

Introduction

Overview of the study

The Adult Literacy and Life Skills Survey (ALL) is a large-scale co-operative effort undertaken by governments, national statistics agencies, research institutions and multi-lateral agencies. The development and management of the study were co-ordinated by Statistics Canada and the Educational Testing Service (ETS) in collaboration with the National Center for Education Statistics (NCES) of the United States Department of Education, the Organisation for Economic Co-operation and Development (OECD), the Regional Office for Latin America and the Caribbean (OREALC) and the Institute for Statistics (UIS) of the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

The survey instruments were developed by international teams of experts with financing provided by the Governments of Canada and the United States. A highly diverse group of countries and experts drawn from around the world participated in the validation of the instruments. Participating governments absorbed the costs of national data collection and a share of the international overheads associated with implementation.

The ALL study builds on the International Adult Literacy Survey (IALS), the world's first internationally comparative survey of adult skills undertaken in three rounds of data collection between 1994 and 1998. The foundation skills measured in the ALL survey include prose literacy, document literacy, numeracy, and problem solving. Additional skills assessed indirectly include familiarity with and use of information and communication technologies.

This volume presents an initial set of findings for a group of seven countries or regions that collected data in 2003. They include Bermuda, Canada, Italy, Norway, Switzerland, the United States and the Mexican State of Nuevo Leon. As this report goes to press a second group of countries is in the field preparing for their ALL data collection in 2005.

Definitions of skill

Like IALS the ALL defines skills along a continuum of proficiency. There is no arbitrary standard distinguishing adults who have or do not have skills. For example, many previous studies have distinguished between adults who are either "literate" or "illiterate". Instead, the ALL study conceptualizes proficiency along a continuum and this is used to denote how well adults use information to function in society and the economy.

Four skill domains are conceptualized in ALL. Two of them, namely prose and document literacy are defined and measured in the same manner as in IALS. Numeracy and problem solving are new domains. The conceptualization and definitions of the four skill domains as well as examples of test items used for the assessment are described in detail in Annex A and in *The Adult Literacy and Life Skills Survey: New Frameworks for Assessment* (Statistics Canada). The operational definition for each skill domain is summarized here in Box A.

Box A

Four skill assessment domains in ALL

- *Prose literacy* – the knowledge and skills needed to understand and use information from texts including editorials, news stories, brochures and instruction manuals.
- *Document literacy* – the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.
- *Numeracy* – the knowledge and skills required to effectively manage the mathematical demands of diverse situations.
- *Problem solving* – Problem solving involves goal-directed thinking and action in situations for which no routine solution procedure is available. The problem solver has a more or less well defined goal, but does not immediately know how to reach it. The incongruence of goals and admissible operators constitutes a problem. The understanding of the problem situation and its step-by-step transformation, based on planning and reasoning, constitute the process of problem solving.

Measurement of skills

The ALL employed the same methodology as in IALS to measure skill proficiency. For each domain, proficiency is denoted on a scale ranging from 0 to 500 points. Each score denotes a point at which a person has an 80 per cent chance of successfully completing tasks that are associated with a similar level of difficulty. For the prose and document literacy domains as well as the numeracy domain, experts have defined five broad levels of difficulty, each corresponding to a range of scores. For the problem solving domain, experts have defined four broad levels of difficulty. See Tables I.1 and I.2 for a description of the levels. Also see Annex A for a more in depth presentation of each domain.

TABLE I.1

Five levels of difficulty for the prose, document and numeracy domains

	Prose	Document	Numeracy
Level 1 (0-225)	Most of the tasks in this level require the respondent to read relatively short text to locate a single piece of information which is identical to or synonymous with the information given in the question or directive. If plausible but incorrect information is present in the text, it tends not to be located near the correct information.	Tasks in this level tend to require the respondent either to locate a piece of information based on a literal match or to enter information from personal knowledge onto a document. Little, if any, distracting information is present.	Tasks in this level require the respondent to show an understanding of basic numerical ideas by completing simple tasks in concrete, familiar contexts where the mathematical content is explicit with little text. Tasks consist of simple, one-step operations such as counting, sorting dates, performing simple arithmetic operations or understanding common and simple percents such as 50%.
Level 2 (226-275)	Some tasks in this level require respondents to locate a single piece of information in the text; however, several distractors or plausible but incorrect pieces of information may be present, or low-level inferences may be required. Other tasks require the respondent to integrate two or more pieces of information or to compare and contrast easily identifiable information based on a criterion provided in the question or directive.	Tasks in this level are more varied than those in Level 1. Some require the respondents to match a single piece of information; however, several distractors may be present, or the match may require low-level inferences. Tasks in this level may also ask the respondent to cycle through information in a document or to integrate information from various parts of a document.	Tasks in this level are fairly simple and relate to identifying and understanding basic mathematical concepts embedded in a range of familiar contexts where the mathematical content is quite explicit and visual with few distractors. Tasks tend to include one-step or two-step processes and estimations involving whole numbers, benchmark percents and fractions, interpreting simple graphical or spatial representations, and performing simple measurements.
Level 3 (276-325)	Tasks in this level tend to require respondents to make literal or synonymous matches between the text and information given in the task, or to make matches that require low-level inferences. Other tasks ask respondents to integrate information from dense or lengthy text that contains no organizational aids such as headings. Respondents may also be asked to generate a response based on information that can be easily identified in the text. Distracting information is present, but is not located near the correct information.	Some tasks in this level require the respondent to integrate multiple pieces of information from one or more documents. Others ask respondents to cycle through rather complex tables or graphs which contain information that is irrelevant or inappropriate to the task.	Tasks in this level require the respondent to demonstrate understanding of mathematical information represented in a range of different forms, such as in numbers, symbols, maps, graphs, texts, and drawings. Skills required involve number and spatial sense, knowledge of mathematical patterns and relationships and the ability to interpret proportions, data and statistics embedded in relatively simple texts where there may be distractors. Tasks commonly involve undertaking a number of processes to solve problems.
Level 4 (326-375)	These tasks require respondents to perform multiple-feature matches and to integrate or synthesize information from complex or lengthy passages. More complex inferences are needed to perform successfully. Conditional information is frequently present in tasks at this level and must be taken into consideration by the respondent.	Tasks in this level, like those at the previous levels, ask respondents to perform multiple-feature matches, cycle through documents, and integrate information; however, they require a greater degree of inferencing. Many of these tasks require respondents to provide numerous responses but do not designate how many responses are needed. Conditional information is also present in the document tasks at this level and must be taken into account by the respondent.	Tasks at this level require respondents to understand a broad range of mathematical information of a more abstract nature represented in diverse ways, including in texts of increasing complexity or in unfamiliar contexts. These tasks involve undertaking multiple steps to find solutions to problems and require more complex reasoning and interpretation skills, including comprehending and working with proportions and formulas or offering explanations for answers.
Level 5 (376-500)	Some tasks in this level require the respondent to search for information in dense text which contains a number of plausible distractors. Others ask respondents to make high-level inferences or use specialized background knowledge. Some tasks ask respondents to contrast complex information.	Tasks in this level require the respondent to search through complex displays that contain multiple distractors, to make high-level text-based inferences, and to use specialized knowledge.	Tasks in this level require respondents to understand complex representations and abstract and formal mathematical and statistical ideas, possibly embedded in complex texts. Respondents may have to integrate multiple types of mathematical information, draw inferences, or generate mathematical justification for answers.

TABLE I.2

Four levels of difficulty for the problem solving domain

Problem Solving	
Level 1 (0-250)	Tasks in this level typically require the respondent to make simple inferences, based on limited information stemming from a familiar context. Tasks in this level are rather concrete with a limited scope of reasoning. They require the respondent to make simple connections, without having to check systematically any constraints. The respondent has to draw direct consequences, based on the information given and on his/her previous knowledge about a familiar context.
Level 2 (251-300)	Tasks in this level often require the respondent to evaluate certain alternatives with regard to well-defined, transparent, explicitly stated criteria. The reasoning however may be done step by step, in a linear process, without loops or backtracking. Successful problem solving may require to combine information from different sources, as e.g. from the question section and the information section of the test booklet.
Level 3 (301-350)	Some tasks in this level require the respondent to order several objects according to given criteria. Other tasks require him/her to determine a sequence of actions/events or to construct a solution by taking non-transparent or multiple interdependent constraints into account. The reasoning process goes back and forth in a non-linear manner, requiring a good deal of self-regulation. At this level respondents often have to cope with multi-dimensional or ill-defined goals.
Level 4 (351-500)	Items in this level require the respondent to judge the completeness, consistency and/or dependency among multiple criteria. In many cases, he/she has to explain how the solution was reached and why it is correct. The respondent has to reason from a meta-perspective, taking into account an entire system of problem solving states and possible solutions. Often the criteria and the goals have to be inferred from the given information before actually starting the solution process.

Data collection

The ALL assessment was administered in homes by experienced interviewers. The study design combined educational testing techniques with those of household survey research. Respondents were first asked a series of questions to obtain background information on a range of variables thought to influence the formation of skill and in turn impact on a range of educational, social and health outcomes. Annex B describes in more detail the survey design used for ALL, including details about survey methods, coverage, sample sizes and key indicators of quality.

Once this background questionnaire was completed the interviewer presented a booklet containing six simple tasks. If the respondent failed to complete two of these tasks correctly, the interview was adjourned. Respondents who completed two or more tasks correctly were then given a much larger variety of tasks drawn from a pool of 170 items, printed in one of eight test booklets. Test booklets were randomly assigned to respondents to ensure good representation of the domains of interest. The assessment was not timed and respondents were given maximum opportunity to demonstrate their skill proficiency.

Organization of the report

The main goal of this first ALL report is to present initial findings on the level and distribution of skills, and the relationships between skills and important background variables. The findings are presented in 11 chapters.

Chapter 1 presents an overview of the ALL study.

Chapter 2 compares the basic distributions of skill by age, gender and country. The chapter also presents evidence on how rapidly skill profiles have changed over time for those countries where such analyses could be conducted¹.

Chapter 3 explores the relationship between each skill domain and education at various levels.

Chapter 4 documents the role skill plays in formal adult education and training markets and the effects of education and skill on continuing learning in informal and non-formal settings at home and at work.

Chapter 5 traces the influence of skill on employment and unemployment and on the transition from school to work.

Chapter 6 explores connections between the emergence of the knowledge economy, reading, writing and numeracy practices at work, and mismatch between observed skill and skill requirements at work.

Chapter 7 presents evidence on the profound effects of skill on earnings from work and investment income.

Chapter 8 focuses on the relationships between familiarity and use of information and communication technologies, labour market outcomes and the social distribution of ICT use and familiarity.

Chapter 9 sheds light on the relative skill levels of immigrants and on the implications of between-country differences in immigration patterns.

Chapter 10 concentrates on the relationship between parents' education and skills, patterns of skill use and how engagement in various activities at home, at work and during leisure can vary by skill level.

Chapter 11 examines the relationship between skill and summary measures of physical and mental health and overall life satisfaction.

Annex A provides a detailed overview of the ALL proficiency scales – how they are defined, how they were measured, how proficiency was summarized and how proficiency estimates should be interpreted. Readers requiring additional technical information on the psychometric aspects of the study are referred to *The Adult Literacy and Life Skills Survey: Aspects of Design, Development and Validation* (Statistics Canada, 2004), *The International Adult Literacy Survey: A Technical Report* (NCES, 1997) and *The Adult Literacy and Life Skills Survey: A Technical Report* (Statistics Canada, 2005).

Annex B documents key aspects of survey administration, response and data quality.

Finally, **Annex C** identifies the experts, researchers and analysts who were involved in developing the ALL instruments, in implementing the national data collections, and in the writing, analytical and editorial work that made publication of this report possible.

Endnotes

1. Comparable prose literacy and document literacy scores are available from the 1994 IALS study for Canada, Switzerland (German and French-speaking populations) and the United States, and from the 1998 IALS study for Norway, Italy and Switzerland (Italian-speaking population). The data sets thus allow for the analysis of changes in skill profiles over a nine and five-year period respectively.
2. Results are presented separately for the three Swiss language groups when considering changes in prose and document literacy skills between the IALS and ALL survey periods. This is because the IALS data for the German and French-speaking communities were collected in 1994 and for the Italian-speaking community in 1998. Estimates for the three Swiss language groups are also presented separately in Chapter 11 because of a high degree of variance among the three language groups with respect to health outcomes. Otherwise, the results present the three population groups combined into a single estimate for the whole country of Switzerland. This report also features estimates for the Mexican state of Nuevo Leon in Chapter 2 and a few other analyses when data were made available.

References

- NCES (1997), *The International Adult Literacy Survey: A Technical Report*, National Centre for Educational Statistics, Washington, DC.
- Statistics Canada (2004), *The Adult Literacy and Life Skills Survey: Aspects of Design, Development and Validation*, Ottawa.
- Statistics Canada (2005), *The Adult Literacy and Life Skills Survey: A Technical Report*, Ottawa.

Note to Readers

Throughout this report graphs are employed to convey study results in a non-technical manner and to provide a source of informative displays that readers may use for their own purposes. To satisfy the more technical reader data tables for all displays are provided in a statistical annex at the end of each corresponding chapter.

The skill proficiency results from the 2003 ALL study are reported separately for four scales – prose literacy, document literacy, numeracy, and problem solving – rather than on a single scale. Although it is desirable to maintain separate scales for the majority of more complex analyses, the theoretical and empirical properties also allow for creating composite skill scales. The prose and document literacy scales are combined into a composite literacy scale for some analyses in this book. Results of multivariate analysis are usually presented for a specific scale. Unless otherwise noted, the results for other scales exhibit the same pattern and magnitude of relationships.

Multiple sources of uncertainty and error are a fact of life in social science research. Given the comparative nature of the ALL study, those responsible for the design of the study and its implementation went to great lengths to establish the validity, reliability, comparability and interpretability of estimates, and to control and quantify errors that might interfere with or bias interpretation. Statistics Canada, the Educational Testing Service and the national study teams have performed comprehensive analyses to understand the nature and extent of errors associated with subtle differences in design and implementation. Notes to figures and tables are used to alert readers whenever errors have been detected that might affect interpretation.

The data values presented in this volume are estimated from representative but complex samples of adults from each country. Consequently there is a degree of sampling error that must be taken into account. Additionally, there is a degree of error associated with the measurement of skills because they are estimated on the basis of responses to samples of test items. Thus a statistic, called the standard error, is used to express the degree of uncertainty associated with both sampling and measurement error.

Country abbreviations used in this report²

OECD countries

Canada	CAN
Italy	ITA
Norway	NOR
Switzerland	CHE
United States	USA

Non-OECD countries

Bermuda	BER
Nuevo Leon	NL

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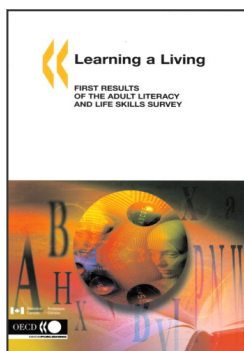
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