



OECD Education Working Papers No. 31

Does Reading Proficiency at  
Age 15 Affect Pathways  
through Learning and Work

**Tomasz Gluszynski,  
Justin Bayard**

<https://dx.doi.org/10.1787/5k1dvwm3rbq-en>

Unclassified

EDU/WKP(2010)4

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

10-Feb-2010

English - Or. English

DIRECTORATE FOR EDUCATION

**DOES READING PROFICIENCY AT AGE 15 AFFECT PATHWAYS THROUGH LEARNING AND WORK**

**OECD Education Working Paper No. 31**

*This research paper was prepared for Human Resources and Skills Development Canada by Tomasz Gluszynski Human Resources and Skills Development Canada and Justin Bayard, Human Resources and Skills Development Canada, as a background paper to the PISA Thematic Report - Pathways to Success.*

Contact: Andreas SCHLEICHER; E-mail: andreas.SCHLEICHER@oecd.org; Tel: +33.145.24.93.66

**JT03278396**

Document complet disponible sur OLIS dans son format d'origine  
Complete document available on OLIS in its original format



EDU/WKP(2010)4  
Unclassified

English - Or. English

**OECD DIRECTORATE FOR EDUCATION**

**OECD EDUCATION WORKING PAPERS SERIES**

This series is designed to make available to a wider readership selected studies drawing on the work of the OECD Directorate for Education. Authorship is usually collective, but principal writers are named. The papers are generally available only in their original language (English or French) with a short summary available in the other.

Comment on the series is welcome, and should be sent to either [edu.contact@oecd.org](mailto:edu.contact@oecd.org) or the Directorate for Education, 2, rue André Pascal, 75775 Paris CEDEX 16, France.

The opinions expressed in these papers are the sole responsibility of the author(s) and do not necessarily reflect those of the OECD or of the governments of its member countries.

Applications for permission to reproduce or translate all, or part of, this material should be sent to OECD Publishing, [rights@oecd.org](mailto:rights@oecd.org) or by fax 33 1 45 24 99 30.

-----  
[www.oecd.org/edu/workingpapers](http://www.oecd.org/edu/workingpapers)  
-----

Applications for permission to reproduce or translate  
all or part of this material should be made to:

Head of Publications Service  
OECD  
2, rue André-Pascal  
75775 Paris, CEDEX 16  
France

Copyright OECD 2009

## ABSTRACT

Over the last decade, Canada has experienced a substantial increase in the number of individuals participating in post-secondary education (PSE). This trend emphasizes the importance of understanding the pathways leading to PSE enrolment and the competencies that are associated with them. This chapter describes a range of possible education and work outcomes at the age of 21, and the pathways that led to them. It describes the wealth of information that is available in the combination of the PISA and YITS databases. This overview provides a useful context in which to consider the complexity and importance of transitioning to postsecondary education and work.

## RÉSUMÉ

Au cours des dix dernières années, le Canada a vu augmenter de façon substantielle le nombre de ses étudiants dans l'enseignement post-secondaire. Cette tendance montre bien l'importance de la compréhension des parcours menant à l'inscription dans l'enseignement post-secondaire et des compétences qui y sont associées. Le présent chapitre passe en revue une gamme de résultats possibles dans les études et sur le marché du travail à l'âge de 21 ans, ainsi que les parcours qui y ont mené. Il décrit l'abondance des informations disponibles via la mise en commun des bases de données PISA et EJET. Cette vue d'ensemble fournit un contexte utile pour examiner la complexité et l'importance des transitions vers l'enseignement post-secondaire et le travail.

## TABLE OF CONTENTS

|   |    |
|---|----|
| DOES READING PROFICIENCY AT AGE 15 AFFECT PATHWAYS THROUGH LEARNING AND WORK..... | 5  |
| Pathways to university .....  | 9  |
| Summary of pathways to university.....  | 11 |
| Pathways to college .....   | 11 |
| Summary of pathways to college .....  | 14 |
| Pathways to work.....   | 14 |
| Summary of pathways to work.....  | 16 |
| Conclusion .....  | 17 |

### Tables

|   |    |
|---|----|
| Table 1. Cumulative proportion of youth with completed high school that attempted PSE and average PISA reading score of each outcome observed in 2006. .... | 7  |
| Table 2. Proportion of youth entering NEET by collection year/age .....   | 8  |
| Table 3. Educational and labour market status in 2004 of university students in 2006 .....  | 9  |
| Table 4. Pathways of 2006 university students .....   | 10 |
| Table 5. Average PISA reading scores and the distribution of pathways of 2006 university students.....  | 14 |
| Table 6. Educational and labour market status in 2004 of college students in 2006.....  | 12 |
| Table 7. Pathways of 2006 college students.....   | 13 |
| Table 8. Average PISA reading scores and the distribution of pathways of 2006 college students.....   | 14 |
| Table 9. Educational and labour market status in 2004 of working respondents in 2006.....   | 15 |
| Table 10. Pathways of respondents working in 2006 .....   | 15 |
| Table 11. Average PISA reading scores and distribution of pathways of respondents working in 2006 .....   | 16 |
| Table 12. NEET status in each collection period and duration of NEET experience.....  | 19 |

### Figures

|  |    |
|--|----|
| Figure 1. Full-time enrolment levels in a bachelor degree program and number of undergraduate degrees awarded..... | 5  |
| Figure 2. Proportion of youth with completed high school that attempted PSE by reference cycle.....                | 6  |
| Figure 3. Differences in scores between the highest and lowest scoring group within each category .....            | 18 |

### Boxes

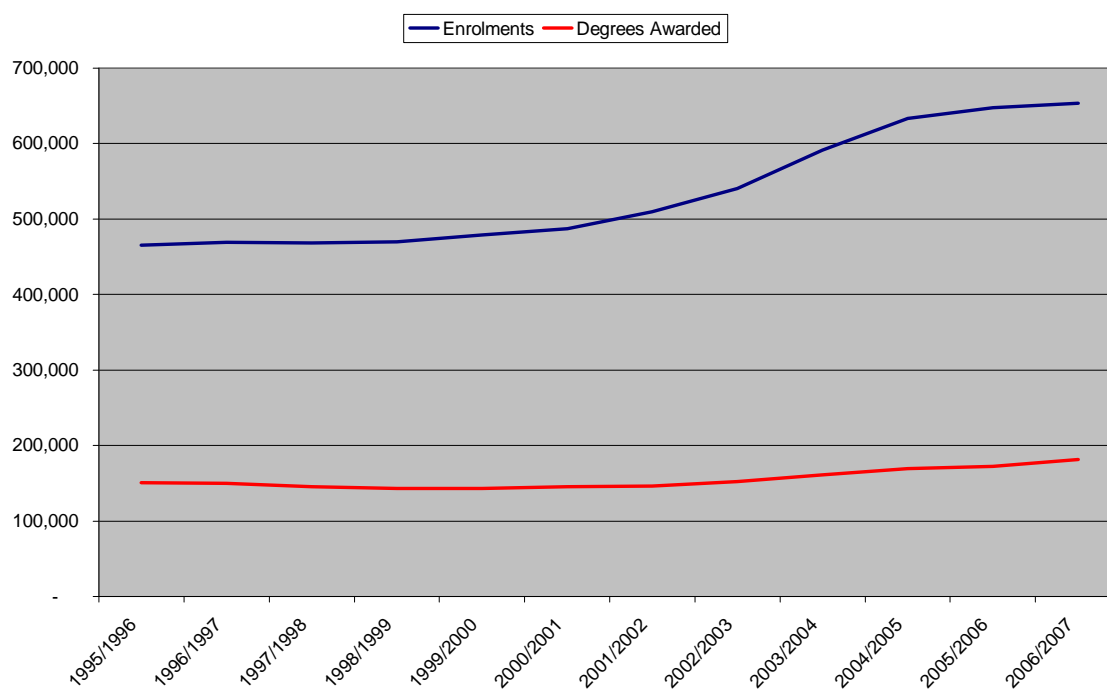
|                                |   |
|--------------------------------|---|
| Box 1. Defining Pathways ..... | 7 |
|--------------------------------|---|

## DOES READING PROFICIENCY AT AGE 15 AFFECT PATHWAYS THROUGH LEARNING AND WORK

1. There is no doubt that increasing human capital, in particular through post-secondary education, has taken a prominent role in Canada as a driver of current and future prosperity. Remarkably, over the last decade Canada has seen a substantial increase in the number of individuals participating in postsecondary education (PSE). For instance, as shown in *Figure 4.1*, the enrolment in full-time bachelor programs has increased by 40% from 1995/96 to 2006/07. Similarly, the number of undergraduate degrees awarded has increased by 21% over the same time period.

2. This trend of increasing enrolments coupled with increases in degrees awarded has placed mounting importance on the pathways leading to such outcomes and the competencies that were associated with them. Using the Youth in Transition Survey in a longitudinal analysis, this chapter outlines the possible education and work outcomes, and the pathways that led to them. The subsequent sections of this chapter document the relationships between reading competencies and the various observed outcomes.

**Figure 1. Full-time enrolment levels in a bachelor degree program and number of undergraduate degrees awarded**

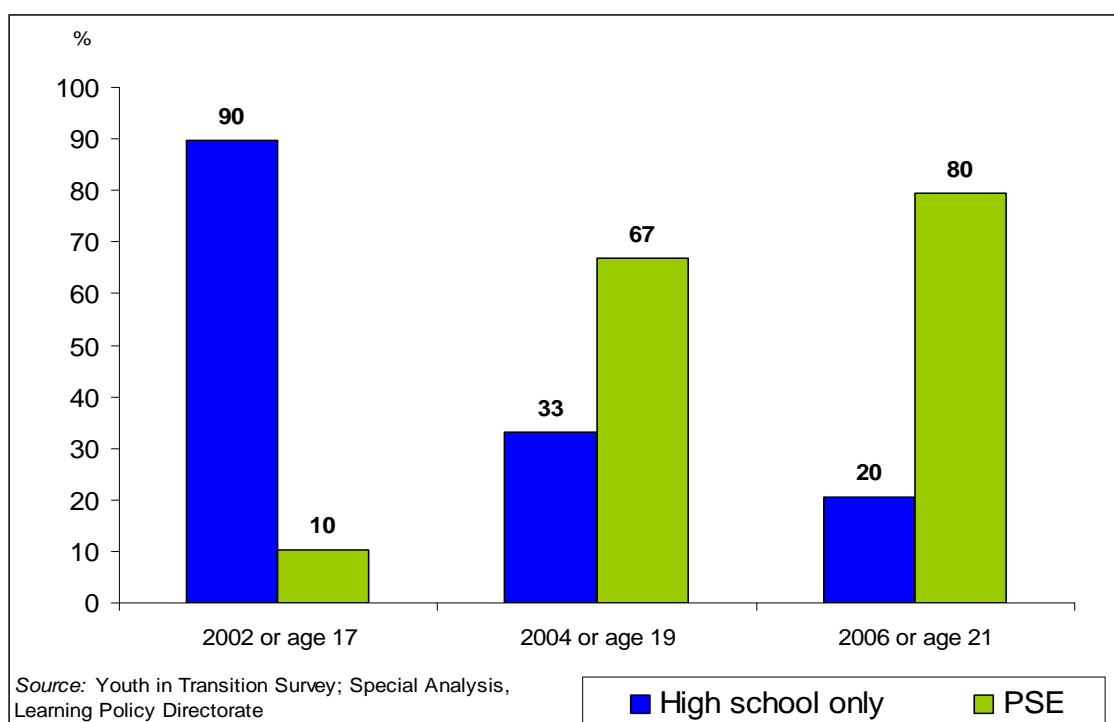


Source : Statistics Canada: Table 477-0013 and 477-0014

3. One of the major advantages of the Youth in Transition Survey was that it allowed for a longitudinal analysis to shed light on participation in PSE and entrance into the labour market amongst Canadian youth in relation to their abilities. Data that provide a ‘snapshot’ of PSE enrolments at any given moment may not reflect a complete picture of the higher education landscape, because the age at which high school graduation<sup>1</sup> occurs – usually between ages 16 to 18 – differs across Canadian provinces. Moreover, youth take diverse pathways to graduation, such as delaying PSE entry, entering then stopping PSE programs, or entering directly from high school.

4. Conditional on being a high school graduate<sup>2</sup>, *Figure 4.2* revealed that participation in PSE rose with age. The largest increase occurred between ages 17 and 19, with PSE attendance rising from 10% to 67%. Further, by age 21, nearly 80% of the original cohort that had graduated from high school had enrolled in PSE institutions. As a note, roughly 10% of high school graduates entered PSE at the age of 17. Since the majority of Canadian provinces have an average high school graduation age of 18, the 10% participation rate was mostly due to Quebec, where students usually graduate at the age of 16 or 17. In fact, excluding Quebec, less than 1% of youth with completed high school entered PSE at age 17.

**Figure 2. Proportion of youth with completed high school that attempted PSE by reference cycle**



Source : Youth in Transition Survey

1. Graduation from high school is usually a requirement for enrolment in PSE, unless certain pre-requisites on age and program related course work are attained.
2. Because completing high school is generally a prerequisite for PSE entry, conditioning on high school graduation provided a clearer picture of PSE participation for those considered ‘at risk’ of entering. Without conditioning on high school graduation, 74% had enrolled PSE by the end of 2005 (26% with high school or less, 33% non-university, and 41% university).

5. In a broad sense, PSE in *Figure 4.2* included a number of different types of tertiary education ranging from college, CEGEP (Quebec), apprenticeships, trade and vocational programs, and university. When PSE was categorised into two groups (non-university and university), the distribution of enrolments was roughly evenly split at age 19 but diverged at age 21. In particular, the proportion of non-university PSE enrolments rose by 2 percentage points while the proportion of university attendees rose by 10 percentage points. Needless to say, by the age of 21, almost 44% of high school graduates had attempted university, 35% a non-university PSE institution, and 20% that remained a high school graduate<sup>3</sup>. *Table 1* revealed increasing proportions entering university and declining proportions remaining as high school graduates. Moreover, youth with completed high school that attempted university by age 21 had the highest average PISA reading proficiencies at age 15.

**Table 1. Cumulative proportion of youth with completed high school that attempted PSE and average PISA reading score of each outcome observed in 2006**

| Educational attainment | 2002 or age 17 (%) | 2004 or age 19 (%) | 2006 or age 21 (%) | Average PISA reading score | Standard Error of the score |
|------------------------|--------------------|--------------------|--------------------|----------------------------|-----------------------------|
| High school            | 90                 | 33                 | 20                 | 477                        | 9                           |
| Non-university PSE     | 10                 | 33                 | 35                 | 519                        | 7                           |
| University PSE         | 0                  | 34                 | 44                 | 588                        | 5                           |

Source : Youth in Transition Survey

#### Box 1. Defining Pathways

By the age of 21, most youth will have experienced working life and education beyond high school. In addition, these experiences happen at different points in time. For the purpose of this chapter, pathways were defined using five outcomes. They were:

1. University PSE: education at the bachelor degree level or higher.
  2. Non-University PSE: education higher than a high school diploma but lower than a bachelor degree.
  3. Working: defined as not attending high school or a PSE institution and working in a job the last two (2) months of the reference year. For example, a youth not in school as of December 2005 would also need to have been recorded to be working during the last two months of 2003 to fall into the working category.
  4. Not in Education, Employment, or Training (NEET): a youth that was not enrolled in a PSE institution or in training as of the December of the reference year and was not considered working (two consecutive months).
  5. High school: a youth who was still in the process of completing high school education.
- a. Reference years were 2001, 2003, and 2005. The last two months (November and December) were sufficient proxies for working since the majority of schooling does not end in these months (final examination periods).

3. The distribution may not add to 100 due to rounding.



6. An emerging category outlined in the textbox *defining pathways* is youth who are neither in school or work. The pathway NEET (Not in Education, Employment, or Training) may signal a transitory state (youth may take prolonged breaks during the year from education and work) for most youth. Indeed, *Table 2* revealed that there was a significant number of youth that enter and exit NEET. However, although small, some youth at age 17 were still considered NEET at age 21. The diagonal element represented the proportion of NEET experiences that occurred starting at age 17, 19 and finally at 21 years. It showed that 43% of youth at age 19 with a NEET experience entered in 2004 while only 40% 2006. Interestingly, 11% of youth with a NEET experience had 2 or more consecutive cycles in this category.<sup>4</sup> For contextual purposes, the 11% of youth with 2 or more consecutive NEET experiences represented fewer than 2% of the entire population of youth in the analysis.

**Table 2. Proportion of youth entering NEET by collection year/age**

| All youth    | 2002 or age 17 (%) | 2004 or age 19 (%) | 2006 or age 21 (%) |
|--------------|--------------------|--------------------|--------------------|
|              | 6                  | 1                  | 1                  |
|              | n/a                | 43                 | 9                  |
|              | n/a                | n/a                | 40                 |
| <b>Total</b> | <b>6</b>           | <b>44</b>          | <b>50</b>          |

Source : Youth in Transition Survey

7. An important feature of YITS was its ability to define pathways and education and the labour market outcomes over time and relate them to an international benchmark in reading proficiency. As shown in *Figure 4.2*, a high proportion of youth had attempted PSE by age 21. Further, the proportion of youth in university PSE had the highest average reading proficiency at age 15. More importantly, the pathways leading to such an outcome at age 21 were diverse<sup>5</sup>.

8. The following sections analysed students' transitions between education and the labour market. Four data points were used to capture their pathways between school and work. These pathways were mapped out over a 6-year period between 2000 and 2006, or as these students aged from 15 to 21 years.

9. Pathways through learning and work are complex. Traditionally, students would finish their secondary education and enter either further schooling, or join the workforce (or similarly, exit the workforce altogether). This linear transfer from education to work is no longer a reality for many Canadian students. Even those who chose to enter post-secondary education after high school could have experienced complex transitions in terms of types of education.

10. The focus of this analysis was to identify different pathways of individuals and to pair them with their PISA reading scores at age 15. The analysis grouped students into three categories based on their educational and labour market status at the last data collection in 2006. The three categories included university, non-university and those working (full-time and part-time). Starting with the observed outcome in 2006 or at age 21, the pathways were analysed going backwards in time. For example, it was possible for a student to be in university in 2006, non-university in 2004, working in 2002 and high school in 2000.

4. There could be some youth that were not in school during the reference month of December in 2001, 2003, and 2005 that could have been enrolled in school in the month of November. Moreover, a NEET status reflects a particular point in time and should not be taken to reflect work and educational patterns throughout the entire year. Permitting sufficient sample sizes, a further analysis is required on this unique group.

5. A schematic diagram of one possible pathway can be found in the appendix.

The following sections will investigate these pathways in light of PISA reading proficiencies. For the rest of the analysis, the term ‘non-university PSE’ will be used interchangeably with ‘college’.

### Pathways to university

11. In 2006, 36% of Canadians who were aged 15 in 2000 were enrolled in universities<sup>6</sup> (Table 3). Their collective average PISA reading score at age 15 was 594 points. This was well above the OECD’s 500-point average, as well as significantly higher than the Canadian average of 534. These results placed these students in the 4<sup>th</sup> reading level, well above the 3<sup>rd</sup> level which was identified as a necessity to function in a knowledge society.

12. Moving back in time by two years to when these students were aged 19 revealed how complex pathways actually were. Eighty-two percent (82%) of the university students of 2006 were in universities in 2004. For these students, their average PISA reading score was 599. Two-percent (2%) of the 2006 university students were found to have been in college two years earlier, with an average PISA reading score of 595. A significant proportion of the 2006 university students (12%) did not follow an educational pathway and reported that they were in the labour force two years earlier. Their average PISA reading score at age 15 was 570 points. Additionally, a small proportion of the 2006 university students (1%) were still in high school in 2004, with average PISA reading scores of 546 points. This was the only group within the 2006 university student body to have achieved only level 3 in reading competencies – however, still adequate for functioning in the knowledge economy, and higher than the national average.<sup>7</sup>

**Table 3. Educational and labour market status in 2004 of university students in 2006<sup>8</sup>**

| Year | Status      | Count  | Percentage | PISA reading score |
|------|-------------|--------|------------|--------------------|
| 2006 | University  | 96,349 | 36         | 594                |
| 2004 | University  | 78,676 | 82         | 599                |
|      | College     | 1,635  | 2          | 595                |
|      | Working     | 11,284 | 12         | 570                |
|      | High school | 713    | 1          | 546                |

Source : Youth in transition survey

13. While writing the PISA assessment in 2000, all respondents were in high school. Therefore, the analysis of 2002 data provided a complete picture of transitions. For the purpose of this section, abbreviations will be used to identify particular pathways. For example, a respondent who was in university in 2006, college in 2004 and work in 2006 is referred to as UCW. For a complete list of all abbreviations see *able A4.1*.

- 
6. Note that the figure of 36% represented enrolment rates in 2006, where the previously reported rate (44%) was cumulative over six years. Also, because some youth could not have their pathways defined at particular points, they were omitted from the analysis. Nevertheless, deeper investigation suggested that missing values were random and not pertaining to any observable characteristics.
7. The reported proportions do not sum up to 100 because of number of respondents for whom the educational or labour market status was impossible to establish. These were qualified as not in education, employment or training (NEET). For a profile of this group see box####.
8. Note: The percentage for 2006 is calculated based on the entire sample. Those for 2004 are based on the 2006 number. For example, 36% of those who were 15 in 2000 ended up in university in 2006, and 12% of these were working in 2004.

**Table 4. Pathways of 2006 university students**

| 2006 or age<br>21                   | 2004 or age<br>19 | 2002 or age<br>17 | Abbreviation | Distribution of 2006 university students<br>as a proportion of total population of<br>those who were 15 years of age in<br>2000 (%) |
|-------------------------------------|-------------------|-------------------|--------------|---|
| University                          | University        | University        | UUU          | 0   |
| University                          | University        | College           | UUC          | 2   |
| University                          | University        | Work              | U UW         | 1   |
| University                          | University        | High school       | UUH          | 26  |
| University                          | College           | University        | UCU          | X   |
| University                          | College           | College           | UCC          | 0   |
| University                          | College           | Work              | UCW          | X   |
| University                          | College           | High school       | UCH          | 0   |
| University                          | Work              | University        | UWU          | X   |
| University                          | Work              | College           | UWC          | 1   |
| University                          | Work              | Work              | UWW          | X   |
| University                          | Work              | High school       | UWH          | 3   |
| University                          | High school       | University        | UHU          | X   |
| University                          | High school       | College           | UHC          | X   |
| University                          | High school       | Work              | UHW          | X   |
| University                          | High school       | High school       | UHH          | 0   |
| X denotes insufficient sample sizes |                   |                   |              |   |

Note: In 2000, at age 15, all these respondents were in high school.

Source : Youth in Transition Survey

14. There were three possible pathways to university that could be considered linear in nature (for youth living outside of Quebec)<sup>9</sup>: UUU, UUH and UHH. This means that the student entered university directly after high school. Concentrating on linear pathways typical of an average Canadian youth, the transition from secondary education to university occurred at different points in time. The average PISA reading score at age 15 was especially high for those who made the earliest transition to university (UUU), with the students in this category scoring 649 points, which put them at level 5 on the PISA reading scale (Table 5). Those entering university two years later in 2004 (UUH), obtained an average score of 597 points, and finally those entering in 2006 (UHH) averaged 546 PISA reading points.

15. As mentioned previously, for some (most notably Quebec) attending college prior to attending university was yet another possibility for Canadian students. Students who followed a pathway to university with more than one type of PSE (*i.e.* high school followed by college followed by university) tended to have high reading scores at age 15. For the groups that contained sufficient sample sizes (UUC, UCC and UCH) the average scores were either at or above 600.

16. An episode of working could also be possible in terms of pathways leading to university. Students who took an early working break (U UW) obtained an average reading score of 624, just short of level 5 in reading. Experiencing a work episode after attending college (UWC) was also associated with particularly high reading scores at age 15 (617 points). Although, the other groups that experienced a work episode prior to attending university had lower reading scores, these were still higher than the OECD average (500) or the Canadian average of 534, ranging from 535 for UCW to 595 for UWW.

9. Because of insufficient sample sizes, a separate analysis could not take place in which Quebec was excluded. However, in the case of Quebec, linear pathways included UCH and UCC *i.e.* entering university after completing CEGEP.

**Table 5. Average PISA reading scores and the distribution of pathways of 2006 university students**

| Type of pathway                     | PISA reading score at age 15 | Standard Error (of average) | Distribution of 2006 university students (%) |
|-------------------------------------|------------------------------|-----------------------------|--|
| UUU                                 | 649                          | 48                          | 1  |
| UUC                                 | 623                          | 15                          | 6  |
| UUW                                 | 624                          | 32                          | 2  |
| UUH                                 | 597                          | 8                           | 73   |
| UCU                                 | X                            | X                           | X  |
| UCC                                 | 600                          | 44                          | 1  |
| UCW                                 | 535                          | 199                         | X  |
| UCH                                 | 607                          | 28                          | 1  |
| UWU                                 | X                            | X                           | X  |
| UWC                                 | 617                          | 31                          | 2  |
| UWW                                 | 595                          | 51                          | X  |
| UWH                                 | 561                          | 17                          | 10   |
| UHU                                 | X                            | X                           | X  |
| UHC                                 | X                            | X                           | X  |
| UHW                                 | 549                          | 93                          | X  |
| UHH                                 | 546                          | 112                         | 1  |
| X denotes insufficient sample sizes |                              |                             |  |

Source : Youth in Transition Survey

17. The reading scores at age 15 showed clear patterns in terms of the particular pathways taken by university students. Although these scores varied depending on the pathway, it is also important to understand the magnitude of prevalence of these pathways. *Table 5* presents the percentages of students following the particular pathways.

18. As seen in the table, a vast majority of Canadian university students (UUH – 73%) who were 15 years of age in 2000 followed a linear educational pathway. The second most popular pathway to university taken by 10% of them included a work episode following graduation from secondary education (UWH). Attendance of college prior to entrance to university was also taken by a significant proportion (5.9%) of university students. The uptake of other types of pathways was not high for the 2006 university students. Interestingly, very few Canadian university students interrupted their post-secondary education (either university or college) with a work episode (UWC and UWU).

### *Summary of pathways to university*

19. The results presented in this section showed that the university students in 2006 who were 15 in 2000 had relatively high reading competencies as measured by PISA. Despite the chosen pathway, on average, all of them obtained reading scores higher than the OECD average and also higher than the Canadian average. Some pathways were associated with very high reading scores, where students obtained level 5 reading scores (highest possible). Overall, the 2006 university students were well prepared for their learning careers in terms of reading competencies.

20. A vast majority of students entered university straight after secondary education, following a linear pathway. Entering a temporary work episode after graduating from high school was also a popular option. However, once these students entered post-secondary education, they tended not to interrupt it with work.

### **Pathways to college**

21. In 2006, a significant proportion of young Canadians (19%) who were 15 years of age in 2000 were registered in Canadian colleges (*Table 6*). As a total, the average reading competencies of these

respondents as measured by PISA six years earlier was 532. This result was virtually identical to the Canadian average of 534, and significantly higher than the OECD average of 500. This average placed these respondents in the 3<sup>rd</sup> reading level, required to function in the knowledge economy.

22. Analogous to the large proportion of university students following a linear pathway, 54% of college students were also in college 2 years earlier. The average reading scores of this group of students at 550. Thirty-three percent (33%) of the 2006 college students reported to have been working two years earlier at age 19, with their average reading scores being 513. Only a small proportion of these students were still in high school in 2004, with reading scores of this group averaging 500. Respondents who attended universities prior to college were few in number (1%), but their reading scores were the highest of all the other groups (568).

**Table 6. Educational and labour market status in 2004 of college students in 2006<sup>10</sup>**

| Year | Status      | Count  | Percentage | PISA reading score |
|------|-------------|--------|------------|--------------------|
| 2006 | College     | 50 294 | 19         | 532                |
| 2004 | University  | 528    | 1          | 568                |
|      | College     | 27 030 | 54         | 550                |
|      | Working     | 16 633 | 33         | 513                |
|      | High school | 1 834  | 4          | 500                |

Source : Youth in Transition Survey

23. As in the case of pathways to university, moving back in time by additional 2 years to 2002, completes the analysis of educational and labour market pathways of the 2006 college students. Again, pathways to college are identified by abbreviations. For example, a respondent who was in college in 2006, working in 2004 and in high school in 2002 was referred to as CWH. For a complete list of all abbreviations see *Table 7*.

10. Note: The percentage for 2006 is calculated based on the entire sample. Those for 2004 are based on the 2006 number. For example, 19% of those who were 15 in 2000 ended up in college in 2006, and 33% of these were working in 2004.

**Table 7. Pathways of 2006 college students**

| 2006 or age 21 | 2004 or age 19 | 2002 or age 17 | Abbreviation | Distribution of 2006 college students as a proportion of total population of those who were 15 years of age in 2000 (%) |
|----------------|----------------|----------------|--------------|---|
| College        | University     | University     | CUU          | X   |
| College        | University     | College        | CUC          | X   |
| College        | University     | Work           | CUW          | X   |
| College        | University     | High school    | CUH          | X   |
| College        | College        | University     | CCU          | X   |
| College        | College        | College        | CCC          | 2   |
| College        | College        | Work           | CCW          | 1   |
| College        | College        | High school    | CCH          | 7   |
| College        | Work           | University     | CWU          | X   |
| College        | Work           | College        | CWC          | 0   |
| College        | Work           | Work           | CWW          | 0   |
| College        | Work           | High school    | CWH          | 6   |
| College        | High school    | University     | CHU          | X   |
| College        | High school    | College        | CHC          | X   |
| College        | High school    | Work           | CHW          | X   |
| College        | High school    | High school    | CHH          | 1   |

X denotes insufficient sample sizes

Note: In 2000, at age 15, all these respondents were in high school

24. The 2006 college students could be grouped into two categories in terms of their PISA reading scores at age 15 – high and low. High scoring students tended to have followed more educational pathways into college, that is, they did not interrupt their education with spells of employment. Their reading scores varied from 591 (CUC) to 538 for those who attempted college straight out of high school (CCH) (*Table 8*).

25. Although spells of employment were associated with lower reading scores at age 15, this was not true for two groups reporting work prior to entering college. These were CCW and CWC with reading scores of 557 and 573 respectively.

26. The lowest reading scores were recorded for those who were still in high school in 2004 with a work episode in 2002 (CHW with average score of 474) and youth that were in high school in 2002 and 2004 preceding college entry (CHH with average reading score of 503).

**Table 8. Average PISA reading scores and the distribution of pathways of 2006 college students**

| Type of pathway | PISA reading score at 15 | Standard Error (of average) | Distribution of 2006 college students (%) |
|-----------------|--------------------------|-----------------------------|---|
| CUU             | X                        | X                           | X   |
| CUC             | 591                      | 90                          | X   |
| CUW             | X                        | X                           | X   |
| CUH             | 566                      | 54                          | X   |
| CCU             | X                        | X                           | X   |
| CCC             | 587                      | 20                          | 11  |
| CCW             | 557                      | 44                          | 3   |
| CCH             | 538                      | 14                          | 39  |
| CWU             | X                        | X                           | X   |
| CWC             | 573                      | 59                          | 2   |
| CWW             | 531                      | 76                          | 2   |
| CWH             | 507                      | 16                          | 30  |
| CHU             | X                        | X                           | X   |
| CHC             | X                        | X                           | X   |
| CHW             | 474                      | 131                         | X   |
| CHH             | 503                      | 57                          | 3   |

X denotes insufficient sample sizes

Source : Youth in Transition Survey

27. As seen in *Table 8*, little over half of the 2006 college students entered college directly after high school (adding the proportions CCC, CCH and CHH), indicative of a linear trajectory. Interestingly, almost a third (29.7%) of the 2006 college students reported an employment spell (CWH) prior to entering college.

### *Summary of pathways to college*

28. The 2006 college students possessed very similar reading skill at age 15 to the national average. These were sufficient for them to continue learning and working in the knowledge economy of today. Only three identified pathways had lower reading scores, those entering college in 2006, those with a work episode in 2002 and high school attendance in 2004, and finally, those with an early employment spell (in 2004) following high school.

### **Pathways to work**

29. Almost half (46%) of the respondents who were of 15 years of age in 2000 were working in 2006. On average their PISA reading scores as measured at age 15 were 507. This was lower than the Canadian average of 534, but in line with the OECD average of 500. As seen in *Table 9*, almost a third of the respondents who were working in 2006, were also working in 2004, with achieving reading scores of 495. The lowest reading scores were obtained by respondents who were still in high school in 2004, with their average reading scores at 455, putting them at level two in the reading scale, which was identified as insufficient for successful learning in the knowledge economy.

**Table 9. Educational and labour market status in 2004 of working respondents in 2006<sup>11</sup>**

| Year | Status      | Count   | Percentage | PISA reading score |
|------|-------------|---------|------------|--------------------|
| 2006 | Working     | 125 030 | 46         | 507                |
| 2004 | University  | 7 591   | 6.1        | 579                |
|      | College     | 34 864  | 27.9       | 531                |
|      | Working     | 73 811  | 59.0       | 495                |
|      | High school | 8 764   | 7.0        | 455                |

Source : Youth in Transition Survey

30. Similarly to the sections dealing with pathways to college and university, pathways to working are referred to with abbreviations. For example, a 2006 working respondent who was in university in 2004 and college in 2002 is referred to as WUC. For a complete list of abbreviations see *Table 10* below.

**Table 10. Pathways of respondents working in 2006**

| 2006 or age 21 | 2004 or age 19 | 2002 or age 19 | Abbreviation | Distribution of respondents working in 2006 as a proportion of total population of those who were 15 years of age in 2000 (%) |
|----------------|----------------|----------------|--------------|---|
| Work           | University     | University     | WUU          | 0   |
| Work           | University     | College        | WUC          | 0   |
| Work           | University     | Work           | WUW          | 0   |
| Work           | University     | High school    | WUH          | 3   |
| Work           | College        | University     | WCU          | X   |
| Work           | College        | College        | WCC          | 2   |
| Work           | College        | Work           | WCW          | 1   |
| Work           | College        | High school    | WCH          | 10  |
| Work           | Work           | University     | WUW          | X   |
| Work           | Work           | College        | WWC          | 1   |
| Work           | Work           | Work           | WWW          | 3   |
| Work           | Work           | High school    | WWH          | 23  |
| Work           | High school    | University     | WHU          | X   |
| Work           | High school    | College        | WHC          | X   |
| Work           | High school    | Work           | WHW          | 0   |
| Work           | High school    | High school    | WHH          | 3   |

X denotes insufficient sample sizes

Note: In 2000, at age 15, all these respondents were in high school

31. The reading abilities as measured by PISA at age 15 were vastly dispersed for the respondents who were working in 2006. They ranged from 624 for those reporting two university spells prior to working (WUU) to 446 for those who interrupted their high school education with work (WHW) (*Table 11*).

32. The highest scores (above 600 reading points) were reported by those with university attendance in 2004 or two years prior to entering work (WUU, WUC and WUW). Those reporting attending university in 2002 and 2004 (WUU) might be working graduates, as the time frame covered in that period would allow for successful graduation. However, those reporting only one university spell most likely did not obtain their university degree. Despite graduation, the association of high reading scores with the

11. Note: The percentage for 2006 is calculated based on the entire sample. Those for 2004 are based on the 2006 number. For example, 46% of those who were 15 in 2000 ended up working in 2006, and 27.9% of these were in college in 2004.



occurrence of at least one university episode might reflect the admission practices of Canadian universities, which are most often based on scholastic abilities as measured by marks.

**Table 11. Average PISA reading scores and distribution of pathways of respondents working in 2006**

| Type of pathway | PISA reading score at 15 | Standard Error (of average) | Distribution of respondents working in 2006 (%) |
|-----------------|--------------------------|-----------------------------|---|
| WUU             | 624                      | 68                          | 0.2   |
| WUC             | 621                      | 73                          | 1.3   |
| WUW             | 612                      | 87                          | 0.2   |
| WUH             | 575                      | 17                          | 5.5   |
| WCU             | X                        | x                           | X   |
| WCC             | 578                      | 17                          | 4.2   |
| WCW             | 539                      | 31                          | 2.0   |
| WCH             | 520                      | 10                          | 21.3  |
| WWU             | X                        | x                           | x   |
| WWC             | 556                      | 32                          | 2.3   |
| WWW             | 499                      | 23                          | 6.6   |
| WWH             | 491                      | 9                           | 49.5  |
| WHU             | X                        | x                           | x   |
| WHC             | X                        | x                           | x   |
| WHW             | 446                      | 85                          | 0.5   |
| WHH             | 456                      | 20                          | 6.5   |

X denotes insufficient sample sizes

Source : Youth in Transition Survey

33. Experiencing two periods of college attendance prior to work would also provide sufficient time for graduation. These respondents (WCC) also had high reading abilities as measured at 15 years of age (578).

34. The lowest reading scores were associated with clear work pathways, that is, where there was no indication of any post-secondary education participation after high school (WWW, WWH, WHW and WHH). Respondents working in 2006 that experienced a high school dropout episode (WHW) and those entering work directly after high school (WHH) were especially disadvantaged in terms of their reading abilities. With scores in the mid 400s, their abilities were insufficient for successful learning in the knowledge economy.

35. The most popular pathway to work in 2006 was entering work after high school (WWH) taken by half of these respondents (*Table 4.8*). The next most popular pathway was college attendance after high school (WCH) with 21% having chosen it. Despite of the growing importance of post-secondary education, a significant proportion of Canadian youth (13%) did not attend any post-secondary education prior to working (WWW and WHH).

### ***Summary of pathways to work***

36. A significant proportion of Canadian youth who were 15 years of age in 2000 was working in 2006. On average their reading scores at age 15 were below the Canadian average. Respondents that experienced university prior to working possessed the highest reading competencies, whereas those without any post-secondary education experience in over the 6 years of survey had the lowest scores. The scores for these respondents placed them in the second reading proficiency level, which was identified as insufficient for successful learning in the knowledge economy, to some extent explaining the lack of post-secondary education in their pathways to work.

## Conclusion

37. The availability of a skills assessment doubled with longitudinal data makes it possible to study educational and labour market pathways in light of competencies. With the skills assessment being administered at the beginning of the pathways, it is possible to make associations between early measures of performance and particular trajectories. With the results presented in this chapter, it has been made clear that early skill levels do affect educational and labour market pathways.

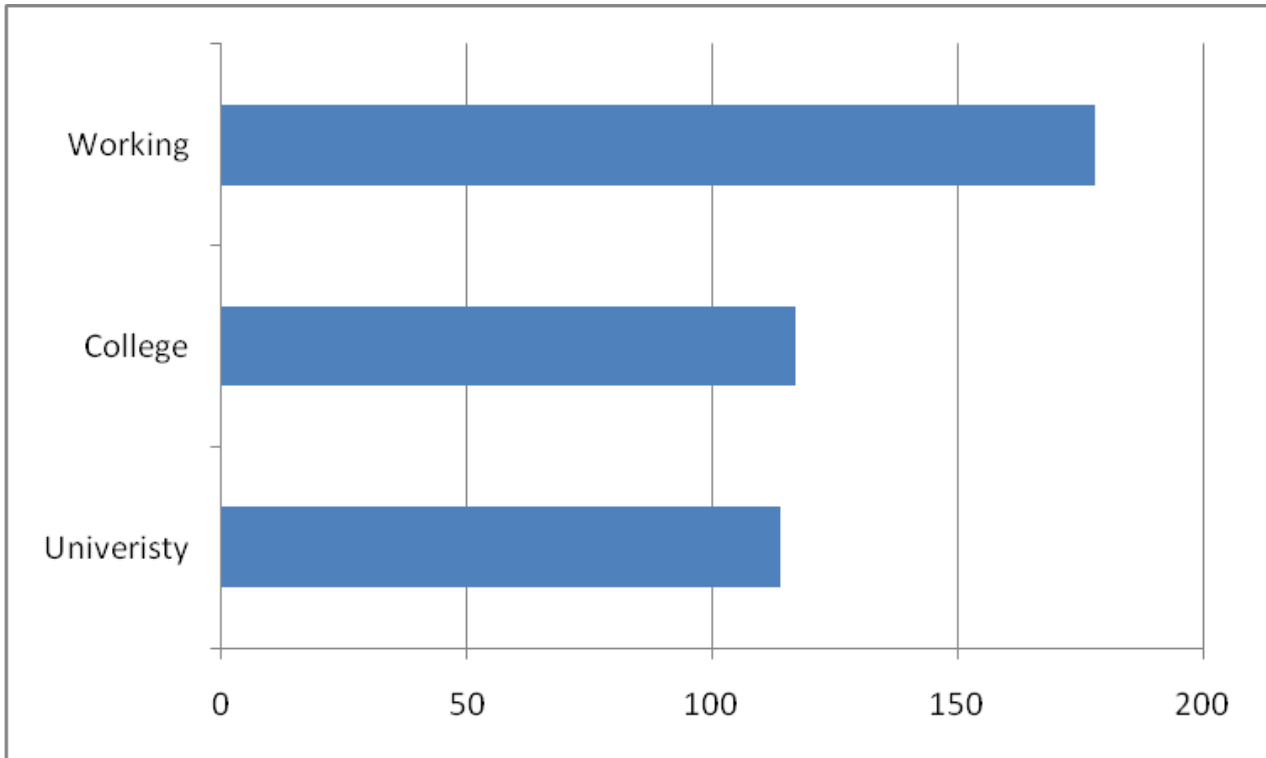
38. On average those who attended any type of post-secondary education, despite completion, had the highest reading abilities at age 15. These competencies were also affected by the type of post-secondary education, with those exposed to university education outscoring those exposed to only college education.

39. Despite the eventual outcome, consistently those who were high school dropouts had the lowest reading scores at 15 years of age. This might be an indication that low reading competencies are associated with completion of high school education. In addition, those who did not experience any post-secondary education after high school, also had very low reading scores. The shortages of reading skills of these youth might be an early indication that they do not benefit from additional learning opportunities. With low competencies to begin with, and most likely subsequent lack of exposure to learning opportunities, they might be putting themselves at an economic disadvantage.

40. The analyses presented in this chapter also confirmed the complexities of pathways taken by Canadian youth. In total, there were 48 possible pathways taken by the respondents. Linear pathways were still the most popular ones among the respondents, but a significant proportion of them chose to follow pathways that saw them change their educational and work statuses over time. Such findings can potentially identify inefficiencies in trajectories and the effects of reading competencies.

41. Within the three groups analysed in this chapter, the group that was working in 2008 had the most variability in their reading skills in 2000. The reading scores within this group ranged from 446 points (WHW) to 624-points (WUU). This represented a spread of 178 points. This variation in scores was much largest than compared to those who were in college and university (117- and 114-points respectively). These results indicate that this group is by far the most heterogenic among those analysed.

**Figure 3. Differences in scores between the highest and lowest scoring group within each category**



Source : Youth in Transition Survey

42. The analysis presented in this chapter was able to identify reading skill profiles of groups of respondents with different pathways, however, it did not control for any individual characteristics of these youth. The subsequent chapters provide results from multivariate analyses of educational and labour market pathways. This allows for a better understanding of what affects these transitions.

**Table 12. NEET status in each collection period and duration of NEET experience**

| <b>NEET Status as of December in respective cycle</b> |                 |                  |                  |  |
|---|-----------------|------------------|------------------|--|
|   | <b>1 period</b> | <b>2 periods</b> | <b>3 periods</b> |  |
| Entered in 2002 or age 17                             | 2864            | 558              | 330              |  |
| Entered in 2004 or age 19                             | 20734           | 4506             | n/a              |  |
| Entered in 2006 or age 21                             | 18929           | n/a              | n/a              |  |
|   | <b>1 period</b> | <b>2 periods</b> | <b>3 periods</b> | <b>Row Totals</b>                            |
| Entered in 2002 or age 17                             | 76%             | 15%              | 9%               | <b>100%</b>                                  |
| Entered in 2004 or age 19                             | 82%             | 18%              | n/a              | <b>100%</b>                                  |
| Entered in 2006 or age 21                             | 100%            | n/a              | n/a              | <b>100%</b>                                  |
| <b>Percentage of Total</b>                            |                 |                  |                  |  |
|   | <b>1 period</b> | <b>2 periods</b> | <b>3 periods</b> | <b>2 or more consecutive periods of NEET</b> |
| Entered in 2002 or age 17                             | 6%              | 1%               | 1%               |  |
| Entered in 2004 or age 19                             | 43%             | 9%               | n/a              | 11%  |
| Entered in 2006 or age 21                             | 40%             | n/a              | n/a              |  |