# The Connection between Literacy and Work: Implications for Social Assistance Recipients

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# The Connection Between Literacy and Work: Implications for Social Assistance Recipients

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**by**
**Constantine Kapsalis**

**January 1998**



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# 1. Introduction

The completion of the first International Adult Literacy Survey (IALS), an international cooperative initiative coordinated by Statistics Canada, has raised awareness about the importance of literacy in the workplace. The connection between education and employability has long been established. Better educated individuals tend to have a lower incidence of unemployment, work more hours, earn more per hour and, as a consequence, rely less on government support programs.

Early results from the newly released IALS microdata point to a number of interesting findings:

- Literacy appears to be a better predictor of employment outcomes than education. This raises of course the issue of differences in the quality of education. But it also raises the possibility of a positive reinforcement of literacy skills obtained at school through opportunities for lifelong learning and the use of the literacy activities at work and in everyday life.

- A recent Statistics Canada study speaks of a "virtuous" cycle between education, life-long learning, literacy and employment (Kapsalis, 1997), while another Statistics Canada report uses the analogy of a "muscle" to describe literacy: "Literacy skills' like muscles, are maintained and strengthened through regular use. While formal education provides a more or less required base, the evidence indicates that applying literacy skills in daily activities -- both at home and at work -- is associated with higher levels of performance" (Statistics Canada, 1996: p. 12).

The issue addressed by this report is the employability of social assistance recipients (SARs). The term employability is used here in the broad sense of better chances of being employed and higher earnings. It is measured by such indicators as the employment rate (percentage of individuals with employment during the year), annual weeks of work, or average full-time/full-year earnings.

A strong positive correlation between the level of education and employability has been well

established in the economic literature. However, there is evidence now suggesting that literacy may be an even better predictor of employability. A likely reason is that literacy reflects not only the level of education but, also, the quality of education and the extent to which the literacy "muscle" is used at work and at home.

Education of course remains an important explanatory variable. The importance of education is reinforced by the simple fact that information about the level of education is much more readily available than information about literacy.

The IALS data provide a unique opportunity to probe the employability of SARs by going beyond the concept of education and incorporating information on literacy. There are two potential applications of the IALS data in that respect:

- One potent application is to establish a literacy-education equivalence scale for SARs. The hypothesis to be tested is that keeping the level of education constant, and controlling for differences in demographic characteristics, literacy levels will differ between the various sub-populations (either because the quality of education differs or because the literacy "muscle" is used to a different extent).

- An equally potent application is to explore the link between work, literacy requirements at the workplace, and literacy activities at home, with the level of literacy. This is an important issue. Analysis of the IALS data can provide an answer to the following types of questions: Does employment improve literacy skills and future employability? Is this true regardless of the literacy requirements of the job? How do employment and literacy requirements at the workplace affect literacy activities at home? What is the net effect of re-employment initiatives on literacy and long-term employability?

In what follows, Section 2 provides a selective review of the literature. Section 3 outlines the methodology. Section 4 explores the correlation between education, literacy, and earnings. Section 5 provides a profile of SARs based on the IALS data. Section 6 examines the relationship between SAR status and literacy. Section 7 uses this relationship to convert the years

of schooling of non-working SARs to literacy-equivalent years of schooling of working non-SARs. The following three sections examine how work correlates with literacy (Section 8), if the type of work matters in terms of potential literacy gains (Section 9), and whether work is at the cost of literacy activities at home or in the community (Section 10). The main conclusions are summarized in Section 11.

# 2. Literature Review

Education has long been recognized in the economic literature as a key determinant of earnings and financial self-sufficiency. Consequently, it has also been recognized that unequal access to education is a contributing factor to income inequality and poverty (Barham, et. al. 1991).

However, the importance of literacy as an education outcome indicator has been virtually ignored in the economic literature, primarily because of the absence of literacy data. Instead, the term illiteracy, when is raised in the literature, typically refers to the more narrow aspect of an inability to read and write, or low level of education (less than grade 9).

Lack of data on literacy in the past has made it difficult to assess fully the impact of employment on future employment prospects. The connection between work and literacy is essential in assessing workfare policies or self-sufficiency initiatives, like the current experiment in New Brunswick and British Columbia.

For example, workfare for SARs has been a controversial issue and the potential contribution of workfare in improving employability has been questioned. Part of the objection has been on philosophical grounds and on whether it is right to force recipients to work as a precondition to receiving benefits (Lightman, 1995).

But the value of workfare has been questioned even on purely economic grounds. Krashinsky argues that employment among SARs is driven primarily by the economic cycle. Attempts to increase employability will be too costly and cannot be justified on economic grounds. He concludes that workfare "has little to do with cost, especially in the short run. But it has everything to do with self-respect and the work ethic, and with the political legitimacy of our social programs" (Krashinsky, 1995: p. 118).

However, preliminary results from IALS raise the interesting possibility that increasing employment among SARs, either through workfare or self-sufficiency initiatives may have a positive effect on future employability through an improvement of literacy. The latter can be

achieved by breaking the vicious cycle where the unemployed and those in straitened circumstances receive less training and education, and engage less in other practices that favour the development of literacy abilities, which in turn further reduces their employment prospects (Shalla and Schellenberg, forthcoming).

# 3. Methodology

The results of this study are based on an analysis of the public use microdata from the 1994 International Adult Literacy Survey (IALS). The Canadian portion of IALS identifies whether the individual received social assistance or employment insurance payments.[1]

To get a clearer picture of the relationship among these three factors, the sample is restricted to ages 26 to 65, since many younger Canadians are still attending school.[2]

The IALS is the first international cooperative effort at measuring literacy, as well other related information, such as education and training. The IALS identifies three types of literacy: document, prose, and quantitative literacy (Table 1). For each type of literacy five levels are defined: 1, 2, 3, and 4/5 (the two top literacy levels are collapsed into one for statistical reasons).

**Box 1**

## Definition of Literacy

Three types of literacy were tested by the IALS:

(a) *prose literacy* refers to the knowledge and skills needed to understand and use information from texts including editorials, news stories, poems and fiction;

(b) *document literacy* refers to 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

(c) *quantitative literacy* refers to the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials, such as balancing a checkbook, figuring out a tip, completing an order form, or determining the amount of interest on a loan from an advertisement.

In each of the three literacy domains, a *scale* from 0 to 500 was constructed, upon which tasks of varying difficulty were placed. The range of scores corresponding to each level are as follows: level 1 (0-225); level 2 (226-275); level 3 (276-325); level 4 (326-375); and level 5 (376-500).

[1] Information on social assistance and employment insurance is not available for the additional Franco-Ontarian sample. As a result, the latter was excluded from the analysis.

[2] Estimates including younger Canadians generally produced similar results.

Although all three types of literacy are important, they tend to be highly correlated (Table 1). In fact, the recently conducted Ontario Literacy Survey of the Hearing Impaired concentrated exclusively on document literacy, on the grounds that the three types of literacy are highly correlated. For the sake of simplifying the presentation of the results, we have concentrated for the most part on document literacy.

**Table 1**
**Correlation Between Different Types of Literacy**

| | Document Literacy score | Prose Literacy score | Quantitative Literacy score |
|---|---|---|---|
| Document literacy score | 100.0% | 88.4% | 89.1% |
| Prose Literacy score | 88.4% | 100.0% | 88.4% |
| Quantitative Literacy score | 89.1% | 88.4% | 100.0% |

# 4. Literacy and Employability

Analysis of the IALS data shows that literacy is a strong predictor of employability. For example, full-time annual earnings are more strongly correlated with the level of literacy than with the level of education. The main reason is that literacy reflects not only the level of education but, also, the quality of education and the extent to which the literacy "muscle" is used at work and at home.

**Table 2: Regression 1**
**Effect of Years of Schooling and Document Literacy Score**
**On Full-Time Annual Earnings**

| | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|
| Sample: Full-time earners (49+wks/30+hrs) | | | | |
| Dependent: LNWRATE Natural log of annual earnings | | | | |
| LNA7 | Natural log of years of education | 0.46 | 0.08 | 5.89 |
| LNDOC | Natural log of document literacy score | 0.63 | 0.08 | 7.66 |
| GENDER | Male (omitted: female) | 0.41 | 0.03 | 12.65 |
| MARSTAT | Marital status (omitted: no spouse) | -0.13 | 0.04 | -3.28 |
| AGE3 | 36-45 (omitted: 26-35) | 0.02 | 0.04 | 0.46 |
| AGE4 | 46-55 | 0.19 | 0.04 | 4.79 |
| AGE5 | 56-65 | 0.08 | 0.07 | 1.20 |
| REG2 | Quebec (omitted: Atlantic) | 0.09 | 0.07 | 1.36 |
| REG3 | Ontario | 0.16 | 0.07 | 2.41 |
| REG4 | West | 0.05 | 0.07 | 0.70 |
| SIC3 | Manufacturing (omitted: primary) | 0.01 | 0.07 | 0.09 |
| SIC4 | Electricity, gas, water | 0.31 | 0.12 | 2.69 |
| SIC5 | Construction | 0.16 | 0.11 | 1.56 |
| SIC6 | Wholesale and retail trade | -0.14 | 0.08 | -1.87 |
| SIC7 | Transport, storage, communications | 0.08 | 0.09 | 0.91 |
| SIC8 | Finance, insurance, real est., bus. serv. | -0.14 | 0.08 | -1.77 |
| SIC9 | Commun/social/personal services | -0.01 | 0.07 | -0.13 |
| C | Constant | 5.37 | 0.44 | 12.32 |

| | | | | | |
|---|---|---|---|---|---|
| R-sqr (adj.) | 31% | Sample | 1059 | | |
| Stand. Error | 0.47 | F statistic | 29.37 | F signific. | 0.00 |

# 5. Profile of Social Assistance Recipients

The profile of Social Assistance Recipients (SARs) is quite distinct from the rest of the population, in terms of demographics, education, literacy and work activity. For example, a relative larger percentage of SARs are in the age group 26 to 35, are female, or they do not have a spouse (Table 3). In terms of employment, the employment rate is much lower among SARs, especially when it comes to full-time/full-year employment.

Also, SARs are less likely to work in a high literacy job. A job is defined here as a "high literacy" one if it involves daily reading of at least one of the following: memos, reports or manuals. By contrast a job is defined as "low literacy" if it never or rarely requires reading of all three of the above.

Social assistance recipients have a lower level of education and literacy than non-SARs. The difference is greatest when comparing non-working SARs to working non-SARs (Table 4):

- 9.5 versus 13.1 years of education (a 38% difference); and
- 216 versus 291 document literacy score (a 35% difference).

**Table 3: Profile of SARs, EI Recipients, and Rest of Population**

| | SA / UI Status | | |
|---|---|---|---|
| | **SAR** | **UI/ No SA** | **No UI / No SA** |
| **Age (International Grouping)** | | | |
| 26-35…….. | 48% | 34% | 31% |
| 36-45…….. | 25% | 43% | 28% |
| 46-55…….. | 20% | 17% | 23% |
| 56-65…….. | 7% | 7% | 18% |
| **Sex** | | | |
| Female…….. | 60% | 50% | 49% |
| Male…….. | 40% | 50% | 51% |
| **Marital Status** | | | |
| No Spouse…… | 68% | 16% | 19% |
| Spouse Present…… | 32% | 84% | 81% |
| **Worked in 94 in any Job** | | | |
| No……... | 63% | 17% | 21% |
| Yes…….. | 37% | 83% | 79% |
| **Worked 49+ Wks/ 30+ Hrs. in 1994** | | | |
| No…… | 90% | 73% | 39% |
| Yes…….. | 10% | 27% | 61% |
| **Literacy Tasks at Work** | | | |
| No job in 1994……... | 63% | 17% | 21% |
| Used Memos, Reports or Manuals Daily……...…… | 15% | 43% | 53% |
| Used Above at Work Less Frequently…… | 8% | 18% | 19% |
| | 15% | 21% | 8% |
| **How Often Do You Read Books?** | | | |
| Daily…… | 29% | 33% | 36% |
| Weekly…… | 16% | 15% | 17% |
| Monthly…….. | 9% | 18% | 13% |
| Yearly…… | 21% | 16% | 15% |
| Never…… | 24% | 18% | 20% |

**Table 3 (Continued)**

| | SAR | UI / No SA | No UI / No SA |
|---|---|---|---|
| **How Often Do You Use A Public Library?** | | | |
| Daily…… | 3% | 0% | 1% |
| Weekly…… | 10% | 7% | 9% |
| Monthly…….. | 11% | 17% | 14% |
| Yearly…… | 15% | 25% | 24% |
| Never…… | 61% | 51% | 53% |
| **You Participate in Voluntary / Community Organizations?** | | | |
| Daily…… | 7% | 1% | 3% |
| Weekly…… | 5% | 9% | 12% |
| Monthly…….. | 7% | 10% | 12% |
| Yearly…… | 18% | 20% | 24% |
| Never…… | 64% | 59% | 51% |

**Table 4 : Years of Education and Literacy Scores:**
SARs vs. Rest of Population, By Work in 1994

| | SAR / Work Status | | | |
|---|---|---|---|---|
| | SAR: Worked in 1994 | SAR: Did not Work in 1994 | Non SAR: Worked in 1994 | Non SAR: Did not Work in 1994 |
| Years of Completed Formal Ed. (Gr).. | 11.4 | 9.5 | 13.1 | 10.9 |
| Post-secondary Diploma / Degree….. | 21% | 9% | 41% | 26% |
| Document Literacy Score……. | 261 | 216 | 291 | 245 |
| Low Document Literacy Level 1/2…. | 55% | 76% | 38% | 60% |
| Prose Literacy Score…… | 264 | 226 | 289 | 255 |
| Low Prose Literacy Score 1/2…….. | 45% | 75% | 37% | 56% |
| Quantitative Literacy Score…….. | 258 | 219 | 294 | 255 |
| Low Quantitative Literacy Level 1/2.. | 55% | 78% | 37% | 55% |
| Weighted Count (000)……... | 626 | 1,048 | 10,304 | 2,530 |

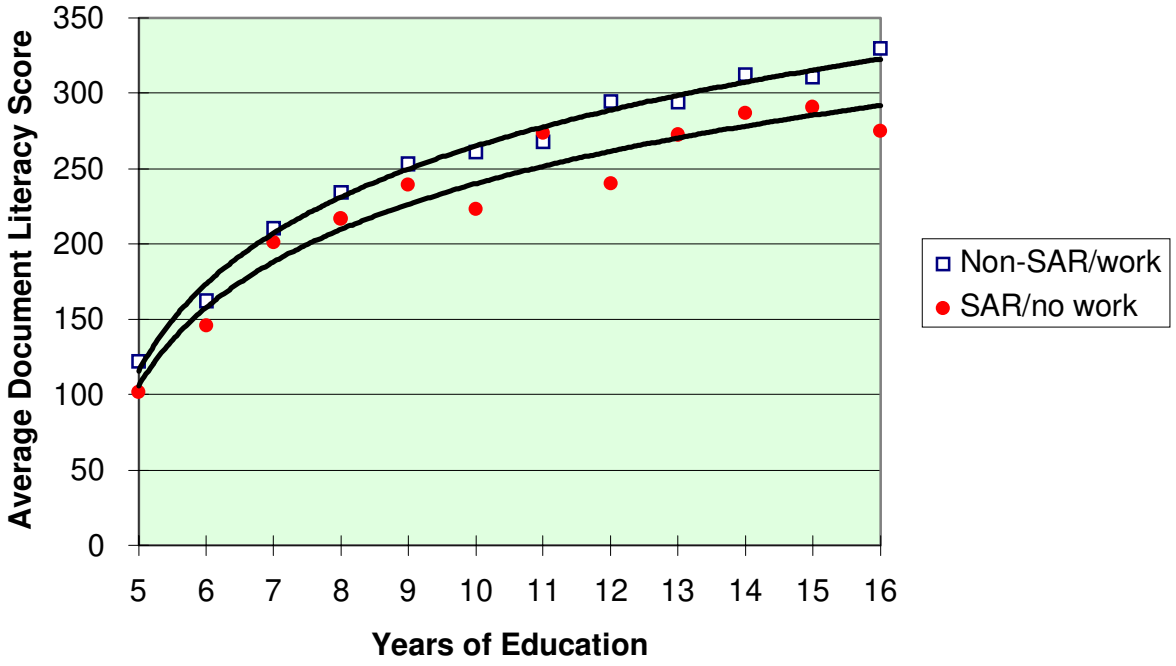
# 6. Correlation Between SAR Status and Literacy

The lower literacy level of SARs can in part be explained by their lower education, since education and literacy are highly correlated.[3] However, even at the same level of education, the literacy of SARs is lower than that of non-SARs.

Chart 1 shows that the average literacy score increases with the years of education, but at a decreasing rate. A logarithmic trend appears to fit well the observed average literacy scores.

Chart 1 also shows that for any given number of years of education, working non-SARs have a higher literacy score than non-working SARs. The difference in literacy scores between SARs and non-SARs appears to increase with the years of education.

**Chart 1: Average Document Literacy Score by Years of Education, Social Assistance, and Work**




[3] The correlation coefficient between years of education and document literacy score in the general population is 64%.

The correlation between the years of education and SAR status was tested more rigorously using regression techniques. The dependent variable was the document literacy score. The first independent variable was years of education (in natural log form).[4] The second independent variable was a dummy for SAR status.[5] Other independent variables included in the regressions were age, gender, presence of spouse, and region.

- Regression 2a (Table 5) compares non-working SARs to working non-SARs. It shows that at any given level of education (and after controlling for differences in age, gender, presence of spouse, and region) the document literacy score of non-working SARs is lower by 31 units, or 14% expressed as a percentage of their average score of 216.

**Table 5: Regression 2a**
**Effect of SAR Status on Document Literacy Score**
**Non-Working SARs versus Working Non-SARs**

| | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|
| Sample: Non-working SARs and working non-SARs | | | | |
| Dependent: DOC document literacy score | | | | |
| LNA7 | Natural log of years of education | 138.10 | 4.17 | 33.09 |
| SAR | Received social assistance | -30.80 | 4.59 | -6.70 |
| AGE3 | 36-45 (omitted: 26-35) | -10.77 | 2.80 | -3.85 |
| AGE4 | 46-55 | -14.54 | 3.11 | -4.68 |
| AGE5 | 56-65 | -37.35 | 4.51 | -8.28 |
| GENDER | Male (omitted: female) | -1.49 | 2.35 | -0.64 |
| MARSTAT | Marital status (omitted: no spouse) | -1.82 | 2.95 | -0.62 |
| REG2 | Quebec (omitted: Atlantic) | -3.15 | 4.67 | -0.67 |
| REG3 | Ontario | -3.48 | 4.53 | -0.77 |
| REG4 | West | -0.45 | 4.61 | -0.10 |
| C | Constant | -44.72 | 11.99 | -3.73 |

| | | | | | |
|---|---|---|---|---|---|
| R-sqr (adj.) | 48% | Sample | 1929 | | |
| Stand. Error | 50.55 | F statistic | 182.54 | F signific. | 0.00 |

[4] A second degree polynomial specification was also tested, but it had the undesirable property of showing negative effects on literacy for very high years of education.

[5] A term for the interaction between years of education and SAR status was also tested, since Chart 1 shows that the negative effect of SAR status on literacy is greater at higher years of education. However, the interaction term was found to be statistically insignificant and was not included in the final regressions.

- Regression 2b (Table 6) performs the same type of comparison between working SARs and working non-SARs. It shows that the independent effect of SAR status is a reduction in document literacy by 13 units, or 6% of their average score of 261.

**Table 6: Regression 2b**
**Effect of SAR Status on Document Literacy Score**
**Working SARs versus Working Non-SARs**

| | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|
| Sample: Non-working SARs and working non-SARs | | | | |
| Dependent: DOC document literacy score | | | | |
| LNA7 | Natural log of years of education | 138.96 | 4.17 | 33.35 |
| SAR | Received social assistance | -13.22 | 5.22 | -2.53 |
| AGE3 | 36-45 (omitted: 26-35) | -9.48 | 2.76 | -3.43 |
| AGE4 | 46-55 | -15.13 | 3.12 | -4.86 |
| AGE5 | 56-65 | -38.74 | 4.58 | -8.46 |
| GENDER | Male (omitted: female) | -1.51 | 2.33 | -0.65 |
| MARSTAT | Marital status (omitted: no spouse) | -1.63 | 2.95 | -0.55 |
| REG2 | Quebec (omitted: Atlantic) | 1.05 | 4.74 | 0.22 |
| REG3 | Ontario | -3.77 | 4.58 | -0.82 |
| REG4 | West | 0.36 | 4.62 | 0.08 |
| C | Constant | -48.40 | 11.96 | -4.05 |

| | | | | | |
|---|---|---|---|---|---|
| R-sqr (adj.) | 44% | Sample | 1858 | | |
| Stand. Error | 49.45 | F statistic | 149.14 | F signific. | 0.00 |

The regression results show that SAR status has a negative effect on literacy (Regression 2b). The effect is even stronger when there is also a difference in employment status (Regression 2a). Of course, the direction of causality in the two regressions is not obvious. One can only speculate at this point that at least part of the negative correlation is due to the negative effect of absence of work on literacy.

# 7. Literacy-equivalence Education Factor

The above results show that at any given level of education, the literacy score of SARs is lower than that of non-SARs. In other words, to achieve the same level of literacy, SARs require more years of education than non-SARs.

The additional years of education required by SARs to reach the same level of literacy as working non-SARs provide a literacy-equivalence factor. This factor allows the conversion of the education level of SARs into the literacy-equivalent level of education of working non-SARs. Thus:

- Although the average years of education of non-working SARs is 9.5, in literacy terms this is equivalent to only 7.5 years of education of working non-SARs. In other words, working non-SARs reach a literacy score of 216 (the average score of non-working SARs) at 7.5 years of schooling rather than 9.5 years. This implies that the literacy-equivalence factor of education for non-working SARs is 2 years (distance AB in Chart 2).

- Alternatively, a non-working SAR requires an additional 2.5 years of education to reach the literacy level of 291 that the average working non-SAR reaches with 13.1 years of schooling (distance DE in Chart 2).[6]

[6] Because the relation between years of education and literacy is not linear, at higher levels of literacy great increments in years of education are required to offset the same absolute difference in literacy scores.

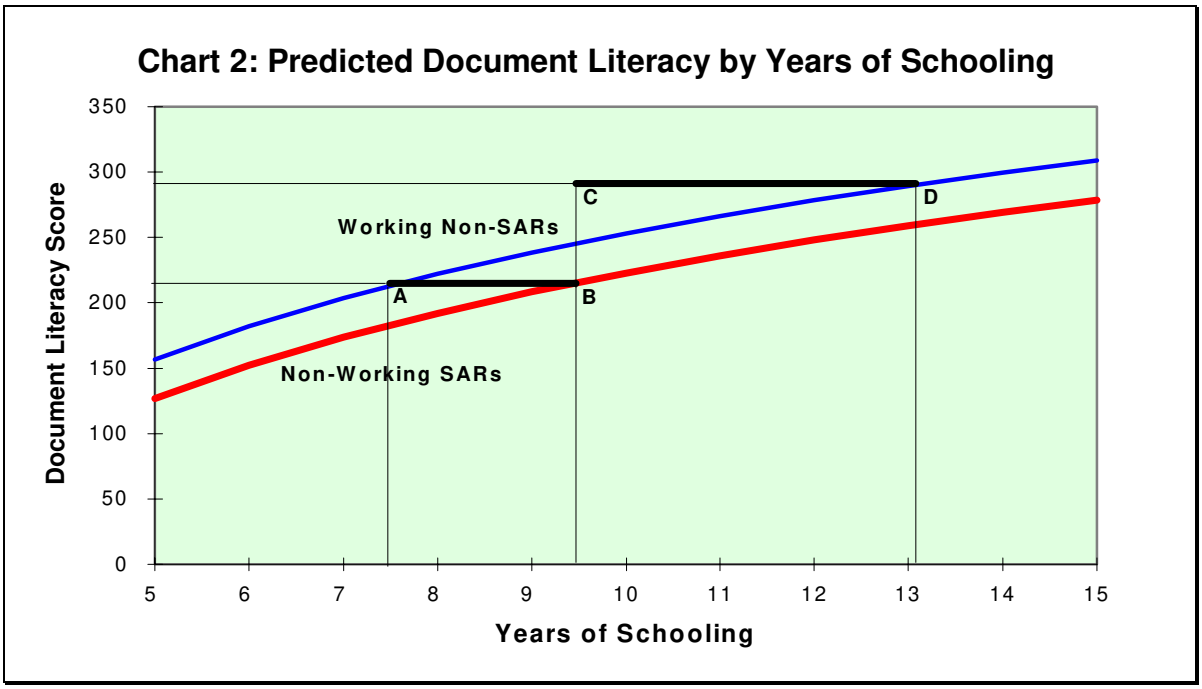


Chart 2: Predicted Document Literacy by Years of Schooling
Document Literacy Score
350
300
250
200
150
100
50
0
5
6
7
8
9
10
11
12
13
14
15
Years of Schooling
Working Non-SARs
Non-Working SARs
A
B
C
D

# 8. The Effect of Work on Literacy

The lower literacy at the same level of education of non-working SARs relative to working non-SARs may be due to different factors:

- One possibility is that SARs have a lower quality of education or their literacy is lower due to other factors that have not been included in the regression model.

- Another possibility is that the absence of work itself has a negative effect on literacy. Although at this stage this is a speculation, it is quite possible that there is a virtuous cycle between work and literacy: higher literacy leads to more employment, while more employment improves literacy skills.

Regressions 3a and 3b (Tables 7 and 8) confirm the correlation between work and literacy. According to these regressions, the effect of work on literacy is stronger among SARs. However, these results are still very preliminary since no allowance is made in the regression equations for the simultaneous relation between work and literacy.

Separating the correlation between work and literacy into its two components (the effect of literacy on work and the effect of work on literacy) is a difficult methodological issue. This issue will be the subject of in-depth investigation in a follow-up study which will explore in more detail the causal relationship between literacy and work.

**Table 7: Regression 3a**
**Effect of Work on Literary**
**Among Non-SARs**

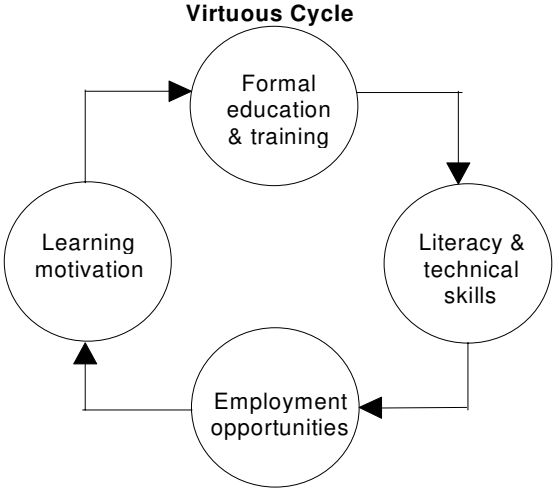
| | | | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|---|---|
| Sample: All non-SARs | | | | | | |
| Dependent: DOC document literacy score | | | | | | |
| LNA7 | Natural log of years of education | | | 132.97 | 3.95 | 33.69 |
| ERATE | Worked in 1994 | | | 9.72 | 3.19 | 3.04 |
| AGE3 | 36-45 (omitted: 26-35) | | | -7.86 | 2.80 | -2.81 |
| AGE4 | 46-55 | | | -16.35 | 3.09 | -5.30 |
| AGE5 | 56-65 | | | -32.49 | 3.86 | -8.42 |
| GENDER | Male (omitted: female) | | | -2.01 | 2.32 | -0.87 |
| MARSTAT | Marital status (omitted: no spouse) | | | -2.43 | 2.91 | -0.84 |
| REG2 | Quebec (omitted: Atlantic) | | | 8.37 | 4.39 | 1.91 |
| REG3 | Ontario | | | 0.86 | 4.27 | 0.20 |
| REG4 | West | | | 3.30 | 4.34 | 0.76 |
| C | Constant | | | -47.16 | 11.17 | -4.22 |
| R-sqr (adj.) | 46% | Sample | 2174 | | | |
| Stand. Error | 51.57 | F statistic | 186.67 | | F signific. | 0.00 |

**Table 8: Regression 3b**
**Effect of Work on Literacy**
**Among SARs**

| | | | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|---|---|
| Sample: All SARs | | | | | | |
| Dependent: DOC document literacy score | | | | | | |
| LNA7 | Natural log of years of education | | | 167.94 | 10.75 | 15.62 |
| ERATE | Worked in 1994 | | | 17.78 | 7.25 | 2.45 |
| AGE3 | 36-45 (omitted: 26-35) | | | -10.68 | 8.17 | -1.31 |
| AGE4 | 46-55 | | | 19.26 | 8.60 | 2.24 |
| AGE5 | 56-65 | | | -2.34 | 13.54 | -0.17 |
| GENDER | Male (omitted: female) | | | -15.83 | 7.18 | -2.20 |
| MARSTAT | Marital status (omitted: no spouse) | | | 8.18 | 7.50 | 1.09 |
| REG2 | Quebec (omitted: Atlantic) | | | -21.10 | 13.07 | -1.61 |
| REG3 | Ontario | | | -11.23 | 13.12 | -0.86 |
| REG4 | West | | | -10.51 | 13.83 | -0.76 |
| C | Constant | | | -138.87 | 27.55 | -5.04 |
| R-sqr (adj.) | 57% | Sample | 283 | | | |
| Stand. Error | 53.15 | F statistic | 38.22 | | F signific. | 0.00 |

The direction of causality is difficult to determine. One could argue that the correlation shows that works improves literacy skills, both because of literacy activities at work and the increased socialization. On the other hand, one could also argue that the correlation shows that those with higher literacy have better chances of being employed. The reality is probably somewhere between. Literacy and work are connected through a "virtuous" cycle: literacy improves the chances of employment; employment improves literacy (Chart 3).

**Chart 3: The Education-Literacy-Work Virtuous Cycle**



# 9. Does the Type of Work Matter

One would expect that literacy improves primarily when the work involves literacy activities, like reading manuals or reports on a regular basis. To test the effect of literacy activities at work, we included in regressions 4a (estimated from non-SARs) and regressions 4b (estimated from SARs) three dummy variables: (See Tables 9 and 10.)

LITER1: read at work memos, reports, or manuals daily;
LITER2: read at work memos, reports, or manuals less frequently;
LITER3: rarely/never read at work memos, reports, or manuals;

(in all cases, the missing category is no work in 1994).

The regression results show that work is associated with higher literacy only when it involves daily literacy activities. The regression coefficient is larger and statistically more significant among SARs than non-SARs.

Most likely the direction of causality runs both ways. Jobs with frequent literacy activities require individuals with high literacy levels while, at the same time, jobs with frequent literacy activities tend to have a positive effect on individuals' literacy.

**Table 9: Regression 4a**
**Effect of Work and Literacy Activities at Work on Literacy: Among Non-SARs**

| | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|
| Sample: All non-SARs | | | | |
| Dependent: DOC document literacy score | | | | |
| LNA7 | Natural log of years of education | 120.76 | 4.26 | 28.37 |
| JOBLIT1 | Reads manuals etc. daily (omitted: no job) | 18.21 | 3.39 | 5.37 |
| JOBLIT2 | Reads manuals etc. less frequently | 6.99 | 3.84 | 1.82 |
| JOBLIT3 | Reads manuals etc. rarely or never | -10.28 | 4.48 | -2.29 |
| AGE3 | 36-45 (omitted: 26-35) | -8.49 | 2.77 | -3.07 |
| AGE4 | 46-55 | -18.58 | 3.07 | -6.06 |
| AGE5 | 56-65 | -33.77 | 3.82 | -8.84 |
| GENDER | Male (omitted: female) | -1.80 | 2.30 | -0.79 |
| MARSTAT | Marital status (omitted: no spouse) | -2.35 | 2.87 | -0.82 |
| REG2 | Quebec (omitted: Atlantic) | 5.38 | 4.36 | 1.23 |
| REG3 | Ontario | 0.33 | 4.22 | 0.08 |
| REG4 | West | 1.55 | 4.32 | 0.36 |
| C | Constant | -16.22 | 11.85 | -1.37 |

| | | | | | |
|---|---|---|---|---|---|
| R-sqr (adj.) | 47% | Sample | 2174 | | |
| Stand. Error | 50.98 | F statistic | 163.65 | F signific. | 0.00 |

**Table 10: Regression 4b**
**Effect of Work and Literacy Activities at Work on Literacy: Among SARs**

| | | Coeff. | Stand.err. | t-stat |
|---|---|---|---|---|
| Sample: All SARs | | | | |
| Dependent: DOC document literacy score | | | | |
| LNA7 | Natural log of years of education | 166.92 | 10.95 | 15.25 |
| JOBLIT1 | Reads manuals etc. daily (omitted: no job) | 22.14 | 9.90 | 2.24 |
| JOBLIT2 | Reads manuals etc. less frequently | 10.52 | 12.56 | 0.84 |
| JOBLIT3 | Reads manuals etc. rarely or never | 17.48 | 10.08 | 1.73 |
| AGE3 | 36-45 (omitted: 26-35) | -11.18 | 8.22 | -1.36 |
| AGE4 | 46-55 | 19.21 | 8.78 | 2.19 |
| AGE5 | 56-65 | -2.01 | 13.69 | -0.15 |
| GENDER | Male (omitted: female) | -15.40 | 7.52 | -2.05 |
| MARSTAT | Marital status (omitted: no spouse) | 8.06 | 7.58 | 1.06 |
| REG2 | Quebec (omitted: Atlantic) | -22.05 | 13.17 | -1.67 |
| REG3 | Ontario | -11.71 | 13.17 | -0.89 |
| REG4 | West | -11.05 | 13.88 | -0.80 |
| C | Constant | -136.03 | 27.99 | -4.86 |

| | | | | | |
|---|---|---|---|---|---|
| R-sqr (adj.) | 57% | Sample | 283 | | |
| Stand. Error | 53.29 | F statistic | 31.75 | F signific. | 0.00 |

# 10. Is Work at the Cost of Home Literacy Activities?

Finally, it is important to recognize that literacy activities can also take place outside work. This raises the possibility that work under some circumstances may lower literacy by reducing the amount of free time.

To test this hypothesis we focused on three types of activities that are associated with higher literacy: using a public library, participating in volunteer activities, and reading books. The first two were expected to be particularly sensitive to the available time and therefore at risk of suffering from work. In all cases, we made a distinction between frequent use (at least once a month) and less frequent use.

To test the effect of work on literacy activities at home, we compared working and non-working individuals (both SARs and non-SARs) before and after we reweighted the sample to remove the influence of education. The results are summarized in Tables 11a and 11b. Similar conclusion were reached by using regression analysis and controlling for more characteristics than education.

The results show that among SARs work does not exact a significant cost to literacy activities at home. In fact, working SARs are more likely to regularly use a public library, do voluntary work, or read a book than non-working SARs. Even after adjusting or differencesin levels of education, there is little difference in literacy activities at home between working and non-working SARs. Moreover, both types of SARs are more likely to participate in literacy activities outside work than working non-SARs.

| Table 11a: Effect of Work on Literacy Activities at Home (before sample reweighting to normalize effect of education) | | | | |
|---|---|---|---|---|
| | SAR / Work Status | | | |
| | SAR: Worked in 1994 | SAR: Did not Work in 1994 | Non SAR: Worked in 1994 | Non SAR: Did not work in 1994 |
| Use a Public Library at Least Monthly…… | 26% | 23% | 24% | 23% |
| Do Voluntary Work at Least Monthly…… | 25% | 14% | 26% | 18% |
| Read Books at Least Monthly…… | 58% | 53% | 64% | 69% |

| Table 11b: Effect of Work on Literacy Activities at Home (after sample reweighting to normalize effect of education) | | | | |
|---|---|---|---|---|
| | SAR / Work Status | | | |
| | SAR: Worked in 1994 | SAR: Did not Work in 1994 | Non SAR: Worked in 1994 | Non SAR: Did not work in 1994 |
| Use a Public Library at Least Monthly…… | 35% | 32% | 22% | 31% |
| Do Voluntary Work at Least Monthly…… | 31% | 28% | 25% | 22% |
| Read Books at Least Monthly…… | 62% | 67% | 60% | 73% |

# 11. Conclusion

There is a virtuous cycle between literacy and work: Literacy is important for employability, but employment is also important in maintaining literacy. Absence from the work place has a negative effect on literacy. There is tentative evidence that encouraging employment will have long-term employability benefits through the improvement of skills. In other words, encouraging work among SARs may improve their employability not only because of the gain in work experience and improvement of work habits, but also because of a positive effect on their literacy.

The IALS data provide an opportunity for two types of further analytical research:

- First, a more in-depth investigation of how work may contribute to the literacy levels of SARs. This can included such aspects as access to employer-sponsored training, use of literacy and numeracy tasks at work, and social interaction at the workplace.

- Second, an expansion of the traditional investigation of the determinants of reliance on social assistance by incorporating literacy as an independent variable. In effect, there is a "simultaneous system" relation between literacy, work, and reliance on social assistance which is important to investigate.

# References

Barham, Vicky; Robin Bodway; Maurice Marchand; and Pierre Pestieau (1991) *Education and the Poverty Trap*. Queens University, Institute for Economic Research.

Brown, David (1995) "Welfare Caseload Trends in Canada" in *Helping the Poor -- A Qualified Case for 'Workfare'*. C.D. Howe Institute, The Social Policy Challenge No. 5, pp. 37-81.

Crompton, Susan (1996) *The Marginally Literate Workforce*. Perspectives on Labour and Income, Summer, Vol. 8, No. 2.

Kapsalis, Constantine (1997) *Employee Training: An International Perspective*. Statistics Canada (Catalogue no. 89-552-MPE, no. 2).

Krashinsky, Michael (1995) "Putting the Poor to Work: Why 'Workfare' Is an Idea Whose Time Has Come?" *in Helping the Poor -- A Qualified Case for 'Workfare'*. C.D. Howe Institute, The Social Policy Challenge No. 5, pp. 91-119

Lightman, Ernie S. (1995) "You Can Lead a Horse to Water...: The Case Against Workfare in Canada." in *Helping the Poor -- A Qualified Case for 'Workfare'*. C.D. Howe Institute, The Social Policy Challenge No. 5, pp. 151-179

National Anti-Poverty Organization (1992) *Literacy and Poverty: A View from the Inside*.

Organization for Economic Co-operation and Development (1996) *Lifelong Learning for All*.

Statistics Canada (1992) *Education in Canada -- A Statistical Review for 1990-91*.

Shalla, Vivian and Grant Schellenerg (forthcoming) *The Value of Words: Literacy and Economic Security in Canada*. Canadian Council on Social Development, Centre for International Statistics.

Statistics Canada/OECD (1995) *Literacy, Economy and Society.*

Statistics Canada (1996) *Reading the Future: A Portrait of Literacy in Canada* (Catalogue no. 89-551-XPE)