READY OR NOT?
LITERACY SKILLS AND POST-SECONDARY EDUCATION
SEPTEMBER 2003

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EXECUTIVE SUMMARY

Students’ decisions to pursue post-secondary education and their chances of realizing this goal are affected by several factors, including their literacy skills and high school credentials; the extent to which they are engaged in the schooling process; the support available from family, friends and other people in their social network; and the financial means available to them. This study used data from two nationally representative studies of the literacy skills of youth and adults — the International Adult Literacy Study (IALS) and the Programme of International Student Assessment (PISA) — to examine the roles that students’ literacy skills and engagement at school might play in determining access to post-secondary education. Analyses of IALS data for over 750 youth revealed that among those ranking in the top 40% of prose and document literacy skills, more than one-half did not attend post-secondary education. Analyses of the PISA data for nearly 30,000 15-year-old students found that about one-third of Canadian youth had average to above-average academic skills but were disaffected from school, in that either they had a low sense of belonging (19.5%) or low participation in school-related activities (14.6%). Disaffection from school was considerably greater among boys than girls, reflected in higher enrolment rates among girls than among boys in post-secondary education. The findings suggest that there are two important groups that could be targeted in efforts to increase access to post-secondary education. One comprises students who are “at the margin” in terms of their literacy skills. Many of these students could attend post-secondary programs if they increased their literacy ranking from the 20th–40th percentile range to the average range. Another group comprises students who have the requisite skills, but are disaffected from school. Some of these students may benefit from counselling; others may simply require more information about the financial and personal returns to various forms of post-secondary education.
A critical decision facing most Canadian youth is whether or not to pursue post-secondary education. For some youth, the decision is easy: they have always known that they will attend college or university; they have the requisite grades for pursuing a number of different kinds of programs; their decision is supported by family and friends; and they have enough money available to them for tuition and living expenses. The decision is also easy for those who do not aspire to furthering their formal education: a number of students do not have the skills and credentials necessary for college or university and are not likely to attain them, or they make a conscious decision to pursue work that does not require advanced skills and training. However, many other youth aspire to pursue a post-secondary education, but their goal is not easily attained. For them, the decision is complex. It depends on the accessibility of post-secondary education, which is determined by a number of factors, including:

- their literacy skills and high school credentials
- the extent to which they are engaged in the schooling process
- support from family, friends and other people in their social network, and
- the financial means available to them (Andres, 1993; Cogem Research Inc., 2002; Foley, 2001; Looker, 2002; Lowe & Krahn, 2000).

An understanding of these issues and how they jointly affect youth’s decisions to attend post-secondary education is crucial for educators and the broader policy community charged with designing and implementing programs aimed at increasing access. The aim of this study, part of the Millennium Research Series, is to discern what proportion of Canadian youth are “at the margin,” in that they do not have adequate literacy skills for succeeding in post-secondary education, and to determine what proportion of those who have the requisite skills do not attend for other reasons. These estimates are based on data from the 1994 International Adult Literacy Study (IALS) and the 2000 Programme for International Student Assessment (PISA). These findings have implications for the design of programs aimed at increasing access to post-secondary education.

The next section of the report provides a brief review of background research pertaining to factors related to students’ academic attainment. It is followed with a section describing the research methods used in this study. The fourth section presents the findings of the analyses relevant to identifying target groups for programs aimed at increasing access to post-secondary education. The final section discusses the implications of the findings for the design of programs aimed at increasing access to post-secondary education.
The academic literature on educational attainment makes an important distinction between aspirations — the level of education one would like to achieve if there were no barriers — and expectations — the level of education one realistically expects to achieve (Hauser & Anderson, 1991; Kerchhoff, 1976). Aspirations are formed early, and are heavily influenced by the values inculcated by parents and other family members (Wilson & Wilson, 1992). Income plays a relatively insignificant role in determining aspirations, compared with parental education (Astone & McLanahan, 1991; Hanson, 1994). Academic ability and self-esteem also affect aspirations (Dai, 1996), but the emphasis of research in this tradition is on socialization processes, which lead to the valuing of higher education and high educational attainment.

Expectations are shaped by people’s aspirations, but they are also influenced by their perceptions of their own ability, their experiences at home and at school and the opportunity structure (Bourdieu & Passeron, 1977). Research on the expectations of youth, in addition to that on the discrepancy between their aspirations and their expectations, emphasizes the differences that exist among the resources available to them, as well as the structural features of the schooling system that allocates rewards according to social class and ethnicity. Research in this tradition has found that youth from low-income families gradually lower their aspirations based on their belief that insufficient financing is a realistic constraint.

The practice of streaming, or tracking children into academic and non-academic streams, also has a significant effect on expectations. In both Canada and the U.S., it is one of the most important predictors of whether a youth expects to attend college (Foley, 2001; Mau & Bikos, 2000). Youth are also segregated, based on their ability and socio-economic status (SES), into high- and low-status schools and school programs through residential segregation, charter schools, French immersion programs and programs for gifted students (Willms, 1999). Students in low-status environments are less likely to have high aspirations and high educational attainment (Kerrickhoff, 1993; Willms, 1986). In segregated systems, several forces come into play, including lower teacher expectations, a worse disciplinary climate, a slower paced curriculum, less qualified teachers and the effects of peers (OECD, 2001; see Willms, 1999 for a review).

One approach to addressing questions about increasing access to post-secondary education would be to identify youth who are frustrated — those who aspire to go to college or university but, because of certain barriers and constraints, do not expect to attend. It would seem simple then to interview frustrated high school graduates, determine what the most important barriers and constraints are, and design post-secondary access programs accordingly. The problem, though, is that features of the schooling system, especially features that allocate students into different types of schools and school programs, gradually influence students’ aspirations, such that by the time they complete secondary school, their aspirations tend to fall in line with their expectations. Therefore, asking students near the end of their secondary schooling about perceived barriers or constraints will yield results that suggest the primary obstacles to post-secondary access are personal factors, such as insufficient finances, when greater attention should be paid to features of the schooling system that shape students’ aspirations and expectations throughout their elementary and secondary school careers. For example, completion of advanced mathematics is often considered the “critical filter” for many college and university
programs (Ma & Willms, 1999), and most students entering secondary school probably do not fully appreciate its role.

Another approach is to view attending post-secondary education as just another step in the education continuum, and consider the factors related to whether students graduate from secondary school. Although the transition to post-secondary education is different than, say, the transition from grade 10 to grade 11, or grade 11 to grade 12, because schooling is no longer free and compulsory, many of the underlying processes for making this transition are the same as those affecting whether students continue in secondary school through to graduation. There is extensive literature on dropping out that views continuing in school versus dropping out as a process that begins at birth, and is affected by characteristics of the individual, and by family, peer, school and community factors (Audas & Willms, 2000). This literature particularly emphasizes low academic achievement, behaviour problems and engagement in school as significant precursors to dropping out. Unlike studies which ask youth their reasons for dropping out, or for not pursuing post-secondary education, this literature places much greater emphasis on academic achievement and engagement in school as significant precursors to dropping out. Unlike studies which ask youth their reasons for dropping out, or for not pursuing post-secondary education, this literature places much greater emphasis on academic achievement and engagement, and the family, peer, school and community processes that affect achievement and engagement throughout the schooling years.

Student engagement refers to the extent to which students identify with and value the outcomes of schooling, have a sense of belonging at school and participate in academic and non-academic school activities, and it is especially relevant (Finn, 1993, 1997; Finn & Rock, 1997; Goodenow, 1993; Goodenow & Grady, 1993; Voelkl, 1995, 1996, 1997; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989). Engagement has a relatively weak relationship to academic achievement in many countries, and should be treated as an important schooling outcome in its own right (Willms, in press). Students who are engaged in school are less likely to drop out and they tend to view learning as a lifelong process.

The literature on dropping out and access to post-secondary education has paid very little attention to the mental health of adolescence, particularly behaviour disorders and depression. However, this may be one of the most important variables affecting whether youth drop out of secondary school before graduation or pursue post-secondary education. Willms (2002a) reports that about 17 to 20 per cent of Canadian youth at ages 10 to 11 are vulnerable because of behaviour problems, such as hyperactivity and inattention, anxiety and emotional problems. Similar findings were reported for Ontario, based on data from the Ontario Child Health Study (Offord et al., 1987). Although many of these youth have the academic skills and financial resources to pursue post-secondary education, emotional problems may prove to be a significant barrier.

Taken together, the literature suggests that there are several different groups of students to consider in efforts to increase access to post-secondary education. There are youth who are “at the margin” in terms of their academic skills, and these might be divided into two groups: those who could succeed in particular kinds of community college or university programs but are not likely to pursue university programs which are highly competitive and academically demanding, and those who have the requisite skills for many college or university programs, but because of skill deficits in certain areas do not have access to the post-secondary program they desire. There are other youth who have the academic skills and ability to attend post-secondary education, but because they are disaffected from school, they do not value schooling and, to a large extent, they are disengaged from the schooling process. Finally, there may be yet another group — composed of students with significant behaviour or emotional problems who could succeed in post-secondary education with the right kind of support.
The analyses in this section are based on data from the 1994 International Adult Literacy Study (IALS; OECD & Statistics Canada, 1995) and the 2000 Programme for International Student Assessment (PISA; OECD, 2001). The IALS data were derived from interviews and extensive testing for a large, nationally representative sample of adults aged 16 to 90 in Canada. The PISA data were derived from a large, nationally representative sample of youth who were aged 15 in 2000. These studies over-sampled youth in smaller provinces, but did not over-sample particular groups, such as immigrants or Aboriginals, and did not include youth living in the territories. Also, the samples did not include Aboriginal youth living on reserves. Thus, it is not possible to use these data to examine the issues affecting post-secondary enrolment for Aboriginals.

In the first set of analyses we examined the prevalence of post-secondary attendance among youth aged 19 to 25. The sample comprised 753 youth, representative of all Canadian youth at that age.1 (Our assumption was that by age 19 most youth would have had the opportunity to have completed secondary school, and enrol in post-secondary education.) The IALS includes three measures of literacy skills — prose, document and quantitative literacy. Our analysis is limited to the prose and mathematics literacy scores, as they are most closely related to the PISA reading and mathematics measures. We divided the cohort into five levels, based on the quintile (20% of the population) of their prose and quantitative literacy scores.2 We then estimated the percentage of youth who had completed at least one year of post-secondary education by level of prose and quantitative literacy scores. Next, we estimated a logistic regression model (a statistical technique which is appropriate when the outcome measure is dichotomous — in our case, post-secondary education versus not post-secondary education) to determine the relationship of post-secondary education attendance with the youth’s age, sex, parental education and literacy skills. The differences in the relationship of post-secondary education to the fourth (second-highest) and fifth (top 20%) quintiles of prose literacy were negligible, so we collapsed these two categories in our analysis. Also, because the prose and quantitative literacy scores are highly correlated (or collinear), it is not appropriate to enter them together in a regression analysis. Therefore, we estimated the difference between the mathematics quintile score (1 to 5) and the

1 Although this sample is relatively small compared with the PISA data, it is adequate for estimating the relationships between post-secondary enrolment and the factors considered in this study. The sample size is not sufficient, however, for comparing these relationships among subgroups of the population, or for making provincial comparisons.

2 An alternate approach to this analysis would have been to enter the literacy measures as continuous variables, with quadratic and perhaps cubic terms to capture the non-linear relationships. Preliminary analyses indicated that the two approaches yield very similar findings; the “loss of data” stemming from using quintiles does not substantially affect the results or the conclusions. We prefer the approach taken here for the particular audience of this paper, because the regression coefficients are much more easily interpreted (i.e., as “odds ratios” rather than as “effects associated with a one-unit increase in literacy scores for a quadratic or cubic model”).
prose quintile score (also 1 to 5), to create a new variable indicating whether a youth performed relatively better or worse in quantitative literacy compared with prose literacy.

In the second set of analyses, we used the OECD PISA data. The sample comprised 29,687 students representative of all Canadian 15-year-old students. We used data for the PISA measures of reading and mathematics performance, which were scaled in the OECD study to have a mean of 500 and a standard deviation of 100 for all participating OECD countries. We also used two measures describing students’ sense of belonging and participation. The measure of sense of belonging was derived from eight items (which used a four-point Likert scale) from the student questionnaire. These items pertain to whether students feel they like school, they belong there, they make friends easily and they are not outsiders. The measure of participation was derived from three items pertaining to student attendance (miss school, skip classes, arrive late for school) and four items describing their homework practices (whether or not they complete homework on time and the time spent on homework in reading, mathematics and science). Similar to the reading and mathematics scores, students’ sense of belonging and participation were scaled to have a mean of 500 and a standard deviation of 100 for all participating OECD countries. Both measures are somewhat negatively skewed, for all participating OECD countries, and for Canada (skewness = -0.76 for sense of belonging, and -0.92 for participation). This means that the scores are distributed with a disproportionate number of students having relatively high scores. Therefore, dichotomizing these two measures was practical for most analyses. Students who were in the bottom quartile for all OECD countries were considered to have either a low sense of belonging or low participation. The analyses also used a measure of SES that was developed for the international PISA report. It was scaled to have a mean of zero and a standard deviation of one for all participating OECD countries.

The first analysis of the PISA data displays the “socio-economic gradient” (see Willms, 2002a, 2002b) for reading performance for Canadian youth. This analysis provides an indication of the extent to which youth with differing reading skills differ along socio-economic lines. The next analysis examines the distribution of sense of belonging and participation for students with varying levels of reading performance. To maintain consistency with the IALS analyses, we categorized students according to their reading performance into five quintiles. The last analysis used a technique called cluster analysis to discern whether we can think about different “types” of students when trying to target programs for access to post-secondary education.
FINDINGS

Figure 1 shows the percentage of Canadian youth aged 19–25 who had completed at least one year of post-secondary education, by the quintiles of their prose and quantitative literacy scores. The average rate is 32.7%, which is consistent with the rate reported by Statistics Canada for youth aged 18–21 in 1994 (approximately 14% in college and 18% in university; see Oderkirk, 2002). These results show, as one might expect, that relatively few youth in the bottom quintile of prose or quantitative literacy skills attend post-secondary education. The more interesting finding though is that there appears to be a threshold at the third quintile for prose literacy and at the fourth quintile for quantitative literacy; students with skills at these levels are much more likely to attend post-secondary education.

Thus, if we want to consider a group that was “marginal” in its prose or quantitative skills, in the sense that improving their skills would greatly enhance their access to post-secondary education, it would be those who were in the second quintile in prose literacy and the third quintile in quantitative literacy. Another striking finding evident in Figure 1 is that over one-half of those with strong literacy skills (the top two quintiles) do not attend post-secondary education.

The second IALS-based analysis examines the multivariate relationship between post-
secondary access and literacy skills, with a model that includes age and sex, and the level of education of parents. To simplify the analysis, for parental education we simply used a dummy variable denoting whether or not at least one parent had attended university. The results are displayed in Table 1. For a logistic regression, the results are most easily interpreted using the “odds-ratio,” rather than the regression coefficients. In this case, each odds-ratio denotes the change in the odds that a youth will participate in post-secondary education associated with a one-unit increase in the explanatory factor, given that other factors in the model are held constant. Thus, these results give us some purchase on the relative importance of gender, family background and literacy skills for accessing post-secondary education.

The odds-ratio associated with age is 1.44, which indicates that youth aged 19–25 are more likely to have completed at least the first stage of post-secondary education if they are one year older. This is to be expected, as many youth take a year or two away from full-time studies after secondary school before continuing with their studies.

The odds of females pursuing post-secondary education were about two times that of males, given control for the other factors in the model. These results are also consistent with those of Statistics Canada, which indicate that in 1994–95, the college enrolment rates were 15% for females and 12% for males, while university enrolment rates were 21% for females, and 14% for males (Oderkirk, 2002). (This would yield an unadjusted odds-ratio of about 1.60, whereas our ratio is 1.35 when adjustment is made only for age.)

The odds of a youth enrolling in post-secondary education nearly double (odds ratio is 1.84) if at least one of his or her parents has completed a university degree. (In preliminary analyses we uncovered differing effects for mothers’ and fathers’ education, which need to be explored further, especially with regard to the observed gender effect.)

### Table 1 — Effects on Post-Secondary Attendance Associated with Youth’s Age, Sex, Parental Education and Literacy Scores. International Adult Literacy Study, 1994

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of respondent (years)</td>
<td>0.366</td>
<td>(0.052)</td>
<td>1.44</td>
</tr>
<tr>
<td>Respondent is female</td>
<td>0.722</td>
<td>(0.188)</td>
<td>2.06</td>
</tr>
<tr>
<td>At least one parent attended university</td>
<td>0.611</td>
<td>(0.194)</td>
<td>1.84</td>
</tr>
<tr>
<td>Prose Literacy Score in 1st (lowest) quintile</td>
<td>-2.611</td>
<td>(0.332)</td>
<td>0.07</td>
</tr>
<tr>
<td>Prose literacy score in 2nd quintile</td>
<td>-1.653</td>
<td>(0.264)</td>
<td>0.19</td>
</tr>
<tr>
<td>Prose literacy score in 3rd quintile</td>
<td>-0.465</td>
<td>(0.226)</td>
<td>0.63</td>
</tr>
<tr>
<td>Respondent’s quantitative literacy score is high relative to his or her prose literacy score</td>
<td>0.417</td>
<td>(0.103)</td>
<td>1.52</td>
</tr>
</tbody>
</table>

**Note.** Odds-ratios in bold text are statistically significant (p < 0.05).
Youth with prose literacy scores in the bottom two quintiles are much less likely to enrol in post-secondary education. The odds-ratios for youth in the lowest and second-lowest scoring groups compared to youth in the top 40% are 0.07 and 0.19, whereas the odds-ratio for youth in the third quintile is 0.63. Therefore, there is an important threshold for post-secondary education that demonstrates the need for increasing skills from the 2nd to the 3rd quintiles.

Finally, these results show that there is a substantial premium associated with strong quantitative skills. For youth whose quantitative skills are in the quintile above that of their prose literacy skills, the odds of post-secondary enrolment are about one-and-a-half times greater. For example, a youth whose prose literacy skills are in the third quintile, but whose quantitative skills are in the fourth quintile, has almost the same likelihood of pursuing a post-secondary education as a youth whose prose and quantitative skills are both in the 4th quintile (Odds ratio is $\exp(-.465+.417) = 0.95$).

The next set of results, based on the OECD PISA data, pertains to 15-year-olds. Figure 2 shows the socio-economic gradient (thick line) for reading performance of Canadian students. The small black dots are students’ scores on the PISA reading test plotted against their family’s SES for a representative sample of 2,000 Canadian students. The vertical axis has two scales: the left-hand scale is the continuous scale for the reading scores, which is scaled to have a mean of 500 and a standard deviation of 100 for all students in participating OECD countries; the right-hand axis depicts reading quintiles. The horizontal axis represents the family’s SES, which is scaled to have a mean of zero and a standard deviation of 1 for all students in OECD countries. Thus, approximately two-thirds of all students fall between -1 and +1 on this scale. The gradient line for Canada is drawn from the 5th to the 95th percentile of the SES scores for all Canadian students, and the white circles on the line depict the 5th, 25th, 50th, 75th and 95th percentiles of SES.

Figure 2 makes several important points:

1. There is a substantial gap in achievement between children from less advantaged and those from more advantaged backgrounds in Canada — the difference is almost 100 points between the average score of a student at the 5th percentile in SES and a student at the 95th percentile in SES (see Willms, 2002c).

2. There is a wide range in reading scores at all levels of SES. There are many students from low SES backgrounds with very high scores, and, conversely, a number of students from high SES backgrounds with relatively low scores.

3. The difference in average reading performance between a youth in the middle of the second quintile and a youth in the middle of the third quintile is about 50 points. This is equivalent to about one
year of schooling (see Willms, 2002c). This is rather encouraging, as it suggests that a one-year bridging program for a motivated youth could boost his or her scores by an amount equivalent to about one quintile.

Figure 3 shows the percentage of youth who have a low sense of belonging at school or a low level of participation. One might expect that the majority of youth with low senses of belonging or low participation levels are low academic achievers. However, these results belie this notion: they clearly show that both the senses of belonging and participation cut across levels of academic achievement. The correlation between reading performance and participation ($r = 0.28$) is stronger than the correlation between reading performance and sense of belonging ($r = 0.06$); however, both relationships are relatively weak. Moreover, there is a substantial number of youth with low participation even among those in the third, fourth and fifth quintiles of reading achievement.

![FIGURE 3 — PERCENTAGE OF CANADIAN 15-YEAR-OLDS WHO EXPERIENCE A LOW SENSE OF BELONGING OR LOW PARTICIPATION, BY LEVEL OF READING PERFORMANCE (OECD PISA 2000)](image)
TABLE 2 — CATEGORIES OF STUDENTS BASED ON A CLUSTER ANALYSIS OF THEIR READING AND MATHEMATICS PERFORMANCE, SENSE OF BELONGING AND PARTICIPATION (OECD PISA 2000)

<table>
<thead>
<tr>
<th>Cluster Centres</th>
<th>Percentage of Students</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Sense of Belonging</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged academic students</td>
<td>27.0</td>
<td>635</td>
<td>617</td>
<td>524</td>
<td>556</td>
</tr>
<tr>
<td>Engaged students</td>
<td>25.0</td>
<td>507</td>
<td>502</td>
<td>590</td>
<td>543</td>
</tr>
<tr>
<td>Students with a low sense of belonging</td>
<td>19.5</td>
<td>526</td>
<td>526</td>
<td>385</td>
<td>527</td>
</tr>
<tr>
<td>Students with low participation</td>
<td>14.6</td>
<td>555</td>
<td>557</td>
<td>525</td>
<td>358</td>
</tr>
<tr>
<td>Disaffected students</td>
<td>13.9</td>
<td>392</td>
<td>415</td>
<td>485</td>
<td>404</td>
</tr>
<tr>
<td>Total or Average</td>
<td>100.0</td>
<td>534</td>
<td>536</td>
<td>508</td>
<td>497</td>
</tr>
</tbody>
</table>

In an attempt to identify categories of youth that might be targeted for post-secondary access interventions we conducted a cluster analysis of the Canadian PISA data, based on scores in reading, mathematics, sense of belonging and participation. The findings are reported in Table 2. The analysis identified five clusters, or “types” of students. The engaged academic students are high achieving students, with reading and mathematics scores that are on average about 80 to 100 points higher than the Canadian norms. These students also have an above-average sense of belonging and participation. They constitute about one-quarter of Canadian students.

Students in the second group, labelled engaged students, have high scores in both of the dimensions of engagement. Their achievement scores are somewhat below Canadian norms, but most of them would be likely candidates for post-secondary education. About one-quarter of Canadian students are represented in this category.

Students with a low sense of belonging compose the third group, which represents about one-fifth of Canadian students. They demonstrate average levels of academic achievement and above average scores in participation. However, their sense of belonging is very low; most of these students do not feel accepted by their peers, they report feeling lonely and they do not feel that they fit in at school. Given their feelings about school, many of these students may not pursue post-secondary education, even though they have relatively high achievement scores.

Students in the fourth group, which comprises about one in seven of all students, have above-average achievement scores, and feel they belong at school. However, they do not participate fully in academic activities. These students with low participation are also at risk of not continuing on to post-secondary education after secondary school graduation, despite having the academic skills.

The last group — disaffected students — comprising about one in seven Canadian students, has relatively low scores on all four measures. These youth are the most prone to dropping out of school, and they may, at least initially, be the focus of efforts to help them graduate from secondary school, rather than enrol in post-secondary education.

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3 A similar analysis was conducted by Willms (in press) for all OECD countries that participated in PISA 2000, as well as for a number of non-OECD countries that participated in PISA in either 2000 or 2002. The measure of participation used in the international analyses differed in that it did not include items pertaining to homework, as homework practices differ considerably across countries. The measure of sense of belonging was also scaled in a slightly different manner. Despite these differences, the results for Canada reported here are consistent with those presented in the international report.
Every year many young Canadians do not attend post-secondary education because they do not have the required secondary school credentials, or because they lack certain skills deemed necessary for success. There are many others who have the requisite skills and credentials, but they do not pursue post-secondary education because they are disaffected from school, they lack financial resources, or they do not have the support of family, friends and others in their social network. For some youth, there are several barriers to post-secondary education, and it is difficult to discern which are most important. This study attempted to discern the prevalence of youth who are “at the margin” in terms of their literacy skills, and the prevalence of youth who are disaffected, as gauged by their sense of belonging and participation in school-related activities. There are three themes that emerge from the empirical findings arising from this research:

The majority of students who could potentially succeed in post-secondary education do not lack academic skills. Rather, the barriers to success have more to do with their attitudes toward school.

1. Among youth who rank in the top 40% of prose and quantitative literacy skills, more than one-half do not attend post-secondary education (see Figure 1).

2. About one-third of 15-year-olds have average to above-average academic skills, but are disaffected from school, in that they either have a low sense of belonging (19.5%) or low participation in school-related activities (14.6%) (see Table 2).

3. This phenomenon is considerably greater among males than females. Females are more than twice as likely to pursue a post-secondary education as males, even after taking account of their levels of prose and quantitative literacy skills (see Table 1).

The youth who could benefit most from programs designed to improve academic upgrading are those whose skills are in the second and third quintile.

1. The likelihood of youth in the bottom two quintiles of literacy skills attending post-secondary education is less than 20% of that of a youth in the top two quintiles of literacy skills, whereas the likelihood for youth in the third quintile (middle 20%) is more than 60% of that of a youth in the top two quintiles. As a result, youth in the second quintile can be thought of as being “at the margin” academically. A program that would bolster their scores by about one grade level would dramatically increase their chances of success in post-secondary education (see Figures 1 and 2).

2. There is an additional “premium” associated with quantitative literacy skills. Considering two youth with the same level of prose literacy skills, but the quantitative skills of one are one quintile level higher, the odds of attending post-secondary education for the youth with superior quantitative skills would be about one-and-a-half times greater (see Table 1).
The findings of this study suggest that interventions designed to increase access to post-secondary education need to be *universal* and to *begin early*. One possibility would be to develop programs for youth in grades 9 and 10 that would:

1. provide information about the financial and personal returns to various forms of post-secondary education
2. discuss alternate career paths, and give an indication of the skill levels of secondary students who pursue these paths
3. instil in youth the notion that financial means is not the most major barrier.

This program could be Web-based, as it primarily requires the provision of information. However, it would be more likely to succeed if students had an opportunity to work with teachers in small focus groups aimed at helping them plan for their future.

One might also consider developing a program aimed at helping students increase their skills from the slightly below average range to the average range. The idea is that many students do not make it from secondary school graduation into a college or university one-year bridging program. Many colleges and universities have already recognized the importance of reaching out to students in grades 11 and 12. Such a program could consist of two or three courses emphasizing the necessary reading, writing, and mathematics skills required for most college and university programs. Students would thus be able to begin thinking about post-secondary options during the last two years of secondary school, and realize a few small steps towards achieving that goal.
REFERENCES


