

International Adult Literacy Survey

A New Brunswick Snapshot

Hopeful that she could complete her studies, she didn't miss her chance to join a literacy program. "Upgrading is like winning 6/49: it's gaining a million new words that will help me with my daily tasks," she says.

Good humoured and determined, he completed his French and Mathematics 101 and 102 in 6 months. He notes, "With an education, I will be able to get a better job, better working conditions and a better life."

The example set by her 71 year old mother attending a literacy program inspired her to do the same. She says, "When you have a taste for life, you have everything necessary to get ahead".

Compound Interest

Compounded Annually

Principal

\$100

Period

1 day

1 week

6 months

5 years

10 years

4%

0.011

0.077

2.00

21.67

48.02

8%

0.022

0.153

4.00

46.93

115.89

16%

0.044

0.307

8.00

110.03

341.14

Data in many forms

Statistics Canada disseminates data in a variety of forms. In addition to publications, both standard and special tabulations are offered. Data are available on the Internet, compact disc, diskette, computer printouts, microfiche and microfilm, and magnetic tape. Maps and other geographic reference materials are available for some types of data. Direct online access to aggregated information is possible through CANSIM, Statistics Canada's machine-readable database and retrieval system.

How to obtain more information

Inquiries about this publication and related statistics or services should be directed to: Jean Pignal, Statistics Canada, Ottawa, Ontario, K1A 0T6 (telephone: (613) 951-3317) or to the Statistics Canada Regional Reference Centre in:

Halifax	(902) 426-5331	Regina	(306) 780-5405
Montréal	(514) 283-5725	Edmonton	(403) 495-3027
Ottawa	(613) 951-8116	Calgary	(403) 292-6717
Toronto	(416) 973-6586	Vancouver	(604) 666-3691
Winnipeg	(204) 983-4020		

You can also visit our World Wide Web site:

<http://www.statcan.ca>

Toll-free access is provided for all users who reside outside the local dialling area of any of the Regional Reference Centres.

National enquiries line	1 800 263-1136
National telecommunications device for the hearing impaired	1 800 363-7629
Order-only line (Canada and United States)	1 800 267-6677

Ordering/Subscription information

All prices exclude sales tax

Catalogue no. 89-565-XPB is published in a **paper** version for \$45.00 per issue in Canada. Outside Canada the cost is US \$45.00 per issue.

Please send orders to Statistics Canada, Operations and Integration Division, Circulation Management, 120 Parkdale Avenue, Ottawa, Ontario, K1A 0T6 or by dialling **(613) 951-7277** or **1 800 700-1033**, by fax **(613) 951-1584** or **1 800 889-9734** or by Internet: order@statcan.ca or from any Statistics Canada Regional Reference Centre. Statistics Canada publications may also be purchased from authorized agents, bookstores and local Statistics Canada offices.

For change of address, please provide both old and new addresses.

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner and in the official language of their choice. To this end, the agency has developed standards of service which its employees observe in serving its clients. To obtain a copy of these service standards, please contact your nearest Statistics Canada Regional Reference Centre.

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences - Permanence of Paper for Printed Library Materials, ANSI Z39.48 - 1984.



ISBN 0-660-59399-8



9 780660 593999



Statistics Canada
Special Surveys Division

A New Brunswick Snapshot

IALS: International Adult Literacy Survey

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 1998

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission from Licence Services, Marketing Division, Statistics Canada, Ottawa, Ontario, Canada K1A 0T6.

June 1998

Catalogue no. 89-565-XPB

Frequency: Occasional

ISBN 0-660-59399-8

Ottawa

Opinions are those of the author and do not necessarily reflect those of the granting agencies or reviewers.

Canadian Cataloguing in Publication Data

Main entry under title:

IALS : International Adult Literacy Survey : a
New Brunswick snapshot

Text in English and French with the French text
on inverted pages.

ISBN 0-660-59399-8

CS89-565-XPB

1. Literacy -- New Brunswick. I. Statistics Canada.

II. Title. III. Title: EIAA : Enquête
internationale sur l'alphabétisation des adultes :
le Nouveau-Brunswick en un clin d'oeil.

LC154.2.N4 I24 1998 302.2'244'097151
C98-988012-5E

Acknowledgements

The authors wish to acknowledge the kind assistance of Cindy Sceviour in the formatting, editing and translation of this document. Without her expert help and co-ordination, this paper would have been a perpetual draft. The topics touched in this paper are based on the Canadian report; *Reading the Future: A Portrait of Literacy in Canada*. The authors are grateful to Stan Jones for his input and deep understanding of literacy in Canada. Thanks also to Scott Murray and Gilles Montigny of Statistics Canada for their revisions, and to the kind people at Literacy New Brunswick Inc. for their support and patient editorial suggestions. Any errors that remain are the sole responsibility of the authors.

Note of appreciation

Canada owes the success of its statistical system to a long-standing co-operation involving Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Table of contents

Executive summary	7
Introduction Learning for life	9
Chapter 1 A profile of literacy in New Brunswick	13
Chapter 2 The practice of literacy	25
Chapter 3 Dollars and sense: The economics of literacy	39
Conclusion	53
Bibliography	55

Executive summary

The 1994 IALS sample in New Brunswick yielded 966 responses, 495 of which were in English and 471 were in French. All respondents were over the age of 16. The survey measured literacy in three domains (prose, document and quantitative). Proficiency in these domains is measured by levels (Level 1 being the lowest level of literacy and Level 4/5 being the highest). The results of this survey can be summarized as follows:

- Close to 60% of New Brunswick adults are in the lowest two levels of literacy in all three domains. New Brunswick has a higher percentage of its population at the highest literacy levels on both the prose and document scales than do the rest of Atlantic Canada and Quebec.
- Generally speaking, the proportion of adults at Level 1, on all three scales, increases with age. Likewise, at the other end of the scale, adults aged 26 to 35 have the greatest proportion at Level 4/5 and those older than 65 have the smallest proportion at the highest literacy levels.
- Adults who responded to the IALS in French consistently scored lower than those answering in English on all three scales. Unlike Quebec, this language difference does not disappear when age or education are controlled.
- While some adults do manage to acquire literacy skills despite having low levels of education, generally speaking, the higher the education attained, the higher the literacy level.
- Adults with a university degree are close to five times more likely to be at the highest literacy levels than those with only a secondary school education. Despite this, the payoff in New Brunswick for graduating from high school is very large.
- Once out of school, the workplace takes over as the primary factor that affects people's literacy skills. Jobs that make high literacy demands tend to promote literacy and allow it to grow. However, workers whose jobs do not make high literacy demands are more likely to experience an erosion of literacy skills. Thus, the jobs of adults at the lowest literacy levels do not seem to demand many literacy activities.
- Income assistance recipients in New Brunswick are twice as likely to be at Level 1 than either employment insurance recipients or those receiving no income support.
- Adults at Level 4/5 are six times more likely to be in professional or administrative occupations (jobs in these categories are growing in number in New Brunswick) than those in lower literacy groups. People at Level 1 are seven times more likely to hold primary or industrial occupations (those categories are on the decline in New Brunswick).
- Adults at Level 1 are more than five times more likely to be unemployed than those at Level 4/5. Furthermore, those who are employed work fewer hours per week and fewer weeks per year than those with higher literacy skills. More than three-quarters of those at Level 1 (in all three domains) earn wages below the mean wage rate in New Brunswick.
- Another factor that promotes literacy outside of either the education system or the workplace is the personal literacy practices of the individual. Except at the highest level of literacy, reading practices are typically weaker in New Brunswick than in the rest of Canada. However, adults in New Brunswick at the lowest literacy levels do practice literacy more at home than at work, unlike similar adults in other provinces.
- Compared with those at Level 1, respondents at Level 4/5 are three times more likely to read a book, five times more likely to write a letter and eight times more likely to visit a library. This suggests that literacy is as much a habit as it is a skill.

Introduction

Learning for life

A strategy for the future

Jean Pignal, Statistics Canada

Background

This study analyses the New Brunswick data collected for the International Adult Literacy Survey (IALS) to better understand the occurrence of literacy in the province. Comparisons with the other Atlantic provinces, Canada as a whole and the pool of countries involved in IALS offer some telling insights.

The IALS was a seven-country initiative conducted in the fall of 1994 to create comparable literacy profiles across linguistic and cultural boundaries. International results published in December 1995 (*Literacy, Economy and Society: Results of the first International Adult Literacy Survey, 1995*) showed a strong plausible link between literacy and a country's economic potential. National results published in the fall of 1996 (*Reading the Future: A Portrait of Literacy in Canada, 1996*) expanded and extended the analysis by providing more details about literacy's constitution and impact in Canada.

Whenever possible, this report attempts to reproduce the analysis presented in the earlier publications. Links to age, education, occupation and a variety of other demographic indicators are explored and a separate chapter on the practices of literacy is presented.

The Canadian component of the IALS was primarily funded by Human Resources Development Canada. Special funding for the senior population (over 65 years of age) was provided by the Seniors Secretariat. In addition, a few provinces provided funding for a larger sample than would have been allocated through a strict PPS (Proportionate to Population Sample) technique, in order to allow for more detailed analysis within their boundaries. These provinces included Alberta, Ontario and, most germane to this report, New Brunswick.

The importance of literacy

More than most provinces in Canada, New Brunswick has adopted the standard of a digital society. While the goal of empowering citizens by encouraging the free access to information is commendable, the reality sometimes falls short. As with printed material, electronic information requires particular skills to assimilate and process it. The individual is, more than ever, a central ingredient in a region's recipe for economic success. As with the transformations of the Gutenberg revolution, governments are quickly beginning to see the need for the development of their own human capital in order for it to reach its full potential. Many governments are advancing the development of "basic skills" and "lifelong learning" as tactics to strengthen their economies and to improve social and economic conditions within their borders. Literacy is central to these goals. Without the ability to read and process printed

information, further learning becomes both onerous and expensive—to the detriment of both one's competitive advantage and social well-being. Clearly, a region with an adequately trained work force have the short-term edge. However, those with a work force capable of adapting are those who will best be able to face future economic challenges.

The IALS theoretical framework

Just as global societies are redefining themselves, the concept of literacy is undergoing an evolution. Theoretical and technological advances have transformed literacy from a simple dichotomy into a richer, more complex construct. More important than the simple ability to read, literacy now focuses on the ability to use this written information. This dimension has the benefit of placing the practice of literacy into a realistic context. Moreover, the new framework includes a continuum of abilities that recognizes the various degrees of literacy across a more structured and well defined range of materials. Thus, the results of the 1994 IALS are reported on three distinct literacy domains:

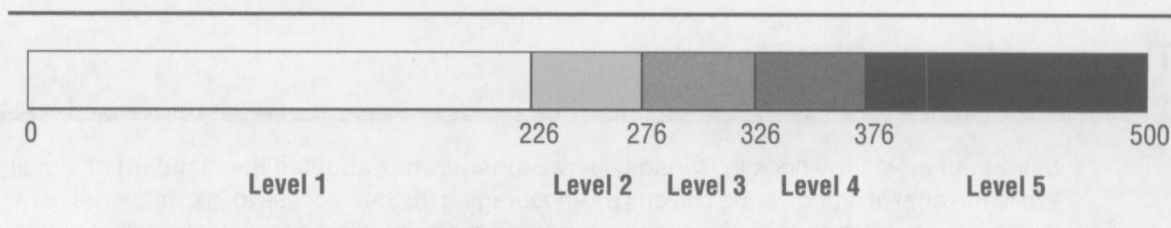
- *Prose literacy*—the knowledge and skills needed to understand and use information from texts including editorials, news stories, poems and fiction;
- *Document literacy*—the knowledge and skills required to locate and use information contained in various formats including job applications, payroll forms, transportation schedules, maps, tables and graphics; and,
- *Quantitative literacy*—the knowledge and skills required to apply arithmetic operations, alone or sequentially, to numbers in printed material, such as balancing a chequebook, figuring out a tip, completing an order form or determining the amount of interest on a loan from an advertisement.

These three domains replace the traditional single literacy measure of reading ability, and reflect our improved understanding of literacy as a cognitive activity.

The IALS framework is primarily concerned with measuring adult literacy skills, as determined through tested proficiency levels, using stimulus materials drawn from real world applications found in specific contexts within advanced industrial and post-industrial economies. Unlike many previous studies of literacy, IALS is not about whether people can read a simple sentence, but is rather about whether they can use the information found in such a sentence. The IALS concern is not with trying to find the "illiterates" in society, but with measuring practical literacy as it is applied in everyday life.

Proficiency in each of the three domains is scaled in a range from 0 to 500 with 0 representing the lowest ability score. To simplify reporting, these have been grouped into five empirically determined literacy levels, shown below.

Figure I.1 IRT scale—range and skill level values



1. It should be noted that, due to a dearth of cases, Level 5 was collapsed with Level 4 for both this and the international report.

Figure I.2 Description of the prose, document and quantitative literacy levels

	Prose	Document	Quantitative
Level 1 (0 to 225)	Most of the tasks at this level require the reader to locate one piece of information in the text that is identical to or synonymous with the information given in the directive. If a plausible incorrect answer is present in the text, it tends not to be near the correct information.	Most of the tasks at this level require the reader to locate a piece of information based on a literal match. Distracting information, if present, is typically located away from the correct answer. Some tasks may direct the reader to enter personal information onto a form.	Tasks at this level require the reader to perform single, relatively simple operations (usually additions). Either the numbers are already entered onto a given document and the operation is stipulated, or the numbers are provided and the operation does not require the reader to borrow.
Level 2 (226 to 275)	Tasks at this level tend to require the reader to locate one or more pieces of information in the text, but several distractors may be present or low-level inferences may be required. Tasks at this level also begin to ask readers to integrate two or more pieces of information or to compare and contrast information.	Document tasks at this level are a bit more varied. While some still require the reader to match on a single feature, more distracting information may be present or the match may require a low-level inference. Some tasks at this level may require the reader to enter information onto a form or to cycle through information in a document.	Tasks at this level typically require readers to perform a single arithmetic operation using numbers that are easily located in the text or document. The operation to be performed may be easily inferred from the wording of the question or the format of the material.
Level 3 (276 to 325)	Tasks at this level tend to direct readers to search texts to match information that requires low-level inferences or that meets specified conditions. Sometimes the reader is required to identify several pieces of information that are located in different sentences or paragraphs rather than in a single sentence. Readers may also be asked to integrate or to compare and contrast information across paragraphs or sections of text.	Tasks at this level appear to be most varied. Some require the reader to make literal or synonymous matches, but usually the matches require the reader to take conditional information into account or to match on multiple features of information. Some tasks at this level require the reader to integrate information from one or more displays of information. Other tasks ask the reader to cycle through a document to provide multiple responses.	Tasks found at this level typically require the reader to perform a single operation. However, the operations become more varied—some multiplication and division tasks are found in this level. Sometimes two or more numbers are needed to solve the problem, and often those numbers are embedded in more complex displays. While semantic relation terms such as "how many" or "calculate the difference" are often used, some tasks require the reader to make higher-order inferences to determine the appropriate operation.
Level 4/5 (326 to 500)	These tasks require readers to perform multiple-feature matching or provide several responses in which the requested information must be identified through text-based inferences. Tasks at this level may also require the reader to integrate or contrast pieces of information, which are sometimes presented in relatively lengthy texts. Typically, these texts contain more distracting information and the information that is requested is more abstract. At Level 5, some texts require readers to make high-level inferences or use specialized knowledge.	Tasks at these levels, like those of previous levels, ask the reader to match on multiple features of information, to cycle through documents, and to integrate information. Often, however, these tasks require the reader to make higher-order inferences to arrive at the correct answer. Sometimes conditional information must be taken into account. At Level 5, multiple distractors, high-level inferences and, sometimes, specialized knowledge are needed.	Tasks at these levels often require operations where typically either quantities or operations are not easily determined. At Level 5, readers are required to perform multiple operations sequentially, and must disembed the features of the problem from the material provided or rely on background knowledge to determine quantities or operations needed.

Each domain requires a specific set of skills, as outlined in Figure 1.2. The difficulty of the items presented is generally based on three factors: the task being requested (the question); the stimulus being presented (the text or graphic); and the respondent's familiarity with the stimulus (his or her specialized knowledge). The task requested proves to be the most important contributor, and familiarity the least important contributor, to the item's difficulty. Literacy, as understood by this report, is not a simple value placing those who have it against those who do not. Rather, it is a continuous distribution of abilities that depend on the type of information and the difficulty of the item presented. In short, people at Level 1 do not have an absence of literacy; just a lower level.

Survey administration

The IALS was conducted in homes by experienced interviewers who administered the literacy tasks in a neutral, non-threatening manner. The survey design combined educational testing techniques with those of household survey research to measure literacy and to provide the information necessary to make these measures meaningful. Respondents were first asked a series of questions to obtain background and demographic information on educational attainment, literacy practices at work and at home, labour force information, adult education participation and literacy self-assessment.

Once this questionnaire was completed, the interviewer presented a booklet to the participant containing six simple tasks. If the respondent failed to correctly complete at least two of these tasks, the interview was adjourned. Respondents who completed two or more tasks correctly were given a much larger variety of tasks, drawn from a pool of 114 items, in a separate booklet. These tests were not timed and respondents were urged to try each exercise. Respondents were given maximum leeway to demonstrate their skill levels, even if their observed skills were minimal.

The primary objective of the IALS was to compare national Canadian literacy profiles with those of several of Canada's key trading partners. The Canadian sample was also designed to produce estimates for several specific subpopulations. Included in these special samples was a considerable augmentation of the sample in New Brunswick.² The goal was to get 500 English and 500 French responses in order to be able to provide some basic distributions of the literacy profiles of both linguistic subpopulations and to compare these with the distributions in other regions of Canada. In the New Brunswick sample, 495 responded in English and 471 in French, for a total of 966 responses. It should be noted that the comparative analysis will have to proceed using regions. Besides New Brunswick, only Quebec and Ontario have populations large enough to support estimates within the limits of the IALS sample size. Comparisons with New Brunswick can only be made with these regions: the Atlantic provinces (minus New Brunswick), Quebec, Ontario and the Western provinces. It is also possible to make comparisons with Canada as a whole and with all other countries that participated in IALS.

The main study sample was drawn from the Labour Force Survey frame. As a result, it excludes inmates of institutions, persons living on Indian reserves and full-time members of the Canadian Armed Forces. Other than these basic exclusions, the survey covers the entire population of New Brunswick aged 16 and older.

2. The basic sample is proportional to population for all provinces and regions. In such a scheme, the sample in New Brunswick would have been about 230 responses. The current sample size of 966 represents an increase of about 730 or so responses.

Chapter 1

A profile of literacy in New Brunswick

Jean Pignal, Statistics Canada

Describing literacy in New Brunswick cannot be done in a vacuum. In most cases, it is equally important to provide a context for the distribution. Whenever appropriate, such a context is provided using national figures to show New Brunswick's relative position within the national picture. In some cases, comparing with other regions may be more telling, in others, comparing with another of the participating countries might provide interesting counterpoints. Differences between the three literacy domains (prose, document and quantitative) are evident. However, unless they are atypical the written analysis will concentrate on the scale most appropriate in order to avoid repetitious descriptions.

The global picture

Broadly speaking, the distribution of literacy across Canada can be described as gradually improving as one moves nationally from east to west. It must be recognized however, that even within regions, this distribution takes on slightly different patterns. New Brunswick has a larger percentage of its population at Level 1 on the prose, document and quantitative scales than its three Atlantic neighbours displayed collectively in Table 1.1. In fact, only Quebec has a larger percentage at this level on two of the three scales. It should also be noted that New Brunswick has a larger percentage at Level 4/5 on both the prose and document scales than do both Quebec and the rest of Atlantic Canada. On the quantitative scale, the distributions in the Atlantic provinces are much more similar but, again, Quebec lags behind and Ontario and the Western provinces have a considerable edge—close to a quarter of their populations were at Level 4/5.

The discrepancy between New Brunswick's ability distribution and those of the other Atlantic provinces should be interpreted with some care. In this respect, the Literacy Skills Used in Daily Activities Survey (LSUDA) conducted in 1989 might shed some light. While the LSUDA is not directly comparable, the trends it uncovered have remained surprisingly stable. This study shows that, in the Atlantic provinces, New Brunswick is second only to Nova Scotia in its profile of literacy skills. It has the second lowest percentage of its population at the lowest literacy skill level and the second highest percentage at the highest level of literacy measured in LSUDA. While we cannot directly examine the IALS skill distributions in the other Atlantic provinces, their ability profile is evidently moderated by the larger population and relatively well performing residents of Nova Scotia.

Table 1.1 Distribution of literacy skills on the three scales by region, adults aged 16 and over

	Prose scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
Canada	22	26	33	20
New Brunswick	28	31	25	16
Other Atlantic provinces	24	23	40	14
Quebec	28	26	39	8
Ontario	19	28	28	25
Western provinces	18	24	34	25

	Document scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
Canada	23	24	30	22
New Brunswick	29	30	24	16
Other Atlantic provinces	28	24	35	13
Quebec	31	27	29	13
Ontario	21	22	31	26
Western provinces	19	25	29	35

	Quantitative scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
Canada	22	26	32	20
New Brunswick	25	34	27	14
Other Atlantic provinces	22	29	32	17
Quebec	28	32	30	10
Ontario	20	23	34	23
Western provinces	18	24	33	25

In the Canadian sample of adults 16 and over, about 60% of New Brunswickers are in the lowest two levels of literacy (see Table 1.1).

Placing the New Brunswick results in an international perspective provides a slightly different profile. Table 1.2 shows the distribution along the three scales for the adult population aged 16 to 65 (in order to be comparable with other countries that participated in the IALS) for New Brunswick and compares them with Canada, Switzerland (a country that is likewise faced with the challenges of bilingualism) and the United States (an important trading partner for New Brunswick). In this light, the New Brunswick results, particularly on the prose scale, are very much in line with those of other countries.

Table 1.2 Distribution of literacy skills on the three scales by selected countries and New Brunswick, adults aged 16 to 65

	Prose scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	20	33	29	20
Canada	17	26	35	23
Switzerland (French)	18	34	39	10
Switzerland (German)	19	36	36	9
United States	21	26	32	21

	Document scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	21	33	27	19
Canada	18	25	32	25
Switzerland (French)	16	29	39	16
Switzerland (German)	18	29	37	16
United States	24	26	31	19

	Quantitative scale			
	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	16	36	31	17
Canada	17	26	35	22
Switzerland (French)	13	25	42	20
Switzerland (German)	14	26	41	19
United States	21	25	31	23

Comparisons for both Table 1.1 (using adults aged 16 and over) and Table 1.2 (using adults aged 16 to 65), although for different age categories, do demonstrate the close association between literacy skills and age.

Literacy and age

The Canadian IALS report found that the largest proportion of those at Level 1 were in the older age cohorts, and that the likelihood of being at Level 1 increases with age. New Brunswick's patterns are only slightly different (see Table 1.3). The quantitative scale follows the national pattern, but the youngest age cohort performs slightly worse than the next highest³—after which the distribution resumes the pattern observed nationally. Assuming that those at the lowest age group are nearest in time to their educational experience, one might conclude that the system is doing a good job of teaching quantitative skills. Recent census information puts New Brunswick's general age distribution in perspective.

3. It should be noted that certain numbers regarding the distribution of age display a high degree of variation and should be examined with caution; while this should not affect the general pattern of distributions, it likely does have an impact on the point estimates. This analysis recognizes the weakness of the estimates but relies on the distribution to remain relatively stable.

Table 1.3 The distribution of literacy skills on the three scales, by age group, New Brunswick, adults aged 16 and over

Prose scale				
Age	Level 1	Level 2	Level 3	Level 4/5
	%			
16 to 25	15 ¹	35	35	15 ¹
26 to 35	11 ¹	27	30	33
36 to 45	21	37	28	14 ¹
46 to 55	27	36	28	10 ¹
56 to 65	36	29	16 ¹	19 ¹
66 and older	72	22	6 ¹	—
Document scale				
Age	Level 1	Level 2	Level 3	Level 4/5
	%			
16 to 25	14 ¹	44	25	17
26 to 35	13 ¹	30	26	32
36 to 45	19	30	34	17
46 to 55	32	32	22	14 ¹
56 to 65	41	20 ¹	29	11 ¹
66 and older	76	19 ¹	5 ¹	—
Quantitative scale				
Age	Level 1	Level 2	Level 3	Level 4/5
	%			
16 to 25	5 ¹	49	34	12 ¹
26 to 35	12 ¹	29	26	33
36 to 45	17	33	38	17 ¹
46 to 55	26	41	22	12 ¹
56 to 65	36	24	34 ¹	6 ¹
66 and older	70	23	7 ¹	—

— Too small to be expressed.

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

The percentage of the New Brunswick population that had a highest level of schooling of less than Grade 9 has steadily fallen from 60% in 1951 to 53% in 1961, 41% in 1971, 29% in 1981 and 20% in 1991.⁴ The population 16 to 25 are roughly three times more likely to have an education higher than Grade 9 than the cohort aged 66 and older. Not surprisingly, they are also less likely to be at Level 1 on any of the three literacy scales. This finding suggests a strong relationship between literacy and education.

4. Statistics Canada, *Educational attainment and school attendance: The nation (1991 Census)*. Statistics Canada Catalogue no. 93-328-XPB. Ottawa, Minister of Industry, Science and Technology, 1993, p. 15.

Literacy and education

It seems almost self-evident that literacy and education are linked. The association is straightforward—the higher one's level of educational attainment, the higher one's literacy level. It should come as no surprise that someone with a university degree is three to five times more likely to be at the highest literacy levels than someone with only a secondary school education, depending on the scale being measured (see Table 1.4).

Table 1.4 The distribution of literacy skills on the three scales by the highest level of educational attainment, New Brunswick, adults aged 16 and over

Prose scale				
Highest level of education	Level 1	Level 2	Level 3	Level 4/5
	%			
Less than Grade 8	84	9 ¹	7 ¹	—
Completed primary school	54	37	9 ¹	—
Some secondary school	28	47	16	9 ¹
Secondary school graduate	9 ¹	39	34	18
Postsecondary non-university	12 ¹	31	44	12 ¹
University graduate	—	17 ¹	30	53
Document scale				
Highest level of education	Level 1	Level 2	Level 3	Level 4/5
	%			
Less than Grade 8	90	8 ¹	2 ¹	—
Completed primary school	65	28	7 ¹	—
Some secondary school	34	44	19	2 ¹
Secondary school graduate	9 ¹	45	32	14
Postsecondary non-university	13 ¹	22	35	30
University graduate	—	23 ¹	25	52
Quantitative scale				
Highest level of education	Level 1	Level 2	Level 3	Level 4/5
	%			
Less than Grade 8	79	19 ¹	2 ¹	—
Completed primary school	59	33	8 ¹	—
Some secondary school	32	45	15 ¹	9 ¹
Secondary school graduate	4 ¹	48	39	9 ¹
Postsecondary non-university	9 ¹	29	44	18
University graduate	—	7 ¹	43	50

— Too small to be expressed.

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

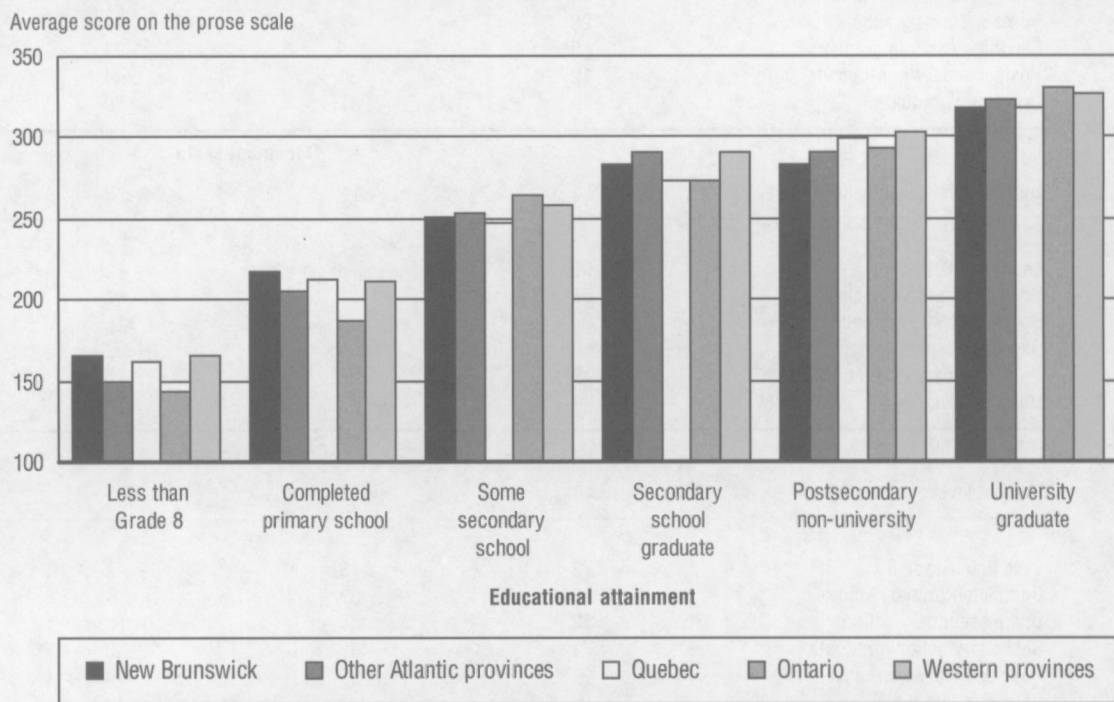
One surprising result in this table is the higher percentage of respondents at Level 1 among postsecondary non-university graduates⁵ compared with high school graduates. This is inconsistent with national results, which show a smoother progression from the highest percentage at Level 1 for the respondents with less than Grade 8 to the lowest percentage at Level 1 for university graduates. The New Brunswick distribution suggests that there is a much higher payoff for graduating from high school in New Brunswick than in the rest of the country. In Canada as a whole, for example,

5. This category includes educational institutions such as community colleges as well as trade and vocational schools.

a respondent with some secondary school is two to three times more likely to find themselves at Level 1 than a high school graduate; in New Brunswick, they are three to eight times more likely to be at Level 1, depending on the scale examined. One possible explanation for this discrepancy is that some graduates from postsecondary non-university institutions in New Brunswick either did not complete their secondary school—they entered a technical institution without graduating from high school—or are removed in time from this particular educational experience—they are taking some form of continuing adult education or training without refreshing the skills they learned or were introduced to in high school. What is certain is that educational attainment is the paramount requirement for acquiring a solid literacy base.

Average literacy scores are much more consistent across Canada's regions, when one keeps educational attainment constant. Many of the regional differences between New Brunswick and the rest of Canada are artifacts of regional differences in educational attainment, as Figure 1.1 demonstrates.

Figure 1.1 Average prose score by educational attainment for each region of Canada, adults aged 16 and over



The importance of education to literacy is central to any analysis of this type. The IALS is in many respects a proxy outcome measure of the performance of the education system. In New Brunswick, the system appears to be working quite well. However, as Figure 1.1 shows, the payoff is only garnered by the actual attainment of a specific level. There is an extremely large payoff for high school graduates—particularly in New Brunswick—and, while the IALS tells us what is rather than what should be, it seems self-evident that every society should encourage its youth to complete their secondary education.

Literacy and gender

The Canadian report on IALS demonstrated some small differences between males and females. The distribution supported previous studies that showed males doing better on the mathematics and problem-solving (quantitative and document) domain and females doing better in reading (prose).⁶ In New Brunswick, the pattern is rather different. On all three scales, females in New Brunswick are shown to outperform their male counterparts (Table 1.5).

Table 1.5 Mean scores with standard deviation by gender

	Mean		Standard deviation	
	Male	Female	Male	Female
Prose	250	269	70	59
Document	250	262	74	69
Quantitative	260	269	70	69

The distribution of literacy shows the same pattern (see Table 1.6). On all three scales, there are more males at Level 1. However, at the same time, there were more males at Level 4/5 on the prose and quantitative scales. The document scale is more consistently dominated by females; there were fewer females at Level 1 and a greater percentage at Level 4/5. In effect, the standard deviations show this effect: There is a greater level of variation in the distribution of males along the literacy continuum while females are more clustered.

Table 1.6 The distribution of literacy skills on the three scales by gender, New Brunswick, adults aged 16 and over

Gender	Prose scale			
	Level 1	Level 2	Level 3	Level 4/5
Male	32	33	18	17
Female	24	29	32	15
Gender	Document scale			
	Level 1	Level 2	Level 3	Level 4/5
Male	31	31	22	15
Female	28	30	25	17
Gender	Quantitative scale			
	Level 1	Level 2	Level 3	Level 4/5
Male	27	31	27	15
Female	23	37	27	13

6. *Technical report: Mathematics assessment 1993*, Council of Ministers of Education Canada 1994; *Technical report: Reading and writing assessment*, Council of Ministers of Education Canada 1995; *The International Association for Evaluation of Educational Achievement (IEA) Study of Reading Literacy: Achievement and Instruction in Thirty-two School Systems*, Warwick B. Elley, ed. 1994.

While Table 1.6 mirrors the overall patterns found in Table 1.5, it is interesting to note the lack of gender differential between literacy skills in New Brunswick.

The language of literacy

Language is a characteristic closely related with literacy. It provides not only the form for the stimulus but also a window into the history of educational access. In New Brunswick this history is particularly important, given that French-language education was not generally available in the province until the late 1960s. This means that all but the two youngest cohorts of the French-speaking population in New Brunswick have received their formal education in a language other than their mother tongue. This, as we shall see, directly affects their literacy profiles.

The IALS provides special insights into the relationship between language and literacy. There are several language variables available in the IALS dataset; the most important is the language in which the test was taken. This variable was used to split the Canadian subpopulations and scale the Canadian tests. In this regard it is the most credible variable that differentiates French from English respondents. Respondents were allowed to choose in which language they wanted to answer the background questionnaire (French or English), and, once completed, they were also offered a choice of which of the two languages they wanted to use to complete the tasks.

In addition, the IALS background questionnaire also asked respondents about the language they first learned as a child—their mother tongue. On a more restrictive note, if this language or list of languages did not include the language of interview, they were asked to rate their current ability to speak, write and understand that language. They were also asked to report: at what age they began to learn the language of the interview (either French or English); which language they used most often at home growing up; which language they first learned to read and write; which language they currently use most often at home; which language they speak most often at work or school; and which language they use most often during leisure activities. The respondents were then asked to rate their proficiency in both the language of interview and the language in which they can express themselves most easily.

The list of questions is impressive. However, only a subset of the population answered the bulk of them, and so their usefulness at an aggregate level is limited to an examination of the Canadian population in total.⁷ All respondents were asked to rate their proficiency in using the language of interview at work. These self-assessment variables are best dealt with in the following chapter on the use and practices of literacy at work and at home. So, the language of the cognitive test and mother tongue are the most important linguistic variables for the present analysis.

The first question to examine is the issue of language transfer. This analysis must, necessarily, deal with the number of people who have a mother tongue of French who chose to complete the cognitive tasks in English, as well as those in the reverse situation. It is important to limit the analysis in such a manner that those respondents with a mother tongue of both French and English are excluded. Such people cannot, by definition, have a language transfer as we understand it.⁸ Likewise, those respondents with a mother tongue other than either French or English must be excluded from the analysis since, while many may have a language transfer, the direction of their transfer is predictable. The amount of language transfer in New Brunswick based on the unweighted responses to the IALS instruments is shown in Table 1.7.

7. The reason for this deficiency is simple: There is a dearth of respondents in New Brunswick (or in any single region for that matter) who don't have at least one of their first languages equivalent to the language which they chose to complete the background questionnaire.

8. On the unweighted data, the bilingual (French and English) population accounts for only 18 respondents, far too few to allow for any sort of analysis. In addition, respondents who have a mother tongue of neither French nor English account for only 10 respondents.

Table 1.7 Mother tongue by language of cognitive test, New Brunswick (unweighted)

	Completed test in English	Completed test in French
Mother tongue English	392 (99%)	6 (1%)
Mother tongue French	77 (14%)	463 (86%)

The results of this table are rather positive when placed in perspective. Very few “anglophones” completed the test in French and while 14% of “francophones” completed the cognitive tasks in English, this is low compared with the 47% who displayed this behaviour in Ontario. If assimilation is an explanation for language transfers, then it seems to play a much smaller role in New Brunswick. Citizens in New Brunswick are more at ease responding to literacy tasks in their mother tongue. This suggests that they have the opportunity to use their language of choice in their daily life, at work, at school, or at home, and that they feel proficient to both read and write information in that language.

The second question concerns a direct comparison of proficiency estimates of the two language groups tested in New Brunswick. The most basic way to depict language and literacy is to look at the proficiency based on the language of the test. In Table 1.8, respondents who answered the test in English consistently show higher proficiency on all three scales. The gap is largest on the prose scale, where a respondent who took the test in French is twice as likely to be at Level 1 than a respondent who took the same test in English. This is not entirely surprising; of the three scales, the prose domain is most closely associated with language (it requires one to read the most with few other visual cues). In comparison, the document scale, which includes items such as charts, graphs and tables, and the quantitative scale, which is primarily concerned with calculations, are relatively independent of the language.

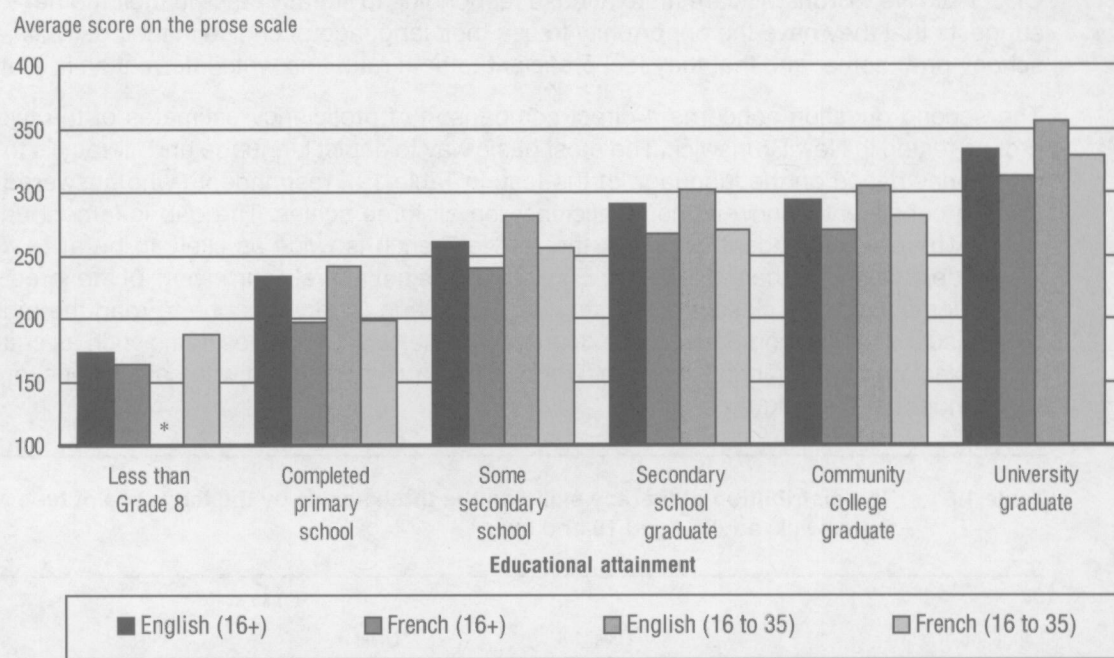
Table 1.8 The distribution of literacy skills on the three scales by the language of test, New Brunswick, adults aged 16 and over ¹

Prose scale				
Language of test	Level 1	Level 2	Level 3	Level 4/5
	%			
English	18	32	30	21
French	37	30	21	12
Document scale				
Language of test	Level 1	Level 2	Level 3	Level 4/5
	%			
English	22	33	24	21
French	37	28	23	12
Quantitative scale				
Language of test	Level 1	Level 2	Level 3	Level 4/5
	%			
English	20	34	27	19
French	30	34	27	10

1. These results are very similar to those produced using mother tongue rather than language of interview.

Figure 1.1 showed that educational attainment is a great equalizer of literacy proficiency. However, Figure 1.2, which depicts the mean scores on the prose scale of the two language groups by educational attainment, does not show the same level of convergence. In addition, even when we restrict the analysis to those respondents aged 16 to 35—that is, those respondents who have had the opportunity to be educated in the language of their choice—the respondents who chose to do the cognitive tasks in English continue to outperform their French counterparts.⁹ To help place the New Brunswick francophone proficiencies in context, Table 1.9 compares the distribution of respondents who were tested in French from New Brunswick, Quebec and Ontario.

Figure 1.2 Average prose score by educational attainment for respondents who answered the test in French and English, New Brunswick, adults aged 16 and over and adults 16 to 35



* Too small to be expressed.

Once again, New Brunswick francophones continue to trail on most scales (with the notable exception of the higher proportion at Level 4/5 on the prose scale). Yet, their performance seems more on par with other francophone populations than with their provincial anglophone counterparts. The observed differences may be because New Brunswick francophones are exposed to less French material.

9. The exclusion of respondents displaying language transfer from the anglophone and francophone populations does not appreciably change the mean scores for any of the three scales. In fact, for those who answered the test in English, removing the respondents with a mother tongue of French only raises the mean by a few points along the educational continuum. For the respondents who answered in French, removing the anglophones has an even more marginal effect. In addition, using the respondent's mother tongue rather than the language which they chose to answer the test likewise does not change the means in any statistically significant manner.

Table 1.9 The distribution of literacy skills on the three scales by selected provinces, adults aged 16 and over who completed the cognitive test in French

Prose scale				
Province	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	37	31	21	12
Quebec	27	25	39	9
Ontario	30	31	30	10
Document scale				
Province	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	37	28	23	12
Quebec	31	27	29	14
Ontario	29	27	27	16
Quantitative scale				
Province	Level 1	Level 2	Level 3	Level 4/5
	%			
New Brunswick	30	34	27	10
Quebec	28	32	30	10
Ontario	25	30	32	14

Summary

In this chapter, we have demonstrated the importance of several demographic variables on literacy skills. Age is important, but only insofar as it is related to educational completion. Language is likewise linked to proficiency on all three scales. However, unlike age, education does not provide a satisfactory explanatory force, even among youth cohorts. One can either accept that the French and English education systems are qualitatively different, or rely on other factors that mitigate the francophone results.

Chapter 2

The practice of literacy

Jean Pignal, Statistics Canada

The formal education system provides a crucial base for literacy, but this base is neither consistent nor similar. There are many people in New Brunswick with low educational attainment and relatively high levels of competence on all three scales (see Table 1.4). There are even more people with high educational attainment and low literacy skills. The Canadian report on the IALS argues that one of the factors pushing the literacy profile up or down, independent of education, is the respondents literacy practices both at work and at home.

This has been called the “Use It or Lose It” theory of literacy. In this context, literacy is not so much a skill as it is a habit. In certain societies, such as Sweden or Norway, this habit is a part of the culture; indeed, reading is practiced in a fashion that is alien to North America. To illustrate, given the small broadcasting industry and the high cost of dubbing, a large portion of Swedish and Norwegian television is presented with subtitles. Thus, while North Americans consider television viewing and reading mutually exclusive, Scandinavians must integrate the two and “read” their television. In Canada, literary practices at work seem to be much more significant—and harder to avoid—than practices at home. In addition, the further one is removed from the educational experience, the more these practices matter. This chapter will examine whether the links between literacy practices and literacy proficiency act in a similar way in New Brunswick.

Reading and writing at work

Because a person chooses an occupation (rather than an industry), the attachment to the individual is more stable. While an engineer may work in several industries, he or she remains an engineer. Table 2.1 shows the relationship between three occupation types and several reading tasks that may be encountered at work.¹⁰ Clearly, the professional and administrative occupations require a greater frequency and variety of reading than do the other types of occupations. With the notable exception of reading diagrams and schematics, clerical and sales occupations require the next highest and primary/industrial the least frequency and variety of reading tasks at work. This variation in reading tasks is consistent with the types of occupations represented in each of these broad categories. Professional/administrative workers, almost by definition, deal with written information, and clerical/sales workers likewise need to perform certain reading tasks often, and with a high degree of precision. On the other hand, workers in such occupations are seldom confronted by diagrams or schematics. This task is much more likely for those in primary/industrial occupations such as construction workers or machine assemblers.

10. Due to the sample size, detailed occupations could not be used. Instead, occupations have been grouped into three broader categories. Included in the “professional/administrative” group are legislators, senior officials, managers, professionals, technicians and associate professionals. In the “clerical/sales” group are clerks, service workers and shop and market sales workers. Finally, the “primary/industrial” category includes skilled agricultural and fishery workers, craft and related trade workers, plant and machine operators and assemblers, and, elementary occupations.

Table 2.1 Proportion of workers in occupation types who reported engaging in various workplace reading tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Occupation	Do you read...at least once a week?				
	letters or memos	reports, articles, magazines or journals	manuals or reference books, including catalogues	diagrams or schematics	bills, invoices, spreadsheets or budget tables
	%				
Professional/administrative	91	90	82	57	62
Clerical/sales	68	48	37	11 ¹	43
Primary/industrial	34	29	29	36	33

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Similar patterns are evident when writing tasks and calculation tasks are examined (see Tables 2.2 and 2.3 respectively). Again, different occupation types require different types of tasks.

Table 2.2 Proportion of workers in occupation types who reported engaging in various workplace writing tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Occupation	Do you write...at least once a week?			
	letters or memos	reports or articles	forms or things such as bills, invoices or budgets	estimates or technical specifications
	%			
Professional/administrative	88	65	70	35
Clerical/sales	50	55	25	12 ¹
Primary/industrial	27	34	24	12 ¹

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

In the writing tasks, the differences between clerical/sales and primary/industrial occupations tend to be less pronounced. However, the professional/administrative occupations still require a greater variety and frequency of tasks. Numeracy tasks are not dominated by any one occupation type; all three occupation types require numeracy tasks to some degree.

Table 2.3 Proportion of workers in occupation types who reported engaging in two workplace numeracy tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Occupation	Do you use mathematics at least once a week to...	
	measure or estimate the size or weight of objects?	Calculate prices, costs or budgets?
	%	
Professional/administrative	53	47
Clerical/sales	40	60
Primary/industrial	58	42

While these results give some indication of the frequency and variety of literacy-related tasks at work, they do not show a full picture of the intensity of these practices. To merge the various tasks for reading, writing and numeracy, and allow for the full range of frequencies, we must construct a more comprehensive series of scales. For the reading intensity scale, respondents were awarded points for each of the seven reading tasks¹¹ on a decreasing scale: 4 points for doing a task every day, 3 points for a few times a week, 2 points for once a week and 1 point for less than once a week. No point was awarded for those who do the task rarely or never. This resulted in an index ranging from 0 to 28; 0 indicates that a respondent rarely or never did any of the tasks and 28 indicates a respondent does all the tasks every day. To normalize the index, the scores were divided by 7 (for each of the tasks).

The same procedure was followed for the four writing tasks and the two numeracy tasks. Thus, for all three scales, the highest possible intensity score was 4 and the lowest 0. The results of this exercise, presented in Table 2.4, show that occupations do indeed require different average degrees of reading, writing and numeracy skills. The largest difference between occupations occurs on the reading scale, and the smallest difference occurs on the numeracy scale. As well, variation within the occupational types is highest on the numeracy scale and lowest on the reading scale. Thus, tasks on the reading scale are more homogeneously distributed within the three occupational types. The lack of homogeneity on the numeracy scale can be interpreted as an indication that certain occupations within each type require either considerably more, or considerably fewer, numeracy skills than others within those same occupation types.

Table 2.4 Average scores and standard deviations for three occupational types on a scale of reading, writing and numeracy intensity (based on the frequency with which individuals carry out the tasks and the variety of tasks they carry out. Maximum value for all three scales is 4), New Brunswick, adults aged 16 and over in the labour force

Occupation	Reading, writing and numeracy intensity scales (maximum 4)					
	Reading intensity		Writing intensity		Numeracy intensity	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Professional/administrative	2.4	0.8	2.3	1.0	2.1	1.3
Clerical/sales	1.4	1.0	1.3	1.1	1.7	1.5
Primary/industrial	1.0	1.0	0.9	1.1	1.7	1.4

11. In addition to the five tasks described in Table 2.1, respondents were also asked how frequently they had to read or use information from "material written in a language other than the language of interview" and how often they had to read or use information from "directions or instructions for medicines, recipes or other products".

Occupations differ in the intensity of literary practices at work. One of the key findings of the IALS is that the growing occupations are mostly in the professional/administrative and clerical/sales categories, and demand higher levels of literacy practices, while the occupations on the decline, which are in the primary/industrial categories, place fewer literacy demands on workers. Results from the Statistics Canada Labour Force Survey for New Brunswick show that this shift is dramatic. Between 1986 and 1995, professional and administrative occupations have increased their share of the active labour force by roughly 9%, while primary/industrial occupations have decreased their share by close to 10%.¹²

At present, however, New Brunswick is increasingly attracting high technology and service sector jobs from large multinational corporations that require workers with high literacy skills:

Service industries are already the largest and fastest-growing sector of our economy, employing three-quarters of our labour force and accounting for 65% of our real domestic product, and the trend is expected to continue as demand for business, health and personal services grows. This is consistent with world-wide patterns: the new information industries, business services, personal and leisure services are all increasing because of a changing world economy.¹³

At the same time, despite healthy primary and industrial sectors, New Brunswick's traditional industries such as agriculture, fisheries, forestry and energy are modernizing, which is placing a downsizing pressure on the work force as fewer, higher-skilled employees are able to do the job of many, using equipment and technology unavailable 10 years ago. A prime example of this trend can be seen in the recent success of the aquaculture industry in New Brunswick. One of the skills required by workers today is an ability to acquire specialized knowledge and information. Another is the ability to read and use information produced from a variety of sources. Together, these are key ingredients in the formula for a competitive work force, resulting in the workplace skills shift.

The relationship between literacy practices in the workplace and literacy proficiencies is direct: Generally speaking, the more frequently a skill is practiced, the higher the proficiency level. In order to summarize the results, Tables 2.5 through 2.7 pair each literacy scale with the practice that is most appropriate.

Table 2.5 Proportion of respondents at each IALS literacy level who reported engaging in various workplace reading tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Level	Do you read...at least once a week?				
	letters or memos (prose scale)	reports, articles, magazines or journals (prose scale)	manuals or reference books, including catalogues (document scale)	diagrams or schematics (document scale)	bills, invoices, spreadsheets or budget tables (document scale)
	%				
Level 1	30 ¹	26 ¹	14 ¹	15 ¹	21 ¹
Level 2	54	40	39	30	47
Level 3	72	64	59	38	50
Level 4/5	82	79	72	52	53

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

12. Clerical/sales occupations have decreased slightly (0.3%) over the same period and other occupations not otherwise classified increased by about 1.3%.

13. Towards 2000: An Economic Development Strategy for New Brunswick, (1990), p. 8.

Table 2.6 Proportion of respondents at each IALS literacy level who reported engaging in various workplace writing tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Level	Do you write...at least once a week?			
	letters or memos (prose scale)	forms or things such as bills, invoices or budgets (document scale)	reports or articles (prose scale)	estimates or technical specifications (document scale)
			%	
Level 1	24 ¹	29	26 ¹	2 ¹
Level 2	47	43	35	25
Level 3	62	54	42	22
Level 4/5	72	70	49	20

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Table 2.7 Proportion of respondents at each IALS literacy level on the quantitative scale who reported engaging in two numeracy tasks at least once a week, New Brunswick, adults aged 16 and over in the labour force

Level	Do you use mathematics at least once a week to...	
	measure or estimate the size or weight of objects?	calculate prices, costs or budgets?
		%
Level 1	37	25 ¹
Level 2	50	45
Level 3	44	43
Level 4/5	71	53

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Combined with the results of the previous tables, one of the most striking conclusions is that the jobs that are increasingly being created in New Brunswick are jobs that require a high degree of literacy activities and, those people who exercise a high degree of activity are also those who are at the upper levels on all three scales. This is most true for reading activities, but appears to be less evident for numeracy activities. Roughly 20% of the working population must do numeracy activities frequently in their professional lives yet are not very proficient on the quantitative scale. In their defence, technology has provided most with the tools needed to perform these tasks (such as calculators and computers) without the need for detailed knowledge of the mechanics of mathematics.

Table 2.8 Average scores and standard deviations by literacy levels, prose, document and quantitative scales on a scale of reading, writing and numeracy intensity (based on the frequency with which individuals carry out the tasks and the variety of tasks they carry out. Maximum value for all three scales is 4), New Brunswick, adults aged 16 and over in the labour force

Level	Reading, writing and numeracy intensity scales (maximum 4)					
	Reading intensity		Writing intensity		Numeracy intensity	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Prose scale		Document scale		Quantitative scale		
Level 1	0.2	0.5	0.2	0.7	0.3	0.9
Level 2	1.0	1.2	0.9	1.3	1.1	1.4
Level 3	1.4	1.2	1.2	1.2	1.4	1.5
Level 4/5	2.0	0.8	2.0	1.1	2.3	1.2

When the intensity scales are examined (see Table 2.8), the relationship between these and the most appropriate literacy scale appear strong. Not only are the levels distinct, but the variation within the levels is no larger—and sometimes slightly smaller—than when occupations were examined (see Table 2.4). Level 1 respondents do not perform any of the literacy practices with any degree of intensity, while respondents at Level 4/5 do so with a great degree of intensity.

These data pose a circular conundrum to which there is no easy answer. People with high literacy skills get the jobs that require high degrees of literacy practice; this in turn reinforces their literacy skills. People with low skills get jobs that require only low levels of practice; this does not help them maintain, much less improve, their already-fragile literacy skills. This creates problems for individuals in the economic and competitive spheres of their lives, particularly when their jobs begin to make increasing literacy demands.

Economically, an adequately trained work force is no longer sufficient as today's markets require a work force capable of adapting to emerging technologies. One of the most basic skills needed for this adaptation is the ability to independently gather and digest information that is still in a printed medium. Table 2.9 shows how New Brunswickers rate their own reading, writing, and mathematics abilities and contrasts this with their literacy levels in the three scales: prose with reading, document with writing and quantitative with mathematics.

Table 2.9 Percentage of respondents by level, prose, document and quantitative scales, who gave different ratings of their reading, writing and numeracy skills for work, New Brunswick, adults aged 16 and over in the labour force

How would you rate your...skills for your main job?			
Prose scale	Writing		
	Excellent/good	Moderate/poor	No opinion
		%	
Level 1	48	32	20 ¹
Level 2	72	25	4 ¹
Level 3	85	6 ¹	9 ¹
Level 4/5	95	4 ¹	1 ¹
Overall	78	10	7 ¹
Document scale	Reading		
	Excellent/good	Moderate/poor	No opinion
		%	
Level 1	53	33	15 ¹
Level 2	80	11 ¹	9 ¹
Level 3	94	2 ¹	4 ¹
Level 4/5	97	2 ¹	1 ¹
Overall	84	7	6 ¹
Quantitative scale	Mathematics		
	Excellent/good	Moderate/poor	No opinion
		%	
Level 1	52	31	17 ¹
Level 2	76	14 ¹	9 ¹
Level 3	83	7 ¹	10 ¹
Level 4/5	99	2 ¹	—
Overall	81	11	8 ¹

— Too small to be expressed.

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

While these results seem to indicate an unrealistic perception on the part of those respondent at Levels 1 and 2, it is consistent with the findings of the national report. First, it confirms that Level 1 should not be equated with illiteracy. Those at Level 1 have poor skills in comparison with those at higher levels; Level 1 is not an absence of literacy but a lower level. Second, as we shall see in Chapter 3, the bulk of those at Levels 1 and 2 were employed in occupations that do not place high literacy demands on their workers (chiefly primary and industrial occupations). Thus, it is not surprising that many respondents felt that their skills were adequate for their current job.

Literacy practices at home

Reading and writing at work are difficult to avoid; the requirements of an occupation must be fulfilled. In this respect, workplace literacy is much like that practiced in the school—it helps determine an individual's ability to rise to another level. On the other hand, literacy activities outside of the workplace are typically optional. Few adults are forced to read a book or write a letter. Some forms of electronic communication are more convenient and less intrusive. One can perform other activities while listening to new and other information programs on the radio, for example. Television requires both viewing

and listening, no degree of literacy skills and varying degrees of concentration. Reading, however, demands almost complete concentration on the task. So literacy practices outside the workplace are much more indicative of a person's attachment to literacy. As with the data on workplace literacy, the IALS data offer a wide range of measures on literacy practices outside the workplace. Table 2.10 shows the distribution of everyday life literacy practices in New Brunswick. Table 2.11 shows the same table for Canada as a whole (including New Brunswick).

Table 2.10 Proportion of respondents by level who reported engaging in each of six daily reading tasks at least once a week outside the workplace, New Brunswick, adults aged 16 and over

Level	Do you read...at least once a week?					
	letters or memos (prose scale)	reports, articles, magazines or journals (prose scale)	manuals or reference books, including catalogues (document scale)	diagrams or schematics (document scale)	bills, invoices, spreadsheets or budget tables (document scale)	directions or instructions for medicines, recipes or other products (prose scale)
	%					
Level 1	27	29	26	2 ¹	29	40
Level 2	45	60	43	13	48	51
Level 3	48	64	52	12 ¹	63	60
Level 4/5	61	74	54	12 ¹	70	48

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Table 2.11 Proportion of respondents by level who reported engaging in each of six daily reading tasks at least once a week outside the workplace, Canadians aged 16 and over

Level	Do you read...at least once a week?					
	letters or memos (prose scale)	reports, articles, magazines or journals (prose scale)	manuals or reference books, including catalogues (document scale)	diagrams or schematics (document scale)	bills, invoices, spreadsheets or budget tables (document scale)	directions or instructions for medicines, recipes or other products (prose scale)
	%					
Level 1	32	41	24	5	34	37
Level 2	51	67	49	15	52	53
Level 3	55	69	53	21	60	54
Level 4/5	59	78	55	23	69	62

The distribution in New Brunswick is similar but much less predictable than the national distribution. Some tasks, such as reading schematics and instructions, seem to be operating in New Brunswick in a manner more or less independent of individuals' literacy proficiencies. Except at the very highest levels of literacy, reading practices are typically weaker in New Brunswick than in Canada as a whole.

In effect, one can argue that the culture of literacy is less entrenched in New Brunswick. In Table 2.12, which provides a reading intensity scale comparable to the others produced in this report, two things become clear.

First, people at the lowest levels of literacy are more involved in literacy practices at home than at work. In fact, the differences between levels are much less pronounced at home, where respondents at Level 4/5 are only about twice as likely to participate in reading activities (see Table 2.12) compared with being 10 times more likely to participate in such activities in the workplace (see Table 2.8). This may be a function of the literacy demands of the work performed by those with high literacy levels as compared with the literacy demands of the work performed by those with lower literacy levels. Whatever the nature of literacy in New Brunswick, it seems to be shared by all of its citizens.

Second, the differences between respondents at Levels 2, 3, 4 and 5 are marginal. While participation at Level 1 is lower, (probably related to their abilities), higher levels display surprisingly similar reading intensities. Within each level, there is a fair degree of cohesiveness as measured by the standard deviation (a smaller standard deviation indicates a more clustered population).

Table 2.12 Average scores and standard deviations by literacy levels, prose and document scale on a scale of reading intensity (based on the frequency with which individuals carry out the tasks and the variety of tasks they carry out. Maximum value for all three scales is 4), outside the workplace, New Brunswick, adults aged 16 and over

Level	Reading intensity scale (maximum 4)			
	Prose scale		Document scale	
	Mean	Standard deviation	Mean	Standard deviation
Level 1	0.7	0.7	0.9	0.7
Level 2	1.4	0.8	1.4	0.8
Level 3	1.6	0.9	1.5	0.9
Level 4/5	1.7	0.6	1.6	0.7

The results in Tables 2.11 and 2.12 show a shared regard for literacy which, while lower than the national average, is relatively stable across the spectrum of ability. Since the intensity of practice in the workplace is not reflected directly in everyday practices, these findings underline the importance of the workplace in maintaining a level of proficiency.

Newspaper reading is a relatively democratic task. Regardless of literacy level, 56% of New Brunswick respondents read a newspaper every day and 85% do so at least once a week. These results are slightly lower than the national average (59% of Canadians read a newspaper daily and 87% at least once a week), but they still represent a substantial proportion of the population and far exceed the frequency of any other type of reading task the IALS measures. However, not everyone reads the newspaper in the same manner. Using the prose scale (the scale most appropriate to the material seen in the typical newspaper), a pattern of reading can become apparent (Table 2.13).

Table 2.13 Proportion of respondents by level, prose scale, who reported reading each of 15 sections of the newspaper, New Brunswick, adults aged 16 and over

Prose scale	Which part of the newspaper do you generally read?				
	Classified ads	Other ads	National or international news	Regional or local news	Sports
			%		
Level 1	72	78	71	93	55
Level 2	80	81	70	93	54
Level 3	72	74	82	97	48
Level 4/5	69	75	87	93	38
Prose scale	Home, fashion, health	Editorials	Financial news	Comics	Television listings
			%		
Level 1	45	46	16	36	64
Level 2	55	60	22	49	59
Level 3	57	63	26	58	53
Level 4/5	58	74	33	64	56
Prose scale	Movie or concert listings	Book or movie reviews	Horoscope	Advice columns	Other
			%		
Level 1	39	13 ¹	62	35	20
Level 2	51	24	56	42	20
Level 3	56	42	64	62	18
Level 4/5	75	66	52	54	21

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Generally, more respondents at Level 4/5 on the prose scale read most sections than those at Level 3. More of those at Level 3 read more sections than those at Level 2. Respondents at Level 1 had the lowest incidence of all. However, this pattern is exactly reversed for the sports section and, to a lesser extent for television listings and ads (both classified and other), which were more popular with respondents at the lower levels of literacy. Local and regional news, interestingly, shows no literacy level preference. Respondents of all levels were likely turn to the local and regional news section. This may be because respondents believe that local news has the greatest potential to affect them directly. As a crude measure of civic awareness, the popularity of this section suggests a strong sense of community in New Brunswick. Whereas the country as a whole displays a 21% difference between Level 1 respondents (74%) and Level 4/5 respondents (95%) who read this section; New Brunswick has a very flat distribution. While this may also reflect the way local and regional events are presented in many New Brunswick newspapers, reading local news still requires a substantial degree of effort for Level 1 readers.

It bears repeating that Level 1 is not an absence of literacy but, rather, a lower level of it. Thus, one finds several types of reading material in the homes of Level 1 readers (see Table 2.14).

Table 2.14 Proportion of respondents by level, prose scale, who reported having each of five different types of reading materials in their home, New Brunswick and Canada, adults aged 16 and over

Prose scale	Do you currently have...in your home? (New Brunswick)				
	a daily newspaper	a weekly newspaper/magazine	more than 25 books	a multi-volume encyclopedia	a dictionary
			%		
Level 1	57	59	55	22	76
Level 2	69	74	83	60	96
Level 3	69	71	86	61	94
Level 4/5	79	79	100	69	98

Prose scale	Do you currently have...in your home? (Canada)				
	a daily newspaper	a weekly newspaper/magazine	more than 25 books	a multi-volume encyclopedia	a dictionary
			%		
Level 1	50	68	50	35	80
Level 2	66	78	80	51	89
Level 3	69	81	91	58	97
Level 4/5	63	79	97	56	96

Two things stand out from this table: first, the difference between those at Level 1 with more than 25 books in their home and those at Level 4/5 is large, significant, and consistent with the national findings.¹⁴ Second, while respondents in New Brunswick are more likely to own a multi-volume encyclopedia than those in the country as a whole, those at Level 1 are less likely compared with the national average. In other words, in New Brunswick, there is a greater gap in the presence of reading materials between Level 1 and the other levels than in the country as a whole. This is more or less true regardless of the reading material, but most startling with regards to multi-volume encyclopedias. Aside from those at Level 1, people in New Brunswick are generally more likely to have reading materials in their homes than the national average.

Having reading materials at home may show an attachment to the culture of literacy, but it does not necessarily indicate regular usage. For this, we turn to Table 2.15, which measures frequent participation in several types of literacy activities. As discussed earlier, reading the newspaper is a literacy activity that appears to transcend literacy levels. Seventy percent of those at Level 1 and 90% of those at the other four levels reported reading a newspaper at least once a week. Despite the greater effort needed by those at the lower levels of literacy, they do not seem to concentrate on trivial sections, such as the comics or the horoscope. They focus instead on advertisements and local and regional news. As each of the four activities listed in the table demands more commitment by the individual—of time, energy and resources—the differences in participation rates begin to show along the boundaries of literacy abilities.

14. Reading the Future, op.cit., p. 70.

Table 2.15 Proportion of respondents at each IALS prose literacy level who reported engaging in various literacy-related activities, New Brunswick, adults aged 16 and over

Level	Do you...			
	read news-papers at least once a week?	read books at least once a week?	write letters at least once a month?	visit a library at least once a month?
	%			
Level 1	70	24	9 ¹	5 ¹
Level 2	90	41	26	10 ¹
Level 3	92	50	33	14
Level 4/5	91	78	43	41

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

People at Level 4/5 are roughly three times more likely to read a book at least once a week, five times more likely to write a letter and eight times more likely to visit a library than those at Level 1.

Literacy and the media

People in a democratic society expect to have access to information. News is a major source of this information, and is available in a variety of media: print, radio and television. These media each cater to a particular type of audience. Print requires a more or less literate audience. The information presented is comparatively dense and detailed, and opposing points of view can be easily accommodated. Print is relatively permanent, making it easy to return to the source for future reference. It is also a convenient medium that allows the reader the flexibility to gather information at an adaptable pace. Radio has a more limited ability to present detail. It is amenable to the presentation of opposing viewpoints but, barring a recording, it is more temporary and, given scheduled programming, is less flexible than the print media. However, it is less intrusive. Radio allows the audience the freedom to do other tasks while simultaneously gathering information. In fact, it is a rare thing to see someone listening to the radio and not doing something else—driving a car, riding a bicycle or working. Television has many of the same characteristics of radio. However, television is even more limited in presenting details, and must confine itself to the most salient points. It is a more engaging medium than the other two and allows for a more rich emotional experience. It is one thing to read about an airplane crash, it is another to hear eyewitness accounts, and a much different experience to see it. Like print, television can engage one's entire attention or, like radio, one can do other things while listening to television and glancing up when something of particular interest draws attention.

This long introduction has a purpose. It means to show that the three types of information sources, newspaper, radio and television, are different and engage their audiences in different ways. The only one that can be argued to have a direct link to literacy abilities is print—the newspaper. Given this link, one might assume that people with higher literacy skills would enjoy the newspaper as their primary source of information. Given that they have acquired a deeper level of analysis than is possible with the other two media, it stands to reason that they would report print as their major source of information. Radio does not demand undivided attention; other tasks can be completed concurrently. Thus, one can hear the same newscast every hour and not feel like any time has been wasted. This makes it particularly independent of a literacy effect. Television, in this context, is an alternate source of information for those who do not have the means or the desire to acquire such

from print or radio. However, it is not necessarily tied to an individual's literacy abilities. Table 2.16 demonstrates these trends in a consistent manner.

Table 2.16 Percentage of respondents by level, prose scale, who identified newspapers, radio and television as major sources of information, New Brunswick, adults aged 16 and over

Prose scale	Do you get a lot of information from...		
	newspapers?	radio?	television?
		%	
Level 1	26	49	67
Level 2	37	54	58
Level 3	45	50	66
Level 4/5	51	51	42

Here it is shown that newspapers (the print medium) are increasingly favoured as a major source of information as literacy abilities increase. Television is favoured only slightly more by those with lower levels of literacy. Radio is, for all intents and purposes, flat as a source of information; showing no preference for literacy abilities. From this data, it is not possible to make any causal conclusions and any such attempt should be avoided. Whether reading the newspaper helps to maintain a literacy level or whether watching television erodes these abilities is not at issue. Rather, the point is that all three mediums provide a needed service which underlies the entire justification for a literate society: they give access to information and allow citizens in a democratic society the ability to make informed decisions which affect their everyday lives.

Summary

This chapter examined the practice of literacy at work and at home for adults aged 16 years of age and over, many of whom would have completed their initial formal education at the time of the survey. Once out of school, the workplace takes over as the primary factor affecting people's literacy skills. Jobs that make high literacy demands tend to promote literacy and allow it to grow, while jobs that do not make high literacy demands are likely to allow an erosion of literacy skills.

Another factor that promotes literacy outside of either the education system or the workplace is individuals' personal literacy practices. Except at the highest level of literacy, New Brunswickers' reading practices are typically weaker than those of other Canadians. However, unlike other Canadians at the lowest literacy levels, New Brunswickers at the lowest literacy levels do practice literacy more at home than at work. However, respondents at Level 4/5 were three times more likely to read a book than those at Level 1, five times more likely to write a letter and eight times more likely to visit a library. This suggests that literacy is as much a habit as it is a skill.

This chapter also examined the variation in practices of gathering information from newspapers, radio and television by literacy level. As literacy increases, newspapers are a favoured form of information, but at Level 1 television is favoured. The distribution for radio is consistent; approximately 50% of all respondents use it as a source of information.

Chapter 3

Dollars and sense: The economics of literacy

Jean Pignal and Tamara Knighton, Statistics Canada

Literacy in a modern world is more than a social good, it is also an economic imperative. Without a literate populous, competitiveness and the ability to adapt to changing realities can be hindered. The previous chapters have examined the distribution of literacy in New Brunswick and the practices of its citizens. Chapter 2 has hinted at the economic impacts of literacy. We have seen that most of the types of occupations in which jobs are growing in New Brunswick require high levels of literacy. This chapter will expand this line of analysis.

It should be recognized that literacy, in and of itself, is not enough to advance a society's economy. Rather, along with a sound economic growth strategy, it is one of the conditions that must be fulfilled in order to allow the participation of its human capital.

The economic consequences of literacy also affect individuals within a society. Unemployment and low income often go hand in hand with low literacy. Individuals with low literacy skills find it more difficult to use printed information, and participate less frequently in community activities, they are less likely to achieve economic success than those with higher levels of literacy.¹⁵ Improved literacy, on the other hand, can help individuals compete in the labour market and improve their economic prospects.

Literacy and the labour market

It has been argued that New Brunswick is increasingly moving from an industrial to a service and information economy (see page 25). This transformation is reflected by both changes in industrial profiles and in the distribution of occupations. The consequences of these shifts is demonstrated in Tables 3.1 to 3.3, which show that literacy levels increase progressively from primary/industrial to professional/administrative occupations and, in a less evident fashion, from primary and secondary to tertiary industries.¹⁶

15. Reading the Future, op.cit. (p. 79).

16. Occupations are grouped in the same manner as that described in Chapter 2. Industries have been grouped in two broad categories: primary/secondary and tertiary. Agriculture, hunting, fishing, mining, quarrying, electricity and gas make up the primary industries. Given the small population in this category and the resultant large coefficients of variance, it was collapsed with the secondary sector which includes industries such as manufacturing, construction, transportation and storage. The tertiary industries include wholesale and retail trade, finance, insurance, real estate and community, social and personal services.

Table 3.1 The distribution of literacy skills on the three scales by occupation groupings, New Brunswick, adults aged 16 and over

Prose scale				
Occupation groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/industrial	27	47	20	6 ¹
Clerical/sales	8 ¹	29	47	16 ¹
Professional/administrative	5 ¹	18	30	48
Document scale				
Occupation groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/industrial	29	39	25	7 ¹
Clerical/sales	13 ¹	37	33	18
Professional/administrative	4 ¹	23	24	50
Quantitative scale				
Occupation groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/industrial	24	40	28	9 ¹
Clerical/sales	8 ¹	38	42	13 ¹
Professional/administrative	3 ¹	15 ¹	38	44

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

As discussed in the previous chapter, occupations in the professional/administrative group place heavy literacy demands on the employee. These demands are reflected in the literacy levels of the incumbents in the broad occupation groups. The primary/industrial occupations have the highest percentage at Level 1 and the majority are at Levels 2 or 3. Likewise, clerical/sales occupations tend to cluster at Levels 2 and 3. Professional/administrative jobs, of the type increasingly being created in New Brunswick, tend to cluster at Level 4/5, and to a lesser degree at Level 3. Another view of this same data (see Table 3.2) shows that people at Level 4/5 are six times more likely to be in professional or administrative occupations than are those at Level 1. At the same time, those at Level 1 are seven times more likely to hold primary/industrial jobs than are those at Level 4/5.

Table 3.2 The distribution of occupations within each of the four literacy levels on the prose scale, New Brunswick, adults aged 16 and over

Occupation groups			
Level	Primary/industrial	Clerical/sales	Professional/administrative
		%	
Level 1	71	17 ¹	12 ¹
Level 2	54	28	18
Level 3	23	46	31
Level 4/5	10 ¹	22	68

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

As indicated in Chapter 2, this is not necessarily a problem until either the job requirements change or the jobs disappear. If that occurs, there may be a large group of workers who do not possess the skills needed for the jobs available.

Examining literacy profiles across industries offers another perspective on the relationship between literacy and the labour market (see Table 3.3). The relationship is not as clear cut, however, since similar occupations may be found in several industries; for instance, most industries have clerks and managers. Nevertheless, there is a marked difference between the primary/secondary industries and the tertiary industries, doubtless due to the concentration of occupations requiring high literacy skills in the tertiary group.

Table 3.3 The distribution of literacy skills on the three scales by industry groupings, New Brunswick, adults aged 16 and over

Prose scale				
Industry groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/secondary	23	38	25	14 ¹
Tertiary	11	30	28	30
Document scale				
Industry groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/secondary	22	44	20	13 ¹
Tertiary	9	25	37	28
Quantitative scale				
Industry groups	Level 1	Level 2	Level 3	Level 4/5
			%	
Primary/secondary	18	39	31	13 ¹
Tertiary	9	27	38	26

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

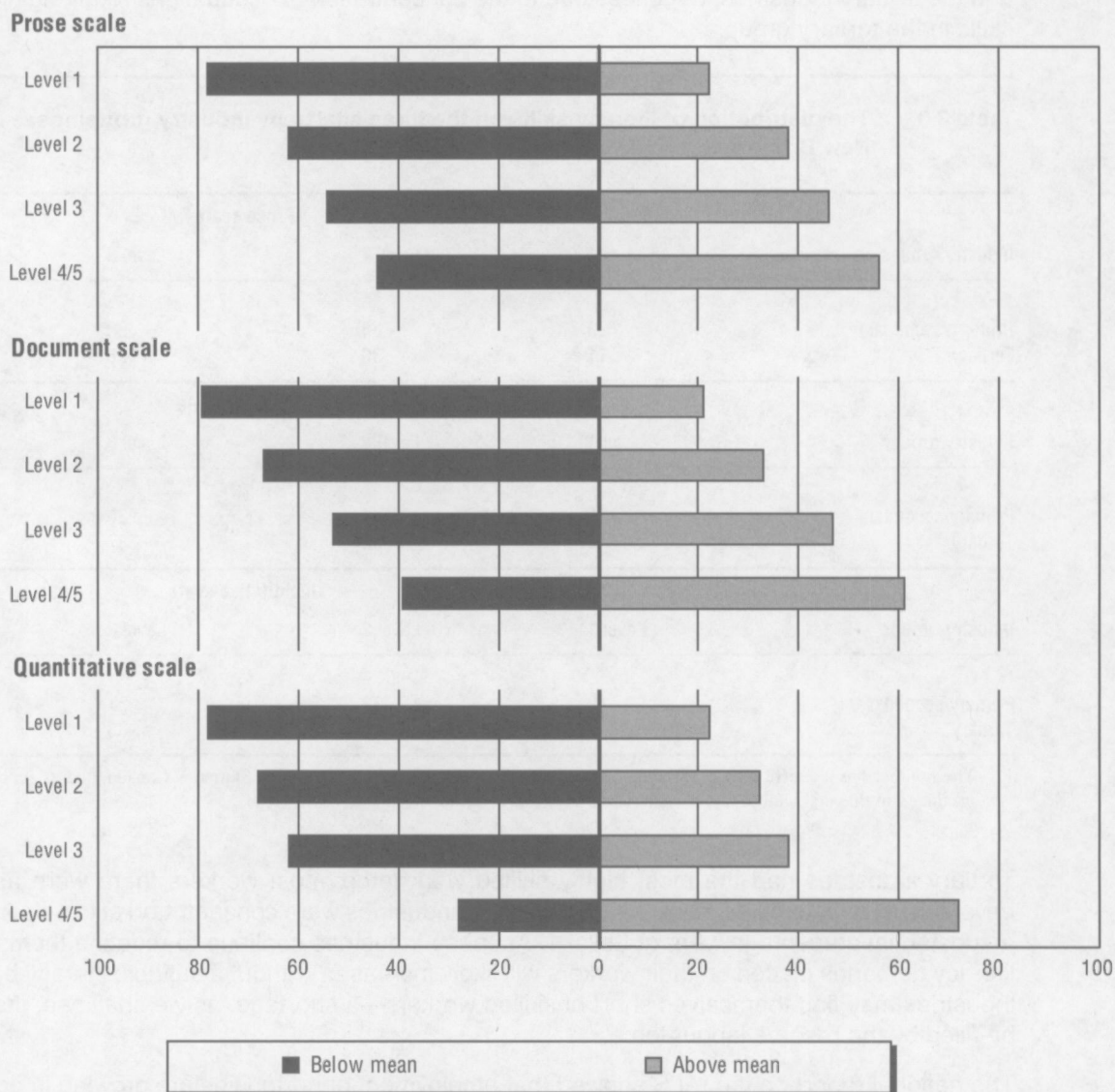
Tertiary industries had the most highly skilled work force; most workers there were at or above Level 3. The work force in primary and secondary industries were concentrated at Levels 2 and 3, but a substantial percentage were at Level 1. As these industries continue to redefine themselves, the literacy demands placed on their workers will likely increase. Without a suitable literacy base, these industries may find themselves short of skilled workers—a shortage, as we shall see, that may not be filled by the reserve labour force.¹⁷

The national report on the IALS showed that employment opportunities are growing in occupations and industries that demand a relatively high level of literacy, while employment is decreasing in occupations and industries that are less demanding of literacy skills. The same can be said of the New Brunswick labour market profiles. The current economic environment reveals, in sharp contrast, the value and function of literacy. Clearly, New Brunswick's competitiveness will continue to depend, to a large degree, on the resources of its people in terms of knowledge, learning abilities (and hence adaptability), information and skills.

17. For purposes of this report, the reserve labour force is understood to be those currently unemployed, out of the labour force or those who will soon be joining the labour force (e.g. currently in school). This population is the pool poised to fill the demand for future employment.

Literacy is more than simply an empowering tool, it is a skill that appears to be recognized and rewarded by employers (see Figure 3.1). The province's wage and salary mean is \$21,014.

Figure 3.1 Proportion of adults with wages below or above the mean by literacy level for each scale, New Brunswick working population¹ 16 and over

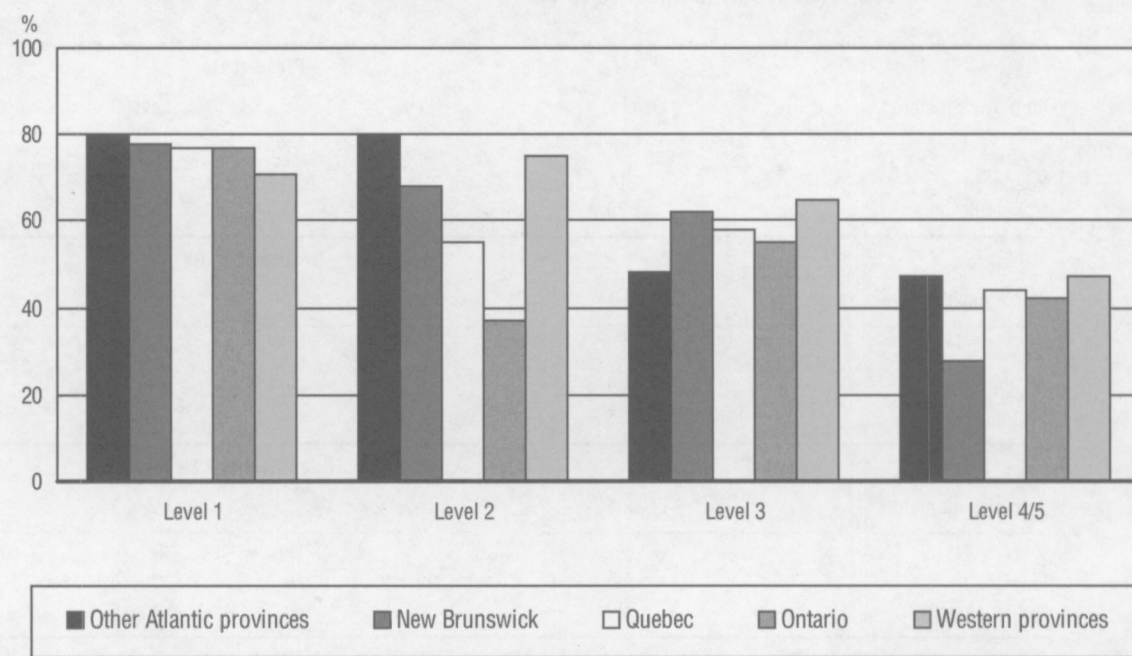


1. The working population is defined as those either presently employed or those who were employed in the last 12 months.

This figure clearly shows that the higher the individual's literacy skills, the more that individual is likely to be above the mean wages and salary. In other words, those with high literacy are rewarded with higher-paying positions. While the trend is clear for all three domains, the payoff seems particularly acute for document skills; fully 72% of those at Level 4/5 fall above the wage and salary mean. Given the association discussed earlier between occupations and literacy levels, these findings are consistent with current expectations.

Economic advantages conferred to those with higher literacy skills also vary across Canada. Figure 3.2 compares New Brunswick with the other regions of Canada by the percentage of individuals who fall below the mean personal income from wages and salaries of their respective regions¹⁸ on the document scale. (Like Figure 3.1, these data are only for those who were employed at the time of the survey or in the previous 12 months.)

Figure 3.2 Percentage of the working population in each region who fall below the mean annual personal income from wages and salaries, document scale, adults aged 16 and over



The distribution shown in this figure is both interesting and complex to analyse. At Level 1, the regions look similar; 70% to 80% of Level 1 respondents have income from wages and salaries below their respective regional mean. Regions differ the most in how the work force rewards respondents at Level 2. The other Atlantic provinces penalize these workers the most, with the same percentage below the income mean as those at Level 1. Ontario, and to a lesser extent, Quebec, actually reward respondents at Level 2 more effectively than their populations at Level 3 and, in Ontario, more than those at Level 4/5. While many factors may explain this inconsistency, one factor may be the large number of high-paying jobs accessible to those with low literacy skills in these regions. This is particularly true of the automotive and manufacturing industries located in the "Golden Triangle" area between Montreal, Toronto and Windsor. Level 3 again demonstrates a convergence of income distribution which, although less pronounced than the Level 1 distribution, nevertheless shows some agreement as to the appropriate reward for literacy. Finally, Level 4/5 is typically highly rewarded, but most so in New Brunswick where only 28% of the respondents fall below the provincial mean, compared with around 47% in the other regions. Other than this larger than average payoff, New Brunswick employers seem to offer a stable and consistent return for literacy.¹⁹

18. The mean in each region is calculated independently from each other using the active working population in each region. Thus, the mean personal income from wages and salaries in the other Atlantic provinces was \$18,824; the same for New Brunswick was calculated at \$21,014; for Quebec it was \$23,320; for Ontario it was \$29,933; and for the Western provinces, it was \$26,620. As an aside, the Canadian mean in 1994 was, according to the IALS data, \$26,396.

19. The use of the document scale in this analysis was governed in large part by this interesting variation. On the prose and quantitative scales, the income "payoff" (measured by the percentage above and below the mean wages and salary income) at Level 4/5 is much more gradual (around 40% of those at Level 4/5 on these scales are below the mean), as evidenced by Figure 3.1.

Literacy and employment

Not surprisingly, employability seems closely related to literacy skills. Employed people were two to four times more likely to be at Level 4/5 and unemployed people were roughly three times more likely to be at Level 1 on all three scales (see Table 3.4).

Table 3.4 The distribution of literacy skills on the three scales by labour force status, New Brunswick, adults aged 16 to 65

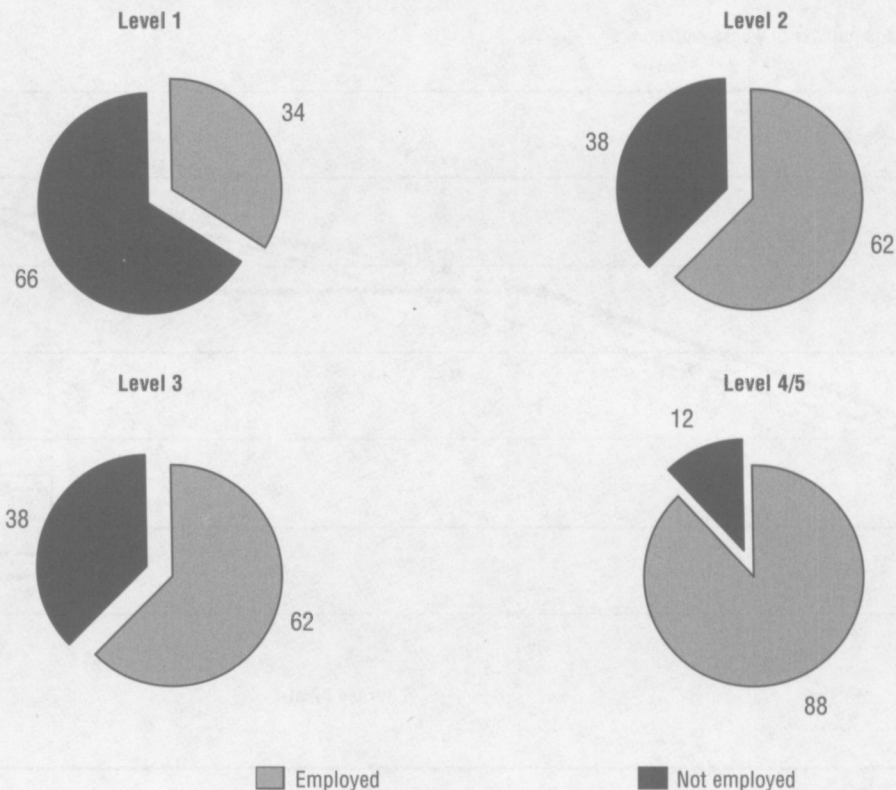
Prose scale				
Employment status	Level 1	Level 2	Level 3	Level 4/5
			%	
Employed	11	34	33	23
Not employed ¹	29	33	24	14
Document scale				
Employment status	Level 1	Level 2	Level 3	Level 4/5
			%	
Employed	12	34	26	28
Not employed ¹	36	33	25	6 ²
Quantitative scale				
Employment status	Level 1	Level 2	Level 3	Level 4/5
			%	
Employed	9	30	39	22
Not employed ¹	29	43	19	9 ²

1. This category includes those who were unemployed and those who were not in the labour force at the time of the survey. Due to the limitation in sample size, it is not possible to present these as separate categories. It is, however, worth noting that those who are unemployed are, nationally, better off, from a literacy perspective than those who are not in the labour force (including people who are discouraged workers, students, on disability, working in the home and retired). For more information, please refer to *Reading the Future: A Portrait of Literacy in Canada* (Statistics Canada 1996 Catalogue no. 89-551-XPE).
2. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

The distribution of employment status within each literacy level presented in Figure 3.3 is even more revealing. This figure graphically shows the distribution of the employed and not employed in each of the literacy levels for the document scale.²⁰

20. There is no discernible difference between this scale and the prose or quantitative scales.

Figure 3.3 Distribution of labour force status by document literacy levels, New Brunswick, adults aged 16 to 65¹



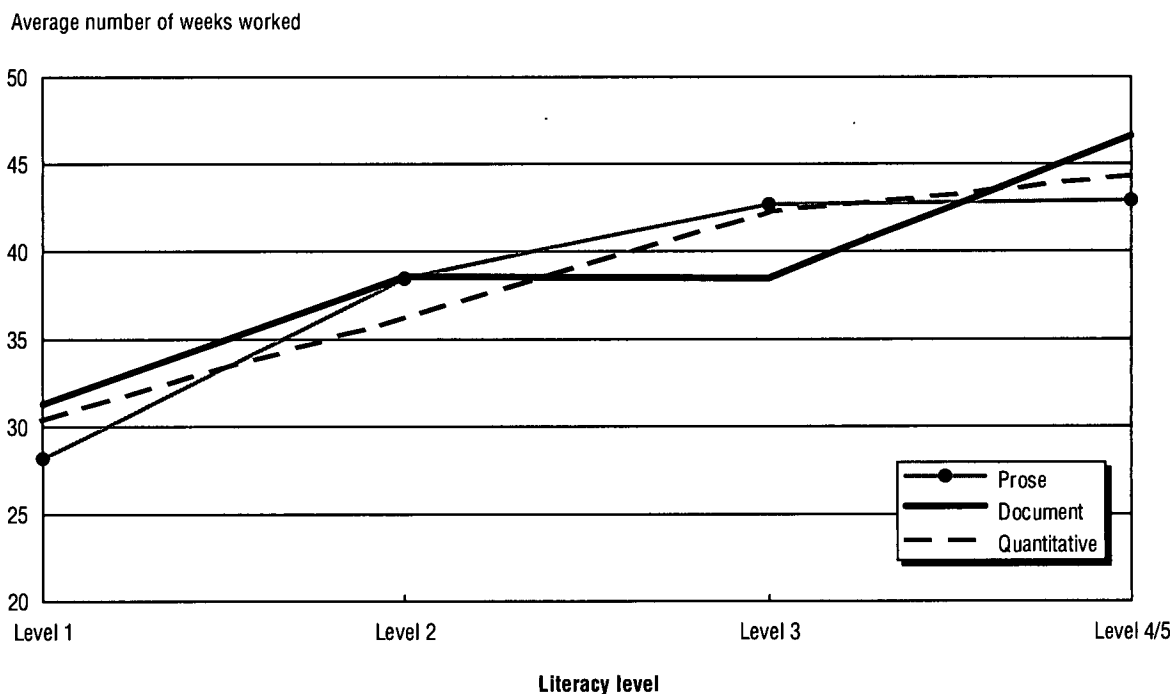
1. Once again, the "Not employed" category includes those who were unemployed and those who were not in the labour force at the time of the survey. Due to the limitation in sample size, it is not possible to present these as separate categories and one should not equate those "Not employed" with those who are strictly "Unemployed".

Here we see that the percentage of people who are not employed decreases as the literacy level increases. Sixty-six percent of the people at Level 1 were not employed compared with only 12% at Level 4/5. Even at Levels 2 and 3, employment prospects are relatively more favorable (greater percentage are employed than not employed).

As discussed in Chapter 2, a circular pattern between employment status and literacy exists. Individuals with high literacy skills are more likely to be employed in positions that require high degrees of literacy practices which, in turn, reinforces their literacy skills. In contrast, those with lower literacy skills are more likely to not have any employment, thus diminishing their opportunities to maintain or enhance their literacy skills which in turn further impedes their ability to compete for positions requiring high literacy skills, or perhaps any position at all.

Literacy in New Brunswick also appears to be related to the number of weeks worked by those who are employed. As shown in Figure 3.4, as literacy increases on any of the three scales, so does the average number of weeks worked during the year. This measure demonstrates a higher level of stability in the workplace. In fact, between Level 1 and Level 4/5 respondents, a difference of roughly 15 weeks is observed by the IALS data. In most cases, this most likely translates into direct financial benefits to the worker.

Figure 3.4 Average number of weeks worked in the previous year, by literacy level and domain, New Brunswick, adults aged 16 and over who worked in the previous year



In addition to having more stable employment—reflected by more weeks worked—those at the higher ends of the literacy continuum also appear more likely to have full-time rather than part-time employment. Considerable concern has focused on the growth of part-time relative to full-time employment. For Canada overall, the published data suggest that the differences in skills have little impact on the type of employment (Statistics Canada, 1996). In contrast, New Brunswick differences do seem to exist in skill levels. A significantly higher percentage of full-time workers are at Level 4/5 compared with part-time workers for all three scales (Table 3.5).

Table 3.5 The distribution of literacy skills on the three scales by type of employment, New Brunswick, adults aged 16 and over in the labour force

Prose scale				
Type of employment	Level 1	Level 2	Level 3	Level 4/5
	%			
Full-time	13	33	29	25
Part-time ¹	17	29	41	14 ²
Document scale				
Type of employment	Level 1	Level 2	Level 3	Level 4/5
	%			
Full-time	14	32	25	27
Part-time ¹	24 ²	37	26 ²	13 ²
Quantitative scale				
Type of employment	Level 1	Level 2	Level 3	Level 4/5
	%			
Full-time	11	29	26	24
Part-time ¹	16 ²	43	33	8 ²

1. For the IALS, part-time work was defined as any work that is less than 30 hours per week. The IALS did not collect if the worker had several such jobs on a concurrent basis.
2. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

Looking past the notion of literacy as a “desirable end in itself”, this section examined whether literacy should matter to the individual. The answers found can be summarized as follows: People with high levels of literacy have better paying jobs, they are employed for longer periods of time, with fewer interruptions and, have a higher chance of gaining full-time employment. All of these translate into a higher quality of life for the individual.

Literacy and income support

For the majority of the unemployed population in Canada, periods of unemployment are relatively short, thanks, in part, to a high level of employee turnover. However, for segments of the population, periods of unemployment are longer-term.²¹ For both the short and long-term unemployed, an important question relates to the extent to which a lack of skills impedes increased participation in the labour force.

The distribution of literacy skills by types of income support are presented in Table 3.6. Generally speaking, those who are receiving employment insurance in New Brunswick have a profile rather similar to those receiving no support. This may reflect the fact that in order to receive employment insurance benefits, the individual must have some, more or less, recent attachment to the labour market. This is not so for those who receive income assistance benefits.

21. Evidence of this phenomenon can be found in several Statistics Canada surveys including the Labour Force Survey (LFS), the Labour Market Activity Survey (LMAS) and the Survey of Labour and Income Dynamics (SLID).

Table 3.6 The distribution of literacy skills on the three scales by type and presence of income support, New Brunswick, adults aged 16 and over

Prose scale				
Support type	Level 1	Level 2	Level 3	Level 4/5
			%	
No support	26	32	25	17
Employment insurance	27	32	26	15 ¹
Income assistance	51	16 ¹	32 ¹	1 ¹
Document scale				
Support type	Level 1	Level 2	Level 3	Level 4/5
			%	
No support	30	30	22	19
Employment insurance	24	35	33	8 ¹
Income assistance	54	22 ¹	19 ¹	5 ¹
Quantitative scale				
Support type	Level 1	Level 2	Level 3	Level 4/5
			%	
No support	24	36	25	16
Employment insurance	22	27	40	11 ¹
Income assistance	53	28 ¹	14 ¹	5 ¹

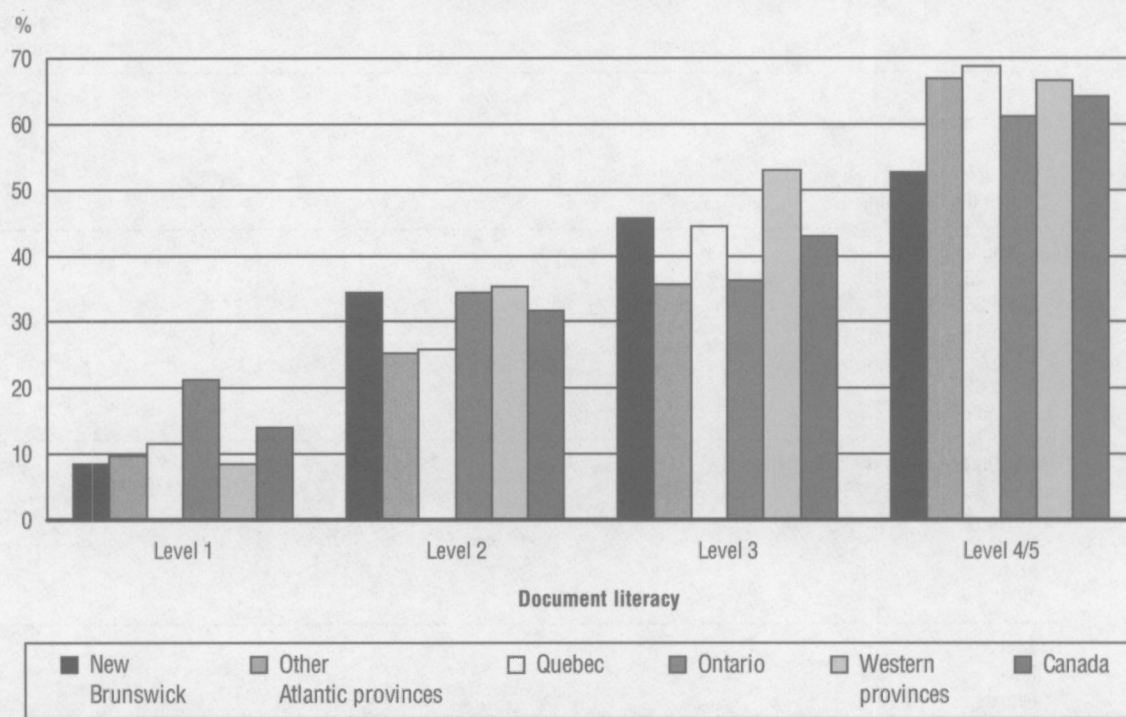
1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

It is both fortunate and unfortunate that the sample size does not allow a more detailed analysis of this topic; fortunate because there are relatively few people receiving income assistance, unfortunate because it does not allow for a confirmation of the literacy distribution for this group. Given this limitation, it is possible to highlight only a single distribution: The percentage of people at Level 1 in each of the three categories for each literacy scale. As such, this table shows that recipients on income assistance are twice as likely to be at Level 1 than either those receiving employment insurance or those receiving no income support.

Literacy and lifelong learning

The ideal of lifelong learning has been adopted by many governments both in Canada and around the globe. In a world where the average worker changes careers an average of three times in their lifetime, the ability to acquire new skills and enhance old ones becomes a strategic asset. Knowledge is a commodity that must be replenished at every opportunity in order to compete in today's labour market. The link between adult education and literacy skills is an important dimension to this replenishment. It seems evident that those who are at the lowest literacy levels are those who would benefit most from adult education, particularly adult education that is related to a career. Figure 3.5 compares the distribution of adults who did participate in some form of adult education within each of the document literacy levels for Canada and each of its regions.

Figure 3.5 Percentage of individuals within each document literacy level who participated in some form of adult education in the 12 months previous to the survey, Canadian adults aged 16 and older



The distribution within the literacy levels highlights several interesting findings. First and most obvious, as literacy levels increase, so does the incidence of adult education. Those at the upper end of the literacy spectrum are six to eight times more likely than those at the lowest level to participate in adult education. Second, with the notable exception of respondents at Level 4/5, Ontario differentiates the least based on literacy level (the slope of its curve is the closest to horizontal), and Quebec differentiates the most (it has the steepest slope). Third, New Brunswick has the lowest incidence of adult education at each extreme of the literacy continuum but is amongst the leaders and above the Canadian average in the middle levels. The Western provinces show a very low level of adult education at Level 1 (10%) and a substantial increase at Levels 2 through 4/5, as high as 70%.

In New Brunswick, a more complete picture is displayed in Table 3.7 where the incidence of participation in adult education is examined among a variety of demographic characteristics. Here we see that 39% of those employed participated in some form of adult education compared with only 22% for those not in the labour force. In addition, youth tend to participate more in adult education than older residents of New Brunswick. This may, in part be explained by the larger number of students amongst the younger age cohort.²² The next highest incidence of adult education occurs between the ages of 36 and 45 for both the general New Brunswick population and those who are employed. Finally, there is very little difference in adult education participation between males and females or between French and English respondents.

22. In fact, this can also be said for the "employed age groups" where students may have reported some part-time employment in addition to going to school.

Table 3.7 Proportion of adults who participated in adult education and training, by various demographic characteristics, New Brunswick, adults aged 16 and over

	Participation in adult education and training
	%
Current employment status	
Employed	39
Unemployed	30
Not in the labour force	22
Age groups	
16 to 25	54
26 to 35	37
36 to 45	39
46 to 55	32
56 to 65	13 ¹
65 and older	2 ¹
Age groups, employed	
16 to 25	50
26 to 35	32
36 to 45	43
46 to 55	41
56 to 65	23 ¹
Gender	
Male	34
Female	31
Language of test	
English	34
French	31

1. The number has a coefficient of variance that exceeds the standards of quality set by Statistics Canada, and as such, the estimate produced in this cell should not be considered accurate or reliable.

The opportunity to take some form of adult education or training is important, and clearly, those at the higher literacy levels take more training. As demonstrated in Table 3.8, however, this may be, at least partially, explained by the low relative number of people at the lower literacy levels who **wanted** to take training whether for personal or work-related reasons.

Table 3.8 Proportion of adults at each literacy level who reported wanting to take some form of adult education either for personal or work-related interests but were not able to, prose scale, New Brunswick, adults aged 16 and over

Prose scale	Is there training or education you wanted to take but could not take?	
	Yes, personal interest	Yes, work related
	%	
Level 1	12	13
Level 2	16	23
Level 3	26	24
Level 4/5	38	37

There can be many plausible explanations why so few people at the lowest literacy level want to take some form of training. Perhaps it is a low sense of self-esteem, perhaps they do not perceive a need for training, or a lack of awareness of what is offered. It may be closely related to their weak literacy skills or availability in specific communities. The IALS cannot answer this. Unfortunately, the reality is that those who could benefit immeasurably are those who seek and receive training the least.

Summary

This chapter examined literacy levels in terms of a number of dimensions that have important implications for economic security today and in the future. Significantly, adults at Level 4/5 are six times more likely to be in professional/administrative types of occupations (categories that are growing in New Brunswick) than those at Level 1. People at Level 1 are seven times more likely to hold primary/industrial occupations (sectors that are on the decline in New Brunswick) than those at Level 4/5.

Adults at Level 1 are over five times more likely to be unemployed than those at Level 4/5. Furthermore, those who are employed work fewer hours per week and fewer weeks per year than those with higher literacy skills. Not surprisingly, over three quarters of those at Level 1 (in all three domains) earn wages below the mean wage rate in New Brunswick.

Those receiving employment insurance in New Brunswick have a profile similar to those receiving no income support. Although the sample size for those on income assistance is small, the results show that income assistance recipients are twice as likely to be at Level 1 than either those receiving employment insurance or those receiving no support.

The ideal of lifelong learning has been adopted by Canada, and many governments globally. As literacy levels increase, so does participation in adult education. New Brunswick has the lowest incidence of adult education for both Levels 1 and 4/5, while Levels 2 and 3 are above the Canadian average.

Conclusion

Literacy New Brunswick Inc.

This analysis of New Brunswick data gathered as part of the 1994 International Adult Literacy Survey or IALS provides a snapshot of literacy levels in the province. The fact that New Brunswick purchased a larger sample to augment the strict proportionate to population size sample, allowed for analysis of results to be carried out for New Brunswick separately from the Atlantic region.

This report has looked at overall literacy levels in New Brunswick and made comparisons with the Atlantic region and Canada as a whole. New Brunswick literacy levels are analyzed along a number of demographic dimensions: age, education, gender and language. Literacy practices at work and at home have been analyzed as has the use of various media forms to access information. And finally, the economics of literacy was examined in terms of labour market participation, employment and unemployment, income support and lifelong learning. This analysis provided a number of salient findings.

In New Brunswick, an important percentage of respondents—close to 60%, are at the bottom two levels of literacy on all three scales. This is significant given that many countries view Level 3 as the threshold level for most occupations with professional and technical occupations in particular requiring higher skill levels and that the jobs that are being created in New Brunswick require increasingly complex literacy skills. There are as well, major income penalties for those with low literacy skills because literacy skills determine the type of job one can get, the stability of that job, the number of hours worked and the remuneration that can be expected. Thus literacy is strongly related to labour market success.

With the exception of those aged 26 to 35, literacy skill levels were found to decrease with increasing age. In New Brunswick, as elsewhere, literacy and education were found to be related but not in fact synonymous. While some adults do manage to acquire literacy skills despite having low levels of education, generally speaking, the higher the education attained, the higher the level of literacy. In New Brunswick, the payoff for graduating from high school is particularly large.

Adult New Brunswickers who responded to the IALS in French consistently scored lower on all three scales than those answering in English. Unlike Quebec, however, this difference does not disappear when age or education are controlled. These observed differences may be attributed to lower levels of exposure to French material on the part of francophones in New Brunswick or other mitigating factors such as differences in literacy practices that could not be analyzed by language due to the insufficient sample size.

As in the rest of Canada and internationally, literacy practices in the workplace and at home were found to have an important impact on the maintenance and/or development of literacy skills. The report found that workers in jobs that make high literacy demands exhibit improved literacy skills while workers in jobs that make few literacy demands are in danger of experiencing an erosion of their skills.

Thus workers with lower level literacy skills who are not getting much practice in the use of literacy skills at work, must actively participate in these literacy tasks at home if they want to maintain or improve their skills. However, except at the very highest levels of literacy, reading practices are typically weaker in New Brunswick than in Canada as a whole. This being said, those at the lowest levels of literacy in New Brunswick are more involved in literacy practices at home than at work. This is particularly the case in regard to newspaper readership where readership approaches the Canadian average, notwithstanding higher overall literacy levels for the Canadian population as a whole.

The analysis of New Brunswick microdata points to the conclusion that literacy is a skill that must be practiced in order to be maintained. It is as much a habit as it is a skill. The ideal of lifelong learning has been adopted by New Brunswick, by Canada and many governments globally. As literacy levels increase, so does participation in adult education. Although New Brunswick has the lowest incidence of participation in adult education for both Levels 1 and 4/5, Levels 2 and 3 are above the Canadian average. With one of the strongest literacy initiatives in the country, the infrastructure is in place in New Brunswick to support continued improvement in the province's literacy skill level.

Bibliography

- Council of Ministers of Education Canada. 1994. *Report on Mathematics assessment 1993*. Toronto: Council of Ministers of Education.
- Council of Ministers of Education Canada. 1995. *Reading and Writing assessment, 1994*. Toronto: Council of Ministers of Education.
- Elley, Warwick B. (ed.). 1994. *The International Association for Evaluation of Educational Achievement (IEA) Study of Reading Literacy: Achievement and Instruction in Thirty-Two School Systems*. Pergamon Press, Terrytown, NY.
- Jones, Stan. 1993. *Reading, but not Reading Well: Reading skills at Level 3*. Ottawa: National Literacy Secretariat.
- Kirsch, Irwin S., Ann Jungeblut, Lynn Jenkins and Andrew Kolstad. 1993. *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics, U.S. Department of Education.
- Liberal Party of New Brunswick. 1995. *Moving Ahead Together: The Platform of the New Brunswick Liberal Party for the 1995 Provincial General Election*. Sackville, N.B., Liberal Party of New Brunswick.
- Mosenthal, Peter B. and Irwin S. Kirsch. 1991. "Toward an explanatory model of document literacy." *Discourse Processes*. 14, 1991:147–180.
- New Brunswick, Commission on Excellence in Education. 1992. *Schools for a New Century*. Fredericton, N.B., Commission on Excellence in Education.
- New Brunswick, Commission on Excellence in Education. 1993. *To Live and Learn: The Challenge of Education and Training*. Fredericton, N.B., Commission on Excellence in Education.
- New Brunswick, Office of the Premier. 1989. *Towards 2000: An Economic Development Strategy for New Brunswick*. Fredericton, N.B., Province of New Brunswick.
- Organisation for Economic Co-operation and Development and Statistics Canada. 1995. *Literacy, Economy and Society: Results of the first International Adult Literacy Survey*. Ottawa: OECD and Minister of Industry.
- Organisation for Economic Co-operation and Development. 1996. "Transitions to learning economies and societies." *Lifelong Learning for All*, pp. 29–70. Paris: OECD.
- Province of New Brunswick. 1996. *New Brunswick at the dawn of a new century: A discussion paper on demographic issues affecting New Brunswick*. Fredericton, N.B., Province of New Brunswick.
- Statistics Canada. 1991. *Adult Literacy in Canada: Results of a National Study*. (Statistics Canada Catalogue no. 89-525-XPE). Ottawa: Minister responsible for Statistics Canada.
- Statistics Canada. 1992. *An International Assessment of Adult Literacy: A Proposal*. Ottawa, Minister of Industry, Science and Technology.

- Statistics Canada. 1993. *Educational attainment and school attendance: The Nation (1991 Census)* (Statistics Canada Catalogue no. 93-328-XPB). Ottawa: Minister responsible for Statistics Canada.
- Statistics Canada. 1995. *The 1992 Adult Education and Training Survey*. Ottawa: Human Resources Development Canada and Statistics Canada.
- Statistics Canada. 1996. *Exports, merchandise trade* (Statistics Canada Catalogue no. 65-202-XPB.) Ottawa: Minister responsible for Statistics Canada.
- Statistics Canada. 1996. *Imports, merchandise trade* (Statistics Canada Catalogue no. 65-203-XPB.) Ottawa: Minister responsible for Statistics Canada.
- Statistics Canada, Human Resources Development Canada and National Literacy Secretariat. 1996. *Reading the Future: A Portrait of Literacy in Canada*. (Statistics Canada Catalogue no. 89-551-XPE). Ottawa: Minister of Industry.
- Yamamoto, Kentaro and Irwin S. Kirsch. 1993. *Estimating Literacy Proficiencies With and Without Cognitive Data*. Princeton, N.J.: Educational Testing Service.