer by country[6]

Country	Less than one year		One to three years		Three to five years		More than 5 years	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Australia	2	0.1	8	0.4	21	0.4	69	0.5
Austria	5	0.4	30	1.0	36	0.9	30	0.7
Belgium	8	0.4	30	0.7	28	0.6	34	0.7
Canada	2	0.1	10	0.3	22	0.4	66	0.5
Czech Republic	9	0.6	32	0.8	29	0.7	29	0.9
Denmark	2	0.2	18	0.6	28	0.8	52	0.9
Finland	2	0.2	17	0.6	30	0.7	51	0.9
Germany	5	0.4	30	0.9	32	0.8	33	0.9
Greece	22	1.0	41	1.0	24	0.9	14	1.0
Hungary	6	0.5	25	0.7	32	0.8	36	0.7
Iceland	2	0.3	19	0.7	30	0.7	50	0.9
Ireland	8	0.6	28	0.9	33	0.7	31	1.1
Italy	14	0.6	41	0.7	23	0.6	21	0.6
Japan	18	0.9	41	0.9	25	0.8	15	0.6
Korea	2	0.2	18	0.7	35	0.8	45	1.1
Latvia	21	1.2	44	1.3	23	1.2	12	0.7
Liechtenstein	1	0.6	21	2.3	38	2.9	40	2.8
Mexico	39	1.8	33	1.0	14	0.8	14	1.8
New Zealand	4	0.4	16	0.7	24	0.7	55	0.9
OECD Average	10	0.1	26	0.2	27	0.1	37	0.2
Poland	11	0.7	44	1.0	25	0.9	21	1.0
Portugal	10	0.6	26	0.8	33	0.8	32	1.0
Russian Federation	47	2.0	33	1.2	11	0.8	9	0.7
Serbia	43	1.1	36	0.9	11	0.6	10	0.7
Slovak Republic	27	1.0	36	0.7	19	0.5	18	0.7
Sweden	1	0.2	12	0.6	30	0.9	57	1.0
Switzerland	5	0.4	29	0.7	32	0.7	34	0.7
Thailand	28	1.5	38	1.3	17	0.8	17	1.0
Tunisia	50	1.7	27	1.0	9	0.6	14	1.0
Turkey	29	1.8	38	1.4	19	0.9	15	1.3
United Kingdom	2	0.3	18	0.9	33	0.9	48	1.0
United States	3	0.3	13	0.5	22	0.6	62	1.0
Uruguay	15	0.8	32	1.2	22	0.7	31	1.2

Source: OECD PISA 2003 database

[6] Countries in italics are partner countries.

Table A2.2 Length of time students have been using a computer by state

State	Less than one year		One to three years		Three to five years		More than 5 years	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
ACT	1	0.3	5	0.9	18	1.4	76	1.7
NSW	2	0.3	10	0.7	21	0.8	66	0.9
VIC	1	0.3	6	0.6	21	0.9	72	1.1
QLD	2	0.4	9	1.0	22	1.8	67	2.0
SA	1	0.3	4	0.7	19	0.8	77	0.9
WA	2	0.4	7	0.8	21	1.0	70	1.1
TAS	1	0.3	6	0.9	24	1.8	70	2.1
NT	2	0.4	9	1.5	24	2.5	64	2.6
Australia	2	0.1	8	0.4	21	0.4	69	0.5
OECD Average	10	0.1	26	0.2	27	0.1	37	0.2

Source: Australian PISA 2003 database

Table A2.3 Length of time Indigenous and non-Indigenous students have been using a computer by gender

	Less than one year		One to three years		Three to five years		More than 5 years	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Indigenous								
Female	3	1.1	14	2.3	24	2.4	59	2.8
Male	5	1.2	18	2.8	30	6.2	47	4.6
Non-Indigenous								
Female	1	0.2	7	0.5	22	0.7	69	0.8
Male	2	0.2	8	0.5	20	0.7	70	0.9

Source: Australian PISA 2003 database

Table A2.4 Length of time students have been using a computer by geographic location

Region	Less than one year		One to three years		Three to five years		More than 5 years	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Metropolitan								
Female	2	0.1	8	0.3	22	0.4	69	0.5
Male	2	0.1	8	0.3	19	0.3	71	0.4
Provincial								
Female	1	0.2	7	0.3	23	0.8	69	0.9
Male	3	0.3	9	0.4	21	1.2	67	1.6
Remote								
Female	0	0.0	4	1.5	19	1.1	77	1.8
Male	2	0.6	10	0.9	13	2.4	75	3.4

Source: Australian PISA 2003 database

Table A2.5 Length of time students have been using a computer by socioeconomic background

Quartile	Less than one year		One to three years		Three to five years		More than 5 years	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Lowest	3	0.4	13	0.7	25	1.0	60	1.0
Second	2	0.3	9	0.7	21	0.7	68	1.0
Third	1	0.2	5	0.5	21	0.8	73	0.8
Highest	1	0.2	5	0.6	16	0.8	79	0.9

Source: Australian PISA 2003 database

Table A2.6 Students' access to computers at school, at home or other places by country[7]

Country	At home		At school		At other places	
	%	S.E.	%	S.E.	%	S.E.
Australia	97	0.2	100	0.1	93	0.3
Austria	97	0.3	97	0.5	76	0.9
Belgium	94	0.3	91	0.8	85	0.5
Canada	95	0.2	99	0.1	98	0.2
Czech Republic	82	0.7	95	0.8	86	0.6
Denmark	97	0.3	100	0.1	85	0.8
Finland	91	0.5	97	0.7	89	0.4
Germany	96	0.4	93	0.6	72	0.9
Greece	67	1.3	93	0.7	81	0.7
Hungary	75	0.8	98	0.5	84	0.7
Iceland	98	0.2	98	0.2	88	0.6
Ireland	87	0.7	89	0.9	84	0.7
Italy	87	0.7	86	1.4	62	0.7
Japan	79	0.9	89	1.5	55	1.2
Korea	98	0.2	85	1.4	88	0.6
Latvia	55	1.7	90	1.2	89	1.1
Liechtenstein	98	0.7	100	0.3	81	2.2
Mexico	51	1.9	83	1.6	85	1.1
New Zealand	91	0.5	98	0.3	92	0.4
OECD Average	85	NA[8]	92	0.2	83	0.2
Poland	64	1.1	91	1.2	80	0.9
Portugal	84	0.9	98	0.3	87	0.8
Russian Federation	37	2.0	76	1.7	70	1.2
Serbia	57	1.5	95	1.0	76	1.2
Slovak Republic	72	1.2	82	1.6	84	1.0
Sweden	98	0.2	97	0.6	91	0.5
Switzerland	97	0.7	94	0.7	70	0.7
Thailand	31	1.4	96	1.4	67	1.6
Tunisia	38	1.7	35	2	56	1.5
Turkey	37	2.2	54	3.5	73	1.5
United Kingdom	93	0.5	99	0.2	90	0.8
United States	90	0.7	97	0.4	90	0.5
Uruguay	63	1.3	72	1.9	84	0.9

Source: OECD PISA 2003 database

Table A2.7 Students' access to computers at school, at home or other places by state

State	At home		At school		At other places	
	%	S.E.	%	S.E.	%	S.E.
ACT	98	0.4	99	0.3	92	0.9
NSW	96	0.4	100	0.2	93	0.7
VIC	98	0.3	100	0.1	93	0.7
QLD	95	1.1	100	0.2	91	0.7
SA	97	0.8	100	0.1	95	0.6
WA	97	0.3	100	0.2	92	0.8
TAS	93	1.0	100	0.2	92	1.2
NT	93	0.9	99	0.5	89	1.7
Australia	97	0.2	100	0.1	93	0.3

Source: Australian PISA 2003 database

[7] Countries in italics are partner countries.
[8] Not available

Table A2.8 Indigenous and non-Indigenous students' access to computers at school, at home or other places

	At home		At school		At other places	
	%	S.E.	%	S.E.	%	S.E.
Indigenous						
Female	81	3	100	0.2	91	1.9
Male	83	5	100	0.2	93	1.9
Non-Indigenous						
Female	97	0	100	0.1	93	0.4
Male	97	1	99	0.1	93	0.4

Source: Australian PISA 2003 database

Table A2.9 Difference in mathematics performance with students' access to a computer at home

State	Adjusted difference	Observed difference
	Score points	
ACT	40	99
NSW	31	77
VIC	33	77
QLD	46	89
SA	40	70
WA	32	76
TAS	14	65
NT	69	91
Australia	35	79

Source: Australian PISA 2003 database

Table A3.1 Students frequently using a computer at home, school or other places by country[9]

Country	At home		At school		At other places	
	%	S.E.	%	S.E.	%	S.E.
Australia	87	0.5	59	1.0	14	0.6
Austria	81	0.8	53	2.0	16	0.7
Belgium	84	0.5	27	0.9	15	0.5
Canada	90	0.3	40	0.9	30	0.5
Czech Republic	70	0.9	41	1.6	19	0.6
Denmark	84	0.7	68	1.6	25	0.8
Finland	78	0.6	36	1.5	21	0.7
Germany	82	0.6	23	1.2	16	0.7
Greece	57	1.2	45	2.4	26	0.8
Hungary	67	1.0	80	1.2	26	0.6
Iceland	89	0.6	41	0.8	21	0.7
Ireland	61	0.9	24	1.4	9	0.5
Italy	76	0.8	51	2.0	19	0.7
Japan	37	1.2	26	2.3	2	0.3
Korea	86	0.6	28	1.9	21	0.9
Latvia	49	1.7	35	1.9	30	1.0
Liechtenstein	89	1.7	56	2.4	18	2.1
Mexico	48	1.8	54	1.9	28	0.4
New Zealand	79	0.7	43	1.2	17	0.7
OECD Average	74	0.2	44	0.3	21	0.2
Poland	59	1.1	44	1.8	25	0.7
Portugal	78	0.9	34	1.5	23	0.8
Russian Federation	43	2.0	43	2.1	36	1.2
Serbia	50	1.3	57	1.8	40	1.2
Slovak Republic	65	1.0	42	1.5	21	0.8
Sweden	89	0.5	48	1.5	20	0.7
Switzerland	81	0.6	30	1.4	13	0.7
Thailand	30	1.6	55	1.8	18	1.1
Tunisia	52	1.8	23	2.2	35	1.1
Turkey	48	2.1	46	3.5	43	1.2
United Kingdom	81	1.0	71	1.4	18	1.0
United States	83	0.7	43	1.4	23	0.7
Uruguay	57	1.4	27	1.8	38	1.0

Source: OECD PISA 2003 database

Table A3.2 Students frequently using a computer at home, school or other places by state

State	At home		At school		At other places	
	%	S.E.	%	S.E.	%	S.E.
ACT	94	0.7	59	2.2	13	1.2
NSW	87	0.8	47	2.0	14	0.7
VIC	89	1.1	62	1.8	14	1.0
QLD	85	1.0	64	2.8	17	1.8
SA	90	1.9	75	1.9	11	2.2
WA	86	0.7	61	2.7	15	0.8
TAS	83	1.7	82	2.1	14	1.6
NT	83	2.0	62	2.6	19	1.8

Source: Australian PISA 2003 database

[9] Countries in italics are partner countries.

Table A3.3 Indigenous and non-Indigenous students frequently using a computer at home and school by gender

	At home		At school	
	%	S.E.	%	S.E.
Indigenous				
Female	66	3.4	63	3.2
Male	73	5.5	70	5.4
Non-Indigenous				
Female	87	0.6	55	1.4
Male	89	0.6	63	1.2

Source: Australian PISA 2003 database

Table A3.4 Students frequently using a computer at home and school by geographic location by gender

Region	At home		At school	
	%	S.E.	%	S.E.
Metropolitan				
Female	88	0.4	52	0.9
Male	90	0.3	61	0.8
Provincial				
Female	82	0.6	62	1.1
Male	84	0.6	70	1.0
Remote				
Female	80	1.9	84	2.5
Male	85	3.5	88	2.2

Source: Australian PISA 2003 database

Table A3.5 Students frequently using a computer at home and school by socioeconomic background

Quartile	At home		At school	
	%	S.E.	%	S.E.
Lowest	80	0.9	60	1.3
Second	88	0.7	57	1.3
Third	90	0.6	57	1.4
Highest	92	0.6	59	1.4

Source: Australian PISA 2003 database

Table A3.6 Students' use of ICT for the Internet and entertainment by country[10]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	0.27	0.02	0.07	0.01	0.47	0.02	-0.71	0.01	1.48	0.02
Austria	0.03	0.02	-0.21	0.02	0.27	0.03	-0.96	0.02	1.21	0.03
Belgium	0.14	0.02	-0.13	0.02	0.4	0.02	-1.09	0.02	1.5	0.02
Canada	0.63	0.01	0.41	0.02	0.87	0.02	-0.48	0.01	2.05	0.02
Czech Republic	-0.08	0.02	-0.32	0.02	0.16	0.02	-1.03	0.02	1.09	0.03
Denmark	0.11	0.02	-0.29	0.02	0.51	0.03	-0.85	0.01	1.37	0.03
Finland	-0.13	0.01	-0.45	0.01	0.2	0.02	-0.96	0.01	0.95	0.02
Germany	-0.06	0.01	-0.4	0.02	0.3	0.02	-1.16	0.02	1.23	0.03
Greece	-0.11	0.02	-0.33	0.02	0.13	0.03	-1.22	0.02	1.09	0.02
Hungary	-0.24	0.02	-0.39	0.02	-0.11	0.03	-1.12	0.01	0.74	0.02
Iceland	0.26	0.02	-0.11	0.02	0.62	0.02	-0.69	0.01	1.5	0.03
Ireland	-0.43	0.02	-0.53	0.03	-0.32	0.03	-1.46	0.02	0.63	0.02
Italy	-0.16	0.02	-0.41	0.02	0.1	0.02	-1.35	0.02	1.07	0.02
Japan	-0.91	0.02	-0.96	0.02	-0.85	0.03	-1.87	0.02	0.06	0.02
Korea	0.34	0.02	0.18	0.02	0.45	0.02	-0.39	0.01	1.27	0.02
Latvia	-0.35	0.03	-0.6	0.03	-0.09	0.03	-1.44	0.02	0.82	0.02
Liechtenstein	0.29	0.06	-0.01	0.07	0.58	0.09	-0.76	0.05	1.61	0.09
Mexico	-0.21	0.04	-0.34	0.04	-0.08	0.05	-1.59	0.02	1.15	0.03
New Zealand	0.26	0.02	0.09	0.02	0.43	0.03	-0.76	0.01	1.51	0.03
OECD Average	0.00	0.00	-0.24	0.00	0.23	0.01	-1.05	0.00	1.22	0.01
Poland	-0.06	0.02	-0.33	0.03	0.2	0.03	-1.24	0.02	1.34	0.03
Portugal	0.07	0.02	-0.2	0.03	0.37	0.03	-1.08	0.01	1.36	0.03
Russian Federation	-0.81	0.04	-1.05	0.03	-0.58	0.05	-1.96	0.02	0.52	0.03
Serbia	-0.48	0.03	-0.74	0.03	-0.22	0.04	-1.76	0.02	1.06	0.03
Slovak Republic	-0.43	0.02	-0.61	0.02	-0.25	0.03	-1.39	0.01	0.61	0.03
Sweden	0.28	0.02	-0.1	0.02	0.65	0.03	-0.7	0.01	1.56	0.03
Switzerland	-0.06	0.02	-0.38	0.02	0.24	0.03	-1.14	0.02	1.19	0.02
Thailand	-0.64	0.03	-0.72	0.04	-0.54	0.04	-1.87	0.03	0.56	0.02
Tunisia	-0.47	0.04	-0.59	0.04	-0.36	0.04	-1.8	0.03	0.75	0.03
Turkey	-0.23	0.03	-0.58	0.03	-0.02	0.03	-1.57	0.04	1.07	0.04
United Kingdom	0.3	0.03	0.06	0.03	0.55	0.04	-0.79	0.02	1.63	0.03
United States	0.46	0.02	0.35	0.02	0.58	0.03	-0.63	0.01	1.86	0.03
Uruguay	-0.31	0.02	-0.47	0.03	-0.14	0.03	-1.68	0.02	1.05	0.02

Source: OECD PISA 2003 database

Table A3.7 Students' use of ICT for the Internet and entertainment by state

State	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.34	0.04	0.13	0.03	0.58	0.05	-0.67	0.03	1.46	0.06
NSW	0.25	0.03	0.07	0.03	0.44	0.04	-0.73	0.02	1.45	0.04
VIC	0.30	0.04	0.12	0.04	0.48	0.04	-0.71	0.02	1.45	0.03
QLD	0.30	0.05	0.02	0.04	0.53	0.07	-0.75	0.00	1.54	0.04
SA	0.21	0.04	0.01	0.04	0.37	0.06	-0.59	0.05	1.51	0.04
WA	0.24	0.03	0.05	0.03	0.45	0.04	-0.69	0.02	1.45	0.06
TAS	0.30	0.04	0.04	0.03	0.53	0.06	-0.65	0.02	1.58	0.09
NT	0.29	0.04	0.12	0.05	0.49	0.08	-0.69	0.02	1.53	0.09
Australia	0.27	0.02	0.07	0.01	0.47	0.02	-0.71	0.01	1.48	0.02

Source: Australian PISA 2003 database

[10] Countries in italics are partner countries.

Table A3.8 Indigenous and non-Indigenous students' use of ICT for the Internet and entertainment

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	0.25	0.04	0.14	0.06	0.35	0.05	-0.71	0.03	1.60	0.07
Non-Indigenous	0.27	0.02	0.06	0.01	0.47	0.02	-0.70	0.01	1.48	0.02
Australia	0.27	0.02	0.07	0.01	0.47	0.02	-0.71	0.01	1.48	0.02

Source: Australian PISA 2003 database

Table A3.9 Students' use of ICT for the Internet and entertainment by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	0.29	0.01	0.08	0.01	0.49	0.01	-0.70	0.01	1.49	0.01
Provincial	0.21	0.02	0.02	0.02	0.40	0.04	-0.72	0.01	1.45	0.02
Remote	0.46	0.08	0.16	0.05	0.78	0.08	-0.59	0.02	1.62	0.02
Australia	0.27	0.02	0.07	0.01	0.47	0.02	-0.71	0.01	1.48	0.02

Source: Australian PISA 2003 database

Table A3.10 Students' use of ICT for the Internet and entertainment by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	0.20	0.02	0.02	0.03	0.39	0.03	-0.76	0.01	1.45	0.03
Second	0.28	0.02	0.07	0.03	0.51	0.03	-0.71	0.02	1.47	0.03
Third	0.29	0.02	0.12	0.02	0.47	0.03	-0.69	0.02	1.51	0.03
Highest	0.29	0.02	0.09	0.02	0.48	0.03	-0.67	0.02	1.44	0.04

Source: Australian PISA 2003 database

Table A3.11 Students' use of ICT for programs and software by country[11]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	0.23	0.01	0.14	0.02	0.33	0.01	-0.74	0.01	1.22	0.01
Austria	0.13	0.02	0.06	0.02	0.2	0.03	-0.9	0.02	1.15	0.02
Belgium	-0.19	0.01	-0.31	0.02	-0.07	0.02	-1.38	0.02	0.93	0.02
Canada	0.15	0.01	0.05	0.02	0.25	0.02	-0.99	0.01	1.29	0.02
Czech Republic	0.08	0.02	-0.02	0.02	0.18	0.03	-1.01	0.02	1.11	0.02
Denmark	0.17	0.02	-0.07	0.02	0.41	0.03	-0.78	0.02	1.22	0.02
Finland	-0.28	0.01	-0.42	0.02	-0.13	0.02	-1.19	0.01	0.64	0.02
Germany	-0.03	0.02	-0.19	0.02	0.12	0.02	-1.19	0.02	1.07	0.02
Greece	0.11	0.02	-0.03	0.03	0.26	0.03	-1.18	0.02	1.38	0.03
Hungary	0.03	0.02	-0.04	0.02	0.09	0.02	-1.00	0.03	1.01	0.02
Iceland	0.10	0.02	-0.07	0.02	0.27	0.03	-0.93	0.02	1.18	0.03
Ireland	-0.35	0.02	-0.26	0.02	-0.43	0.03	-1.61	0.02	0.81	0.02
Italy	0.23	0.02	0.08	0.02	0.39	0.03	-0.97	0.02	1.48	0.03
Japan	-1.03	0.03	-0.97	0.03	-1.10	0.04	-2.27	0.02	0.01	0.02
Korea	-0.33	0.02	-0.30	0.02	-0.36	0.02	-1.39	0.02	0.60	0.01
Latvia	-0.23	0.03	-0.42	0.03	-0.02	0.04	-1.53	0.03	0.97	0.02
Liechtenstein	0.13	0.05	-0.13	0.06	0.38	0.07	-0.89	0.06	1.22	0.08
Mexico	0.18	0.03	0.09	0.03	0.29	0.03	-1.29	0.02	1.54	0.02
New Zealand	0.16	0.02	0.13	0.02	0.18	0.02	-0.94	0.02	1.28	0.02
OECD Average	0.00	0.00	-0.09	0.00	0.11	0.01	-1.15	0.00	1.14	0.00
Poland	0.22	0.02	0.02	0.03	0.43	0.03	-1.22	0.03	1.66	0.03
Portugal	0.23	0.02	0.11	0.02	0.36	0.03	-0.94	0.02	1.32	0.02
Russian Federation	-0.30	0.04	-0.41	0.04	-0.19	0.05	-1.82	0.02	1.09	0.02
Serbia	0.07	0.03	0.00	0.03	0.14	0.03	-1.30	0.02	1.51	0.04
Slovak Republic	0.02	0.02	-0.12	0.02	0.15	0.03	-1.28	0.02	1.27	0.03
Sweden	-0.17	0.01	-0.36	0.02	0.02	0.02	-1.16	0.01	0.83	0.02
Switzerland	-0.15	0.02	-0.34	0.02	0.03	0.03	-1.31	0.02	0.97	0.03
Thailand	-0.05	0.03	-0.03	0.04	-0.07	0.04	-1.30	0.04	1.07	0.02
Tunisia	0.00	0.04	-0.13	0.05	0.12	0.06	-1.84	0.03	1.56	0.04
Turkey	0.10	0.04	-0.09	0.06	0.22	0.05	-1.62	0.04	1.66	0.04
United Kingdom	0.32	0.03	0.31	0.03	0.33	0.03	-0.75	0.02	1.37	0.03
United States	0.33	0.02	0.31	0.02	0.35	0.02	-0.82	0.02	1.55	0.03
Uruguay	0.24	0.03	0.16	0.04	0.33	0.03	-1.48	0.03	1.79	0.02

Source: OECD PISA 2003 database

Table A3.12 Students' use of ICT for programs and software by states

States	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.32	0.03	0.20	0.04	0.46	0.05	-0.68	0.04	1.29	0.05
NSW	0.19	0.02	0.11	0.03	0.27	0.03	-0.74	0.02	1.26	0.03
VIC	0.24	0.03	0.14	0.03	0.34	0.03	-0.71	0.02	1.20	0.03
QLD	0.30	0.03	0.18	0.04	0.40	0.04	-0.77	0.03	1.25	0.03
SA	0.24	0.03	0.14	0.04	0.31	0.05	-0.66	0.04	1.16	0.05
WA	0.19	0.03	0.10	0.03	0.28	0.04	-0.73	0.03	1.20	0.06
TAS	0.30	0.02	0.19	0.04	0.39	0.03	-0.72	0.03	1.26	0.04
NT	0.39	0.04	0.25	0.05	0.56	0.07	-0.63	0.05	1.43	0.07
Australia	0.23	0.01	0.14	0.02	0.33	0.01	-0.74	0.01	1.22	0.01

Source: Australian PISA 2003 database

[11] Countries in italics are partner countries.

Table A3.13 Indigenous and non-Indigenous students' use of ICT for programs and software

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	0.48	0.07	0.36	0.06	0.58	0.11	-0.80	0.04	1.36	0.07
Non-Indigenous	0.23	0.01	0.13	0.02	0.32	0.01	-0.73	0.01	1.23	0.01
Australia	0.23	0.01	0.14	0.02	0.33	0.01	-0.74	0.01	1.22	0.01

Source: Australian PISA 2003 database

Table A3.14 Students' use of ICT for programs and software by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	0.23	0.01	0.13	0.01	0.32	0.01	-0.73	0.01	1.24	0.01
Provincial	0.24	0.01	0.15	0.02	0.33	0.02	-0.74	0.01	1.21	0.01
Remote	0.44	0.04	0.31	0.04	0.57	0.03	-0.61	0.03	1.26	0.07
Australia	0.23	0.01	0.14	0.02	0.33	0.01	-0.74	0.01	1.22	0.01

Source: Australian PISA 2003 database

Table A3.15 Students' use of ICT for programs and software by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	0.24	0.02	0.14	0.03	0.34	0.03	-0.78	0.03	1.26	0.02
Second	0.21	0.02	0.11	0.02	0.33	0.02	-0.78	0.02	1.22	0.02
Third	0.23	0.02	0.14	0.02	0.32	0.03	-0.69	0.02	1.24	0.03
Highest	0.24	0.02	0.16	0.03	0.32	0.02	-0.66	0.02	1.20	0.02

Source: Australian PISA 2003 database

Table A4.1 Students' attitudes towards computers by country[12]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	-0.10	0.01	-0.26	0.02	0.07	0.02	-1.23	0.01	1.15	0.01
Austria	0.31	0.02	0.18	0.03	0.45	0.02	-1.08	0.03	1.35	0.00
Belgium	0.13	0.01	-0.07	0.02	0.31	0.02	-1.18	0.02	1.34	0.00
Canada	0.15	0.01	0.03	0.02	0.28	0.01	-1.09	0.01	1.34	0.00
Czech Republic	0.01	0.02	-0.29	0.02	0.29	0.02	-1.13	0.02	1.21	0.01
Denmark	-0.24	0.02	-0.67	0.03	0.19	0.03	-1.58	0.02	1.13	0.01
Finland	-0.38	0.02	-0.63	0.02	-0.12	0.02	-1.54	0.02	0.93	0.01
Germany	0.25	0.02	-0.03	0.02	0.54	0.02	-1.16	0.02	1.35	0.00
Greece	0.28	0.01	-0.09	0.02	0.26	0.02	-1.10	0.02	1.27	0.01
Hungary	-0.20	0.02	-0.49	0.03	0.06	0.02	-1.49	0.02	1.11	0.01
Iceland	0.15	0.02	-0.15	0.02	0.43	0.03	-1.15	0.02	1.34	0.00
Ireland	-0.32	0.01	-0.39	0.02	-0.26	0.02	-1.51	0.02	0.96	0.01
Italy	-0.07	0.01	-0.24	0.02	0.11	0.02	-1.18	0.01	1.13	0.01
Japan	-0.41	0.03	-0.41	0.03	-0.42	0.04	-1.97	0.03	1.15	0.01
Korea	0.25	0.02	0.11	0.02	0.34	0.03	-0.89	0.01	1.35	0.00
Latvia	-0.17	0.02	-0.35	0.03	0.03	0.03	-1.27	0.02	1.09	0.01
Liechtenstein	0.26	0.06	0.05	0.10	0.46	0.07	-1.10	0.08	1.34	0.00
Mexico	-0.13	0.02	-0.18	0.02	-0.08	0.02	-1.21	0.02	1.05	0.01
New Zealand	-0.10	0.02	-0.23	0.02	0.02	0.02	-1.26	0.02	1.15	0.01
OECD Average	0.00	0.00	-0.19	0.00	0.19	0.00	-1.24	0.00	1.22	0.00
Poland	0.26	0.02	0.05	0.02	0.48	0.02	-0.91	0.02	1.35	0.00
Portugal	0.27	0.02	0.06	0.03	0.50	0.02	-0.89	0.02	1.34	0.00
Russian Federation	0.12	0.02	-0.01	0.03	0.23	0.03	-1.12	0.02	1.34	0.00
Serbia	0.50	0.03	0.37	0.04	0.63	0.04	-0.85	0.03	1.35	0.00
Slovak Republic	-0.01	0.02	-0.25	0.02	0.22	0.03	-1.14	0.02	1.15	0.01
Sweden	-0.10	0.02	-0.39	0.02	0.20	0.02	-1.43	0.02	1.19	0.01
Switzerland	-0.02	0.02	-0.28	0.03	0.23	0.03	-1.49	0.02	1.30	0.01
Thailand	0.02	0.02	0.07	0.02	-0.03	0.02	-0.85	0.02	1.07	0.01
Tunisia	0.31	0.02	0.36	0.03	0.27	0.03	-0.93	0.03	1.35	0.00
Turkey	0.14	0.03	-0.04	0.04	0.24	0.03	-1.16	0.03	1.34	0.00
United Kingdom	0.07	0.02	-0.09	0.03	0.23	0.03	-1.12	0.02	1.27	0.01
United States	0.07	0.01	0.02	0.02	0.12	0.02	-1.08	0.01	1.27	0.01
Uruguay	0.06	0.02	-0.03	0.02	0.15	0.02	-1.05	0.02	1.22	0.01

Source: OECD PISA 2003 database

Table A4.2 Students' attitudes towards computers by state

States	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.00	0.03	-0.15	0.04	0.17	0.05	-1.25	0.04	1.17	0.02
NSW	-0.09	0.02	-0.22	0.03	0.06	0.03	-1.21	0.02	1.16	0.01
VIC	-0.15	0.03	-0.30	0.03	0.00	0.03	-1.24	0.02	1.14	0.02
QLD	-0.01	0.03	-0.21	0.04	0.15	0.02	-1.23	0.03	1.17	0.01
SA	-0.05	0.04	-0.33	0.04	0.18	0.04	-1.14	0.02	1.19	0.02
WA	-0.20	0.02	-0.38	0.04	-0.01	0.03	-1.25	0.03	1.13	0.02
TAS	-0.04	0.04	-0.23	0.04	0.13	0.05	-1.21	0.03	1.17	0.02
NT	-0.04	0.05	-0.24	0.05	0.19	0.09	-1.22	0.05	1.16	0.03
Australia	-0.10	0.01	-0.26	0.02	0.07	0.02	-1.23	0.01	1.15	0.01

Source: Australian PISA 2003 database

[12] Countries in italics are partner countries.

Table A4.3 Indigenous and non-Indigenous students' attitudes towards computers

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	-0.16	0.04	-0.29	0.06	-0.02	0.06	-1.22	0.04	1.17	0.03
Non-Indigenous	-0.09	0.01	-0.26	0.02	0.07	0.02	-1.22	0.01	1.16	0.01
Australia	-0.10	0.01	-0.26	0.02	0.07	0.02	-1.23	0.01	1.15	0.01

Source: Australian PISA 2003 database

Table A4.4 Students' attitudes towards computers by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	-0.08	0.01	-0.26	0.01	0.09	0.01	-1.21	0.01	1.15	0.00
Provincial	-0.13	0.01	-0.29	0.02	0.02	0.01	-1.24	0.01	1.16	0.01
Remote	-0.11	0.08	-0.08	0.07	0.32	0.07	-1.08	0.02	1.24	0.03
Australia	-0.10	0.01	-0.26	0.02	0.07	0.02	-1.23	0.01	1.15	0.01

Source: Australian PISA 2003 database

Table A4.5 Students' attitudes towards computers by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	-0.12	0.02	-0.27	0.03	0.03	0.03	-1.23	0.02	1.16	0.02
Second	-0.08	0.02	-0.24	0.03	0.08	0.03	-1.21	0.02	1.15	0.01
Third	-0.10	0.02	-0.24	0.03	0.05	0.03	-1.23	0.02	1.16	0.01
Highest	-0.10	0.02	-0.28	0.03	0.07	0.03	-1.22	0.02	1.14	0.01

Source: Australian PISA 2003 database

Table A4.6 Students' confidence in performing routine tasks by country[13]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	0.39	0.01	0.32	0.01	0.46	0.01	-0.70	0.02	0.82	0.00
Austria	0.25	0.02	0.22	0.02	0.27	0.03	-1.02	0.03	0.82	0.00
Belgium	0.11	0.02	-0.02	0.02	0.24	0.02	-1.22	0.02	0.82	0.00
Canada	0.33	0.01	0.23	0.01	0.44	0.01	-0.78	0.01	0.82	0.00
Czech Republic	0.20	0.02	-0.02	0.03	0.42	0.02	-1.08	0.02	0.82	0.00
Denmark	0.15	0.02	-0.15	0.02	0.47	0.02	-1.09	0.02	0.82	0.00
Finland	0.08	0.01	-0.30	0.02	0.46	0.02	-1.26	0.02	0.82	0.00
Germany	0.15	0.02	-0.07	0.03	0.38	0.02	-1.14	0.02	0.82	0.00
Greece	-0.38	0.03	-0.55	0.03	-0.21	0.03	-1.77	0.01	0.81	0.00
Hungary	-0.12	0.02	-0.38	0.03	0.12	0.03	-1.55	0.02	0.82	0.00
Iceland	0.21	0.02	-0.09	0.02	0.49	0.02	-1.13	0.02	0.82	0.00
Ireland	-0.03	0.02	-0.06	0.03	-0.01	0.02	-1.33	0.02	0.82	0.00
Italy	-0.20	0.02	-0.33	0.03	-0.06	0.03	-1.59	0.02	0.81	0.00
Japan	-0.80	0.03	-0.87	0.03	-0.73	0.05	-2.31	0.04	0.71	0.01
Korea	0.08	0.01	-0.07	0.02	0.19	0.02	-1.03	0.01	0.82	0.00
Latvia	-0.33	0.03	-0.60	0.04	-0.05	0.03	-1.81	0.02	0.81	0.00
Liechtenstein	0.24	0.05	0.06	0.07	0.42	0.06	-0.99	0.07	0.82	0.00
Mexico	-0.68	0.05	-0.74	0.05	-0.61	0.05	-2.23	0.03	0.81	0.00
New Zealand	0.20	0.01	0.11	0.02	0.29	0.02	-1.02	0.02	0.82	0.00
OECD Average	0.00	0.00	-0.16	0.01	0.14	0.01	-1.34	0.00	0.81	0.00
Poland	0.04	0.03	-0.07	0.03	0.16	0.03	-1.54	0.02	0.82	0.00
Portugal	0.21	0.02	0.12	0.03	0.30	0.03	-1.18	0.02	0.82	0.00
Russian Federation	-0.57	0.05	-0.75	0.05	-0.41	0.07	-2.26	0.04	0.81	0.00
Serbia	-0.60	0.03	-0.72	0.04	-0.48	0.04	-2.04	0.03	0.81	0.00
Slovak Republic	-0.36	0.03	-0.64	0.03	-0.10	0.04	-1.95	0.02	0.81	0.00
Sweden	0.21	0.01	-0.05	0.02	0.48	0.01	-1.05	0.02	0.82	0.00
Switzerland	-0.02	0.02	-0.26	0.03	0.20	0.02	-1.42	0.02	0.82	0.00
Thailand	-0.91	0.04	-0.88	0.04	-0.95	0.05	-2.19	0.03	0.54	0.02
Tunisia	-1.44	0.06	-1.57	0.06	-1.32	0.06	-3.00	0.04	0.37	0.03
Turkey	-0.74	0.05	-0.84	0.05	-0.68	0.06	-2.26	0.03	0.81	0.00
United Kingdom	0.25	0.02	0.16	0.03	0.34	0.02	-0.92	0.03	0.82	0.00
United States	0.26	0.02	0.25	0.02	0.28	0.02	-0.99	0.03	0.82	0.00
Uruguay	-0.23	0.03	-0.27	0.03	-0.18	0.04	-1.86	0.03	0.82	0.00

Source: OECD PISA 2003 database

Table A4.7 Students' confidence in performing routine tasks by state

States	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.43	0.02	0.42	0.04	0.45	0.04	-0.71	0.05	0.81	0.00
NSW	0.36	0.02	0.30	0.03	0.43	0.03	-0.74	0.03	0.81	0.00
VIC	0.41	0.02	0.35	0.03	0.47	0.02	-0.67	0.03	0.81	0.00
QLD	0.37	0.02	0.30	0.04	0.43	0.03	-0.79	0.04	0.81	0.00
SA	0.48	0.03	0.39	0.04	0.56	0.04	-0.59	0.05	0.81	0.00
WA	0.38	0.02	0.30	0.03	0.45	0.03	-0.69	0.03	0.81	0.00
TAS	0.41	0.03	0.32	0.03	0.48	0.04	-0.73	0.05	0.81	0.00
NT	0.31	0.04	0.29	0.06	0.34	0.06	-0.77	0.07	0.81	0.00
Australia	0.39	0.01	0.32	0.01	0.46	0.01	-0.70	0.02	0.82	0.00

Source: Australian PISA 2003 database

[13] Countries in italics are partner countries.

Table A4.8 Indigenous and non-Indigenous students' confidence in performing routine tasks

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	0.04	0.06	0.13	0.07	-0.03	0.09	-1.06	0.09	0.81	0.00
Non-Indigenous	0.40	0.01	0.33	0.01	0.47	0.01	-0.70	0.02	0.81	0.00
Australia	0.39	0.01	0.32	0.01	0.46	0.01	-0.70	0.02	0.82	0.00

Source: Australian PISA 2003 database

Table A4.9 Students' confidence in performing routine tasks by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	0.40	0.01	0.33	0.01	0.47	0.01	-0.69	0.01	0.81	0.00
Provincial	0.36	0.01	0.29	0.01	0.42	0.01	-0.77	0.02	0.81	0.00
Remote	0.31	0.04	0.35	0.05	0.25	0.04	-0.94	0.04	0.81	0.00
Australia	0.39	0.01	0.32	0.01	0.46	0.01	-0.70	0.02	0.82	0.00

Source: Australian PISA 2003 database

Table A4.10 Students' confidence in performing routine tasks by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	0.30	0.02	0.26	0.02	0.34	0.03	-0.78	0.03	0.81	0.00
Second	0.37	0.02	0.30	0.03	0.45	0.02	-0.72	0.03	0.81	0.00
Third	0.42	0.01	0.36	0.02	0.49	0.02	-0.63	0.02	0.81	0.00
Highest	0.47	0.01	0.42	0.02	0.53	0.02	-0.65	0.03	0.81	0.00

Source: Australian PISA 2003 database

Table A4.11 Students' confidence in performing Internet tasks by country[14]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	0.41	0.01	0.32	0.02	0.49	0.01	-0.69	0.01	0.88	0.00
Austria	0.24	0.02	0.20	0.02	0.29	0.03	-0.93	0.03	0.88	0.00
Belgium	0.23	0.02	0.13	0.02	0.33	0.03	-1.09	0.02	0.88	0.00
Canada	0.57	0.01	0.52	0.01	0.62	0.01	-0.33	0.01	0.88	0.00
Czech Republic	0.06	0.02	-0.18	0.02	0.30	0.02	-1.18	0.02	0.88	0.00
Denmark	0.11	0.02	-0.24	0.02	0.47	0.02	-1.07	0.01	0.88	0.00
Finland	0.06	0.01	-0.33	0.02	0.45	0.01	-1.08	0.01	0.88	0.00
Germany	0.13	0.02	-0.07	0.02	0.35	0.02	-1.15	0.02	0.88	0.00
Greece	-0.45	0.03	-0.65	0.03	-0.23	0.03	-1.73	0.02	0.87	0.00
Hungary	-0.44	0.02	-0.65	0.03	-0.25	0.03	-1.73	0.02	0.87	0.00
Iceland	0.41	0.01	0.21	0.02	0.60	0.02	-0.66	0.02	0.88	0.00
Ireland	-0.37	0.02	-0.47	0.03	-0.27	0.03	-1.62	0.02	0.88	0.00
Italy	-0.39	0.02	-0.58	0.03	-0.18	0.03	-1.82	0.02	0.88	0.00
Japan	-0.71	0.03	-0.75	0.03	-0.67	0.04	-2.21	0.03	0.76	0.01
Korea	0.77	0.01	0.76	0.01	0.78	0.01	0.44	0.02	0.89	0.00
Latvia	-0.53	0.03	-0.80	0.04	-0.25	0.04	-1.87	0.02	0.83	0.01
Liechtenstein	0.48	0.04	0.37	0.06	0.58	0.05	-0.50	0.06	0.88	0.00
Mexico	-0.54	0.04	-0.61	0.05	-0.47	0.05	-2.05	0.04	0.87	0.00
New Zealand	0.31	0.01	0.22	0.02	0.41	0.02	-0.86	0.02	0.88	0.00
OECD Average	0.00	0.00	-0.17	0.01	0.15	0.01	-1.23	0.00	0.87	0.00
Poland	-0.17	0.03	-0.38	0.03	0.03	0.03	-1.57	0.02	0.88	0.00
Portugal	-0.22	0.03	-0.46	0.04	0.05	0.03	-1.62	0.02	0.88	0.00
Russian Federation	-1.27	0.05	-1.55	0.05	-1.00	0.07	-2.90	0.04	0.52	0.02
Serbia	-0.93	0.03	-1.12	0.04	-0.72	0.04	-2.47	0.03	0.73	0.01
Slovak Republic	-0.81	0.03	-1.06	0.03	-0.59	0.04	-2.29	0.03	0.68	0.01
Sweden	0.39	0.01	0.20	0.02	0.57	0.01	-0.68	0.02	0.88	0.00
Switzerland	0.09	0.02	-0.09	0.02	0.26	0.03	-1.18	0.03	0.88	0.00
Thailand	-1.36	0.04	-1.39	0.05	-1.33	0.05	-2.96	0.03	0.09	0.02
Tunisia	-1.38	0.04	-1.53	0.05	-1.25	0.05	-2.93	0.04	0.15	0.03
Turkey	-0.55	0.04	-0.76	0.05	-0.42	0.05	-2.06	0.04	0.88	0.00
United Kingdom	0.28	0.02	0.15	0.03	0.40	0.02	-0.88	0.02	0.88	0.00
United States	0.39	0.01	0.37	0.02	0.42	0.02	-0.72	0.02	0.88	0.00
Uruguay	-0.46	0.03	-0.59	0.03	-0.33	0.04	-2.08	0.03	0.88	0.00

Source: OECD PISA 2003 database

Table A4.12 Students' confidence in performing Internet tasks by state

States	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.46	0.03	0.38	0.03	0.55	0.04	-0.65	0.04	0.87	0.00
NSW	0.37	0.02	0.29	0.04	0.46	0.03	-0.73	0.03	0.87	0.00
VIC	0.45	0.03	0.37	0.04	0.52	0.03	-0.64	0.03	0.87	0.00
QLD	0.40	0.03	0.30	0.04	0.48	0.03	-0.75	0.04	0.87	0.00
SA	0.44	0.03	0.31	0.04	0.55	0.03	-0.56	0.06	0.87	0.00
WA	0.38	0.02	0.30	0.03	0.48	0.03	-0.72	0.03	0.87	0.00
TAS	0.45	0.03	0.39	0.03	0.51	0.04	-0.65	0.04	0.87	0.00
NT	0.40	0.04	0.35	0.05	0.45	0.06	-0.69	0.06	0.87	0.00
Australia	0.41	0.01	0.32	0.02	0.49	0.01	-0.69	0.01	0.88	0.00

Source: Australian PISA 2003 database

[14] Countries in italics are partner countries.

Table A4.13 Indigenous and non-Indigenous students' confidence in performing Internet tasks

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	-0.03	0.13	0.05	0.07	-0.10	0.22	-0.99	0.10	0.87	0.00
Non-Indigenous	0.41	0.01	0.32	0.01	0.50	0.01	-0.68	0.02	0.87	0.00
Australia	0.41	0.01	0.32	0.02	0.49	0.01	-0.69	0.01	0.88	0.00

Source: Australian PISA 2003 database

Table A4.14 Students' confidence in performing Internet tasks by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	0.45	0.01	0.36	0.01	0.53	0.01	-0.66	0.01	0.87	0.00
Provincial	0.29	0.01	0.20	0.02	0.38	0.01	-0.76	0.01	0.87	0.00
Remote	0.33	0.07	0.30	0.08	0.35	0.07	-0.83	0.03	0.87	0.00
Australia	0.41	0.01	0.32	0.02	0.49	0.01	-0.69	0.01	0.88	0.00

Source: Australian PISA 2003 database

Table A4.15 Students' confidence in performing Internet tasks by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	0.30	0.02	0.22	0.03	0.38	0.03	-0.78	0.02	0.87	0.00
Second	0.41	0.02	0.33	0.03	0.48	0.02	-0.69	0.02	0.87	0.00
Third	0.46	0.01	0.38	0.02	0.54	0.02	-0.63	0.02	0.87	0.00
Highest	0.49	0.02	0.42	0.02	0.57	0.02	-0.58	0.03	0.87	0.00

Source: Australian PISA 2003 database

Table A4.16 Students' confidence in performing high-level tasks by country[15]

Country	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Australia	0.42	0.01	0.19	0.02	0.65	0.02	-0.67	0.02	1.68	0.01
Austria	0.28	0.02	0.08	0.02	0.49	0.03	-0.82	0.02	1.52	0.02
Belgium	0.04	0.02	-0.20	0.01	0.27	0.02	-1.06	0.02	1.26	0.01
Canada	0.35	0.01	0.10	0.01	0.62	0.01	-0.78	0.01	1.67	0.01
Czech Republic	0.05	0.03	-0.30	0.02	0.39	0.03	-1.09	0.02	1.33	0.02
Denmark	0.06	0.02	-0.37	0.02	0.51	0.02	-1.10	0.02	1.37	0.02
Finland	-0.04	0.01	-0.49	0.02	0.41	0.02	-1.16	0.02	1.23	0.02
Germany	0.08	0.02	-0.26	0.02	0.43	0.03	-1.06	0.02	1.41	0.02
Greece	-0.22	0.02	-0.45	0.02	0.04	0.03	-1.35	0.02	1.06	0.02
Hungary	-0.33	0.02	-0.59	0.02	-0.11	0.02	-1.44	0.02	0.78	0.02
Iceland	0.14	0.02	-0.31	0.02	0.57	0.02	-1.01	0.02	1.51	0.02
Ireland	-0.24	0.02	-0.30	0.02	-0.19	0.03	-1.38	0.02	1.00	0.02
Italy	-0.15	0.02	-0.38	0.02	0.09	0.03	-1.27	0.01	1.09	0.02
Japan	-0.71	0.02	-0.76	0.02	-0.67	0.03	-1.93	0.03	0.39	0.02
Korea	-0.09	0.01	-0.21	0.02	-0.01	0.02	-1.03	0.02	0.86	0.02
Latvia	-0.35	0.02	-0.66	0.03	-0.02	0.03	-1.43	0.02	0.85	0.02
Liechtenstein	0.47	0.05	0.07	0.06	0.85	0.07	-0.72	0.07	1.87	0.04
Mexico	-0.13	0.03	-0.21	0.03	-0.05	0.04	-1.34	0.03	1.02	0.02
New Zealand	0.22	0.02	0.05	0.02	0.40	0.03	-0.88	0.02	1.48	0.02
OECD Average	0.00	0.00	-0.24	0.00	0.25	0.01	-1.14	0.00	1.25	0.00
Poland	0.20	0.02	-0.11	0.03	0.51	0.03	-0.99	0.02	1.57	0.02
Portugal	0.12	0.02	-0.13	0.02	0.39	0.02	-1.00	0.02	1.33	0.02
Russian Federation	-0.49	0.04	-0.72	0.04	-0.27	0.06	-1.89	0.03	0.96	0.02
Serbia	-0.43	0.02	-0.61	0.02	-0.24	0.03	-1.64	0.03	0.82	0.03
Slovak Republic	-0.50	0.03	-0.78	0.03	-0.25	0.03	-1.73	0.03	0.77	0.02
Sweden	0.00	0.02	-0.36	0.02	0.37	0.03	-1.13	0.01	1.30	0.02
Switzerland	-0.03	0.02	-0.39	0.02	0.30	0.02	-1.20	0.02	1.24	0.01
Thailand	-0.68	0.03	-0.67	0.04	-0.69	0.04	-1.98	0.04	0.40	0.02
Tunisia	-0.58	0.04	-0.78	0.04	-0.39	0.05	-2.05	0.04	0.82	0.03
Turkey	-0.16	0.02	-0.29	0.03	-0.08	0.03	-1.45	0.03	1.05	0.03
United Kingdom	0.31	0.03	0.09	0.03	0.53	0.03	-0.84	0.02	1.58	0.02
United States	0.43	0.02	0.32	0.02	0.55	0.02	-0.75	0.01	1.79	0.02
Uruguay	-0.07	0.02	-0.19	0.02	0.05	0.03	-1.30	0.03	1.19	0.02

Source: OECD PISA 2003 database

Table A4.17 Students' confidence in performing high-level tasks by state

States	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
ACT	0.46	0.03	0.28	0.08	0.66	0.06	-0.65	0.03	1.69	0.03
NSW	0.35	0.03	0.12	0.04	0.59	0.04	-0.70	0.03	1.68	0.02
VIC	0.46	0.03	0.25	0.04	0.67	0.03	-0.64	0.02	1.67	0.02
QLD	0.51	0.00	0.28	0.04	0.71	0.03	-0.67	0.04	1.72	0.02
SA	0.45	0.04	0.16	0.04	0.70	0.04	-0.65	0.04	1.65	0.04
WA	0.37	0.03	0.16	0.04	0.61	0.04	-0.69	0.03	1.68	0.04
TAS	0.46	0.04	0.18	0.05	0.71	0.06	-0.66	0.04	1.71	0.02
NT	0.36	0.05	0.17	0.06	0.59	0.08	-0.72	0.05	1.76	0.06
Australia	0.42	0.01	0.19	0.02	0.65	0.02	-0.67	0.02	1.68	0.01

Source: Australian PISA 2003 database

[15] Countries in italics are partner countries.

Table A4.18 Indigenous and non-Indigenous students' confidence in performing high-level tasks

	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Indigenous	0.24	0.06	0.22	0.07	0.26	0.09	-0.72	0.06	1.67	0.06
Non-Indigenous	0.43	0.01	0.19	0.02	0.66	0.02	-0.68	0.02	1.68	0.01
Australia	0.42	0.01	0.19	0.02	0.65	0.02	-0.67	0.02	1.68	0.01

Source: Australian PISA 2003 database

Table A4.19 Students' confidence in performing high-level tasks by geographic location

Region	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Metropolitan	0.43	0.0	0.19	0.0	0.66	0.0	-0.67	0.0	1.69	0.0
Provincial	0.41	0.0	0.2	0.0	0.63	0.0	-0.69	0.0	1.67	0.0
Remote	0.45	0.1	0.23	0.1	0.69	0.1	-0.7	0.0	1.69	0.0
Australia	0.42	0.01	0.19	0.02	0.65	0.02	-0.67	0.02	1.68	0.01

Source: Australian PISA 2003 database

Table A4.20 Students' confidence in performing high-level tasks by socioeconomic background

Quartile	All students		Females		Males		Lowest quarter		Highest quarter	
	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.	Mean index	S.E.
Lowest	0.37	0.02	0.18	0.03	0.56	0.03	-0.72	0.02	1.66	0.02
Second	0.43	0.02	0.23	0.03	0.64	0.03	-0.69	0.02	1.68	0.02
Third	0.44	0.02	0.21	0.03	0.68	0.03	-0.64	0.02	1.70	0.02
Highest	0.46	0.02	0.21	0.03	0.69	0.03	-0.63	0.02	1.67	0.02

Source: Australian PISA 2003 database