

Educational outcomes at age 21 associated with reading ability at age 15

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Previous research using data from the [Youth in Transition Survey](#) showed for the first time that reading proficiency at age 15 plays a significant role in both high school graduation and postsecondary participation by age 19.¹ However, age 19 is still relatively early to have conclusive information on the educational outcomes of youth. This article takes advantage of more recent data from the Youth in Transition Survey to examine high school and postsecondary education outcomes for that same group of youth two years later, when they were 21 years old.

Reading proficiency at age 15 and subsequent high school status at age 21

Larger proportions of youth with low reading proficiency scores at age 15 took longer to complete high school and had not completed high school by age 21 compared to youth with higher reading proficiency scores (see Box 1).

Box 1:

How reading achievement is measured in the Programme for International Student Achievement (PISA)

Reading literacy is defined in the [Programme for International Student Achievement \(PISA\)](#) as “the ability to understand, use and reflect on written texts, in order to achieve one’s goals, to develop one’s knowledge and potential, and to participate in society.”²

Reading literacy was measured when youth were age 15. The average reading score was 500 points for member countries of the Organisation for Economic Co-operation and Development; the Canadian average score was 534.

Reading achievement was divided into five proficiency levels corresponding to tasks of varying difficulty, with Level 1 indicating the lowest level of proficiency and Level 5 indicating the

highest. Students at a particular level not only demonstrate the knowledge and skills at that level but also the proficiencies required at lower levels.

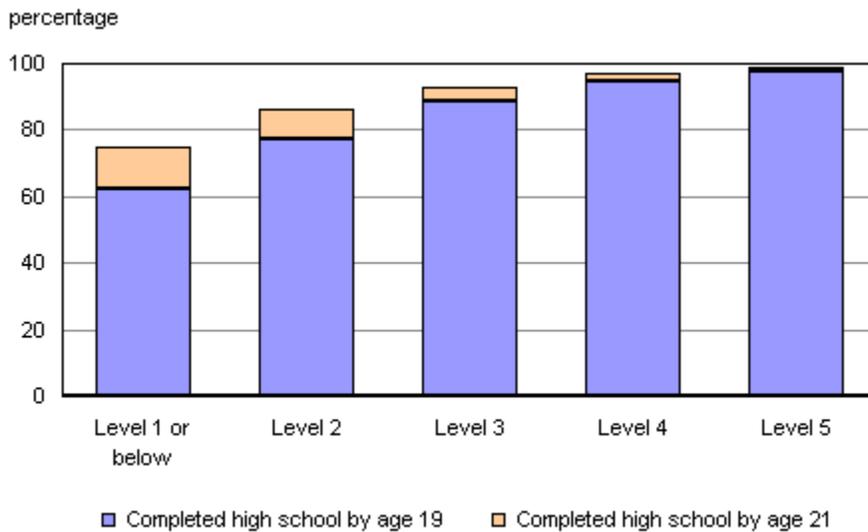
Level 1 scores ranged between 335 and 407 points; Level 2, between 408 and 480 points; Level 3, between 481 and 552 points; Level 4 between 553 and 626 points; Level 5 scores were those above 626 points.

Overall, 87% of Canadian youth who were 15 years old in 2000 had graduated from high school four years later, at the age of 19. Two years later, at age 21 in 2006, another 5% of youth had graduated from high school, resulting in a total of 92% of Canadian youth who were 15 years old in 2000 graduating from high school by the age of 21.

There was a clear relationship between youths' reading ability at age 15 and the length of time to complete high school and the probability of graduating by age 21, with a higher percentage of youth with low levels of reading proficiency taking longer to attain their high school diploma. For example, 13% of youth at reading proficiency Level 1 or below attained their high school diploma between the ages of 19 and 21 compared to just 1% of those at Level 5 (Chart 1).

Chart 1
High school completion status at age 19 and age 21, by reading proficiency level at age 15

[Description for Chart 1](#)



Source: Statistics Canada, [Youth in Transition Survey 2006](#).

Youth with lower levels of reading proficiency were also less likely to have graduated by age 21. Only 75% of youth with the lowest level of proficiency had graduated from high school by age 21 (with some having dropped out of high school and others being high school continuers) compared to 99% of those at the highest level of reading proficiency.

High school graduates had considerably higher reading scores at age 15 than did high school continuers and dropouts (Table 1).³ Furthermore, youth who had dropped out of high school by age 19, but who had returned by age 21, had higher reading literacy scores than youth who remained dropouts. About 7% of Canadian youth had left high school by age 19 and their average reading score was 455. Among those who had left school by age 19, 31% had returned to high school by age 21.

High School Status	Mean reading score at age 15	
	High school status at age 19	High school status at age 21
Graduate	547	543
Continuer	455	459
Dropout	457	452

Source: Statistics Canada, [Youth in Transition Survey 2006](#).

At the national level, the mean reading score of dropouts who returned to high school was 28 points higher than for those who remained drop outs by age 21. This gap was more pronounced in New Brunswick and the Western provinces, where the difference was nearly 60 points or more, and least pronounced in Nova Scotia and Ontario (Table 2).⁴

Canada/Province	High school dropout at age 19	Remained dropout at age 21	Returned to high school by age 21
Canada	457	451	479
Newfoundland and Labrador	430	416	429
Prince Edward Island	430	426	443
Nova Scotia	448	442	444
New Brunswick	427	402	463
Quebec	443	437	465
Ontario	464	466	471
Manitoba	451	443	490
Saskatchewan	465	443	501
Alberta	486	472	537
British Columbia	465	456	502

Source: Statistics Canada, [Youth in Transition Survey 2006](#).

Reading proficiency at age 15 and postsecondary status at age 21

Close to three quarters of the 15 year-olds of 2000 had attended college or university by age 21.

Whether or not someone attempted a postsecondary education was related to their reading proficiency level at age 15 (Table 3).

	No postsecondary	College	University
Canada	477	519	588
Newfoundland and Labrador	446	491	577
Prince Edward Island	460	487	563
Nova Scotia	453	486	570
New Brunswick	442	475	553
Quebec	472	547	598
Ontario	465	502	587
Manitoba	483	516	577
Saskatchewan	484	518	582
Alberta	511	531	612
British Columbia	488	522	584

Source: Statistics Canada, [Youth in Transition Survey 2006](#).

The vast majority of individuals at reading proficiency Level 4 or 5 at age 15 had enrolled in either college or university by age 21. In contrast, only about half of those whose reading proficiency was below Level 3 had enrolled in college or university by age 21.

Alberta was notably different in this regard. Over one in five (22%) 21 year-olds who had attained Level 4 or 5 in reading proficiency at age 15 had not attended college or university. This rate was 5 percentage points more than in the case of Manitoba (the province with the second highest rate) and 10 percentage points more than the national average of 12%.

The type of postsecondary education differed, depending on the reading proficiency of an individual. Among individuals who scored at reading proficiency Level 4 or 5 at age 15, 63% had enrolled at a university by the age of 21, while 26% had enrolled in college. Among those at reading proficiency Level 3, 33% had attended university and 40% had attended college. Finally, about half of those below proficiency Level 3 at age 15 had attended neither college nor university, with another 38% reporting having attended college and 13% reporting attending university.

There were some notable differences across provinces. In the Atlantic Provinces, three quarters or more of those who scored at reading proficiency Level 4 or 5 at age 15 had attended university by the time they were 21 years old. These rates were highest in Nova Scotia and Prince Edward Island, where 81% of individuals with the highest reading proficiency scores had enrolled at university. In these provinces, the university participation rate was high compared to other provinces even among youth who had low reading proficiency scores. More specifically, in New Brunswick, Nova Scotia and Prince Edward Island, over 20% of 21 year-olds who scored below Level 3 in reading proficiency at age 15 were enrolled in a university program – the highest proportion among all the provinces.

A large proportion of those who had enrolled in a postsecondary education were still studying when they were 21

Of those who had enrolled in a postsecondary education program, 67% of them were still attending school (continuers) at age 21, while 19% had graduated by this age (graduates, non-continuers) (Table 4). The latter group likely consists largely of college or [CÉGEP](#) graduates.

	Reading proficiency level		
	Below Level 3	Level 3	Level 4 or 5
Graduate, non-continuer	29.2	22.6	13.8
Continuer	52.0	60.8	75.5
Leaver	18.7 ^E	16.6	10.6

E use with caution
Source: Statistics Canada, [Youth in Transition Survey 2006](#).

Since higher proportions of individuals who had higher reading proficiency scores at age 15 tended to enrol in university programs by age 21, and since university programs tend to be longer than those at the community college level, they were more likely to still be in school at age 21. Overall, 76% of those who scored at reading proficiency Level 4 or 5 at age 15 were still attending school at age 21.

Notably, youth who had low reading proficiency scores at age 15 and who had enrolled in a postsecondary program were more likely to abandon their studies by age 21 before graduating - close to 19% of those below Level 3 in reading proficiency at age 15 had left their postsecondary studies by age 21, compared to 11% of those at reading proficiency Level 4 or 5 at age 15.

Other factors associated with participation in college or university by age 21

When controlling for other factors known to influence postsecondary education participation such as gender, mother tongue, place of residence, parental education and family income, reading proficiency had the most significant effect on attending a college or a university.

Nevertheless notable differences in college and university participation rates are evident across family background characteristics, despite reading abilities.

Among youth scoring below Level 3 on the reading proficiency scale at age 15, college or university participation rates at age 21 were much lower for those whose parents both had at most a high school education than they were for youth who had at least one parent with a university education (35% compared to 57%) (Table 5). Though college and university participation rates for high-scoring youth at age 15 (Level 4 or 5) were higher for those whose parents had a high school education, contrasts were still evident when compared to youth who had a least one university-educated parent. In this case, college participation rates for youth whose parents had a high school education were higher than for youth who had a university-educated parent (37% compared to 23%); in contrast, youth with high reading proficiency at age 15 and a university-educated parent were twice as likely to have attended by university by age 21 (68% compared to 34%).

	Post-secondary status at age 21		
	No post-secondary education	College	University
	Percentage		
Youth reading proficiency below Level 3			
Parents have high school or less	65	29 ^E	6 ^E
At least one parent with college completion	55	34	11 ^E
At least one parent with university completion	42	42	15
Youth reading proficiency at Level 3			
Parents have high school or less	48	34 ^E	18 ^E
At least one parent with college completion	34	41	25
At least one parent with university completion	21	40	39

Youth reading proficiency at Level 4 or Level 5			
Parents have high school or less	29 ^E	37 ^E	34 ^E
At least one parent with college completion	19	32	49
At least one parent with university completion	9	23	68

E use with caution, sampling variability is greater than 33%

Note: Parental education levels are measured when youth are age 15.

Source: Statistics Canada, [Youth in Transition Survey 2006](#).

Similar patterns are evident when considering family income at age 15 which provides a measure of financial resources when youth may be considering future postsecondary education. Youth scoring below Level 3 at age 15 whose family income was in the lowest income quartile were much more likely to have not attended college or university by age 21 than youth from families in the highest income quartile (55% compared to 37%) (Table 6). On the other hand, college and university participation rates were higher for high reading-proficiency youth from low-income families than for their low-scoring counterparts; however, they were more likely to attend college than youth from high-income families, whereas higher proportions of the latter group attended university.

Table 6			
Postsecondary status at age 21 by reading proficiency level and household income quartile at age 15			
	Post-secondary status at age 21		
	No post-secondary education	College	University
	Percentage		
Youth reading proficiency below Level 3			
Lowest household income quartile	55	34	11 ^E
Second-lowest household income quartile	54	35	11 ^E
Second-highest household income quartile	45	42	13
Highest household income quartile	37	45	18 ^E
Youth reading proficiency at Level 3			
Lowest household income quartile	32	39	29 ^E
Second-lowest household income quartile	31	43	27
Second-highest household income quartile	25	40	36
Highest household income quartile	19 ^E	37	45
Youth reading proficiency at Level 4 or Level 5			

Lowest household income quartile	18	30	53
Second-lowest household income quartile	14	30	56
Second-highest household income quartile	10	26	64
Highest household income quartile	8 ^E	19	73
E use with caution, sampling variability is greater than 33%			
Note: Parental education levels are measured when youth are age 15.			
Source: Statistics Canada, Youth in Transition Survey 2006 .			

Conclusion

The findings reported here confirmed one key factor and added a new one for understanding the relationship between high school graduation and reading ability, as measured at age 15. First, it confirmed that many individuals at lower reading proficiency levels took more time to complete high school. Second, it indicates that youth who were high school dropouts at age 19 and who had returned to high school by age 21 had higher reading proficiency scores than those who remained dropouts. Furthermore, the scores of the high school dropouts who returned to high school by age 21 were particularly high in Alberta and British Columbia – two provinces with strong economic growth between 2000 and 2006 – compared to other provinces. Further analysis is needed to explore the extent to which labour market conditions play a role in the choices youth make regarding educational pathways.

Youth with higher reading ability at age 15 were more likely to have attended a postsecondary institution by the time they were age 21 and were also more likely to still be enrolled at age 21 compared to those having lower reading scores. Moreover, a greater proportion of youth with high reading proficiency attended university at age 21 rather than college.

Finally, when controlling for other factors known to have an influence on postsecondary education participation such as gender, mother tongue, place of residence, parental education and family income, reading proficiency had the strongest effect on attending college or university, with higher percentages of high-scoring youth attending both university and college than their low-scoring counterparts, regardless of family background. These findings point to the importance of an individual's own proficiency for participation in postsecondary education. They also provide validation of performance tests such as those in the Programme for International Student Assessment in improving our understanding of factors affecting high school completion and postsecondary participation.

However, it is also apparent that differences exist in patterns of postsecondary participation when family background is considered, with participation in postsecondary education being comparatively lower for youth with parents with less education or lower income, despite their reading proficiency. Furthermore, high reading-proficiency youth with this family background were more likely to attend college compared to youth with university-educated parents or from higher-income families, who were more likely to attend university.

Notes

1. Tamara Knighton and Patrick Bussière. 2006. [Educational Outcomes at Age 19 Associated with Reading Ability at Age 15](#). Statistics Canada Catalogue number 81-595-MIE – Number 043.
2. OECD. 2006. Mathematics, Reading, Science and Problem Solving Knowledge and Skills. OECD, Paris.
3. A difference of 73 points between two average scores represents about one proficiency level in reading literacy, a difference that indicates a substantive gap in literacy skills.
4. Province of education is measured when youth are age 15.