4

Decisions After School: Pathways Followed by the Cohort Born in 1984

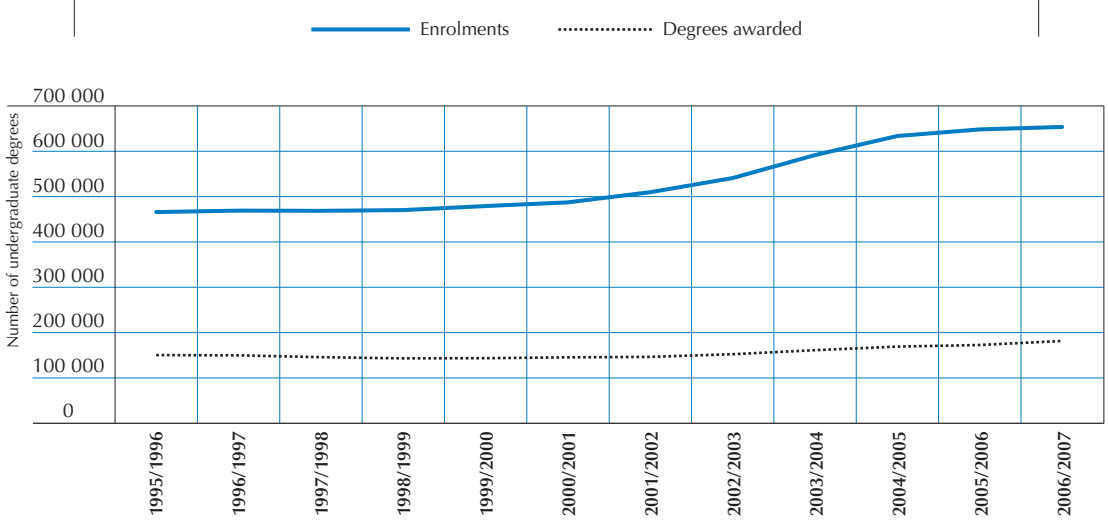
Abstract

This chapter provides a first glimpse at the results of Canada's longitudinal study – the Youth in Transition Survey (YITS). Using 2006 as a reference point, when students were 21 years olds, it examines the various pathways taken by students to college, university and work since 2000. These pathways are critical in shaping the future educational, occupational and social outcomes of these individuals and hence are of considerable policy relevance. While linear pathways were most common to achieve a post-secondary education, they were not the only ones. The importance of achievement in PISA 2000 evidenced by the results presented in this chapter. High levels of competencies at age 15 are in general associated with linear pathways and higher educational attainment – notably, a university education – but many students also followed non-linear pathways (those shifting between education and work) to achieve a post-secondary education.

INTRODUCTION: THE IMPORTANCE OF POST-SECONDARY EDUCATION

Over the last decade, Canada has experienced a substantial increase in the number of individuals participating in post-secondary education. As shown in Figure 4.1, the enrolment in full-time bachelor programmes 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.

Figure 4.1
Full-time enrolment levels in a bachelor degree programme and number of undergraduate degrees awarded



Source: Tables 477-0013 and 477-0014, Statistics Canada (2009).

This increasing trend of post-secondary education enrolment coupled with increases in degrees awarded has placed greater importance on the pathways leading to such outcomes and the competencies that are associated with them. This chapter describes a range of possible education and work outcomes at age 21 and the pathways that led to them.

This chapter is a descriptive introduction into the wealth of information that is available in the combination of the PISA and YITS databases. Of course, since the results discussed here are descriptive, it should be borne in mind that to gain a more complete understanding of patterns of transition to subsequent outcomes it would be necessary to adjust for a range of background characteristics. This approach for adjusting for the influences of multiple variables is made in subsequent chapters. However, a key aim of this chapter is to illustrate that, even with more simple descriptive analyses, the results are extremely insightful and shed light on a number of important policy issues.

The complexity and importance of transitioning to postsecondary education and work should not be understated. Indeed, a descriptive overview of the outcomes gathered in YITS provides a useful context in which to consider the more complex results in the chapters that follow.

The following questions form the focus of this chapter:

- What were the more and less common pathways taken by young Canadians to education and work?
- How much did reading scores vary by these pathways?
- Which pathways promote quality and equity?

The results in this chapter are based on analyses conducted by Bayard and Gluszynski (2009).

RATES OF ACCESS TO POST-SECONDARY EDUCATION

Before considering the pathways taken by Canadian students retrospectively from 2006, it is worth considering the overall rate of access to post-secondary education. Furthermore, a comparison of the PISA scores of students in university, college and work in 2006 provides an initial indication of the importance of prior achievement on real-life literacy tasks to subsequent educational and work choices and outcomes.

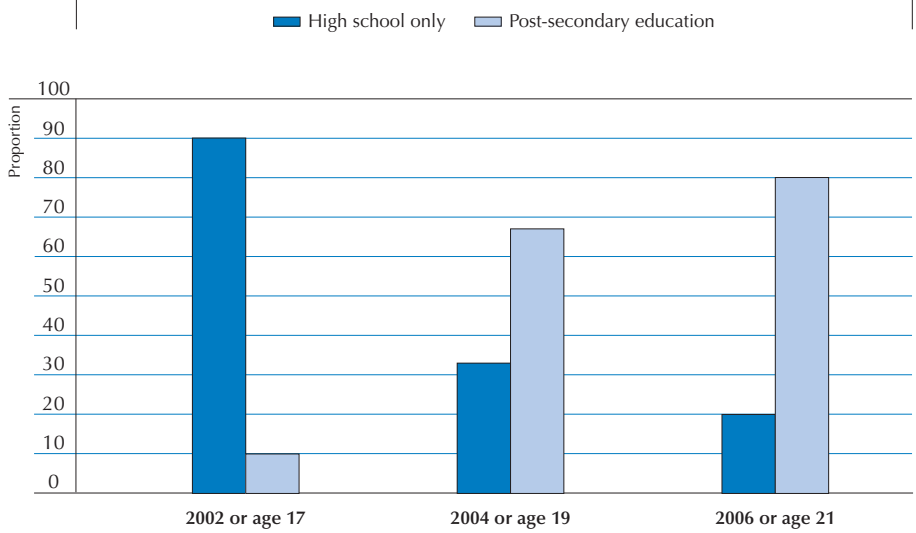
Secondary school completion rates in Canada are high. In all, 94% of PISA 2000 students graduated secondary school by 2006. The majority of Canadian high school students graduate at age 18 and nearly all by age 21. Conditional on being a high school graduate, Figure 4.2 shows that participation in post-secondary education increased with age. The largest increase occurred between the ages of 17 and 19, with post-secondary education attendance rising from 10% to 67%. Further, by age 21 (in 2006), nearly 80% of the original cohort that had graduated from high school had enrolled in post-secondary education institutions.

In 2006, 36% of Canadians who participated in PISA 2000 were attending a university, 19% were in college and 45% were working. The mean score of students in universities was highest (594), followed by college attenders (532) and lowest for students who were in work in 2006 (507). The score difference between university students and those in work in 2006 was close to one standard deviation.

It is also possible to compare the reading scores of students according to whether they accessed post-secondary education or not (*i.e.* regardless of the time-point at which they transitioned), since some students working in 2006 did attend post-secondary education, while others did not. Thus, regardless of the particular point in time at which students accessed post-secondary education (or not), the YITS dataset revealed that 20% of students did not access any type of post-secondary education and the mean reading score of this group (477) was some 60 points below the Canadian average. About 35% of students attended college and their mean score was 519. Students who attended university had the highest mean score (588) and this accounted for 44% of the cohort.

This initial descriptive overview of the outcomes of youth in 2006 with reference to their PISA reading scores in 2000 provides support for the importance of earlier proficiency in the achievement of more favourable educational attainment.

Figure 4.2
Proportion of youth who completed secondary school that attempted post-secondary education by reference cycle (conditional on secondary school graduation)



Source: Youth in Transition Survey, Special Analysis, Learning Policy Directorate, HRSDC.

PATHWAYS TO EDUCATION AND WORK

In 2006, the most recent point in time when data from YITS were available for this study, young adults that participated in PISA 2000 were aged 21. In these six years, though seems a short time, the 15-year-olds of PISA 2000 underwent a critical phase in their own personal development. They had to make important decisions about their future academic and professional careers. Those who completed their compulsory education had to decide whether to continue further in their education and opt for post-secondary education or join the workforce. Post-secondary education in Canada, as described in Chapter 2, offers several options to students, which can be broadly classified as college or university. If they joined the labour market, they may have been employed or unemployed at the time of the survey.

Although it may be observed that in 2006, youth that participated in PISA 2000 were in university, college or work, the paths taken that led to these outcomes are complex. Box 4.1 provides a description of the types of educational and labour market outcomes that have been used to describe pathways of this cohort of young people. By specifying the outcomes of individuals at each data collection point (2002, 2004, 2006), the extent of various transition pathways through the education system can then be identified. Identifying pathways in this fashion allows an examination of the more and less common pathways taken by Canadian youth, the extent to which these pathways may be considered linear and the pathways that may be considered more and less beneficial both to individuals and to the Canadian economy.

This analysis is extremely important since the choices students make and possible barriers preventing the optimal choice can have a profound impact on students' subsequent educational and occupational experiences.

Box 4.1 What are the outcomes that define pathways to education and work?

Pathways were defined using education and labour market outcomes across 2002, 2004 and 2006. These were:

1. University post-secondary education (ISCED 5A level or higher).
2. Non-university post-secondary education: education higher than a secondary school diploma, including college or vocational education (lower ISCED 5A).
3. Working: not attending upper secondary school or post-secondary education and working in a job the last two months of the reference year.
4. In upper secondary school.
5. Not in education, employment, or training: not enrolled in post-secondary education or in education as of December of the reference year and was not considered working (two consecutive months).

It should be noted that 6% of students did not complete upper secondary school. These individuals are not included in the analyses reported in this chapter. Similarly, students experiencing varying degrees of inactivity are not included since these patterns are complex to analyse.

For policy purposes, the group of students that may be classified as not being in education, employment or training is of concern since it is likely that many of the young people in this group may have fallen out of the system. But it is important to see this in a longitudinal context in order not to over-state the issue. It is estimated that about 11% of students experienced more than one consecutive period of inactivity. However, just 1% experienced three consecutive periods of inactivity. The lower percentages are an indication of the dynamic nature of an even less desirable pathway where youth can re-enter education or the workplace to improve their life chances. These movements out of inactivity can be affected by individual decisions as well as the educational and labour market environments.

The longer term prospects of early labour market entrants, with only a secondary education diploma or less, as well as those who graduated late from upper-secondary school, are also of concern. They may fall victim to increasing competition for jobs from those better qualified in terms of job opportunities, stability of employment and future earnings.

When PISA was conducted in 2000, all youth were in secondary education. Following that, at a given point in time, an individual could be in one of four states: university, college, work, or secondary school. The pathways are denoted backwards through time. For example, an individual with a pathway across 2002, 2004 and 2006 of "Work-College-School" means that he or she was in secondary school in 2002, in college in 2004 and in work in 2006. Similarly, a student with a pathway of "University-University-School" was in secondary school in 2002 and in university in 2004 and 2006.

The analysis starts with the primary activity of youth in 2006 (at age 21) – where they enrolled in college or a university or were working. Then, it asks how students got there – where these same students were in 2004 and 2002 (at ages 19 and 17). The cognitive skills these students demonstrated in terms of reading scores in PISA 2000 are also considered. The next three sections consider the pathways that led students to university, college and work respectively, in PISA 2006.

PATHWAYS TO UNIVERSITY AND ACHIEVEMENT IN PISA 2000

In educational terms, access to university is the most positive outcome. However, not all students may be suited to university. Another relevant issue with respect to post-secondary education access generally is the extent to which course choice matches students' educational strengths and educational and occupational expectations. These issues are examined further in subsequent chapters.

Given the various outcomes that were used to define youth pathways, there were no fewer than 16 possible pathways to attendance at a university in 2006. However, some pathways were much more common than others. Table 4.1 shows nine pathways to university in 2006 for which there were sufficient numbers of students to report the results (*i.e.* where there were 1% or more in the group). However, for the smaller groups, the standard errors of the achievement scores are high so results should be interpreted with caution.

The evidence suggests that being a PISA top performer in reading is not a necessary condition for attending university but rather that a high PISA score in reading provides a substantial advantage for achieving a university education. Furthermore, while linear pathways were the most common (*i.e.* proceeding directly from school to university), non-linear pathways were also possible. The highest PISA scores were associated with students finishing secondary school earlier and/or following a linear pathway.

Table 4.1

Frequencies of nine pathways to university (2006), and PISA combined reading literacy scores (2000)

2006 (age 21)	2004 (age 19)	2002 (age 17)	PISA combined reading score (2000)	S.E.	Distribution of 2006 university students (%)
University	University	Secondary school	597	8	73
University	Work	Secondary school	561	17	10
University	University	College	623	15	6
University	University	Work	*624*	*32*	2
University	Work	College	*617*	*31*	2
University	University	University	*649*	*48*	1
University	College	College	*600*	*44*	1
University	College	Secondary school	*607*	*28*	1
University	Secondary school	Secondary school	*546*	*112*	1

Note: Seven categories of pathways have fewer than one per cent of students and are not included in the table. This is why the distribution sums to 97, not 100. The percentages in the last column are subtotals of the 36% of PISA 2000 participants who were working in 2006.
Achievement scores in italics are to be interpreted cautiously as they are based on a small number of observations.
Source: Youth in Transition Survey, Special Analysis, Learning Policy Directorate, HRSDC.

By far the most common pathway identified for those in university at age 21 was completing upper secondary, then attending university in both 2004 and 2006. This category accounted for 73% of all students attending university in 2006. The second most common pathway (10% of 2006 university students) was completing upper secondary, then working and enrolling in university in 2006. The third most common was attending a college in 2002 and enrolling in university by 2004 (6% of 2006 university students). The latter figure could be affected by Québec's education system (described in Chapter 2).

There were three possible pathways to university that could be considered linear in nature (for youth living outside of Québec): University-University-University, University-University-School and University-School-School; *i.e.*, the student entered university directly after secondary 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 (University-University-University), with the students in this category scoring an average of 649 points, which put them at Level 5 on the PISA reading scale. Those entering university two years later in 2004 (University-University-School), obtained an average score of 597 points and finally those entering in 2006 (University-School-School) averaged 546 PISA reading points.

For some (most notably those in Québec), attending college prior to attending university was another possibility. Students who followed a pathway to university with more than one type of post-secondary education (*i.e.* secondary school followed by college followed by university) tended to have high reading scores at age 15. For the groups that contained sufficient sample sizes (University-University-University, University-College-College and University-College-School) the average scores were either at or above 600.

An episode of working was also possible in terms of pathways leading to university. An interruption for work could be positive, if the students did so to gain experience, to their career choice or to earn money specifically to finance their university education. Students who took an early working break (University-University-Work) obtained an average reading score of 624, just short of Level 5 in reading. Experiencing a work episode after attending college (University-Work-College) was also associated with particularly high reading scores at age 15 (617 points). And, although the other groups that experienced a work episode prior to attending university had lower reading scores, these were still high, ranging from 535 points for University-College-Work to 595 points for University-Work-Work.

PATHWAYS TO COLLEGE AND ACHIEVEMENT IN PISA 2000

Linear pathways to college were most common for youth in college in 2006. However transitions to work were more common than for the university group and, overall, the PISA 2000 reading scores of students in college were lower than youth in universities. This suggests first, that students may have needed to work to finance their studies to a greater degree than their university counterparts, and/or had a more vocationally-oriented disposition, second, that the ability requirements for college were generally not as high as for university. Of course, there was variation in these mean scores, depending on the particular pathway taken.

Just over half (54%) of college students followed a linear pathway, since these students were also in college two years earlier. The average reading score of this group of students was 550. Thirty-three per cent (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 secondary school in 2004, with reading scores of this group averaging 500. Thus, similar to the university students, college students completing secondary school at an age older than average tended to have lower reading scores.

It was possible to identify seven of 16 pathways to college in 2006 that had sufficient sample sizes to report results (that is, 1% or more of college students). Table 4.2 shows these seven pathways. Again, caution is advised in interpreting the results for the smaller groups since the standard error of the achievement measure is large.

Table 4.2

Frequencies of seven pathways to college (2006), and PISA combined reading literacy scores (2000)

2006 (age 21)	2004 (age 19)	2002 (age 17)	PISA combined reading score (2000)	S.E.	Distribution of 2006 college students (%)
College	College	Secondary school	538	14	39
College	Work	Secondary school	507	16	30
College	College	College	587	20	11
College	College	Work	*557*	*44*	3
College	Secondary school	Secondary school	*503*	*57*	3
College	Work	College	*573*	*59*	2
College	Work	Work	*531*	*76*	2

Note: Nine categories of pathways have equal to or less than one per cent of students and are not included in the table. This is why the distribution sums to 90, not 100.
The percentages in the last column are subtotals of the 19% of PISA 2000 participants who were working in 2006.
Achievement scores in italics are to be interpreted cautiously as they are based on a small number of observations.
Source: Youth in Transition Survey, Special Analysis, Learning Policy Directorate, HRSDC.

Similar to the students in university, students entering college at a younger than average age and who remained in college (College-College-College) had a high average PISA reading score of 587 (Level 4). Interestingly, students experiencing a spell of work in 2002 also had high average scores – whether attendance at college was linear (College-College-Work, 557; College-Work-Work, 531) or not (College-Work-College, 573). Students still in secondary school in 2002 tended to have low average scores (College-Work-School, 507; College-School-School, 503).

SUMMARY OF PATHWAYS TO POST-SECONDARY EDUCATION

A key observation with respect to access to both college and university is that experiencing a spell of work was not necessarily associated with a lower PISA reading score. However, some pathways that were associated with work transitions were associated with lower PISA reading scores, particularly where the student finished secondary school at an older than average age. The analyses presented here cannot explain why these patterns of score differences are so, but they provide a first look at the important and complex issues of transition to post-secondary education and the relevance of prior proficiency and secondary school completion age in these transition patterns.

Typically, good marks were necessary for admission into post-secondary education. These results confirm that cognitive ability as measured by PISA reading not only distinguishes students proceeding to higher education from others who did not, but it also distinguishes those pursuing a university degree from those seeking a college diploma.

The importance of scores above the OECD average of 500 is underlined for future prospects. Therefore, schools should be encouraged to have average scores well above 500, with distributions skewed to the right (*i.e.* a majority of students scoring at or above 500). In other words, supports need to be put in place that not only raise achievement overall, but also serve to ensure that the largest majority possible attain their full potential in cognitive proficiency.

PATHWAYS TO WORK AND ACHIEVEMENT IN PISA 2000

While it is true to say that the demands for high levels of educational attainment have increased in industrialised countries (Canada being no exception), it is not the case that being employed by age 21 is invariably a negative outcome. However, as the various pathways to work described in this section show, there is a minority of students who had low reading scores and proceeded directly from secondary schools into the workforce. These students, who scored below the OECD average, may be unlikely to have sufficient proficiency and qualifications to secure stable, rewarding employment. They may also not be likely to reap the full benefits of on-the-job training or future professional development, if these were available to them.

In 2006, just under half of students that took part in PISA 2000 (46%) were working. In 2004, 59% of this group was working, 28% was in college, 7% was in secondary school and 6% was in university, which indicates an educational pathway intercepted (in some cases interrupted) by work. Nine distinct pathways to work in 2006 with sufficient numbers of cases to report (at or exceeding 1% of those working in 2006) are shown in Table 4.3. Again, caution is advised in considering the results of the smaller groups since the low numbers in these groups result in large margins of measurement error.

The most common pathway associated with students working in 2006 was attending secondary school in 2002 and then working in 2004 and 2006. This pathway accounted for 50% of those working in 2006. The second most common pathway to work, secondary school in 2002, college in 2004 and working in 2006, was taken by 21% of students and indicates labour market entrants with a college diploma. Seven per cent (7%) of students were in work in all three periods, while a further 7% were in secondary school in both

2002 and 2004, then in work by 2006. Six per cent (6%) of students attended secondary school in 2002, were in university in 2004 and working in 2006. A smaller percentage (4%) attended college in 2002 and 2004 and were working in 2006, likely graduating from longer programmes.

Table 4.3
Frequencies of nine pathways to work (2006), and PISA combined reading literacy scores (2000)

2006 (age 21)	2004 (age 19)	2002 (age 17)	PISA combined reading score (2000)	S.E.	Distribution of 2006 individuals working (%)
Work	Work	Secondary school	491	9	50
Work	College	Secondary school	520	10	21
Work	Work	Work	499	23	7
Work	Secondary school	Secondary school	456	20	7
Work	University	Secondary school	575	17	6
Work	College	College	578	17	4
Work	Work	College	*556*	*32*	2
Work	College	Work	*539*	*31*	2
Work	University	College	*621*	*73*	1

Note: Seven categories of pathways have fewer than one per cent of students and are not included in the table. This is why the distribution sums to 99, not 100%.
The percentages in the last column are subtotals of the 46% of PISA 2000 participants who were working in 2006.
Achievement scores in italics are to be interpreted cautiously as they are based on a small number of observations.
Source: Youth in Transition Survey, Special Analysis, Learning Policy Directorate, HRSDC.

The three groups of students who had linear pathways to work, *i.e.* going directly from secondary school to work, had the lowest PISA reading scores and again it can be seen that students finishing secondary school at an older than average age had low reading scores (Work-Work-School, 491; Work-Work-Work, 499; Work-School-School, 456).

In contrast, students who attended some post-secondary education prior to entering work achieved higher average reading scores, particularly those with two consecutive periods in post-secondary education (Work-College-School, 520; Work-University-School, 575; Work-College-College, 578; Work-Work-College, 556; Work-College-School, 539; Work-University-College, 621). However, some of these groups might include students who did not complete their post-secondary education course. For example, it is highly unlikely that a student would complete a university course in two years.

All in all, the dispersion in reading scores of the group of youth who were working in 2006 was much wider than both the university and college groups. This is because working before proceeding to higher education was less common than many of the other pathways described and these pathways may become more common if students want to avoid study debt.

CONCLUSION

With the administration of the PISA 2000 assessment prior to students setting out along various educational and labour market pathways, it is possible to make associations between early measures of performance and particular trajectories. The results make it clear that early skill levels are related to educational and labour market pathways, which in themselves are crucial because they can be expected to have a deep and lasting impact on these individuals' educational and occupational experiences. However, it is also true to say that high proficiency as measured by PISA is not a prerequisite for entry into post-secondary education, since a degree of variation in the scores of students was found, depending on the particular pathway taken.

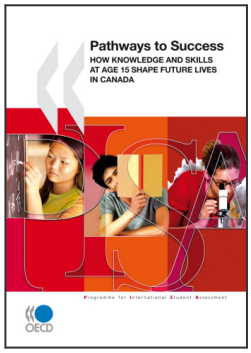
The chapter sought first to identify the more and less common pathways to education and work taken by young Canadians from 2002 to 2006, by which time they were aged 21. In 2006, about 36% of students were in university, 19% were attending college and 45% were working. However, there were a number of

possible different pathways that led to the 2006 outcomes. It was observed that linear pathways to post-secondary education were more common than non-linear ones (*i.e.* proceeding directly to post-secondary education from secondary school). However, non-linear pathways were also the case for a large population of students who were in university or college. For example, 35% of college students and 14% of university students had a period of work prior to commencing post-secondary education. And, while 64% of youth working in 2006 proceeded to do so directly from secondary school, some of this group may not have successfully completed post-secondary education. For example, 6% of those working in 2006 had been in university the period prior and it is highly likely that they dropped out of university.

Second, the chapter considered variations in the reading scores according to the different types of pathways. Overall, the 2006 university students were well prepared for their learning careers in terms of reading competencies, since regardless of the pathway chosen, the vast majority scored at Levels 4 or 5. Also, a large majority of college students scored at Levels 3 or 4 despite the various pathways taken. A small minority of students in university in 2006, who were either still in school in 2004 or working during the same period, had lower PISA scores than other groups, although these were still well in excess of the OECD average. Overall, then, the university group may be considered advantaged both in prior achievement and also post-secondary education status.

Similarly, college students completing secondary schooling later than average and experiencing a period of work prior to beginning college also had the lowest PISA scores of college students, but, nonetheless, these were at or slightly above the OECD average. Of the three groups considered in this chapter, the group that was working in 2006 had the most variability in their reading skills in 2000. The reading scores within this group ranged from 446 points to 624 points. These results confirm that this group is the most heterogeneous among those analysed and could therefore be the focus of further research (*e.g.* in examining variations by gender, job, sector of employment and socio-economic status).

Finally, the chapter examined how the various pathways gave some indication of those associated with excellence and equity. Generally speaking, students who completed secondary school at an older than average age, regardless of whether they attended post-secondary education or not, fared worse in terms of their achievement on PISA in 2000. This may be indicative of the negative association between disruptions to schooling or grade repetition and both achievement and later outcomes. Also, students proceeding directly to work from school had low PISA scores. This group is therefore a target for policy intervention, for example, by examining and developing practices that promote on-the-job training, or a re-engagement with education appropriate to their needs. Linear pathways to post-secondary education were associated with higher reading scores and this indicates that policies to promote post-secondary education attendance should include drivers to promote smooth transitions to post-secondary education.



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