Chapter 6

Skills and the Nature of the Workplace

Summary

This chapter explores the relationship between different types of jobs, job tasks, and skills. First, the skill distributions of the workforce in technology- and knowledge-intensive industries are compared to other sectors. Similarly, the skills of workers in knowledge-intensive occupations are compared to those in other types of occupations. Second, the relationships between literacy and numeracy engagement at work and the skills measured by ALL are considered. Third, it is shown that the extent of engagement in literacy and numeracy activities is strongly linked to the types of occupations in which adults are employed. The last section looks at the match and mismatch between the skills of workers and the extent to which they engage in job tasks that require those skills.

Table of Contents

Summary 129

Chapter 6

Skills and the Nature of the Workplace 129

6.1 Overview and highlights 131

6.2 Skills in knowledge economies 132

6.3 The relationship between job tasks and skills 137

6.4 Match and mismatch between job tasks and observed skills 143

References 147

Annex 6

Data Values for the Figures 149

Skills and the Nature of the Workplace

6.1 Overview and highlights

This chapter explores the relationship between different types of jobs, job tasks, and skills. First, the skill distributions of the workforce in technology- and knowledge-intensive industries are compared to other sectors. Similarly, the skills of workers in knowledge-intensive occupations are compared to those in other types of occupations. Second, the relationships between literacy and numeracy engagement at work and the skills measured by ALL are considered. Third, it is shown that the extent of engagement in literacy and numeracy activities is strongly linked to the types of occupations in which adults are employed. The last section looks at the match and mismatch between the skills of workers and the extent to which they engage in job tasks that require those skills.

6

The highlights of the chapter are as follows:

- High skills industries including knowledge-intensive market service activities; high and medium-high technology manufacturing; and public administration, defense, education and health feature comparatively high proportions of adults at skill Levels 3 and 4/5.
- High and medium-high technology compared with low and medium-low technology manufacturing industries have comparatively higher proportions of skilled workers. Thus continued growth in the high technology sector is likely to cause upward pressure on the demand for skills.
- Occupations with high requirements for the use of cognitive skills including expert, management, and high-skill information types of jobs tend to feature higher proportions of workers with medium to high levels of the skills measured in ALL.
- "Old economy" types of occupations including low-skill services and goods-related types of jobs employ a limited proportion of workers with medium to high literacy and numeracy skills.
- There is a significant association between literacy and numeracy related practices at work and the skills measured in ALL. Workers

scoring at higher levels of literacy and numeracy skills also engage more frequently in literacy and numeracy related practices at work.

- All countries show apparent skills deficits as measured by the difference between observed skills and the extent to which those skills are required at work. That is, workers with low skills who are employed in jobs requiring comparatively high engagement in literacy and numeracy related job tasks. This applies to about 10 to 30 per cent of the workforce depending on the country.
- All countries show apparent skills surpluses as measured by the difference between observed skills and the extent to which those skills are required at work. That is, workers with medium to high skills who are employed in jobs requiring comparatively low engagement in literacy and numeracy related job tasks. This is good for growing knowledge economies in the long run, but a lack of skills use in the workplace may be problematic in the short run. This follows from the "use it or lose it" hypothesis.

6.2 Skills in knowledge economies

Various processes including globalisation, technological and labour force changes as well as the increased use of flexible work practices have caused major structural changes in OECD economies and are likely to continue to do so (OECD and Statistics Canada, 2000; OECD 2001a; OECD 2001b; Judy and D'Amico, 1997). Many developments linked to such processes have led to more jobs that require higher levels of knowledge and skills. These are the types of jobs that form knowledge economies and raise the importance of skills such as those measured in the ALL survey. Accordingly this section reports on distributions of adult skills among different types of jobs. Findings are presented by two key variables often used to monitor growth in knowledge economies but also to describe the nature of one's employment, namely reclassifications of the International Standard Industry Classification (ISIC) and International Standard Classification of Occupations (ISCO).

Box 6A

Measuring technology- and knowledge-intensive industries

All industries are to some extent dependent on technology and knowledge inputs. However, some industries rely more on these than others. Recent efforts drawing on methodological work carried out at the OECD and by others have led to a categorization used in this section that delimits industries according to their relative intensity of technology in the case of manufacturing industries, and knowledge in the case of market service industries. See *Science, Technology and Industry Scoreboard* (OECD, 1999, pp. 18, 60, 137-140; and 2001b, p. 124) for further details.

In summary, all manufacturing industries are classified according to technology intensity into four categories as follows: high technology manufacturing, medium-high technology manufacturing, medium-low technology manufacturing, and low technology manufacturing. But note that due to sample size limitations for some countries the first and last two categories are collapsed when reporting skill distributions.

The knowledge-intensive market service activities category includes post and telecommunications (ISIC division 64), finance and insurance (ISIC divisions 65-67), and business activities excluding real estate (ISIC divisions 71-74).

In general, high-skill industries feature higher proportions of adults with medium to high levels of skill. In particular, Figure 6.1 shows that industries related to knowledge-intensive market service activities; public administration, defense, education and health; and high and medium-high technology manufacturing tend to have relatively higher proportions of adults at Levels 3 and 4/5 on the document scale than other types of industries (see Box 6A). The results, however, vary substantially by country.

For example, primary type industries in Norway feature comparatively high rates of medium to high skilled workers, reaching over 85 per cent. Bermuda and Canada also have about 50 per cent of those working in primary industries at Levels 3 and 4/5. Consequently, these countries are likely to have a comparative advantage in implementing technological, process and organizational innovations in the primary sector. Note that Norway has a high proportion of skilled workers in every type of industry, with at least 60 per cent of workers in each type of industry scoring at Levels 3 and 4/5. Canada also has high proportions in all types of industries, where only low and medium-low technology manufacturing industries have less than 50 per cent of workers with medium to high levels of document literacy skills.

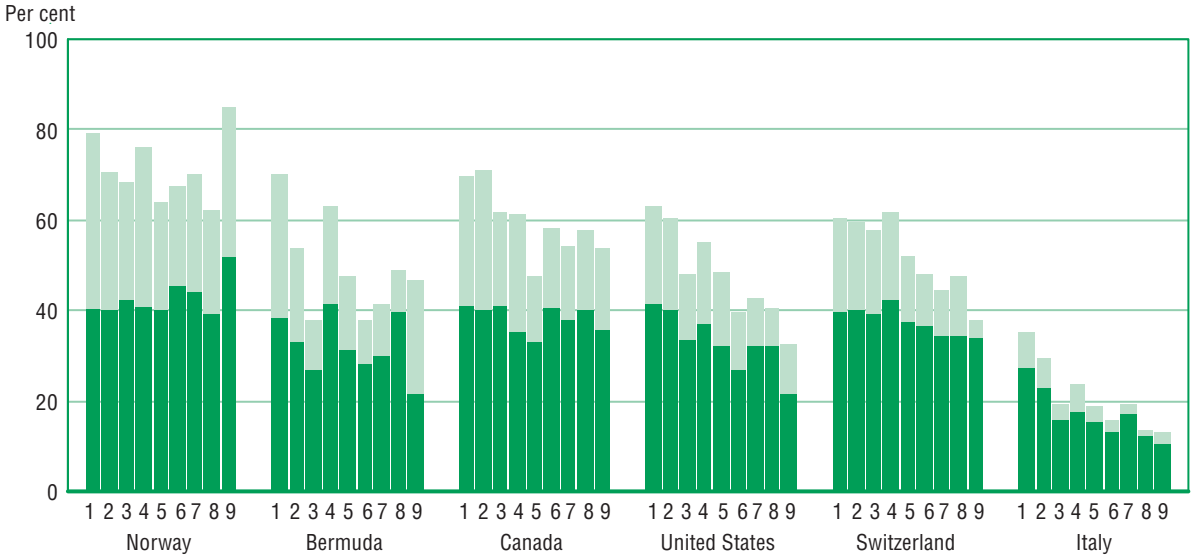
In every country, high and medium-high technology compared to low and medium-low technology manufacturing industries have comparatively more skilled workers. Results are similar for other skill domains but are not reported here. High-technology industries account for a growing share of OECD-wide value added and international trade and are expected to play a significant role in economic growth (OECD, 2004). Therefore, this is an expanding sector that is likely to put upward pressure on the demand for skills.

Industry classifications are relevant to skills analysis (and vice versa) because they are useful in delimiting the extent and nature of particular technologies and work practices that are prevailing in different industry sectors. But skills represent much of the know-how used to carry out job tasks and therefore, are likely to be more closely associated with occupational classifications. After all, occupational classifications are partly based on descriptions of work tasks and the skills needed to complete those successfully.

FIGURE 6.1

Knowledge- and technology-based industry classification by skills

Per cent of labour force populations aged 16 to 65 at document literacy Levels 3 and 4/5, by type of industry, 2003



Legend

1. Knowledge-intensive market service activities
2. Public administration, defense, education and health
3. Other community, social and personal services
4. High and medium-high-technology manufacturing industries
5. Low and medium-low-technology manufacturing industries
6. Utilities and Construction
7. Wholesale, retail, hotels and restaurants
8. Transport and storage
9. Primary industries

Level 4/5

Level 3

Countries are ranked by the combined proportion of persons at Levels 3 and 4/5 in knowledge-intensive market service activities.

Source: Adult Literacy and Life Skills Survey, 2003.

Box 6B

Measuring knowledge-based occupations

A number of recent efforts reclassify the International Standard Classification of Occupations (ISCO) into fewer occupational groups (e.g., Osberg, Wolff and Baumol, 1989; Lavoie and Roy, 1998; Boothby, 1999). These efforts attempt to delimit types of occupations on the basis of knowledge content and common skills requirements including cognitive, communication, management and motor skills. Many skills are required in varying degrees to carry out typical tasks associated with different jobs, but some preliminary evidence suggests that occupations tend to cluster according to relatively few mixes of skill requirements and accordingly few occupational types (Béjaoui, 2000). Note that the types of skills measured in ALL are considered to be associated with cognitive skills only.

In this section, all ISCO occupations are classified according to different types of job tasks that require varying skills as follows: knowledge expert, management, information high-skill, information low-skill, services low-skill, and goods-related.

See Boothby (1999) and Béjaoui (2000) for a more detailed description of the relative requirements of different skills by occupational types. In summary, knowledge expert types of occupations require the most use of cognitive skills, more than average management and communication skills as well as fine motor skills. Although managers are required to use cognitive skills slightly less intensively than experts, they are required to use management and communication skills the most often, making their required skills set the most balanced. Similar to experts, high-skill information occupations require the use of cognitive, management and communication skills more than the average. Although lower, low-skill information occupations also require the use of these skills slightly more than average. Low-skill services and good-related occupations require the use of these types of skills comparatively less often.

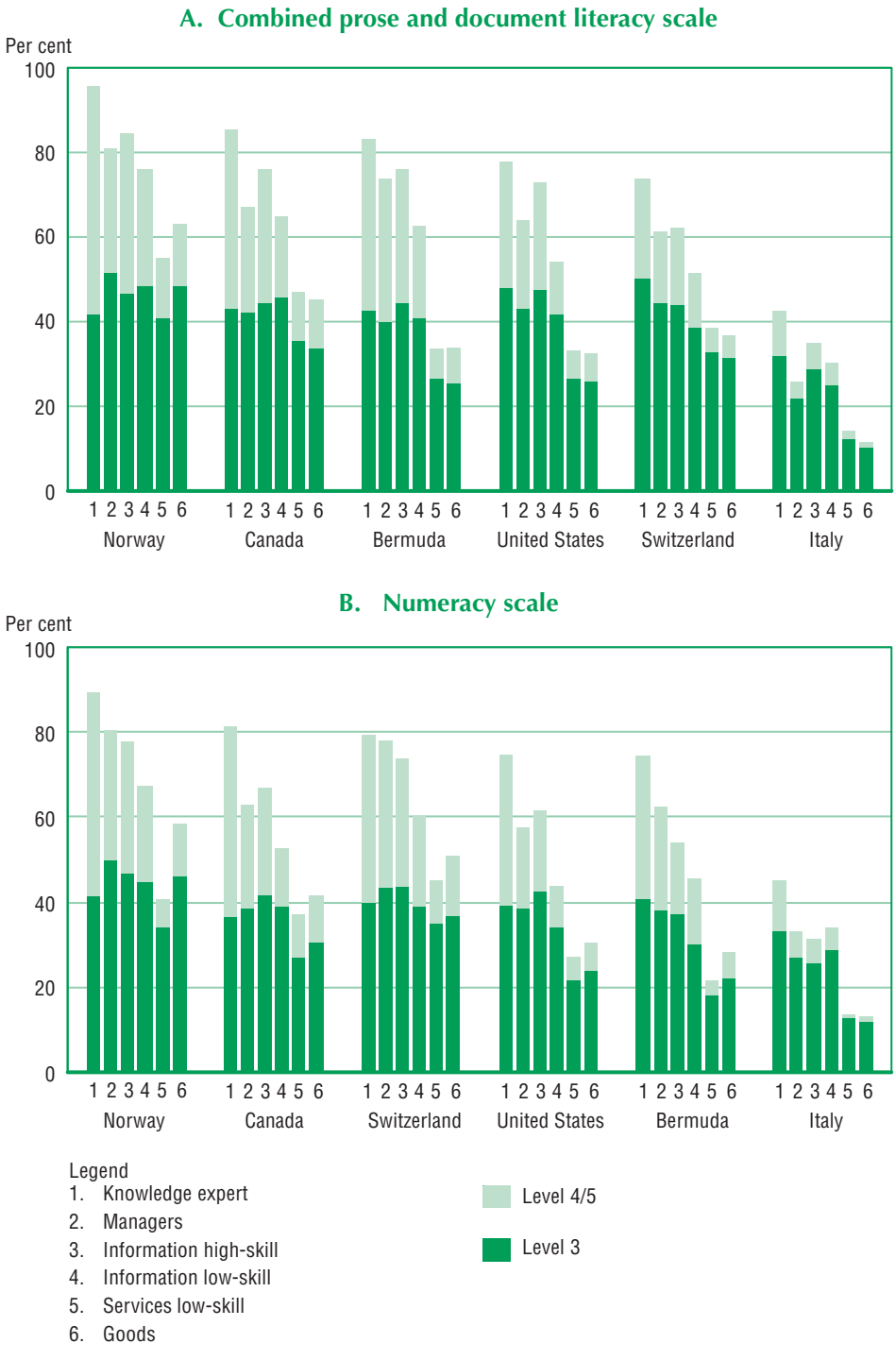
Figure 6.2a-c reports on skill distributions by the occupational types described in Box 6B. In general, occupational types that have higher requirements for the use of cognitive skills also tend to feature higher proportions of persons with medium to high levels (Levels 3 and 4/5) of the skills measured in ALL. This is the case for all domains including prose and document literacy, numeracy and problem solving. Within countries, the pattern of distributions are very similar. Occupations that form knowledge economies including expert, management, high-skill and low-skill information types, have higher proportions of skilled workers than "old economy" types of occupations such as low-skill services and goods-related. Moreover, the supply of skills in the "old economy" appears to be limited.

Following an economic downturn in the early 2000s, many OECD countries are placing even more emphasis on the development of knowledge economies (European Communities, 2004). The aim is to increase competitiveness, create 'good' jobs and sustain long-term economic growth. At the same time there is a major concern in most OECD countries about ageing populations (OECD, 2003). This combined with other upward pressures on the demand for skill, has many suggesting that labour markets cannot rely solely on higher graduation rates and quality improvements in initial education systems. Accordingly, many OECD countries also emphasize lifelong learning policies that aim to raise the skill levels of the current workforce. But as noted in Chapter 4, marked increases in the rate of participation in adult education and training experienced in most participating countries are also accompanied by strong indications that many people with low skills continue to be excluded from further education and training.

FIGURE 6.2 A to C

Knowledge-based occupational classification by skills

Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003



Countries are ranked by the combined proportion of persons at Levels 3 and 4/5 in knowledge expert occupations.

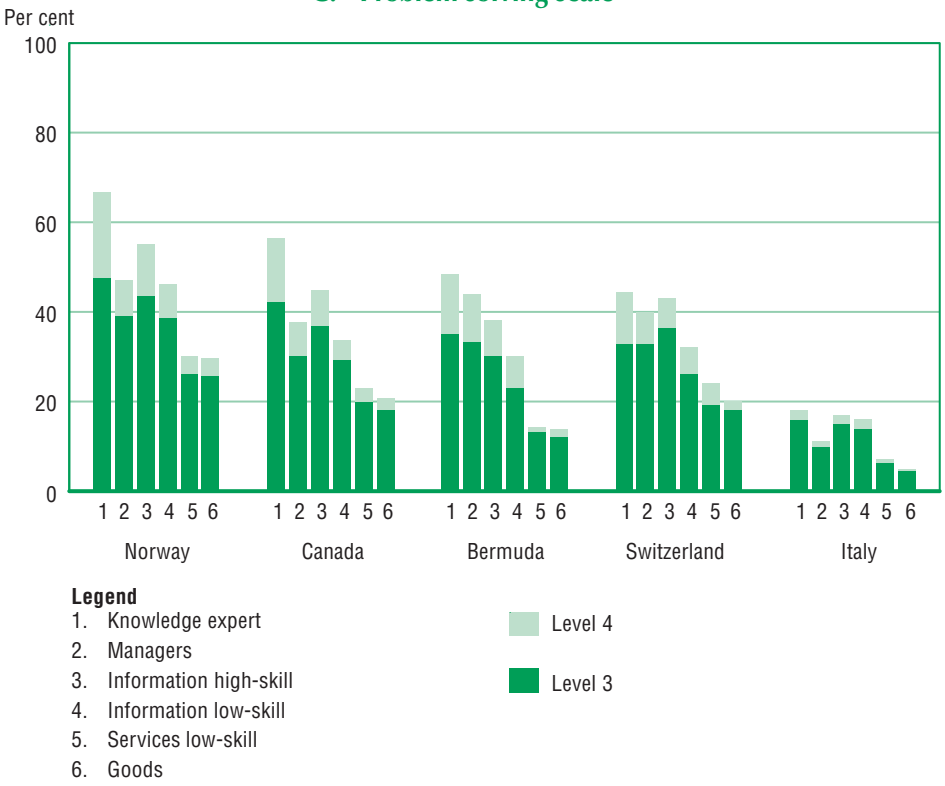
Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 6.2 A to C (concluded)

Knowledge-based occupational classification by skills

Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003

C. Problem solving scale[1,2]



Countries are ranked by the combined proportion of persons at Levels 3 and 4 in knowledge expert occupations.

1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

6.3 The relationship between job tasks and skills

The various tasks that workers engage in on a day to day basis require different types of skills to complete them in a satisfactory manner. Thus certain skills are closely related to specific job tasks. Accordingly, the ALL survey collected information on select job tasks that are relevant to the skills assessed. These data are used to create measures that gauge the extent to which adults engage in reading, writing and numeracy related activities at work (see Box 6C). This section considers such job tasks in relation to skills and the occupational types described in the previous section.

As expected, there is a clear association between literacy and numeracy related practices at work and the skills measured in ALL. Figures 6.3a-d show that persons scoring at higher levels of skill engage more in these practices. The data also offer other insights into the distribution of skills. The case of Italy provides an example of how the average level of engagement among all employed adults has an impact on the overall skills performance of the country as measured by ALL. In relation to other countries, Italians on average engage the least in literacy and numeracy related practices at work. Yet Italian adults who engage more also score higher just like in comparison countries.

Box 6C

Measuring engagement in literacy and numeracy related tasks at work

The ALL survey gathered information on select reading, writing and numeracy related activities at work. This includes 17 items as follows:

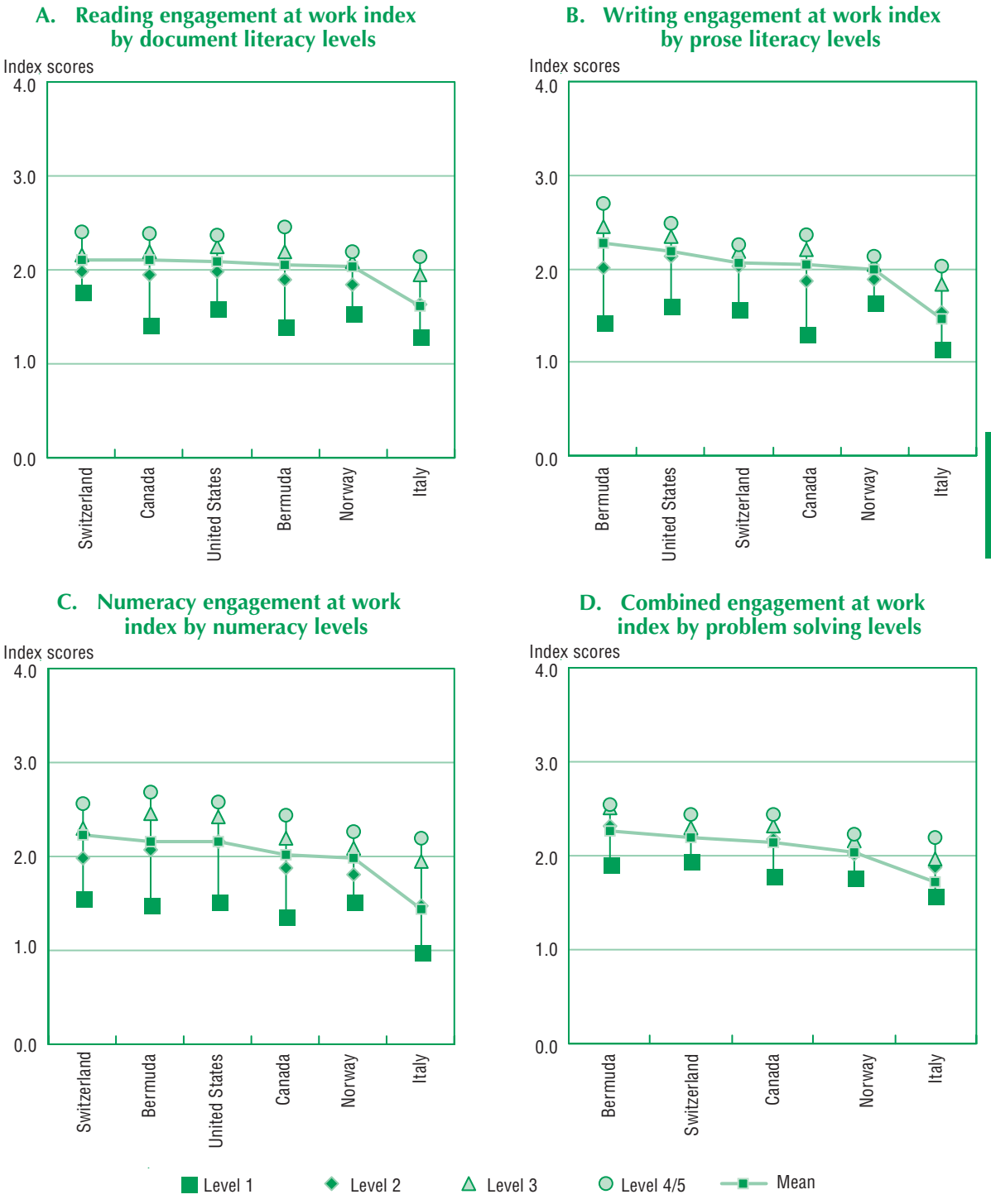
- Six items regarding the frequency of reading or using information from each of the following as part of the respondent's main job: letters, memos or e-mails; reports, articles, magazines or journals; manuals or reference books including catalogues; diagrams or schematics; directions or instructions; bills, invoices, spreadsheets or budget tables.
- Five items regarding the frequency of writing or filling out each of the following as part of the respondent's main job: letters, memos or e-mails; reports, articles, magazines or journals; manuals or reference books including catalogues; directions or instructions; bills, invoices, spreadsheets or budget tables.
- Six items regarding the frequency of doing each of the following as part of the respondent's main job: measure or estimate the size or weight of objects; calculate prices, costs or budgets; count or read numbers to keep track of things; manage time or prepare timetables; give or follow directions or use maps or street directories; use statistical data to reach conclusions.

Using these items, reading, writing and numeracy indices were created. This involved a three step process. First, Exploratory Factor Analysis (EFA) was used to explore and model the data. Second, Confirmatory Factor Analysis (CFA) was used to validate the models chosen and hence the indices. Third, items were selected and scaled according to the CFA using the Rasch item response model. The scale score is a weighted maximum likelihood estimate, and countries were given equal weight in the scaling process. Indices are standardized so the mean of the index value for the combined sample of all participating countries is two and the standard deviation is one. But for the purpose of the analyses reported in Figures 6.3, 6.4 and 6.5, the index scores are reported as ranging from zero to four in order to facilitate the interpretation of the scale. The scale values roughly correspond as follows: one is "never"; two is "rarely"; three is "less than once a week"; and four is "at least once a week".

FIGURE 6.3 A to D

Practice engagement at work by skills levels

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2), by skills levels, labour force populations aged 16 to 65, 2003



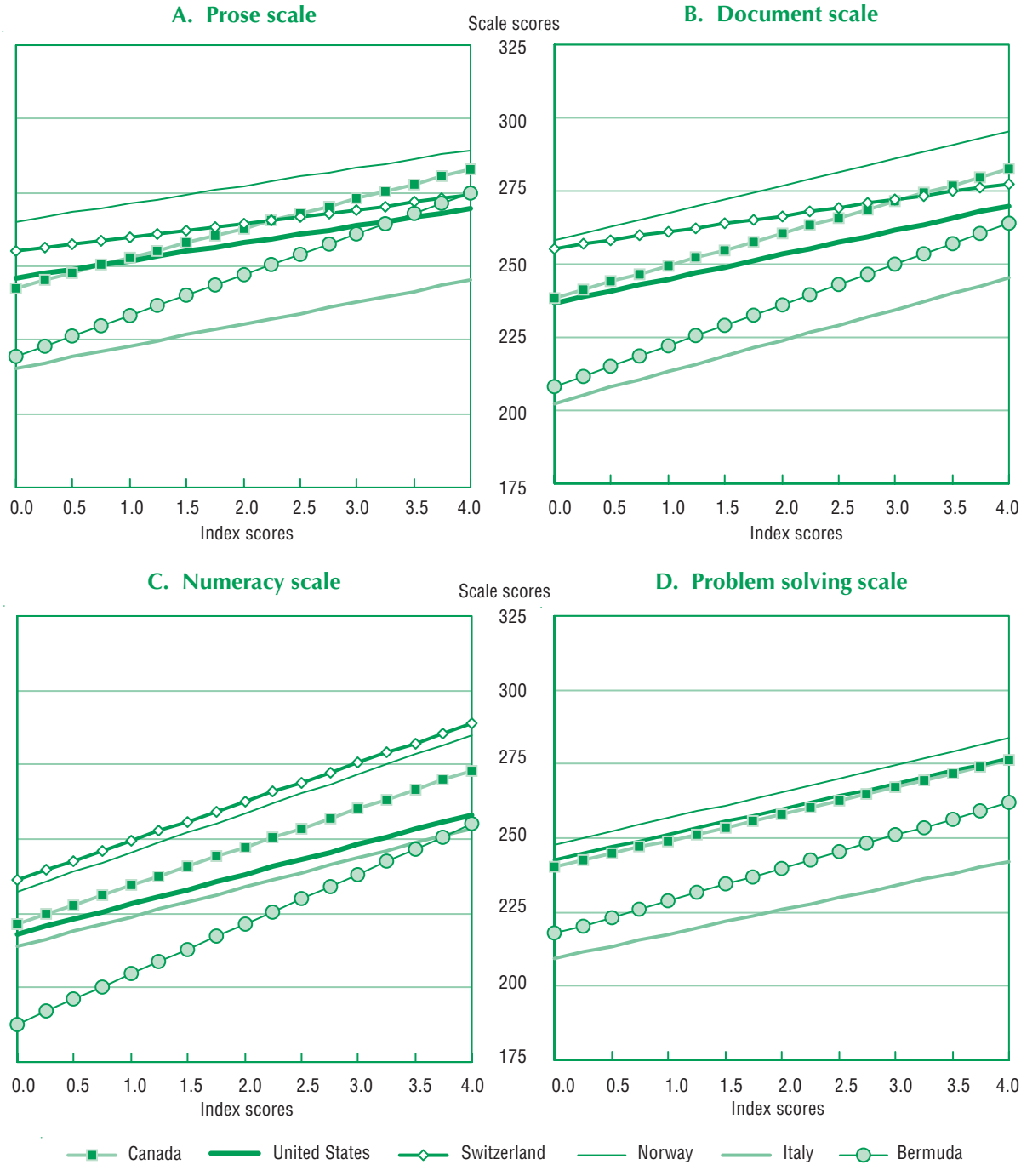
Countries are ranked by the mean of the index scale.

Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 6.4 A to D

Practice engagement at work and skills, controlling for education

Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003



1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

An important question is whether engagement in these practices leads to the formation of skills or whether persons are engaging in these tasks because they already have high levels of skill. This is a difficult question that is impossible to answer with certainty when working with cross-sectional data. But the answer has important implications for initial education and adult education and training systems. In reality, both possibilities are likely to be significant and vary according to individual life experiences. Figures 6.4a-d consider the relationships between practice engagement and skills, after taking into account completed years of schooling and whether the respondents mother tongue is the same as the test language. The results show that in every country, practice engagement maintains a strong positive relation with skills. Only in Switzerland is the extent of engagement in reading at work not related to skills after adjusting for education and native language status.

These findings imply that even after taking into account initial schooling experiences, practice engagement tends to have a significant relation to skills. This is not surprising, since learning by doing (or practice engagement or informal learning) in the work place and in daily life involves processes that play an important role in the formation of skills. Previous findings and research based on IALS also assert that skills are like muscles that need to be exercised in order to be developed and maintained (Statistics Canada and OECD, 1995).

Processes of informal learning as well as the formation, transmission, storage and dissemination of knowledge are increasingly managed by firms in a proactive manner (Mårtensson, 2000). In general, there is an increased emphasis on viewing the work place as a learning place. Hence the reason for slogans such as "learning while working, and working while learning" and "learning organizations" that have gained currency in recent years. Few doubt the importance of learning at work but many questions merit further investigation and support. Major issues at the level of the firm are to understand better the nature of skills required for developing high performance work practices, how firms recruit these skills, and how to develop them through training and work organization.

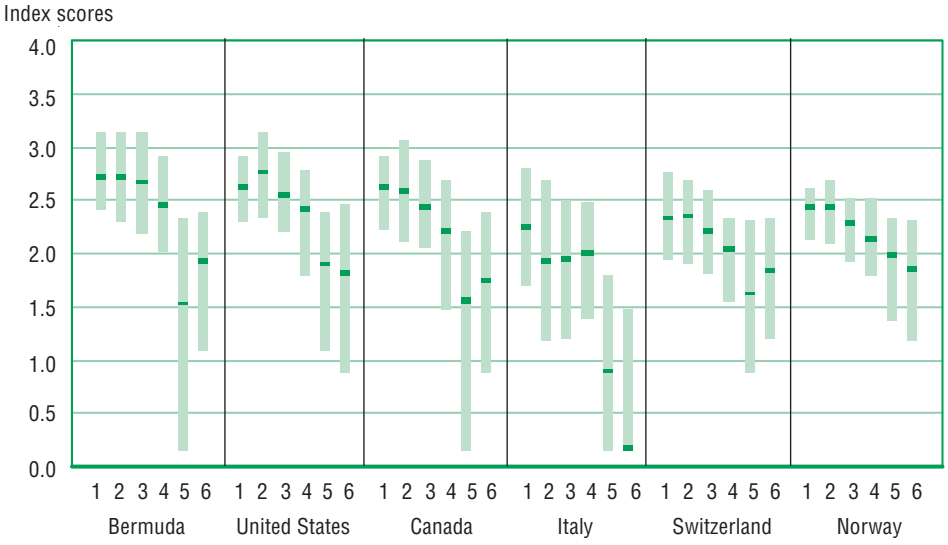
At a macro level, these issues take on added urgency because of the growing share of knowledge-intensive jobs in labour markets and associated possible skills shortages. More knowledge intensive jobs imply an increased demand for literacy and numeracy related skills, including increased use of information and communication technologies. This is because many of the jobs forming knowledge economies require higher engagement in the processing of information including reading, writing and numeracy practices. Figures 6.5a-c show that the extent of engagement in literacy and numeracy practices at work is strongly associated with the occupational types introduced in the previous section (see Box 6B). Results display a consistent pattern which suggests that knowledge related occupations including experts, managers and high-skill information workers tend to engage more in these types of practices. Another major issue at the macro level is to understand better how different models of lifelong learning articulate with different competition strategies in sectors and economies as a whole.

FIGURE 6.5 A to C

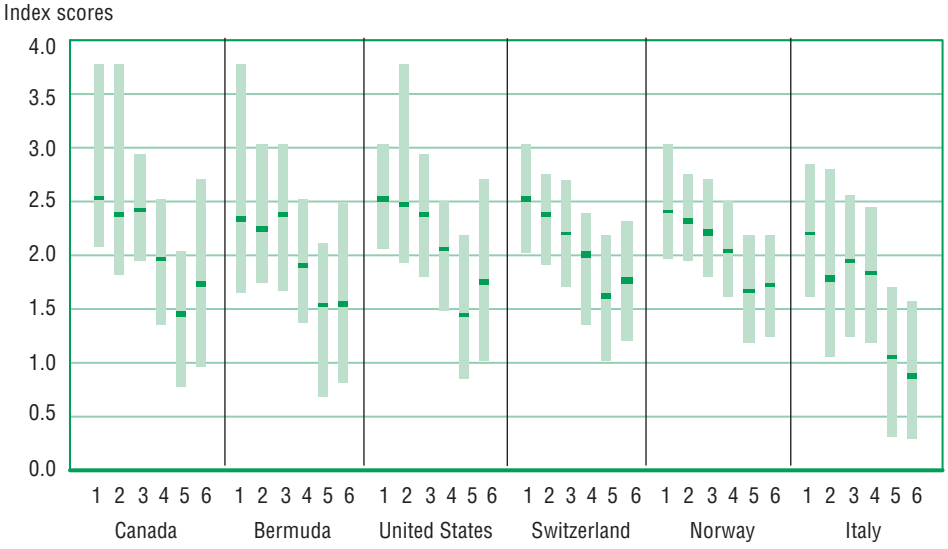
Practice engagement at work by occupational types

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003

A. Writing engagement at work



B. Reading engagement at work



Legend

1. Knowledge expert
2. Managers
3. Information high-skill
4. Information low-skill
5. Services low-skill
6. Goods

A. Countries are ranked by the mean of the 75th percentile in knowledge expert occupations.

B. Countries are ranked by the mean of the 75th percentile in knowledge expert occupations, if tied, then ranked by the means of the 50th/25th pecentiles in knowledge expert occupations.

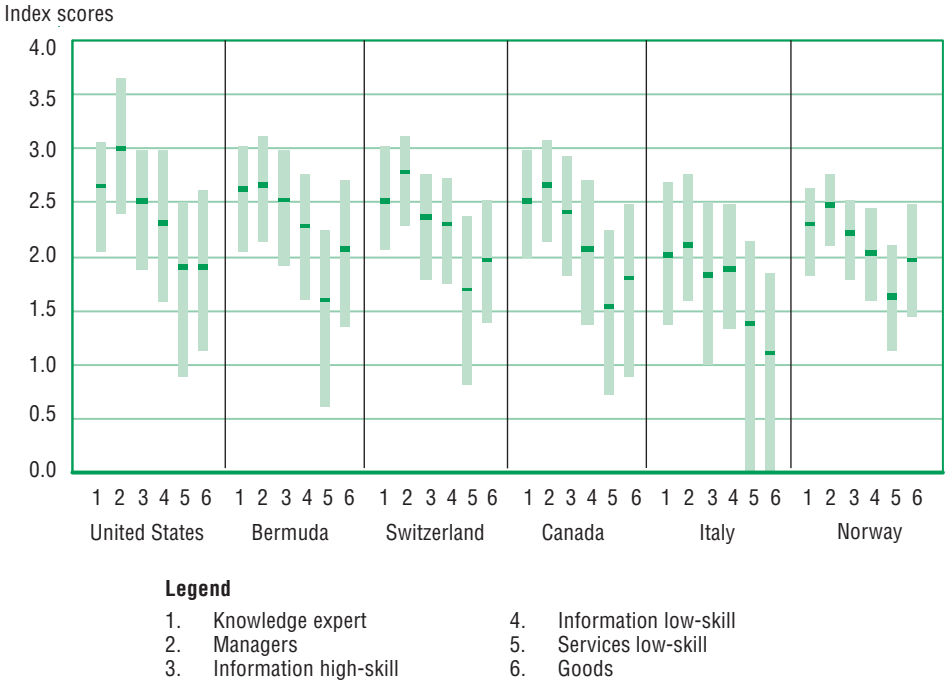
Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 6.5 A to C (concluded)

Practice engagement at work by occupational types

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003

C. Numeracy engagement at work



C. Countries are ranked by the mean of the 75th percentile in knowledge expert occupations, if tied, then ranked by the mean of the 50th pecentile in knowledge expert occupations.

Source: Adult Literacy and Life Skills Survey, 2003.

6.4 Match and mismatch between job tasks and observed skills

This section considers how workers actually use their skills in their jobs. Specifically it examines the match and mismatch between the day to day literacy and numeracy related requirements of workers and their actual skills as measured by ALL (See Box 6D). This is important for several reasons. First, there is a tendency to focus on individual deficits and remedial training, but the issue is broader than this. Deficits and the need for training depend on the requirements of the job. Also, skills are under-utilized in many labour markets (see Krahn and Lowe, 1998; Boothby, 1999). That is, many workers have high literacy and numeracy skills but do not use them at work. This is referred to as a "skills surplus". On the other hand, there are also many workers who have low skills but engage relatively often in literacy and numeracy related activities for productive purposes. This is referred to as a "skills deficit".

Box 6D

"Match" and "mismatch" between job tasks and skills

Match and mismatch is determined on the basis of reported engagement in literacy and numeracy related tasks at work and measured skills. The approach in this section is based on a methodology developed by Krahn and Lowe (1998). Persons with engagement scores below the median were assigned to the "low-engagement" category, and those scoring above were assigned to the "high-engagement" category. Similarly, persons scoring at skills Levels 1 and 2 were assigned to the "low-skills" category, and those scoring at Levels 3 and 4/5 were assigned to the "medium to high skills" category. These four categories were combined and labeled as follows:

- Low-skills, low-engagement → MATCH
- High-skills, high-engagement → MATCH
- Low-skills, high-engagement → MISMATCH → SKILLS DEFICIT
- High-skills, low-engagement → MISMATCH → SKILLS SURPLUS

Mismatch in the labour market can arise because of asymmetric information. Employers do not have perfect information concerning the skills of potential employees. It can also occur because of a lack or excess of skills supply for particular jobs. Figures 6.6a-d show the extent of match and mismatch between literacy and numeracy related job tasks and observed skills. A number of important observations are worth noting. First, the proportion of matches consistently exceeds 50 per cent of workers in every country and ranges up to over 60 per cent in all countries for the case of numeracy skills and numeracy engagement (see Figure 6.6c). This is not surprising, since one would expect that over time workers with higher skills would find their way into jobs requiring more skills, whereas those with few skills would not move up.

Skills deficits are apparent in every country, but the extent of the problem varies. Approximately 10 to 30 per cent of the workforce can fall into this category, depending on the country. Some countries have a comparatively high skills deficit. This is indicated by a high proportion of workers with low document and problem solving skills who are working in jobs that require high-engagement in literacy and numeracy related tasks. Presumably, a certain level of mismatch is expected in the labour market but whether 10 per cent, for example, is normal cannot be answered with certainty. Higher rates, however, are likely to suggest a need for adjustment; in particular, the need for an increased effort to train persons in those jobs.

The reserve of skills, or skills surplus, as defined by the number of workers with medium to high skills employed in jobs requiring low-engagement also varies substantially by country. For example, Norway has a reserve of skills in the document literacy domain equivalent to approximately 30 per cent of working adults whereas Italy's reserve is around 10 per cent. Overall country performances as measured by ALL tend to be related to the size of skill reserves. While a skills surplus is good for growing knowledge economies in the long run, a lack of skills use in the workplace may be problematic in the short run because it exposes

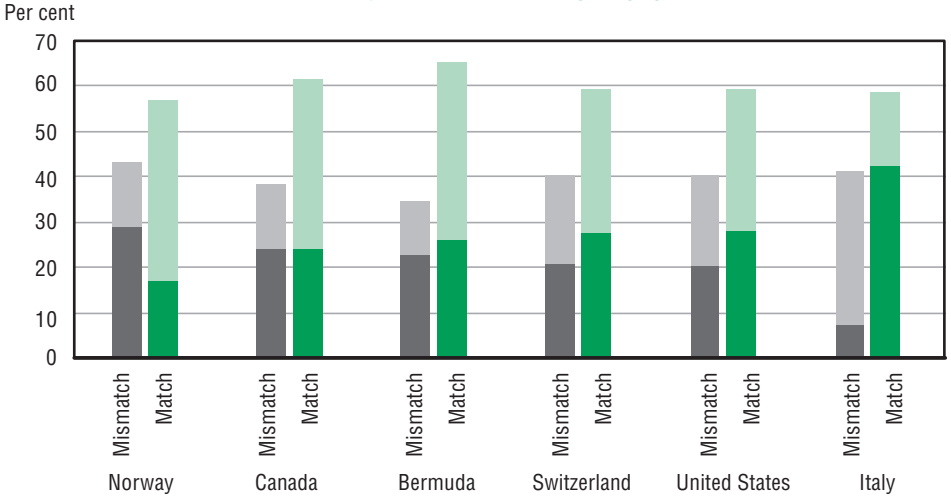
workers to the risk of skill loss. This follows from the "use it or lose it" hypothesis (OECD and HRDC, 1997; Krahn and Lowe, 1998). The previous section suggested that practice engagement is important to nurture and develop skills. Some evidence suggests that the opposite may also be true. Workers who are deprived of the opportunity to perform complex literacy and numeracy tasks may lose some of their skills proficiency.

FIGURE 6.6 A to D

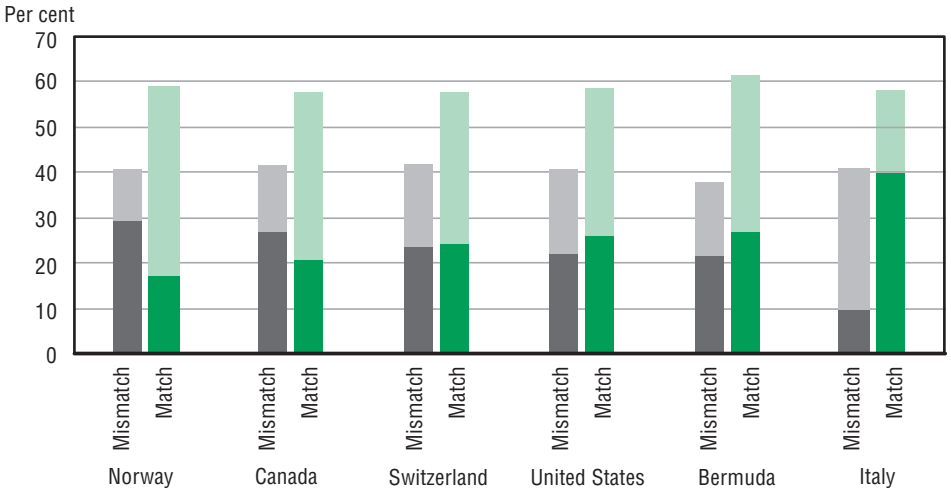
"Match" and "mismatch" between individual skills and practice engagement in the workplace

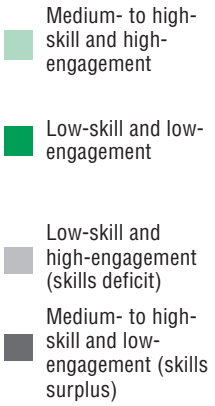
Per cent of labour force populations aged 16 to 65 whose skills match or mismatch their level of practice engagement at work, 2003

A. Prose literacy skills and writing engagement at work



B. Document literacy skills and reading engagement at work





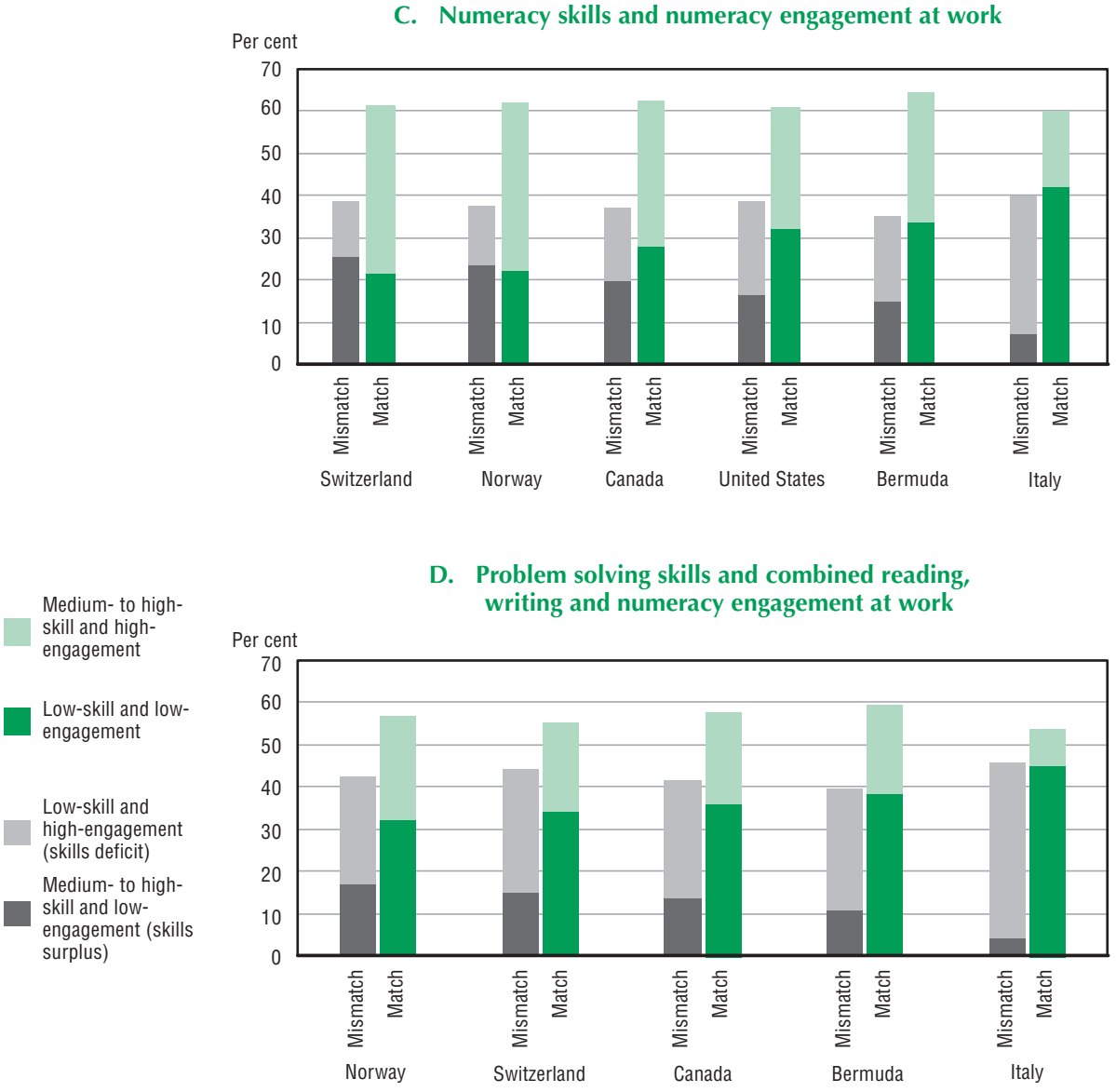
Countries are ranked by proportion of persons with medium to high skills who report low engagement in reading at work.

Source: Adult Literacy and Life Skills Survey, 2003.

FIGURE 6.6 A to D (concluded)

"Match" and "mismatch" between individual skills and practice engagement in the workplace

Per cent of labour force populations aged 16 to 65 whose skills match or mismatch their level of practice engagement at work, 2003



Countries are ranked by proportion of persons with medium to high skills who report low engagement in reading at work.

Source: Adult Literacy and Life Skills Survey, 2003.

References

Béjaoui, A. (2000), *L'évolution de la prime associée aux qualifications et son implication quant aux changements de la structures des salaires,* Université de Montréal, Montréal.

Boothby, D. (1999), "Literacy Skills, the Knowledge Content of Occupations and Occupational Mismatch", Working Paper 99-3E, Applied Research Branch, Human Resource Development Canada, Hull, Quebec.

European Communities (2004), *Facing the Challenge – The Lisbon Strategy for Growth and Employment*, Report from the High Level Group chaired by Wim Kok, November.

Judy, R. and D'Amico, C. (1997), *Workforce 2020: Work and Workers in the 21st Century,* Hudson Institute, Indianapolis, IN.

Krahn, H. and Lowe, G.S. (1998), *Literacy Utilization in Canadian Workplaces,* Statistics Canada and Human Resource Development Canada, Ottawa and Hull.

Lavoie, M. and Roy, R. (1998), "Employment in the Knowledge-based Economy: A growth accounting exercise for Canada", Research Paper, Applied Research Branch, Human Resources Development Canada, Hull, Quebec.

Mårtensson, M. (2000), "A Critical Review of Knowledge Management as a Management Tool", *Journal of Knowledge Management*, Vol. 4(3), pp. 204-216.

OECD (1994), *The OECD jobs study – Facts, analysis and strategies,* Paris.

OECD (1999), *Science, Technology and Industry Scoreboard: Benchmarking Knowledge-Based Economies,* Paris.

OECD (2001a), *Education Policy Analysis,* Paris.

OECD (2001b), *Science, Technology and Industry Scoreboard: Towards a Knowledge-Based Economy,* Paris.

OECD (2003), *Ageing, Housing and Urban Development,* Paris.

OECD (2004), *Science, Technology and Industry Outlook,* Paris.

OECD and HRDC (1997), *Literacy Skills for the Knowledge Society: Further Results from the International Adult Literacy Survey,* Paris and Hull.

OECD and Statistics Canada (2000), *Literacy in the Information Age: Final Report on the International Adult Literacy Survey,* Paris and Ottawa.

Osberg, L., Wolff, E.N. and Baumol, W.J. (1989), *The Information Economy: The Implications of Unbalanced Growth,* Institute for Research on Public Policy, Halifax.

Contributors

Richard Desjardins, *Statistics Canada*

Patrick Werquin, *OECD*

Annex 6

Data Values for the Figures

TABLE 6.1

Per cent of labour force populations aged 16 to 65 at document literacy Levels 3 and 4/5, by type of industry, 2003

	Level 3		Level 4/5	
Bermuda				
Knowledge-intensive market service activities	38.5	(4.8)	31.7	(2.6)
Public administration, defense, education and health	33.2	(4.2)	20.6	(2.8)
Other community, social and personal services	27.0	(5.4)	11.0	(3.1)
High and medium-high-technology manufacturing industries	41.4	(10.1)	21.4	(6.6)
Low and medium-low-technology manufacturing industries	31.3	(9.9)	16.4	(6.1)
Utilities and Construction	28.1	(4.8)	10.0	(2.9)
Wholesale, retail, hotels and restaurants	30.1	(4.3)	11.5	(2.1)
Transport and storage	39.6	(8.3)	9.4	(5.3)
Primary industries	21.4	(7.1)	25.3	(8.9)
Canada				
Knowledge-intensive market service activities	41.1	(2.0)	28.5	(2.0)
Public administration, defense, education and health	40.0	(1.8)	31.0	(1.8)
Other community, social and personal services	41.1	(4.7)	20.6	(4.1)
High and medium-high-technology manufacturing industries	35.2	(4.8)	26.1	(4.7)
Low and medium-low-technology manufacturing industries	32.9	(3.2)	14.8	(2.2)
Utilities and Construction	40.6	(4.6)	17.5	(2.9)
Wholesale, retail, hotels and restaurants	38.0	(2.2)	16.1	(1.4)
Transport and storage	40.2	(5.7)	17.6	(3.4)
Primary industries	35.8	(4.2)	18.0	(3.0)
Italy				
Knowledge-intensive market service activities	27.5	(3.6)	7.9	(2.2)
Public administration, defense, education and health	23.1	(2.3)	6.5	(1.3)
Other community, social and personal services	15.7	(4.9)	3.8	(1.6)
High and medium-high-technology manufacturing industries	17.8	(4.2)	5.8	(3.4)
Low and medium-low-technology manufacturing industries	15.6	(5.2)	3.3	(1.4)
Utilities and Construction	13.1	(3.2)	2.9	(1.5)
Wholesale, retail, hotels and restaurants	17.4	(2.3)	2.2	(1.0)
Transport and storage	12.3	(3.9)	1.4	(0.9)
Primary industries	10.7	(3.1)	2.6	(1.8)

TABLE 6.1 (concluded)

Per cent of labour force populations aged 16 to 65 at document literacy Levels 3 and 4/5, by type of industry, 2003

	Level 3		Level 4/5	
Norway				
Knowledge-intensive market service activities	40.7	(3.9)	38.7	(2.7)
Public administration, defense, education and health	40.1	(2.1)	30.4	(2.0)
Other community, social and personal services	42.1	(7.5)	26.3	(7.1)
High and medium-high-technology manufacturing industries	41.1	(7.1)	34.9	(5.9)
Low and medium-low-technology manufacturing industries	40.2	(5.6)	23.6	(4.3)
Utilities and Construction	45.2	(4.7)	22.4	(4.1)
Wholesale, retail, hotels and restaurants	44.0	(4.9)	26.0	(3.2)
Transport and storage	39.0	(5.9)	22.9	(4.8)
Primary industries	52.1	(8.5)	32.8	(7.6)
Switzerland				
Knowledge-intensive market service activities	39.8	(5.0)	20.7	(3.2)
Public administration, defense, education and health	39.9	(3.4)	19.4	(2.7)
Other community, social and personal services	39.3	(10.7)	18.5	(7.7)
High and medium-high-technology manufacturing industries	42.1	(8.6)	19.7	(4.9)
Low and medium-low-technology manufacturing industries	37.3	(7.4)	14.5	(4.8)
Utilities and Construction	36.4	(10.2)	11.7	(4.0)
Wholesale, retail, hotels and restaurants	34.5	(3.7)	9.8	(2.7)
Transport and storage	34.4	(7.5)	13.1	(5.4)
Primary industries	33.9	(10.5)	4.2	(3.5)
United States				
Knowledge-intensive market service activities	41.2	(3.8)	21.7	(3.4)
Public administration, defense, education and health	39.9	(3.1)	20.6	(2.2)
Other community, social and personal services	33.3	(6.1)	14.8	(3.5)
High and medium-high-technology manufacturing industries	37.0	(6.2)	17.9	(3.0)
Low and medium-low-technology manufacturing industries	32.3	(4.4)	16.0	(3.8)
Utilities and Construction	26.8	(3.9)	12.9	(3.5)
Wholesale, retail, hotels and restaurants	32.2	(2.5)	10.4	(1.8)
Transport and storage	32.2	(8.0)	8.2	(4.0)
Primary industries	21.7	(12.0)	11.0	(6.8)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.2

Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003

	Level 3		Level 4/5	
A. Combined prose and document literacy scale				
Bermuda				
Knowledge expert	42.6	(4.3)	40.7	(4.5)
Managers	40.1	(2.7)	33.6	(3.3)
Information high-skill	44.4	(4.9)	31.4	(4.4)
Information low-skill	40.8	(4.2)	22.0	(2.5)
Services low-skill	26.6	(4.2)	7.1	(3.2)
Goods	25.5	(3.3)	8.3	(1.6)
Canada				
Knowledge expert	43.0	(3.1)	42.5	(3.2)
Managers	42.4	(3.0)	24.8	(2.5)
Information high-skill	44.3	(2.6)	31.5	(2.0)
Information low-skill	45.6	(2.2)	19.2	(1.7)
Services low-skill	35.5	(2.9)	11.7	(1.9)
Goods	33.8	(2.1)	11.7	(1.5)
Italy				
Knowledge expert	31.9	(5.7)	10.6	(2.6)
Managers	21.6	(4.5)	4.4	(2.4)
Information high-skill	28.8	(3.1)	6.3	(2.3)
Information low-skill	25.1	(2.6)	5.3	(1.9)
Services low-skill	12.3	(2.3)	1.9	(0.8)
Goods	10.4	(1.1)	1.3	(0.6)
Norway				
Knowledge expert	41.6	(4.3)	54.1	(4.1)
Managers	51.4	(5.3)	29.7	(3.9)
Information high-skill	46.5	(2.1)	38.1	(1.9)
Information low-skill	48.5	(3.5)	27.5	(3.4)
Services low-skill	41.0	(3.8)	14.0	(3.2)
Goods	48.4	(4.3)	14.5	(3.1)
Switzerland				
Knowledge expert	50.4	(5.0)	23.3	(3.8)
Managers	44.4	(3.3)	17.1	(3.9)
Information high-skill	43.8	(4.9)	18.5	(3.4)
Information low-skill	38.5	(3.5)	13.0	(2.4)
Services low-skill	33.1	(3.2)	5.4	(2.5)
Goods	31.4	(3.4)	5.4	(1.9)
United States				
Knowledge expert	47.9	(5.1)	29.9	(4.8)
Managers	43.3	(2.8)	20.5	(2.7)
Information high-skill	47.7	(4.1)	25.1	(3.2)
Information low-skill	41.7	(2.4)	12.7	(1.7)
Services low-skill	26.8	(3.3)	6.6	(1.4)
Goods	25.9	(2.4)	6.5	(1.6)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.2 (continued)

Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003

	Level 3		Level 4/5	
B. Numeracy scale				
Bermuda				
Knowledge expert	40.8	(5.7)	33.5	(3.4)
Managers	38.0	(3.5)	24.3	(3.9)
Information high-skill	37.1	(5.8)	17.1	(3.4)
Information low-skill	30.0	(3.1)	15.7	(1.4)
Services low-skill	18.2	(3.8)	3.4	(1.1)
Goods	22.0	(3.6)	6.2	(1.5)
Canada				
Knowledge expert	36.7	(3.0)	44.7	(3.7)
Managers	38.5	(2.7)	24.4	(2.2)
Information high-skill	41.6	(2.0)	25.0	(1.8)
Information low-skill	39.1	(1.8)	13.5	(1.2)
Services low-skill	26.9	(2.8)	10.2	(1.5)
Goods	30.7	(1.8)	10.8	(1.7)
Italy				
Knowledge expert	33.3	(4.3)	11.7	(3.7)
Managers	26.8	(5.9)	6.3	(2.7)
Information high-skill	25.7	(5.3)	5.9	(1.9)
Information low-skill	28.7	(2.2)	5.5	(1.5)
Services low-skill	12.7	(2.4)	1.0	(0.9)
Goods	11.9	(1.5)	1.3	(0.5)
Norway				
Knowledge expert	41.4	(5.8)	47.8	(5.1)
Managers	50.2	(3.5)	30.4	(3.0)
Information high-skill	47.1	(3.2)	30.6	(3.2)
Information low-skill	44.9	(3.3)	22.5	(3.0)
Services low-skill	33.9	(3.4)	6.7	(2.6)
Goods	45.9	(3.2)	12.4	(1.7)
Switzerland				
Knowledge expert	39.8	(4.6)	39.5	(5.4)
Managers	43.3	(4.6)	34.5	(3.6)
Information high-skill	43.6	(4.0)	30.1	(2.9)
Information low-skill	39.1	(4.9)	21.0	(3.1)
Services low-skill	34.9	(4.4)	10.3	(3.1)
Goods	36.7	(3.1)	14.2	(3.0)
United States				
Knowledge expert	39.2	(4.2)	35.5	(4.5)
Managers	38.3	(3.9)	19.4	(2.9)
Information high-skill	42.3	(2.5)	19.2	(2.0)
Information low-skill	34.0	(3.0)	10.0	(1.7)
Services low-skill	21.9	(2.7)	5.3	(1.4)
Goods	23.9	(2.0)	6.5	(1.6)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.2 (concluded)

Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003

	Level 3		Level 4	
C. Problem solving scale[1]				
Bermuda				
Knowledge expert	35.0	(4.7)	13.5	(3.3)
Managers	33.2	(2.9)	10.8	(2.0)
Information high-skill	30.1	(5.8)	8.3	(2.4)
Information low-skill	23.2	(3.1)	6.9	(1.4)
Services low-skill	13.2	(2.8)	1.2	(0.9)
Goods	11.9	(2.7)	2.1	(1.4)
Canada				
Knowledge expert	42.1	(3.8)	14.4	(2.7)
Managers	30.3	(2.7)	7.7	(1.9)
Information high-skill	36.8	(2.2)	8.2	(1.3)
Information low-skill	29.3	(2.0)	4.6	(1.1)
Services low-skill	19.9	(2.0)	3.3	(1.3)
Goods	18.4	(1.6)	2.4	(0.7)
Italy				
Knowledge expert	16.2	(3.8)	2.2	(1.0)
Managers	9.8	(3.0)	1.5	(1.5)
Information high-skill	15.1	(3.2)	1.8	(1.4)
Information low-skill	13.6	(2.4)	2.4	(1.0)
Services low-skill	6.2	(1.9)	1.1	(0.6)
Goods	4.5	(1.4)	0.4	(0.3)
Norway				
Knowledge expert	47.6	(5.6)	18.9	(3.2)
Managers	38.9	(5.5)	8.1	(2.1)
Information high-skill	43.6	(2.9)	11.6	(1.5)
Information low-skill	38.5	(4.2)	7.6	(1.9)
Services low-skill	26.3	(3.0)	3.9	(1.4)
Goods	25.9	(3.4)	3.8	(1.0)
Switzerland[2]				
Knowledge expert	32.9	(5.2)	11.7	(3.0)
Managers	33.0	(3.5)	6.9	(2.2)
Information high-skill	36.5	(2.4)	6.4	(1.8)
Information low-skill	26.3	(4.1)	5.9	(2.0)
Services low-skill	18.9	(4.0)	5.0	(2.7)
Goods	18.1	(4.1)	2.1	(1.2)

1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.3

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2), by skills levels, labour force populations aged 16 to 65, 2003

	Level 1		Level 2		Level 3		Level 4/5	
A. Reading engagement at work index by document literacy levels								
Bermuda	1.4	(0.1)	1.9	(0.1)	2.2	(0.1)	2.5	(0.1)
Canada	1.4	(0.1)	1.9	(0.0)	2.2	(0.0)	2.4	(0.0)
Italy	1.3	(0.1)	1.6	(0.1)	1.9	(0.1)	2.1	(0.1)
Norway	1.5	(0.1)	1.9	(0.0)	2.1	(0.0)	2.2	(0.0)
Switzerland	1.8	(0.1)	2.0	(0.1)	2.2	(0.0)	2.4	(0.1)
United States	1.6	(0.1)	2.0	(0.1)	2.2	(0.1)	2.4	(0.1)
B. Writing engagement at work index by prose literacy levels								
Bermuda	1.4	(0.1)	2.0	(0.1)	2.5	(0.1)	2.7	(0.0)
Canada	1.3	(0.1)	1.9	(0.0)	2.2	(0.0)	2.4	(0.0)
Italy	1.2	(0.0)	1.5	(0.1)	1.8	(0.1)	2.0	(0.2)
Norway	1.6	(0.1)	1.9	(0.0)	2.0	(0.0)	2.1	(0.0)
Switzerland	1.6	(0.1)	2.0	(0.1)	2.2	(0.0)	2.3	(0.1)
United States	1.6	(0.1)	2.1	(0.1)	2.4	(0.0)	2.5	(0.1)
C. Numeracy engagement at work index by numeracy levels								
Bermuda	1.5	(0.1)	2.1	(0.1)	2.5	(0.1)	2.7	(0.0)
Canada	1.4	(0.0)	1.9	(0.0)	2.2	(0.0)	2.4	(0.0)
Italy	1.0	(0.1)	1.5	(0.1)	1.9	(0.1)	2.2	(0.1)
Norway	1.5	(0.1)	1.8	(0.0)	2.1	(0.0)	2.3	(0.0)
Switzerland	1.6	(0.1)	2.0	(0.1)	2.3	(0.0)	2.6	(0.1)
United States	1.5	(0.1)	2.2	(0.1)	2.4	(0.0)	2.6	(0.1)
D. Combined engagement at work index by problem solving[1] levels								
Bermuda	1.9	(0.0)	2.3	(0.0)	2.5	(0.1)	2.5	(0.1)
Canada	1.8	(0.0)	2.2	(0.0)	2.3	(0.0)	2.4	(0.1)
Italy	1.6	(0.0)	1.9	(0.1)	2.0	(0.1)	2.2	(0.3)
Norway	1.8	(0.0)	2.0	(0.0)	2.2	(0.0)	2.2	(0.1)
Switzerland[2]	1.9	(0.1)	2.2	(0.0)	2.3	(0.1)	2.4	(0.1)

1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.4

Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003

	Unstandardized coefficients			
	B	Standard error	t-value	Significance
A. Prose scale				
Bermuda				
(Constant)	-0.53	0.06	-8.83	0.00
Combined index scores (scale 2 = 0)	0.27	0.03	9.00	0.00
Years of education (Grade 12 = 0)	0.14	0.01	14.00	0.00
Test language (Same as mother tongue = 0)	-0.20	0.07	-2.86	0.01
Canada				
(Constant)	-0.23	0.04	-5.75	0.00
Combined index scores (scale 2 = 0)	0.20	0.02	10.00	0.00
Years of education (Grade 12 = 0)	0.11	0.00		0.00
Test language (Same as mother tongue = 0)	-0.51	0.04	-12.75	0.00
Italy				
(Constant)	-0.86	0.05	-17.20	0.00
Combined index scores (scale 2 = 0)	0.15	0.03	5.00	0.00
Years of education (Grade 12 = 0)	0.08	0.01	8.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Norway				
(Constant)	0.06	0.05	1.20	0.28
Combined index scores (scale 2 = 0)	0.12	0.03	4.00	0.00
Years of education (Grade 12 = 0)	0.10	0.01	10.00	0.00
Test language (Same as mother tongue = 0)	-0.33	0.06	-5.50	0.00
Switzerland				
(Constant)	-0.19	0.06	-3.17	0.01
Combined index scores (scale 2 = 0)	0.09	0.02	4.50	0.00
Years of education (Grade 12 = 0)	0.10	0.00		0.00
Test language (Same as mother tongue = 0)	-0.44	0.06	-7.33	0.00
United States				
(Constant)	-0.33	0.05	-6.60	0.00
Combined index scores (scale 2 = 0)	0.11	0.02	5.50	0.00
Years of education (Grade 12 = 0)	0.13	0.01	13.00	0.00
Test language (Same as mother tongue = 0)	-0.84	0.06	-14.00	0.00

-- Estimate was not statistically different from zero at the five per cent level of significance in the first step of the analysis. Hence this parameter was not estimated in the country specific model.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.4

Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003

	Unstandardized coefficients			
	B	Standard error	t-value	Significance
B. Document scale				
Bermuda				
(Constant)	-0.72	0.07	-10.29	0.00
Combined index scores (scale 2 = 0)	0.26	0.03	8.67	0.00
Years of education (Grade 12 = 0)	0.13	0.01	13.00	0.00
Test language (Same as mother tongue = 0)	-0.15	0.07	-2.14	0.05
Canada				
(Constant)	-0.26	0.04	-6.50	0.00
Combined index scores (scale 2 = 0)	0.21	0.02	10.50	0.00
Years of education (Grade 12 = 0)	0.11	0.00		0.00
Test language (Same as mother tongue = 0)	-0.44	0.05	-8.80	0.00
Italy				
(Constant)	-0.95	0.04	-23.75	0.00
Combined index scores (scale 2 = 0)	0.20	0.03	6.67	0.00
Years of education (Grade 12 = 0)	0.07	0.01	7.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Norway				
(Constant)	0.04	0.07	0.57	0.53
Combined index scores (scale 2 = 0)	0.18	0.03	6.00	0.00
Years of education (Grade 12 = 0)	0.10	0.01	10.00	0.00
Test language (Same as mother tongue = 0)	-0.30	0.05	-6.00	0.00
Switzerland				
(Constant)	-0.15	0.04	-3.75	0.00
Combined index scores (scale 2 = 0)	0.10	0.02	5.00	0.00
Years of education (Grade 12 = 0)	0.09	0.01	9.00	0.00
Test language (Same as mother tongue = 0)	-0.36	0.05	-7.20	0.00
United States				
(Constant)	-0.40	0.05	-8.00	0.00
Combined index scores (scale 2 = 0)	0.16	0.02	8.00	0.00
Years of education (Grade 12 = 0)	0.12	0.01	12.00	0.00
Test language (Same as mother tongue = 0)	-0.72	0.07	-10.29	0.00

-- Estimate was not statistically different from zero at the five per cent level of significance in the first step of the analysis. Hence this parameter was not estimated in the country specific model.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.4

Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003

	Unstandardized coefficients			
	B	Standard error	t-value	Significance
C. Numeracy scale				
Bermuda				
(Constant)	-0.99	0.06	-16.50	0.00
Combined index scores (scale 2 = 0)	0.33	0.02	16.50	0.00
Years of education (Grade 12 = 0)	0.12	0.01	12.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Canada				
(Constant)	-0.48	0.04	-12.00	0.00
Combined index scores (scale 2 = 0)	0.25	0.02	12.50	0.00
Years of education (Grade 12 = 0)	0.11	0.00		0.00
Test language (Same as mother tongue = 0)	-0.38	0.04	-9.50	0.00
Italy				
(Constant)	-0.75	0.04	-18.75	0.00
Combined index scores (scale 2 = 0)	0.20	0.02	10.00	0.00
Years of education (Grade 12 = 0)	0.07	0.01	7.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Norway				
(Constant)	-0.26	0.05	-5.20	0.00
Combined index scores (scale 2 = 0)	0.26	0.03	8.67	0.00
Years of education (Grade 12 = 0)	0.09	0.01	9.00	0.00
Test language (Same as mother tongue = 0)	-0.25	0.06	-4.17	0.00
Switzerland				
(Constant)	-0.18	0.05	-3.60	0.01
Combined index scores (scale 2 = 0)	0.26	0.03	8.67	0.00
Years of education (Grade 12 = 0)	0.09	0.01	9.00	0.00
Test language (Same as mother tongue = 0)	-0.41	0.05	-8.20	0.00
United States				
(Constant)	-0.66	0.05	-13.20	0.00
Combined index scores (scale 2 = 0)	0.20	0.02	10.00	0.00
Years of education (Grade 12 = 0)	0.15	0.01	15.00	0.00
Test language (Same as mother tongue = 0)	-0.64	0.08	-8.00	0.00

-- Estimate was not statistically different from zero at the five per cent level of significance in the first step of the analysis. Hence this parameter was not estimated in the country specific model.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.4

Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003

	Unstandardized coefficients			
	B	Standard error	t-value	Significance
D. Problem solving scale[1]				
Bermuda				
(Constant)	-0.56	0.07	-8.00	0.00
Combined index scores (scale 2 = 0)	0.22	0.03	7.33	0.00
Years of education (Grade 12 = 0)	0.11	0.01	11.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Canada				
(Constant)	-0.21	0.04	-5.25	0.00
Combined index scores (scale 2 = 0)	0.18	0.02	9.00	0.00
Years of education (Grade 12 = 0)	0.10	0.00	0.00	0.00
Test language (Same as mother tongue = 0)	-0.51	0.04	-12.75	0.00
Italy				
(Constant)	-0.84	0.04	-21.00	0.00
Combined index scores (scale 2 = 0)	0.16	0.03	5.33	0.00
Years of education (Grade 12 = 0)	0.06	0.01	6.00	0.00
Test language (Same as mother tongue = 0)	--	--	--	--
Norway				
(Constant)	-0.06	0.06	-1.00	0.30
Combined index scores (scale 2 = 0)	0.18	0.03	6.00	0.00
Years of education (Grade 12 = 0)	0.11	0.01	11.00	0.00
Test language (Same as mother tongue = 0)	-0.37	0.08	-4.63	0.00
Switzerland[2]				
(Constant)	-0.18	0.10	-1.80	0.09
Combined index scores (scale 2 = 0)	0.17	0.04	4.25	0.00
Years of education (Grade 12 = 0)	0.08	0.01	8.00	0.00
Test language (Same as mother tongue = 0)	-0.28	0.08	-3.50	0.00

-- Estimate was not statistically different from zero at the five per cent level of significance in the first step of the analysis. Hence this parameter was not estimated in the country specific model.

1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.5

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003

	25th percentile		50th percentile		75th percentile	
A. Writing engagement at work						
Bermuda						
Knowledge expert	2.4	(0.1)	2.7	(0.1)	3.1	(0.1)
Managers	2.3	(0.1)	2.7	(0.1)	3.1	(0.1)
Information high-skill	2.2	(0.1)	2.7	(0.1)	3.1	(0.1)
Information low-skill	2.0	(0.1)	2.4	(0.1)	2.9	(0.1)
Services low-skill	0.2	(0.0)	1.5	(0.1)	2.3	(0.1)
Goods	1.1	(0.1)	1.9	(0.1)	2.4	(0.0)
Canada						
Knowledge expert	2.2	(0.0)	2.6	(0.0)	2.9	(0.0)
Managers	2.1	(0.0)	2.6	(0.0)	3.1	(0.1)
Information high-skill	2.1	(0.0)	2.4	(0.0)	2.9	(0.0)
Information low-skill	1.5	(0.1)	2.2	(0.0)	2.7	(0.0)
Services low-skill	0.2	(0.0)	1.5	(0.1)	2.2	(0.1)
Goods	0.9	(0.2)	1.7	(0.1)	2.4	(0.0)
Italy						
Knowledge expert	1.7	(0.1)	2.2	(0.1)	2.8	(0.1)
Managers	1.2	(0.4)	1.9	(0.1)	2.7	(0.1)
Information high-skill	1.2	(0.2)	1.9	(0.1)	2.5	(0.1)
Information low-skill	1.4	(0.1)	2.0	(0.1)	2.5	(0.1)
Services low-skill	0.2	(0.0)	0.9	(0.3)	1.8	(0.1)
Goods	0.2	(0.0)	0.2	(0.0)	1.5	(0.1)
Norway						
Knowledge expert	2.1	(0.1)	2.4	(0.0)	2.6	(0.0)
Managers	2.1	(0.1)	2.4	(0.0)	2.7	(0.1)
Information high-skill	1.9	(0.0)	2.3	(0.0)	2.5	(0.0)
Information low-skill	1.8	(0.0)	2.1	(0.0)	2.5	(0.1)
Services low-skill	1.4	(0.1)	2.0	(0.1)	2.3	(0.0)
Goods	1.2	(0.1)	1.8	(0.1)	2.3	(0.1)
Switzerland						
Knowledge expert	2.0	(0.1)	2.3	(0.1)	2.8	(0.1)
Managers	1.9	(0.0)	2.3	(0.1)	2.7	(0.0)
Information high-skill	1.8	(0.0)	2.2	(0.1)	2.6	(0.1)
Information low-skill	1.6	(0.1)	2.0	(0.0)	2.3	(0.1)
Services low-skill	0.9	(0.2)	1.6	(0.1)	2.3	(0.1)
Goods	1.2	(0.1)	1.8	(0.1)	2.3	(0.1)
United States						
Knowledge expert	2.3	(0.1)	2.6	(0.0)	2.9	(0.0)
Managers	2.3	(0.0)	2.7	(0.1)	3.1	(0.1)
Information high-skill	2.2	(0.1)	2.5	(0.0)	3.0	(0.0)
Information low-skill	1.8	(0.1)	2.4	(0.0)	2.8	(0.1)
Services low-skill	1.1	(0.1)	1.9	(0.1)	2.4	(0.0)
Goods	0.9	(0.2)	1.8	(0.1)	2.5	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.5

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003

	25th percentile		50th percentile		75th percentile	
B. Reading engagement at work						
Bermuda						
Knowledge expert	1.6	(0.1)	2.3	(0.1)	3.8	(0.3)
Managers	1.8	(0.1)	2.2	(0.1)	3.0	(0.3)
Information high-skill	1.7	(0.1)	2.4	(0.1)	3.0	(0.3)
Information low-skill	1.4	(0.1)	1.9	(0.0)	2.5	(0.1)
Services low-skill	0.7	(0.1)	1.5	(0.1)	2.1	(0.1)
Goods	0.8	(0.1)	1.5	(0.1)	2.5	(0.1)
Canada						
Knowledge expert	2.1	(0.1)	2.5	(0.1)	3.8	(0.2)
Managers	1.8	(0.0)	2.4	(0.1)	3.8	(0.3)
Information high-skill	1.9	(0.0)	2.4	(0.0)	3.0	(0.0)
Information low-skill	1.4	(0.0)	1.9	(0.0)	2.5	(0.0)
Services low-skill	0.8	(0.1)	1.4	(0.1)	2.0	(0.1)
Goods	1.0	(0.1)	1.7	(0.1)	2.7	(0.1)
Italy						
Knowledge expert	1.6	(0.1)	2.2	(0.1)	2.9	(0.1)
Managers	1.1	(0.2)	1.8	(0.1)	2.8	(0.4)
Information high-skill	1.2	(0.1)	1.9	(0.1)	2.6	(0.1)
Information low-skill	1.2	(0.0)	1.8	(0.1)	2.5	(0.2)
Services low-skill	0.3	(0.1)	1.0	(0.1)	1.7	(0.1)
Goods	0.3	(0.1)	0.9	(0.1)	1.6	(0.1)
Norway						
Knowledge expert	2.0	(0.1)	2.4	(0.1)	3.0	(0.1)
Managers	1.9	(0.1)	2.3	(0.1)	2.8	(0.1)
Information high-skill	1.8	(0.0)	2.2	(0.0)	2.7	(0.1)
Information low-skill	1.6	(0.1)	2.0	(0.1)	2.5	(0.1)
Services low-skill	1.2	(0.1)	1.6	(0.1)	2.2	(0.1)
Goods	1.2	(0.1)	1.7	(0.1)	2.2	(0.1)
Switzerland						
Knowledge expert	2.0	(0.1)	2.5	(0.1)	3.0	(0.2)
Managers	1.9	(0.1)	2.4	(0.1)	2.8	(0.0)
Information high-skill	1.7	(0.0)	2.2	(0.1)	2.7	(0.1)
Information low-skill	1.4	(0.1)	2.0	(0.1)	2.4	(0.1)
Services low-skill	1.0	(0.1)	1.6	(0.1)	2.2	(0.1)
Goods	1.2	(0.1)	1.7	(0.1)	2.3	(0.1)
United States						
Knowledge expert	2.1	(0.1)	2.5	(0.0)	3.0	(0.2)
Managers	1.9	(0.1)	2.5	(0.1)	3.8	(0.3)
Information high-skill	1.8	(0.1)	2.4	(0.1)	3.0	(0.1)
Information low-skill	1.5	(0.1)	2.0	(0.1)	2.5	(0.1)
Services low-skill	0.9	(0.1)	1.4	(0.0)	2.2	(0.0)
Goods	1.0	(0.1)	1.7	(0.1)	2.7	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.5

Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003

	25th percentile		50th percentile		75th percentile	
C. Numeracy engagement at work						
Bermuda						
Knowledge expert	2.1	(0.1)	2.6	(0.1)	3.0	(0.0)
Managers	2.1	(0.1)	2.6	(0.1)	3.1	(0.2)
Information high-skill	1.9	(0.1)	2.5	(0.1)	3.0	(0.1)
Information low-skill	1.6	(0.1)	2.3	(0.1)	2.8	(0.1)
Services low-skill	0.6	(0.3)	1.6	(0.1)	2.2	(0.1)
Goods	1.3	(0.1)	2.1	(0.1)	2.7	(0.1)
Canada						
Knowledge expert	2.0	(0.0)	2.5	(0.0)	3.0	(0.1)
Managers	2.1	(0.1)	2.6	(0.1)	3.1	(0.0)
Information high-skill	1.8	(0.1)	2.4	(0.0)	2.9	(0.1)
Information low-skill	1.4	(0.0)	2.1	(0.0)	2.7	(0.0)
Services low-skill	0.7	(0.1)	1.5	(0.1)	2.2	(0.1)
Goods	0.9	(0.1)	1.8	(0.1)	2.5	(0.0)
Italy						
Knowledge expert	1.4	(0.1)	2.0	(0.1)	2.7	(0.1)
Managers	1.6	(0.1)	2.1	(0.1)	2.8	(0.1)
Information high-skill	1.0	(0.2)	1.8	(0.1)	2.5	(0.1)
Information low-skill	1.3	(0.1)	1.9	(0.0)	2.5	(0.1)
Services low-skill	-0.3	(0.0)	1.1	(0.2)	1.9	(0.1)
Goods	-0.3	(0.0)	0.8	(0.1)	1.6	(0.1)
Norway						
Knowledge expert	1.8	(0.1)	2.3	(0.1)	2.6	(0.0)
Managers	2.1	(0.0)	2.5	(0.0)	2.8	(0.1)
Information high-skill	1.8	(0.0)	2.2	(0.0)	2.5	(0.0)
Information low-skill	1.6	(0.1)	2.0	(0.0)	2.5	(0.1)
Services low-skill	1.1	(0.1)	1.6	(0.1)	2.1	(0.1)
Goods	1.4	(0.1)	2.0	(0.1)	2.5	(0.0)
Switzerland						
Knowledge expert	2.1	(0.1)	2.5	(0.0)	3.0	(0.1)
Managers	2.3	(0.1)	2.8	(0.0)	3.1	(0.2)
Information high-skill	1.8	(0.1)	2.4	(0.0)	2.8	(0.1)
Information low-skill	1.8	(0.1)	2.3	(0.1)	2.7	(0.1)
Services low-skill	0.8	(0.1)	1.7	(0.1)	2.4	(0.1)
Goods	1.4	(0.1)	2.0	(0.1)	2.5	(0.1)
United States						
Knowledge expert	2.0	(0.1)	2.6	(0.1)	3.1	(0.0)
Managers	2.4	(0.1)	3.0	(0.1)	3.7	(0.1)
Information high-skill	1.9	(0.1)	2.5	(0.1)	3.0	(0.1)
Information low-skill	1.6	(0.1)	2.3	(0.1)	3.0	(0.1)
Services low-skill	0.9	(0.1)	1.9	(0.1)	2.5	(0.0)
Goods	1.1	(0.1)	1.9	(0.1)	2.6	(0.1)

Source: Adult Literacy and Life Skills Survey, 2003.

TABLE 6.6

Per cent of labour force populations aged 16 to 65 whose skills match or mismatch their level of practice engagement at work, 2003

	Match				Mismatch			
	Low-skill and low-engagement		Medium- to high- skill and high-engagement		Low-skill and high-engagement (skills deficit)		Medium- to high- skill and low-engagement (skills surplus)	
A. Prose literacy skills and writing engagement at work								
Bermuda	25.9	(1.2)	39.3	(1.1)	11.8	(0.9)	22.9	(1.3)
Canada	24.1	(0.7)	37.4	(0.9)	14.2	(0.6)	24.2	(0.8)
Italy	42.3	(1.5)	16.5	(1.2)	34.1	(1.4)	7.2	(0.6)
Norway	17.0	(0.9)	40.0	(0.9)	14.0	(0.9)	29.0	(1.0)
Switzerland	27.5	(1.9)	32.1	(1.7)	19.7	(1.1)	20.7	(1.9)
United States	28.1	(1.2)	31.5	(1.3)	20.2	(1.2)	20.2	(0.8)
B. Document literacy skills and reading engagement at work								
Bermuda	26.9	(1.4)	35.0	(1.4)	16.1	(1.3)	21.9	(1.3)
Canada	20.8	(0.7)	37.5	(1.0)	14.7	(0.8)	27.0	(0.7)
Italy	40.3	(1.5)	18.3	(1.6)	31.8	(1.4)	9.7	(0.8)
Norway	17.2	(0.9)	42.0	(1.2)	11.2	(0.7)	29.6	(1.3)
Switzerland	24.6	(1.3)	33.4	(1.4)	18.2	(1.3)	23.8	(1.3)
United States	26.1	(1.1)	32.8	(1.3)	19.0	(1.1)	22.1	(1.0)
C. Numeracy skills and numeracy engagement at work								
Bermuda	33.8	(1.6)	30.9	(1.1)	20.1	(1.0)	15.1	(1.3)
Canada	28.4	(0.6)	34.1	(0.8)	17.5	(0.7)	19.9	(0.7)
Italy	42.3	(1.6)	17.7	(1.3)	32.7	(1.5)	7.3	(0.6)
Norway	22.6	(1.0)	39.8	(1.2)	14.0	(0.9)	23.6	(1.2)
Switzerland	21.9	(1.3)	39.3	(1.3)	12.9	(1.2)	25.9	(1.0)
United States	32.2	(1.1)	28.8	(1.1)	22.2	(1.3)	16.8	(1.1)
D. Problem solving skills[1] and combined reading, writing and numeracy engagement at work								
Bermuda	38.7	(1.4)	21.1	(1.1)	28.8	(1.3)	11.3	(1.3)
Canada	36.1	(1.0)	21.9	(1.0)	28.1	(1.0)	13.9	(0.9)
Italy	45.5	(1.2)	8.3	(1.4)	41.6	(1.8)	4.6	(0.8)
Norway	32.6	(1.0)	24.5	(1.4)	25.4	(1.4)	17.5	(1.0)
Switzerland[2]	34.7	(1.4)	20.9	(1.1)	29.1	(1.2)	15.3	(1.3)

1. United States did not field the problem solving skills domain.
2. The problem solving skills scores for Switzerland apply to the German and French speaking communities only since they did not field the problem solving skills domain in the Italian speaking community.

Source: Adult Literacy and Life Skills Survey, 2003.

Table of Contents

Introduction

Foreword 3

Introduction 15

Overview of the study 15

Definitions of skill 15

Measurement of skills 16

Table I.1 Five levels of difficulty for the prose, document and numeracy domains 17

Table I.2 Four levels of difficulty for the problem solving domain 18

Data collection 18

Organization of the report 19

References 20

Note to Readers 21

Chapter 1

The Why, What and How of the ALL Survey 23

1.1 Goals of the ALL survey 25

1.2 The conceptual approach to the ALL survey 26

References 28

Chapter 2

Comparative Profiles of Adult Skills 29

2.1 Overview and highlights 31

2.2 Comparative distributions of adult skills 32

2.3 Changes in skills profiles from IALS to ALL 39

2.4 Adult skills and age 43

2.5 Adult skills and gender 46

References 48

Annex 2 Data Values for the Figures 49

Chapter 3

Education and Skills 57

3.1 Overview and highlights 59

3.2 The relationship between education and cognitive skills 60

3.3 Skills of upper secondary graduates 64

3.4 Skills of post-secondary graduates 66

References 70

Annex 3 Data Values for the Figures 71

Chapter 4

Skills and Adult Learning 79

4.1 Overview and highlights 81

4.2 Participation in organised forms of adult education and training 82

4.3 Who is excluded from adult learning opportunities? 84

4.4 Patterns of informal learning 87

4.5 Financial support for adult learning 90

References 95

Annex 4 Data Values for the Figures 97

Table of Contents

Chapter 5
Skills and the Labour Force 105
5.1 Overview and highlights 107
5.2 Competitiveness of labour force populations 108
5.3 Employability of working-age populations 112
5.4 Employability of younger and older working-age populations 116
References 119
Annex 5 Data Values for the Figures 121

Chapter 6
Skills and the Nature of the Workplace 129
6.1 Overview and highlights 131
6.2 Skills in knowledge economies 132
6.3 The relationship between job tasks and skills 137
6.4 Match and mismatch between job tasks and observed skills 143
References 147
Annex 6 Data Values for the Figures 149

Chapter 7
Skills and Economic Outcomes 163
7.1 Overview and highlights 165
7.2 Earnings returns to skills and education 166
7.3 Skills, social assistance and investment income 171
References 173
Annex 7 Data Values for the Figures 175

Chapter 8
Skills and Information and Communications Technologies 179
8.1 Overview and highlights 181
8.2 Connectivity and income as a key determinant 182
8.3 ICTs and literacy skills 184
8.4 ICT use and familiarity by key demographic characteristics 187
8.5 ICT use and outcomes 193
References 195
Annex 8 Data Values for the Figures 197

Chapter 9
Skills and Immigration 203
9.1 Overview and highlights 205
9.2 The significance of immigration in OECD countries 206
9.3 Education credentials and observed skills of immigrants 208
9.4 The relationship between language status and skills 212
9.5 Skills and labour market outcomes of immigrants 213
References 216
Annex 9 Data Values for the Figures 217

Table of Contents

Chapter 10
Skills, Parental Education and Literacy Practice in Daily Life 225
10.1 Overview and highlights 227
10.2 The relationship between parents' education and skills of youth 228
10.3 Comparison of socio-economic gradients for three cohorts of adults 234
10.4 Engagement in literacy practices at home and in daily life 237
References 241
Annex 10 Data Values for the Figures 243

Chapter 11
Skills and Health 247
11.1 Overview and highlights 249
11.2 Skills and general health status 250
11.3 Skills and work-related health status 256
References 261
Annex 11A Data Values for the Figures 263
Annex 11B General and Work Related Health Questions 267

Conclusion
Directions for further work 269
Figure C1 The depth of risk 270
Priorities for further analysis 270
Priorities for future adult skill assessments 271
References 272
Data Values for the Figures 273
Table C1 Number of adults aged 16 to 65 at Levels 1 and 2 in prose literacy, document literacy and numeracy as a per cent of the total population at Level 1 and 2 in any domain by country, 2003 273

Annex A
A Construct-Centered approach to Understanding What was Measured in the Adult Literacy and Life Skills (ALL) Survey 275
Overview 277
Introduction 277
Scaling the literacy, numeracy and problem solving tasks in ALL 278
Measuring prose and document literacy in ALL 280
Defining prose and document literacy 280
Measuring numeracy in ALL 291
Defining numeracy in ALL 291
Measuring problem solving in ALL 302
Defining problem solving in ALL 302
Conclusion 309
References 311

Annex B
Adult Literacy and Life Skills Survey Survey Methodology 313
Survey methodology 315
Assessment design 315
Target population and sample frame 316
Sample design 317

Table of Contents

Sample size 320
Data collection 321
Scoring of tasks 324
Survey response and weighting 326

Annex C
Principal Participants in the Project 329

List of Figures

Chapter 2

Figure 2.1 Multiple comparisons of skills proficiencies 34
Figure 2.2 Comparative distributions of skills scores 36
Figure 2.3 Comparative distributions of skills levels 37
Figure 2.4 Changes in distributions of skills scores 40
Figure 2.5 Changes in mean scores from IALS to ALL 41
Figure 2.6 Changes in distributions of skills levels 42
Figure 2.7 Age and adult skills 44
Figure 2.8 Skills-age profiles controlling for educational attainment 45
Figure 2.9 Gender differences in skills 47

Chapter 3

Figure 3.1 Educational attainment and skills proficiencies 62
Figure 3.2 Age, educational attainment and skills proficiencies 63
Figure 3.3 Likelihood of scoring at low skill levels by upper secondary education status 65
Figure 3.4 Skills of post-secondary graduates 68

Chapter 4

Figure 4.1 Adult education and training participation rates 83
Figure 4.2 Changes in adult education and training participation rates 83
Figure 4.3 Literacy and adult education participation 85
Figure 4.4 Likelihood of participation by literacy levels 86
Figure 4.5 Changes in participation rates by literacy levels 86
Figure 4.6 Engagement in informal learning 88
Figure 4.7 Informal learning by level of education 89
Figure 4.8 Likelihood of participation in active modes of informal learning by literacy levels 89
Figure 4.9 Sources of financial support for adult education and training 91
Figure 4.10 Sources of financing by document literacy levels 92
Figure 4.11 Employer sponsored training by level of practice engagement 93

Chapter 5

Figure 5.1 Skills among labour force populations in the top 25 per cent 109
Figure 5.2 Skills among labour force populations in the bottom 25 per cent 111
Figure 5.3 Likelihood of labour force inactivity by skills levels 113
Figure 5.4 Likelihood of experiencing unemployment by skills levels 114
Figure 5.5 Probability of exiting unemployment by skills levels 115
Figure 5.6 Probability of younger workers exiting unemployment by skills levels 116
Figure 5.7 Probability of older workers exiting unemployment by skills levels 117

Table of Contents

Chapter 6

Figure 6.1 Knowledge- and technology-based industry classification by skills 134
Figure 6.2 Knowledge-based occupational classification by skills 136
Figure 6.3 Practice engagement at work by skills levels 139
Figure 6.4 Practice engagement at work and skills, controlling for education 140
Figure 6.5 Practice engagement at work by occupational types 142
Figure 6.6 "Match" and "mismatch" between individual skills and practice engagement in the workplace 145

Chapter 7

Figure 7.1 Returns to skills and education 168
Figure 7.2 Earnings premiums associated with occupational types 170
Figure 7.3 Likelihood of low-skilled adults collecting social assistance payments 171
Figure 7.4 Likelihood of medium to high-skilled adults earning investment income 172

Chapter 8

Figure 8.1 Home computer and internet access at home 183
Figure 8.2 Home computer access by income quartiles 184
Figure 8.3 Skills of computer users and non-users 185
Figure 8.4 Index scores of ICT use and familiarity 185
Figure 8.5 Use of computers for task-oriented purposes by literacy skills 186
Figure 8.6 Use of computers for task-oriented purposes by age groups 188
Figure 8.7 Use of computers for task-oriented purposes by gender 189
Figure 8.8 Use of computers for task-oriented purposes by educational attainment 190
Figure 8.9 Use of computers for task-oriented purposes by type of occupation 191
Figure 8.10 Likelihood of being a high-intensity computer user by literacy skill levels 192
Figure 8.11 Combined literacy and computer use profiles 194
Figure 8.12 Likelihood of being a top income quartile earner by combined skill and user profiles 194

Chapter 9

Figure 9.1 Natural population growth in OECD countries 207
Figure 9.2 Per cent of foreign-born in population and in labour force for OECD countries participating in ALL, 2001 208
Figure 9.3 Recent versus established immigrant status by educational attainment 209
Figure 9.4 Recent versus established immigrant status by skill level 210
Figure 9.5 Native versus foreign language status of immigrants by skill level 213
Figure 9.6 Likelihood of being unemployed among native-born and foreign-born by skill level 214
Figure 9.7 Likelihood of earning low income among native-born and foreign-born by skill level 215

Chapter 10

Figure 10.1 Socio-economic gradients of youth 230
Figure 10.2 Changes in socio-economic gradients of youth from IALS to ALL 233
Figure 10.3 Socio-economic gradients for three cohorts of adults 235
Figure 10.4 Literacy skills and literacy practices at home and in daily life 239

Table of Contents

Chapter 11

Figure 11.1 Classification of general health status 252
Figure 11.2 General health status by country 254
Figure 11.3 Skills and general health status by key demographic variables 255
Figure 11.4 Classification of work-related health status 257
Figure 11.5 Work-related health status by country 259
Figure 11.6 Skills and work-related health status by key demographic variables 260

List of Tables

Chapter 2

Table 2.1 Comparisons of countries based on average scores, populations aged 16 to 65, 2003 34
Table 2.2 Mean scores with .95 confidence interval and scores at the 5th, 25th, 75th and 95th percentiles on skills scales ranging from 0 to 500 points, populations aged 16 to 65, 2003 49
Table 2.3 Per cent of populations aged 16 to 65 at each skills level, 2003 50
Table 2.4 Mean scores with .95 confidence interval and scores at the 5th, 25th, 75th and 95th percentiles on skills scales ranging from 0 to 500 points, populations aged 16 to 65, IALS 1994/1998 and ALL 2003 51
Table 2.5 Summary of changes in mean scores from IALS to ALL, by statistical significance at the five per cent level, populations aged 16 to 65, IALS 1994/1998 and ALL 2003 41
Table 2.6 Differences between IALS 1994/1998 and ALL 2003 in the per cent of adults aged 16 to 65 at each skills level 52
Table 2.7A Mean scores with .95 confidence interval and scores at the 5th, 25th, 75th, and 95th percentiles on the document scale, population aged 16 to 25, 26 to 45 and 46 to 65, 2003 52
Table 2.7B Per cent of populations aged 16 to 25, 26 to 45 and 46 to 65 at each level on the document scale, 2003 53
Table 2.8 Relationship between age and literacy scores on the document literacy scale, with adjustment for level education and language status, populations aged 16 to 65, 2003 53
Table 2.9 Mean skills proficiencies between men and women on the prose, document, numeracy and problem solving scales, 2003 55

Chapter 3

Table 3.1A Mean numeracy scores on a scale with range 0 to 500 points, by level of educational attainment, populations aged 16 to 65, 2003 71
Table 3.1B Mean problem solving scores on a scale with range 0 to 500 points, by level of educational attainment, populations aged 16 to 65, 2003 72
Table 3.2A Mean combined prose and document scores on a scale with range 0 to 500 points, by level of educational attainment, populations aged 26 to 35, 2003 73
Table 3.2B Mean combined prose and document scores on a scale with range 0 to 500 points, by level of educational attainment, populations aged 56 to 65, 2003 74
Table 3.3A Odds of scoring at Levels 1 or 2 on the problem solving scale by upper secondary education status, adjusted for age and native language status, persons aged 16 to 30, 2003 75
Table 3.3B Odds of scoring at Levels 1 or 2 on the numeracy scale by upper secondary education status, adjusted for age and native language status, persons aged 16 to 30, 2003 75
Table 3.4 ALL skills-education profiles for persons aged 16 to 35 who have completed at least upper secondary education, adjusted for age and native language status, problem solving scale (United States on combined prose and document scale), 2003 76

Table of Contents

Chapter 4

Table 4.1 Per cent of populations aged 16 to 65 receiving adult education and training during the year preceding the interview, by type of participation, 2003 97

Table 4.2 Per cent of populations aged 16 to 65 receiving adult education and training during the year preceding the interview, IALS 1994/1998 and ALL 2003 97

Table 4.3 Per cent of populations aged 16 to 65 receiving adult education and training during the year preceding the interview, by document literacy levels, 2003 98

Table 4.4 Adjusted odds ratios showing the likelihood of adults aged 16 to 65 receiving adult education and training during the year preceding the interview, by document literacy levels, 2003 98

Table 4.5 Changes in the per cent of adults aged 16 to 65 in adult education and training between IALS 1994/1998 and ALL 2003, by document literacy levels 99

Table 4.6 Per cent of populations aged 16 to 65 participating in informal learning activities during the year preceding the interview, by mode of engagement, 2003 99

Table 4.7 Per cent of populations aged 16 to 65 participating in active modes of informal learning in the year preceding the interview, by education attainment, 2003 100

Table 4.8 Adjusted odds ratios showing the likelihood of adults aged 16 to 65 participating in active modes of informal adult learning during the year preceding the interview, by document literacy levels, 2003 101

Table 4.9 Per cent of men and women participating in adult education and training who receive financial support from various sources, populations aged 16 to 65, 2003 101

Table 4.10 Per cent of participants in adult education and training who received financial support from various sources, by document literacy, populations aged 16 to 65 who worked in the last 12 months, 2003 102

Table 4.11 Adjusted odds ratios showing the likelihood of receiving employer sponsored adult education and training during the year preceding the interview, by combined levels of engagement in reading, writing and numeracy practices at work, populations aged 16 to 65, 2003 103

Chapter 5

Table 5.1 Score of the 75th percentile on a scale with range 0 to 500 points, labour force populations aged 16 to 25, 26 to 45 and 46 to 65, 2003 121

Table 5.2 Score of the 25th percentile on a scale with range 0 to 500 points, labour force populations aged 16 to 25, 26 to 45 and 46 to 65, 2003 123

Table 5.3 Odds ratios showing the likelihood of experiencing labour force inactivity for 6 months or more in the last 12 months compared to being employed all year, by numeracy levels, populations aged 16 to 65, excluding students and retirees, 2003 124

Table 5.4 Odds ratios showing the likelihood of experiencing unemployment for 6 months or more in the last 12 months compared to being employed all year, by numeracy levels, labour force populations aged 16 to 65, 2003 125

Table 5.5 The probabilities of unemployed adults aged 16 to 65 to exit unemployment over a 52 week period, by low (Levels 1 and 2) and medium to high (Levels 3 and 4/5) skills, document scale, 2003 125

Table 5.6 The probabilities of unemployed adults aged 16 to 30 to exit unemployment over a 52 week period, by low (Levels 1 and 2) and medium to high (Levels 3 and 4/5) skills, document scale, 2003 126

Table 5.7 The probabilities of unemployed adults aged 50 to 65 to exit unemployment over a 52 week period, by low (Levels 1 and 2) and medium to high (Levels 3 and 4/5) skills, document scale, 2003 127

Chapter 6

Table 6.1 Per cent of labour force populations aged 16 to 65 at document literacy Levels 3 and 4/5, by type of industry, 2003 149

Table 6.2 Per cent of labour force populations aged 16 to 65 at skills Levels 3 and 4/5, by type of occupation, 2003 151

Table 6.3 Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2), by skills levels, labour force populations aged 16 to 65, 2003 154

Table 6.4 Relationship between combined index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) and skills scores on scales 0 to 500 points, adjusted for years of schooling and native language status, labour force populations aged 16 to 65, 2003 155

Table 6.5 Index scores of reading, writing and numeracy engagement at work on a standardized scale (centred on 2) by aggregated occupational types, labour force populations aged 16 to 65, 2003 159

Table 6.6 Per cent of labour force populations aged 16 to 65 whose skills match or mismatch their level of practice engagement at work, 2003 162

Chapter 7

Table 7.1 Three stage least squares estimates of the effect of observed skills (percentile scale) on weekly log-earnings, prose, document, numeracy and problem solving scales, labour force populations aged 16 to 65, 2003 175

Table 7.2 Per cent difference of expected weekly earnings for each occupational type relative to "goods related" occupations, labour force populations aged 16 to 65, 2003 177

Table 7.3 Adjusted and unadjusted odds ratios showing the likelihood of low skilled adults (Levels 1 and 2) collecting social assistance payments, numeracy scale, populations aged 16 to 65, 2003 178

Table 7.4 Adjusted and unadjusted odds ratios showing the likelihood of medium to high skilled adults (Levels 3 and 4/5) earning investment income, numeracy scale, populations aged 16 to 65, 2003 178

Chapter 8

Table 8.1 Per cent of adults aged 16 to 65 who report having access to a computer and the Internet at home, 2003 197

Table 8.2 Per cent of adults aged 16 to 65 who report having access to a computer at home, by household income quartiles, 2003 197

Table 8.3 Mean scores on the prose literacy scale ranging from 0 to 500 points, by whether respondents are computer users or non-users, populations aged 16 to 65, 2003 198

Table 8.4 Mean index scores on three scales of ICT use and familiarity, perceived usefulness and attitude toward computers, diversity and intensity of Internet use, and use of computers for specific task-oriented purposes, populations aged 16 to 65, 2003 198

Table 8.5 Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by prose literacy levels, populations aged 16 to 65, 2003 198

Table 8.6 Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by age groups, populations aged 16 to 65, 2003 199

Table 8.7 Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by gender, populations aged 16 to 65, 2003 199

Table 8.8 Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by educational attainment, populations aged 16 to 65, 2003 199

Table 8.9 Mean index scores on a scale measuring the intensity of use of computers for specific task-oriented purposes, by type of occupations, populations aged 16 to 65, 2003 200

Table of Contents

Table 8.10	Adjusted odds ratio showing the likelihood of adults aged 16 to 65 of being high-intensity computer users, by prose literacy levels, 2003	200
Table 8.11	Per cent of adults aged 16 to 65 in each combined literacy and computer use profile, 2003	200
Table 8.12	Adjusted odds ratio showing the likelihood of adults aged 16 to 65 of being a top income quartile earning, by combined literacy and computer user profiles, 2003	201

Chapter 9

Table 9.1	The number of births minus number of deaths from 1950 to 1999 and projections to 2050	217
Table 9.2	Per cent of foreign-born in population and in labour force for OECD countries participating in ALL, 2001	208
Table 9.3	Per cent of populations aged 16 to 65 at each level of educational attainment, by recent vs established immigration status, 2003	218
Table 9.4	Per cent of populations aged 16 to 65 at each skill level, by recent vs established immigrant status, 2003	219
Table 9.5	Per cent of adults aged 16 to 65 at each literacy level on the prose scale, by whether their native tongue is same or different from the official language(s) of host country, 2003	223
Table 9.6	Adjusted odds ratios indicating the likelihood of low skilled (Levels 1 and 2) and medium to high skilled (Levels 3 and 4/5) foreign-born and native-born populations aged 16 to 65 of being unemployed, prose literacy scale, 2003	224
Table 9.7	Adjusted odds ratios indicating the likelihood of low skilled (Levels 1 and 2) and medium to high skilled (Levels 3 and 4/5) foreign-born and native-born populations aged 16 to 65 of being in the lowest personal earnings income quartile, prose literacy scale, 2003	224

Chapter 10

Table 10.1	Relationship between respondent's prose literacy scores and parents' education in years, populations aged 16 to 25, 2003	243
Table 10.2	Relationship between respondent's prose literacy scores and parents' education in years, populations aged 16 to 25, IALS 1994/1998	244
Table 10.3	Relationship between respondent's prose literacy scores and parents' education in years, populations aged 16 to 25, 26 to 45 and 46 to 65, 2003	244
Table 10.4	Relationship between prose literacy scores and engagement in literacy practices at home and in daily life, adjusted for respondent's and parents' education, populations aged 16 to 25, 26 to 45 and 46 to 65, 2003	245

Chapter 11

Table 11.1	Response profiles in the four latent classes based on general health status, populations aged 16 to 65, 2003	263
Table 11.2	Per cent of adults in each of four general health status groups by country, populations aged 16 to 65, 2003	263
Table 11.3	Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003	264
Table 11.4	Response profiles in the four latent classes based on work-related health status, populations aged 16 to 65, 2003	265
Table 11.5	Per cent of adults in each of four work-related health status groups by country, populations aged 16 to 65, 2003	265
Table 11.6	Mean scores on the prose, document and numeracy scales ranging from 0 to 500 points by key demographic variables, populations aged 16 to 65, 2003	266

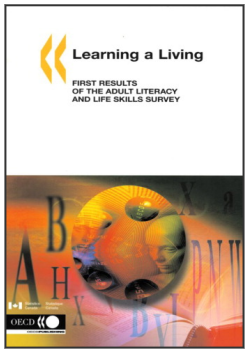
Table of Contents

Annex A

Table A1	Problem-solving steps and instantiations	305

Annex B

Table B1	Sample frame and target population exclusions	317
Table B2	Sample size by assessment language	321
Table B3	Survey collection period	322
Table B4	Interviewer information	323
Table B5	Scoring – percent reliability by domain	325
Table B6	Scoring operations summary	325
Table B7	Benchmark variables by country	327
Table B8	Sample size and response rate summary	327



From:

Learning a Living

First Results of the Adult Literacy and Life Skills Survey

Access the complete publication at:

https://doi.org/10.1787/9789264010390-en

Please cite this chapter as:

OECD/Statistics Canada (2005), "Skills and the Nature of the Workplace", in *Learning a Living: First Results of the Adult Literacy and Life Skills Survey*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/9789264010390-8-en

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.