

CLLN EXPLORES THE RELATIONSHIP BETWEEN LITERACY AND EARNINGS

LEARNING AND EARNING: Linking Literacy and Poverty Using IALS Data on Earnings

a literature review



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a literature review prepared for
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by The Centre for Literacy
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Introduction

The purpose of this literature review is to explore the relationship between literacy and poverty primarily using data from the series of related international literacy assessments, commonly referred to as the International Adult Literacy Survey (IALS). IALS data provides extensive information about literacy and related factors such as employment, earnings, education and demographics that can be used to support discussions of literacy and poverty. The literature review has been undertaken as part of a project for the Canadian Literacy and Learning Network to support high-level decision-making and contribute to the development of “an extensive and collective understanding” of literacy and poverty in Canada.

The following questions guide the literature review and provide its general organization:

1. Does existing research establish clear links between literacy proficiency and earnings? Is the relationship between literacy and earnings equally strong for all groups in Canada, the United States and other OECD countries?
2. Are there other factors at work? If so, what are these factors?
3. What are the policy implications of these links for poverty reduction and reducing earning inequalities in Canada?
4. What are the remaining knowledge gaps and the most promising avenues for future research efforts around these questions?

The focus on earnings, as opposed to other indicators of well-being, is mainly dictated by the scarcity of data explicitly linking literacy skill levels to other social outcomes. Improving the literacy skills of Canadians would improve their lives in many ways, whether they can be directly measured or not. In addition, a relationship between literacy levels and poverty has been recognized most recently in the Federal Poverty

Reduction Plan Report of the Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities released in November 2010. The report calls for increased “adult literacy levels, in particular by increasing funding for the literacy and life skills program and through measures to encourage newcomers to Canada to learn English or French” (House of Commons 2010, p.222).

Using IALS data and literacy measures

For nearly two decades IALS and related surveys have shaped literacy research, policy and practice in Canada and other countries. These include the 1992 US National Adult Literacy Survey (NALS), the 1994 International Adult Literacy Survey (IALS), the 2003-2006 Adult Literacy and Life skills survey (ALL) in the U.S. and other countries, and its Canadian counterpart, the 2003 International Adult Literacy and Skills Survey (IALSS). This literature review focuses almost exclusively on studies that use the 1994 IALS and the 2003 IALSS, both of which include a sizable Canadian sample.

IALS developed a new way to measure adult literacy skill levels by engaging respondents in reading, math and problem-solving tasks drawn from daily life in six categories: 1) home and family; 2) health and safety; 3) community and citizenship; 4), consumer economics; 5) work, and; 6) leisure and recreation. It measured skill level using new theories and methodologies related to task complexity and item response [See Appendix A for a description of IALS framework]. It defined literacy as “...using printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential” (Statistics Canada, 2005 b , p. 198). IALS recognized that literacy abilities are not simply present or absent

but are developmental and present themselves along a continuum. Statistics Canada has described the purposes of IALS is to:

- ▶ find out how well adults use printed information to function in society
- ▶ collect data on the incidence and volume of participation in adult education and training
- ▶ investigate the relationship between initial and adult education
- ▶ investigate the relationships between literacy proficiency and wider economic and social outcomes

[Source: <http://www.statcan.gc.ca/dli-ild/data-donnees/ftp/ials-eiaa-eng.htm>]

Although IALS can be used to address a wide range of social issues and questions, the data has primarily been used to investigate the relationship between literacy and labour-market outcomes in order to understand the contribution of literacy to both individual and national economic productivity. This is not surprising given that IALS data has provided economists and other analysts a direct measure of skills across countries and language groups, something not readily available previously. Green and Riddell (2001) have described the problem that they and fellow economists faced before IALS was introduced:

“Most research on the contribution of human capital to economic growth and its role in the distribution of income uses only relatively crude indicators such as educational attainment and years of labour market experience. Educational attainment is generally measured by years of schooling or highest level of education reached. Labour market experience is unobserved in most data sets and is often proxied by ‘potential experience,’ measured as age minus years of schooling minus six. (...) More generally, education and work experience are ‘inputs’ into the production of human capital, not direct measures of the ‘outcomes’—a set of skills, competencies and knowledge” (p. 7)

IALS represented a breakthrough in providing comparable data on literacy skills as well as data on labour force activity and various earnings measures. The availability of this data explains why this literature review on the links between poverty and literacy focuses on studies that rely on IALS data. However, measuring poverty is a complex undertaking and although IALS may provide a wealth of data that can be used to study the links between levels of literacy skills and indicators of economic well-being such as earnings and employment, these same indicators do not provide sufficient information in themselves to conclude whether or not an individual is living in poverty. They merely allow us to examine economic outcomes usually associated with poverty.

IALS has other limitations and it is helpful to identify what IALS can and cannot reveal. Some critics have suggested that the unique and specific definition of literacy for assessment purposes does not reflect the complex nature of literacy, or of the many ways in which literacy is defined, used, and understood. IALS was developed to generate population measures only; it was not intended to provide comparable measures of literacy proficiency for individuals. Some critics (Hamilton & Barton, 2000) have also questioned its claim to reflect actual literacy use and its characterization of culture and background knowledge as bias. Finally, IALS is a cross-sectional study, not a longitudinal one. While it can provide a portrait of literacy skills at a given point in time, it cannot track over time the individuals who were tested. Despite these concerns, this review is based on the premise that IALS data can provide valuable insights into the linkages between literacy and indicators of economic well-being.

Part 1 looks at studies that explore the general links between literacy skill levels and individual earnings. The section also explores the complex relationships between formal schooling, work experience and literacy skill levels. Most of the studies examined in this section fall into the category of human-capital theory. We do not examine other outcomes such as labour force participation, although they are obviously important. Canadian studies based on IALS data have focussed more on earnings than on labour force participation.

Part 2 expands the scope to examine factors not typically taken into account by human capital approaches; these studies pay more attention to sub-groups analysis (i.e. women and immigrants) and to the role of government and labour market regulations in shaping labour market outcomes.

In our conclusion, we attempt to identify emerging trends and promising findings in order to inform further discussion and future directions that might be taken by the literacy and essential skills field.

The literature on these issues is vast, but we have limited this review to the themes identified above, believing that they provide a useful point of entry into the discussion of literacy and poverty.

Part 1: Examining the links between literacy, employment, earnings and education in Canada

In this section, we review the evidence that points to a significant relationship between literacy skill levels and earnings in the context of human capital theory. Although human capital theory is not the main focus, it provides the theoretical background for many of the studies examined and it is therefore useful to outline some of its basic premises.

Human Capital Theory: an outline

There are various economic models that describe how human capital is presumed to contribute to economic growth, and that outline the conditions necessary for human capital accumulation to fully play that role. It is generally agreed today that human capital refers “to the abilities, skills and knowledge possessed by individuals that allow them to be productive, function effectively economically and socially, and contribute to economic progress” (The Centre for Literacy, 2010, p. 1). The introduction of human capital has changed the way economists look at the determinants of economic growth. Economic growth used to be conceptualized essentially as a function of an increase in the stock of physical capital, such as machinery, equipment, and structures, and labour, such as the number of people employed or number of hours worked. The notion of human capital emerged when economists realized that the growth of labour and physical capital could not solely account for output growth. Human capital became a way to explain that percentage of output growth that could not be accounted for by traditional economic factors.

Literacy skills and earnings in Canada

For most analysts in Canada, the links between literacy skill-levels and positive economic outcomes for individuals are strong, although they readily concede that other factors are also at work. What these other factors are and how they interact with literacy skills is not as clear, as we will see.

Using data from the Canadian component of the 1994 IALS, Shalla and Schellenberg (1998) succinctly summarize the relationship between literacy and economic well-being, stating that this data has “*clearly established a link between literacy and economic security, showing that Canadians with weaker literacy skills are more likely to be unemployed, work in lower-paying jobs and live in low-income households*” (p. 45). In addition, they suggest there is a connection between economic well-being and potential literacy development as adults who earn less participate less in activities that support the development of literacy abilities, and have fewer opportunities to participate in job training and education. Still, they also note that the relationship between literacy skills and earnings is perhaps not as straightforward as it may seem, especially for women. Shalla and Schellenberg find it particularly startling that, “*women with stronger literacy skills sometimes fare no better than men with weaker skills. The gender-segregated nature of the labour market and women’s predominant responsibilities for household work and child care, as well as differences in labour market experience and educational attainment profiles, help explain these disparities*” (p. 45).

Teasing out the different impacts of schooling and literacy skill levels on earnings is often challenging for researchers. Using the same IALS data to examine the relationship between earnings, literacy proficiency, education and work

experience, Green and Riddell (2001) find that literacy skills have a large impact on earnings, accounting for approximately one-third of the estimated returns to education. They summarize their findings as follows: “*Labour market outcomes depend on the skills of an individual and the value placed on those skills in the labour market. [...] These findings support the human capital theory.*” (p. 37) In a subsequent article, these researchers (2003) use the same IALS data to explore the complicated links between literacy skills, work experience, schooling and other, “non-cognitive” skills. They still find that literacy skills contribute significantly to earnings and also observe that the impact of schooling on earnings is reduced as a result. Furthermore, they find that this relationship is fairly consistent across earning levels, that is, whether individuals belong to the 20% of the population with the highest earnings, the 20% with the lowest earnings, or somewhere in between. In short, schooling and literacy skills are closely linked because most people acquire these skills in school. However, it is also possible to identify a distinct and independent impact of literacy skills on earnings, regardless of the education level of people.

On the other hand, they also recognize that policies designed to increase literacy skills should not be considered easy solutions, since the evidence suggests that “*literacy skills interact with whatever skills are created through experience in generating earnings but do not interact with other, potentially non-cognitive, skills*” (p.22), such as social skills. In other words, having more literacy skills does not increase the economic impact of other non-cognitive skills. Although work experience may lead to increased earnings, when work experience and education are examined independently in relation to their influence on the growth of literacy skills, Green

and Riddell find that schooling, not work experience, has more of an influence. However, they note that this finding “*is also consistent with non-cognitive skills being even more important than cognitive skills in explaining earnings generation*” (p. 22). Here, Green and Riddell point to a U.S. study by Bowles et al (2001) that suggests other behavioural traits such as a sense of efficacy, or the ability to avoid aggressive or disruptive behaviours, have a significant impact on earnings.

The intersection between literacy skills, work experience, schooling and other, “non-cognitive skills”¹ is a recurring theme in IALS literature. Although they are not explicitly described in the studies reviewed here, these “non-cognitive skills” appear to be very much like the skills that make up what sociologists and other researchers have called the “social capital” of individuals. These skills include the ability to interact well with others, the capacity to inspire trust in others, and self-confidence, among others. All of these non-cognitive skills can contribute to the economic productivity of individuals and businesses and they are also useful for community and civic engagement.

In a study using the 1994 IALS data, Daniel Boothby (2002), also finds that while literacy skills have a distinct effect on earnings, other more powerful factors help explain earning differences:

“Very large differences in work experience and in literacy score do not affect occupational assignment by as much as does a single year of schooling. In our view, some part of the effects of schooling are due to skills other than literacy skills which are produced by schooling.”

(Boothby, 2002, p. 27).

In addition, “*earnings depend crucially on the match between schooling and occupation, not on schooling alone*” (p. 28). If there were measures that could look at skills acquired through schooling, other than literacy, Boothby speculates it would become possible to develop a more complete accounting for the returns to education.

The 2003 IALSS gave analysts an opportunity to test previous findings using more recent data. In their joint analysis of the first results in 2005, the OECD and Statistics Canada noted that the results reveal that both literacy skills and schooling are strongly rewarded in Canada and the United States, while in other countries, such as Bermuda and Italy for instance, literacy skills are rewarded over and above the returns to education. This “... *suggests that skills are highly valued on the labour market and that education is rewarded only in so far as it is associated with these skills*” (OECD/Statistics Canada, 2005, p.167). .

IALSS also examined the intensity of information and communication technology (ICT) use in several countries and their findings show that “*high ICT use requires prior literacy and numeracy skill. ICT skills, in turn, amplify the productivity effects of capital and labour and hence drive inequality in wages*” (OECD/Statistics Canada, 2005, p. 270). In addition, the authors also note that a considerable proportion of adults in all countries exhibit significant skill deficiencies, and that there are signs that others are experiencing an erosion of skills over time, something that Green and Riddell (2003) had noted in their analysis of the 1994 IALS data.

In their analysis of the 2003 IALSS data, Green and Riddell (2007) arrive at somewhat similar conclusions by emphasizing the importance of schooling in producing literacy proficiency.

¹ Non-cognitive skills are generally defined as skills that are often not measurable and more “personality” related. Non-cognitive skills include emotional maturity, conscientiousness, empathy, interpersonal skills, verbal and non-verbal communication. Non-cognitive skills are generally assumed to influence the overall behaviour of a person and therefore important in labour-market success, but difficult to measure.

The authors suggest that “...literacy and years of schooling are likely to be jointly determined” (Green and Riddell, 2007, p. 17). In order to determine how important the effect of schooling is in generating literacy skills, the authors also examine other variables, particularly parental education levels, and find that,

“[...] once we instrument for schooling, the parental background variables all become smaller in magnitude and lose statistical significance. [...] Our main conclusion is that, if the assumptions underlying our instrument are correct, these results indicate that education has a strong causal effect on literacy and that schooling is the dominant determinant of literacy.” (Green and Riddell, 2007, p. 19).

They also found some support-although not strong-for the “use it or lose it” effect. That is, those who use literacy more intensely at work tend to have a slightly higher literacy score with their skills declining more slowly over time.

Finally, Green and Riddell conclude that this is a minor impact compared to the effects of schooling. They still believe that literacy skills may play a more substantial role in accounting for returns to schooling, but acknowledge that this can also be explained by the fact that “[...] schooling also affects earnings through its impact on non-cognitive traits such as leadership skills and reliable attendance at work [...] .” (Green and Riddell, 2007, p. 41)

While not negating the importance that Green and Riddell impute to schooling as a strong contributor to literacy skills, a recent IALSS report by Canadian Literacy and Learning Network (CLLN & DataAngel 2011) presents evidence that there are distinct economic returns to literacy and schooling, but that literacy skills have an impact regardless of the educational level of individuals.

Using data from that report (CLLN, Murray and Shillington, 2011 p 3), the following table clearly shows differences in earnings by literacy level with different levels of educational achievement.

Average Earnings of the Population by Education and Literacy Level, no Adjustment for Age Distribution, 2003						
Literacy level	1	2	3	4	5	
	Total					
Total	\$40,000	\$28,000	\$32,000	\$44,000	\$48,000	\$55,000
Less than High School	\$23,000	\$25,000	\$25,000	\$21,000	\$17,000	n/a
HS Graduates	\$32,000	\$27,000	\$31,000	\$35,000	\$29,000	\$36,000
Trade (cert./dip./a)	\$45,000	\$31,000	\$37,000	\$49,000	\$53,000	n/a
College	\$46,000	\$31,000	\$37,000	\$49,000	\$50,000	\$49,000
Degree	\$60,000	\$50,000	\$45,000	\$63,000	\$63,000	\$60,000
<small>n/a: could not be calculated because of small sample size.</small>						
Source: calculations using the IALSS 2003						

It is interesting that the authors found that the most critical threshold seems to be situated between levels 2 and 3, particularly for those who have educational credentials above a high-school diploma. It has been noted (Murray, 2010) that increased literacy does translate into higher wages for some workers, while for others finding and keeping employment becomes easier.

Summary of Part 1

From the evidence presented in Part 1, it appears that in Canada, literacy skills - as measured through IALS and IALSS - have a significant impact on the earnings of individuals. However, most of the studies reviewed also assume that other skills not measured by IALS probably contribute to earnings, and nearly all researchers agree that schooling plays an essential role in producing literacy skills and perhaps other skills that are valued by employers in the labour markets, but that these other skills do not appear to interact with literacy skills. The interaction between the various sets of skills is an area that requires further investigation.

These studies generally assume that the Canadian economy, much like that of the U.S., can be described as an open economy. According to Coulombe and Tremblay (2009), the *“key prediction of this open-economy growth model... is that the evolution of capital and output will be largely driven by the accumulation of human capital....[T]his prediction appears to fit the evidence from Canadian data.”*(p. 4) It is interesting that, for the most part, economic analyses of IALS in Canada have not paid much attention to other economic factors such as labour-market institutions.

In Part 2, we examine studies that go beyond the scope of human-capital theory and produce findings that should be taken into account when assessing the role of literacy skills in explaining individual earning and other economic

outcomes. A number of these studies highlight cases where the relationship between literacy skills and earnings seems to break down, particularly for groups such as women, immigrants, social assistance recipients and adults with lower education levels. On a larger scale, many researchers have conducted international comparative analyses that suggest that labour-market institutions in every country shape to a large extent how closely literacy skills are related to earnings.

It should be stressed that these findings do not necessarily imply that economic analyses conducted within the framework of human-capital theory are inadequate to understand the relationship between literacy skills and earnings. While some analysts (see Bowles et al, 2001) do make that claim, most studies we reviewed simply make the case that other approaches, both within economics as well as other disciplines, can help explain earning difference between individuals.

Part 2: Expanding the scope of the analysis: other types of evidence

A number of researchers have used IALS data to examine whether the relationship between literacy skills and earnings applies to everyone, or whether this relationship is stronger for some groups than for others. In this section, we review selected studies that look at the links between literacy skills and earnings for women, immigrants, and adult with low levels of education. Some use only IALS data from Canada, but a few include comparative IALS data from other countries. Cross-national comparisons are useful because they introduce a new set of institutional factors, particularly the role of collective bargaining, which may also influence the relationship between literacy skills and earnings.

Literacy skills and earnings for women

Shalla and Schellenberg (1998) generally support the theory that strong literacy skills have a positive impact on earnings, but they also note that for women, this relationship is not straightforward because women with strong literacy skills sometimes earn no more than men with weaker literacy skills. In another 1998 study, Raudenbush and Kasim use data from the National Adult Literacy Survey (NALS) in the United States to investigate whether differences in literacy skills can explain the earnings differences between men and women. They conclude that they cannot since the skill differences between men and women are negligible. They also examine other explanations, such as differences in occupational preferences, but they reject these as well because “*most of the overall gender gaps (about two-thirds) lie within occupations*” (p. 60).

Using IALS data from eleven countries as a control for the other skills measures, Blau and Kahn (2001) also find that differences in cognitive skills cannot fully explain earning differences between men and women, but the international comparison leads them to attribute these differences to labour-market institutions. Their findings suggest that:

[...] wage-setting mechanisms, such as encompassing collective bargaining agreements that provide for relatively high wage floors, raise the relative pay of women, who tend to be at the bottom of the wage distribution. Consistent with this view, we find that the extent of collective bargaining coverage in each country is significantly negatively related to the gender gap. (p. 40)

Devroye and Freeman (2001) arrive at a similar conclusion, but their approach differs considerably. Instead of looking at the role of labour-market

institutions, they ask whether wage-setting mechanisms that allow the labour market to function with few constraints and regulations, such as those found in the United States, encourage widely divergent rates of pay even within narrowly defined occupational groups. For instance, wage differences for software engineers working in European Union countries tend to be narrower than those for software engineers in the United States because US firms have more freedom to use different reward mechanisms, such as bonuses or stock options. Devroye and Freeman claim that IALS data suggest this is what is happening, which suggests in turn that literacy skills alone do not have as important an impact on earnings as other researchers have suggested.

Leuven et al. (2004) dispute this assessment. Their analysis, also based on the 1994 IALS data, uses different statistical assumptions that lead them to assert that the standard supply and demand model for skills accounts for a significant proportion of earning differences between men and women. They do not deny that labour-market institutions may play a role, but believe that the “*relative contributions of institutions and market forces are [...] still unknown.*” (p. 484)

Finally, in its analysis of the 2003 IALSS, Statistics Canada (2005b) reports that in Canada the relationship between literacy skills and earnings seems to be stronger for women than for men. The report states that “*[...] a much higher percentage of men than women earning at least \$60,000 a year are at the lowest levels of literacy - one in four men and fewer than one in ten women nationally. Similarly, in the next highest earnings category, \$40,000 up to \$60,000, about one in three men compared with less than one in five women are at the lowest levels of prose literacy.*” (p. 82)

The report does not offer an explanation for this finding, but it seems clear that factors other than economic rewards for skills are at work. We review what some of these factors might be in our discussion of international evidence in a later section.

Literacy skills and earnings for immigrants and ethnic minorities

Earnings for new immigrants to Canada have declined over the last 20 years. Analysts have suggested this may be partly attributed to a decline in skills among new immigrants, even though on average educational attainment among immigrants has risen to the point where they tend to be better educated, as a group, than native-born Canadians (Garnett Picot, 2008). IALS data has allowed analysts to investigate these issues more thoroughly.

Before IALS, analysts such as Finnie and Meng (2002) had used data from the Survey of Literacy Skills Used in Daily Activities (LSUDA), to examine whether the returns to education and skills for male immigrants to Canada differed from the returns for these same skills when obtained in Canada. They concluded that the income gap between male immigrants to Canada and native-born male Canadians could be fully explained by skill differences.

Immigrants who were educated in Canada also receive a lower return to their education than native-born Canadians, although this appears to be restricted to those with lower levels of education. However, Finnie and Meng recognize that

[...] immigrants' credentials and skills are being discounted and naturally this adversely influences their incomes. While it is always difficult to separate the influences of race, skill quality and information costs, governments should actively pursue policies to

eliminate barriers to allow for the recognition of immigrants' skills(p. 20).

Ferrer, Green and Riddell (2006) produce similar findings from two sets of data. They used the 1998 Ontario Immigrant Literacy Survey (or OILS) to obtain data on demographic and labour market information and results from literacy and numeracy tests for immigrants, which they compare to the results for native-born Canadians in IALS.

They find that immigrant literacy skill levels are significantly lower than the skills of native-born Canadians and that the economic returns of these skills for immigrants are in line with the returns that native-born Canadians with similar skill levels get in the labour market. However, while it appears that lower literacy skills have an impact on earnings for immigrants, they observe that other factors are probably at work, particularly the fact that work-experience acquired outside Canada is heavily discounted once immigrants arrive, and this is especially true for highly educated immigrants. Their results also show that while work experience does not translate into increased levels of literacy proficiency for Canadian-born workers, it does for immigrant workers. The authors suggest that this difference is likely related to language proficiency. As immigrants gain work experience, they also gain increased language skills, which produces increased literacy proficiency measures. This difference may help explain why literacy and education can have distinct effects for immigrants. It also introduces the intersection and overlap between literacy and language skills.

In a later paper, Bonikowska, Green and Riddell (2008) address the same questions, and by adding data from IALSS to that from the OILS and IALS. They reach a similar conclusion that immigrants get better economic returns from their literacy proficiency than from their

education credentials. Their findings lead them to suggest that “[...] raising immigrant average skill levels to the Canadian-born level would almost eliminate the earnings disadvantage of high school educated male immigrants relative to similarly educated Canadian-born men, and would produce a substantial earnings advantage among high school educated female immigrants.” (p. 9)

The analytical framework used in these studies does not address important questions that have been raised elsewhere. For instance, does the relationship between literacy skills and earnings hold for all groups of immigrants, regardless of their origin or their ethnicity? Finnie and Meng (2003) are perhaps the only ones who have attempted to investigate these issues. Using the Survey of Literacy Skills Used in Daily Activities, (LSUDA) data, they present an “[...] empirical examination of the incomes of visible minorities, aboriginal Canadians, and whites which is unique in that it takes into account not only education levels and other standard human capital measures, but also immigration status and literacy and numeracy (i.e., cognitive) skill levels.” (p. 1)

In addition, Finnie and Meng (2003), find that ethnic minority groups in Canada show a wide range of income levels and literacy and numeracy skills and that these variations in skill levels account for much of the minority-white gap in earnings (up to 65%) for men. However, they also note that literacy and numeracy variables do not explain much of the earning gap for women. These findings are consistent even when they restrict their analysis to immigrants who belong to visible minority groups. Not all the earning gap can be explained by variations in skill levels, though, and they ask whether these results would change if better ways of measuring human capital were found. They also wonder whether “the ethnicity effects found here could be due to

the under-valuation of immigrants education, previous labour market experience, and other skills in the Canadian labour market.” (p. 16)

Literacy skills and earnings for Aboriginal people in Canada

There has been surprisingly little attention paid to the relationship between literacy skills and earnings for aboriginal Canadians, at least within IALS framework. In a 2008 report, Bagala Biswal recognizes that the very small Aboriginal sample size in IALSS may not be representative of the total Aboriginal population in Canada. Despite these limitations, he believes that IALSS data can provide useful indications of the magnitude of the literacy skills issues among Aboriginal people in Canada. He finds that on average, Aboriginal people tend to have lower literacy test scores than non-Aboriginal Canadians.

There are also differences between the three major groups that make the Aboriginal population in Canada (North American Indians, Metis and Inuit), with the Metis having the highest percentage of people scoring at level 3 or above.

Like other analysts, Biswal notes that strong literacy skills generally lead to higher earnings, but also says that “the relationship between prose literacy and earnings was generally stronger for Non-Aboriginal people at national and territorial levels compared to Aboriginal people” (Biswal, 2008, p.36). For instance, the proportion of non-Aboriginal people with levels 3-5 who were earning \$60,000 or more a year was 74.5%, while only 61% of Aboriginal people with levels 3-5 were earning \$60,000 or more a year. He suggests that this may be due to the fact that they “might live in areas with a constrained labour market” (p.37). In other words, where Aboriginal people choose to live and work probably has an impact on their earnings even if they have strong literacy skills.

Literacy skills and earnings for adults with low literacy skills

It is generally assumed by policy makers that improving the literacy skills of adults would improve their labour-market outcomes, although it appears that this may not be true in all cases. For instance, using U.S. data from the 1992 National Adult Literacy Survey, Barton and Jenkins (1995) observe that higher literacy skills are generally rewarded by more stable employment and higher annual income, a pattern that remains true for social assistance recipients, but they also note substantial income disparities between welfare recipients and non-welfare recipients at the same IALS level of ability, differences “*so large [...] that welfare recipients who performed in the fourth level of prose literacy earned less, on average, than adults in the general population who performed in the lowest level*” (p. 54).

In addition, the rate of earning increases was lower for social assistance recipients. For the authors, these results indicate that factors other than low literacy are involved in explaining the incidence of social assistance dependence (although the authors do not address them) and that some assumptions about the positive economic consequences of literacy need to be questioned.

Kapsalis (1998) examines this issue from a different perspective in Canada. He explores the connection between literacy and work for social assistance recipients (SARs) to determine whether being employed improves the literacy skills of SARs. He finds that literacy skills are a strong predictor of employability among adults who receive social assistance, and annual earnings' levels are correlated more with literacy levels than education levels. Not surprisingly, social assistance recipients had lower levels of education and literacy than those who were not

receiving benefits. He also finds that being employed has an impact on literacy skills, particularly among SARs, but he cautions that “[...] *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.*” (p.20) In addition, Kapsalis notes that only work involving daily literacy activities has such an impact, but it is not clear if this type of work enhances literacy skills or if it simply offers an opportunity to maintain their skills. As noted, Green and Riddell (2003) found that work experience did not generally lead to an increase of literacy skills.

Whether employment actually increases literacy skills or simply helps to maintain them, it seems clear that employment has a direct effect on literacy skills. Willms and Murray (2007) found that people who are employed typically have higher literacy test scores than people who are not employed (p. 22). They go on to note that literacy habits at home are important in preventing literacy skill loss, that their analysis cannot determine if a loss of literacy skills is directly related or a symptom of unemployment but that regardless it is real and socially significant for the individuals involved and to the economy.

Edin and Gustavsson (2008), using 1994 and 1998 Swedish IALS data, find that long periods of unemployment probably lead to a depreciation of literacy skills. They allow that they are unable to exclude the possibility of reverse causation; that unemployment itself may be due to a loss of skills. However, they believe that such a possibility remains small, “*given our finding that the most negative effects were for individuals with uninterrupted spells of non-employment between the two test dates.*” (p. 20).

Much of the literature on adults with low literacy skills has focussed on finding the best ways of increasing those skills in the belief that these efforts will produce positive economic returns for individuals. In the UK, a recent report (Vorhaus, 2009), summarizing the available evidence, found support for linking good literacy skills in adults with positive economic returns. Vorhaus notes that for people who acquired those skills when they were adults, these economic returns can take longer to materialize. He points to evidence that suggests economic returns tend to be stronger for improvements in numeracy skills. Vorhaus also notes that there is insufficient evidence on the impact of learning in different settings such as workplaces or post-secondary or continuing education institutions.

Reder (2010) finds an economic return to literacy skills for those who did not complete high school. Using data from the Longitudinal Study of Adult Learning (LSAL) in the U. S., Reder looked at changes in literacy proficiency and how the changes affected earnings over time for one cohort. He found that literacy proficiency does have a positive impact on earnings amongst high school drop-outs. Interestingly, he also found that literacy skill level improves once adults leave school, an observation that is consistent with other recent research that examines resistance to learning in adult education.

The role of national labour markets: an international perspective

The idea that labour-market institutions can explain some of the differences analysts have observed in the economic returns to literacy skills across countries is familiar to both economists and sociologists. Some of the authors already reviewed arrive at similar conclusions. Green and Riddell (2003) have suggested that the labour market in Canada places a high premium on literacy skills and Devroye and

Freeman (2001) suggest that countries with the least-regulated labour markets see higher returns to skill investments.

In their examination of wage inequalities in the U.S., Blau and Kahn (2005) use data from the 1994-1998 IALS to find, that while differences in skill levels partly explain earning inequalities, other factors seem to be at work. They note that the U.S. has both a greater abundance of low-skilled workers and much less coverage by collective bargaining than elsewhere in the OECD, which may help to produce higher wages for skill in the U.S.

Howell and Huebler (2004) arrive at the same conclusion. They use data from IALS to test some of the dominant assumptions -- what they call the OECD-IMF orthodoxy-- about wages, skills and the role of labour-market institutions. For instance, they examine whether there is a trade-off between more egalitarian wage-setting mechanisms, such as minimum-wage rules and extensive collective-bargaining coverage, and higher levels of unemployment and they find no meaningful evidence for it. They also examine whether large differences in skills explain wage inequality and, again, find little evidence that large differences in the dispersion of skills explain much of the inequalities they observed. The exception is the Anglo-Saxon countries (the United States, the United Kingdom, Canada, Australia and New Zealand) where there is a stronger correspondence between skills and earnings. They argue that, in the real world, supply-demand may create a feasible range of wages, but bargaining power and labour market institutions play important and complicated roles in the process, and conclude that a "convincing explanation for differences in earnings and employment trends across developed countries requires moving beyond simple supply and demand stories." (p. 65). Denny et al. (2004) use the same data to perform a cross-national

analysis of the relationship between earnings and literacy skills. They find significant differences among countries, but their findings generally support the idea that literacy skills have a measurable impact on earnings. For his part, Carbonaro (2006) uses IALS data from several countries and finds that there are greater returns on literacy skills in liberal market economies (free-market economies with a minimum of rules and regulations, such as the US, but also found in Canada and Australia) than in social-market economies which are generally characterized by greater state intervention and regulation in the economy, such as Germany. The authors suggest that labour-market institutions and regulations play an important role in protecting low-skilled workers from wage practices that do not allow them to achieve a minimum standard of living.

Barone and Van de Werfhorst (2009) concur, but suggest we must make a distinction between the returns for general cognitive skills and work-specific abilities (literacy, financial, and technical). They find economic returns for general cognitive skills, but their results suggest that the economic returns are stronger for work-specific abilities. These results also vary, depending on the country of study. Like other analysts, they caution that

[...] skills that are rewarded on the labour market are not necessarily cognitive in nature. This suggests that our results may still underestimate the importance of human capital .” They add that “the relative importance of general versus work-specific cognitive abilities varies systematically between countries, with a larger fraction of the schooling effect being captured by the work-specific component in Germany and the Netherlands than in the US and the UK. This can be explained by the different role of schooling between countries.(p. 26)

Barrett (2009) uses data from the Australian Bureau of Statistics Adult Literacy and Life Skills

Survey (ALLSo6) to examine whether measured skills can explain earnings differences and the extent to which there is evidence for what he calls the “sheepskin effect .” He finds that measured skills explain a certain proportion of the returns to schooling (up to one-third for an additional year of schooling), but notes that other, non-cognitive skills, such as perseverance and diligence, play an even more important role. He also finds that the returns to cognitive skills tend to be higher when associated with the completion of a formal credential, which indicates the presence of the sheepskin effect. Additionally, Barrett suggests that credentials may also play a role in signalling to employers the presence of non-cognitive skills such as those are valued in theories of social capital.

Summary and conclusions

This literature review posed four questions:

1. Does existing research establish clear links between literacy proficiency and earnings? Is the relationship between literacy and earnings equally strong for all groups in Canada, the United States and other OECD countries?
2. Are there other factors at work? If so, what are these factors?
3. What are the policy implications of these links for poverty reduction and reducing earning inequalities in Canada?
4. What are the remaining knowledge gaps and the most promising avenues for future research efforts around these questions?

As shown, the links between literacy proficiency and economic well-being are not always straightforward, but they can be summarized as follows:

- ▶ Literacy proficiency does have an impact on individual earnings,
- ▶ this impact varies from country to country, although it appears to be stronger in Canada and the U.S.,
- ▶ different groups do not reap equal benefits from having literacy proficiency,
- ▶ other general cognitive skills may be equally, if not more, important in explaining earning differences between individuals,
- ▶ long periods of unemployment tend to erode literacy skills, but being employed does not guarantee that individuals will maintain these skills; the nature of their work and their own personal habits also matter,
- ▶ labour-market institutions (collective bargaining coverage, minimum wages rules) also play a role in explaining individual earnings differences within a country, and
- ▶ adults who improve their literacy proficiency eventually obtain improved earnings, but these gains may take time to materialize.

What are the policy implications of these links for poverty reduction and reducing earning inequalities in Canada?

First, it matters that we find better ways to improve the skill levels of adults with low skills. However, these improvements cannot be limited to only literacy skills. Other non-cognitive skills may matter as much, if not more.

Learning opportunities must be provided in all the settings where Canadians go about their daily lives: at work, but also in the family and the community. Steve Reder's (2010) work on the distinction between proficiency and practices measures seems especially relevant here.

According to him, the rationale for funding adult literacy programs is often based on claims that these programs raise the literacy proficiency of adults, while research shows that these programs have the most direct immediate impact on the literacy and numeracy practices of adults.

Proficiency may increase over time as a result of the changed practices. Reder stresses that, since the accountability frameworks under which most programs typically operate stress immediate proficiency gains, many funding and policy choices are currently based on faulty assumptions at a time when countries are trying to improve the literacy and numeracy skills of a significant segment of their populations.

There is evidence that some skills, though not all of them, can be useful at home, at work, when we seek medical services, when we negotiate a lease, mortgage or other financial instrument. If that is the case, then it makes sense to multiply learning opportunities, not limit them. As a recent (2011) OECD/CERI report on workforce skills and innovation points out: *"Having a large minority of a population with very low literacy and numeracy skills represents a significant constraint on the capacity for innovation. The*

evidence for this is indirect but it is the case that countries with the largest variation in level of ability in basic skills also have the highest degree of income inequality .” (p. 60)

As noted, the Canadian labour market tends to be less regulated than in other countries and businesses have taken advantage of this to adopt norms and practices that have resulted in higher labour turnover. While there are certain economic benefits associated with these practices, there are also perverse effects. For instance, the OECD notes that “non-standard forms of employment such as casual, contract and part-time jobs, and practices that result in higher labour turnover, are associated with both lower employer investment in worker training and lower investment by workers themselves in their own education and training” (p. 61). In addition, there is some evidence that time spent out of work tends to erode skills, particularly numeracy skills (Bynner and Parsons, 1998). There is still a lot to be learned about what works best to maintain and even upgrade the skills of those who are out of work.

Evidence supports the idea that improving the skills of Canadians may not be enough to give them decent earnings. For one thing, it cannot be assumed that because a significant percentage of the workforce sees high economic returns to skills and education in Canada, that all workers who manage to gain these skills would get similar returns. In addition, if the economic returns from stronger literacy skills for specific groups are mitigated by other factors, it seems reasonable to believe there are grounds for examining labour-market institutions and asking if they could be altered to produce more equitable outcomes. This is a complicated issue, of course, because labour-market regulations are not completely separate from the social and civic culture in a country. They work best when they are widely accepted and seen as beneficial by most citizens. In Canada, it may well be that this varies

from province to province. As always, in Canada, jurisdictional issues must be considered, since provinces are primarily responsible for education, social services and training, while the federal government – which shares some responsibilities for these issues – now plays an increasingly modest role. In the final analysis, however, careful changes to Canada’s labour-market institutions may well be our best opportunity to introduce more equity and better incentives for upgrading the skills of Canadians.

In a report on poverty presented in November 2010 by the House of Commons’ Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities, the authors acknowledge that increasing adult literacy levels should be part of any plan attempting to reduce poverty in Canada. (House of Commons 2010) Among the committee’s recommendations, they recommended that “*the federal government take steps to substantially increase adult literacy levels, in particular by increasing funding for the literacy and life skills program and through measures to encourage newcomers to learn English or French.*” (p. 238)

The real challenge, for CLLN and other literacy organizations, will be to expand and enrich that awareness by proposing tangible evidence that, while workplace literacy and essentials skills are important to equip adults with better skills, real progress will only be made when adult literacy initiatives are seen as complementary wherever they take place.

In return, literacy organizations may have to shoulder the burden of providing evidence that their programs and learning initiatives produce results. While credible research may not, in and of itself, be sufficient to bring about social change, it does provide a good basis for discussion and dialogue with policy-makers.

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APPENDIX A: IALS framework overview

IALS assessment approach uses a series of tasks or test items constructed to look at three distinct types of literacy: prose, document and quantitative literacy. The task development framework is comprised of a definition of literacy, a list of general content parameters for developing tasks, and a highly detailed and complex model of task complexity and required responses.

“Literacy is using printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential” (Statistics Canada, 2005b, p. 198)

The tasks were drawn from six content areas deemed applicable to the lives of adults: 1) home and family, 2) health and safety, 3) community and citizenship, 4), consumer economics, 5) work, and 6) leisure and recreation. The texts used for the tasks are informational, and classified as continuous or non-continuous. They do not include literary, creative or experiential texts.

The difficulty of any given task, also referred to as task complexity, is determined by a combination of three factors:

1. A classification hierarchy of the type of information in the task from concrete to abstract;
2. A classification hierarchy of the information-processing demands of the task based on locating and matching bits of information by cycling through the text, integrating, and generating information; and
3. The plausibility of distractors within the text.

Based on these three factors, each task is given a score on a 500 point scale. For example, the lowest score for a prose task is 188; the highest is 377. The scores correspond to one of five levels: Level 1 (0–225), Level 2 (226–275), Level 3 (276–325), Level 4 (326–375) and Level 5 (376–500). The uneven distribution of scores indicates that the task complexity factors work well in the mid-range of scores but weaken in the upper and particularly lower ranges. In fact, IALS provides little information about literacy proficiency for nearly half the scale (0-225). If an adult was not able to complete the task with the lowest score (188), he or she did not continue to participate in the assessment. In order to successfully complete any one task, and then move on to a more difficult task, an individual had to achieve an 80% accuracy criterion.

Canadian Literacy and Learning Network is the national hub for research, information and knowledge exchange, increasing literacies and essential skills across Canada. CLLN, a non-profit charitable organization, represents literacy coalitions, organizations and individuals in every province and territory in Canada.



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