



# LESSONS IN LEARNING

Do students entering university have the basic writing and math skills they need?

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If the articles and editorials devoted to the topic are any indication, large numbers of first-year university students are incapable of writing a coherent sentence, even though they graduated from high school with good marks. Some universities have resorted to using academic spies who use statistical techniques to identify students that are in need of additional support. However, like most issues, the situation is more complex than first appears.

### **What do we know: Are high-school students developing the skills they need for university study?**

Many people – including university professors – worry that incoming university students do not have the skills of previous generations. That said, it is worth noting that professors have been making the same complaints about the lack of preparedness of incoming students since the beginning of formal education. Socrates was reputed to have had similar complaints about the students seeking his tutelage as do today's university professors! Comparisons between current and past students are a staple of teaching at all levels. In 1977, the Association of Universities and Colleges of Canada (AUCC) released a report addressing enrolment and quality issues in universities that stated: "Whatever the reason, there is no doubt that large numbers of first-year students have difficulty in writing essays, in expressing themselves coherently, and in manipulating mathematical symbols and expressions." (Barbeau et al., 1977: 20)

However, recent student testing suggests that students' comprehension of basic skills is generally not declining. Canada takes part in the Programme for International Student Assessment (PISA) conducted by the Organisation for Economic Cooperation and Development (OECD) in the most economically developed nations of the world. The results of the assessment of the performance of 15-year-old Canadian students indicated that they performed well above the international average in both the 2000 and 2003 mathematics assessments, and performance levels improved for one of the mathematics domain (space and shape) between the two PISA assessments. In reading, Canadian students performed well above the international average in both the 2000 and 2003 assessments; the reading performance did not change between 2000 and 2003.

Most provinces require that students partake in examinations set by the province. In Alberta, the percentage of students achieving "acceptable" and "excellent" standards in mathematics increased between 2000 and 2004. In British Columbia performance in English has held steady between 1998 and 2004, while mathematics performance improved slightly over the same period.

However, there is some evidence to support university professors' perceptions that incoming students' comprehension of basic skills has declined. The evidence is derived from proficiency exams administered within universities.

The Faculty of Engineering at Waterloo University administers an examination in mathematics to assess the preparedness of first-year students. Between 1991 and 1996, 4,000 first-year students were tested. The data show that over the period there has been a very slight decline in performance, accounting for

approximately 2% of the total variation in test scores. The University of Western Ontario administered a mathematics diagnostic test in 1984 and then again in 1992, and noted a slight decline in performance (Coutts & Goyder, 1998).

Some observers feel that the increasing accessibility of university education has enabled weaker students to pursue post-secondary studies. In 1920 very few people went to high school, much less university. Even by 1950, less than 6% of Canadian 25- to 44-year-olds had university degrees. Today, secondary schooling is universally available, and the proportion of 25- to 44-year-olds with university degrees is near 20%.

Others believe that grade inflation in high schools explains why some incoming students do not have the skills that university professors expect them to have. But the evidence does not necessarily reflect this sentiment. The sort of data usually taken as strong evidence of grade inflation may in fact be indicative of other changes. For example, in Ontario, university entering marks increased moderately between 1983 and 1993. However, this increase was largely the result of changes in the number of university applicants and in the number of available spaces within universities (Casas & Meaghan, 1995).

Some suggest that provincial examinations are one way to assess the extent of grade inflation. In Newfoundland provincial examinations were administered three times between 1992 and 1997. During those years (1992, 1993, 1995) the average grade in the examined courses was 4% to 5% lower than it was for the same courses during years without provincial exams (1994, 1996, 1997; Crocker, 1998). In Alberta, between 2000 and 2005 (years for which the data are available), school-awarded grades were significantly higher than were provincial examination grades for every subject in each year.

Drawing strong inferences from the difference between grades earned on provincial examinations and grades from teachers is not recommended. Provincial examinations are only able to assess limited aspects of a student's performance at the end of a course. Just prior to taking the year-end provincial exams, students typically review previously administered tests and study for the exams. Teachers, on the other hand, assess a broader range of performances – quizzes, oral presentations, papers, group work, etc. – over the entire year. In fact, in the United States, teacher assessments are regarded by universities and colleges as a better predictor of the students who will complete their education than standardized university admissions exams.

## Lessons in learning

While the skill level of incoming university students is not a national crisis, students, their families, professors, universities and governments should pay careful attention. What are the lessons in learning for those concerned about the question: Do students entering university have the basic writing and math skills they need?

**For students and their families:** Success at university requires more than just good marks. The transition from high school to university provokes anxiety

for many students. They worry whether they can handle the independence that accompanies the transition from a relatively structured secondary school environment to one that demands greater independence and accords greater autonomy. In particular, students living away from home, as well as their families, worry whether they can cope with both the intellectual demands of a university program as well as coping with fewer personal support systems.

Students should be encouraged to make use of the support services that are available. Almost all universities in Canada provide a broad range of support services for students, including counselling for students anxious about living and working in a new setting, and academic support services such as tutoring in writing and mathematics.

**For university professors and universities:** Universities are under pressure from provincial governments to ensure that first-year students, who in the past left campuses in significant numbers, continue on into second year and beyond. From the perspective of the governments that fund universities, empty seats represent a poor return on the public's investment in university education. It is not surprising that universities want to identify students at risk of failing and help them to adjust to and succeed with the demands of university study.

Providing social and academic support services is benefitting students and paying dividends on the public investment in university education. According to the 2005 Maclean's Guide to Canadian Universities, students at Nipissing University are more satisfied with the quality of their student services than are students at any other university in Canada. Other Universities across Canada with strong student services ratings include: St. Francis Xavier, Bishop's, Saskatchewan, Alberta, Victoria. Other universities could benefit from examining these programs and identifying best practices that could be adopted.

Overall, institutions across Canada are working hard to ensure that students continue to succeed after first year, providing a better return on the public's investment.

Assessing the performance of successive generations of students is complex and complicated. It requires the use of equivalent measures and carefully controlled comparisons of students with similar background characteristics.

**For government:** Pursuing policies designed for one purpose – increasing the number of students in first-year university courses and ensuring their retention – can have unintended consequences, such as the need to offer more costly support services for students who are perceived to lack the skills they need to succeed.

**For the Canadian Council on Learning:** One lesson for CCL is that identifying accurate ways to determine whether Canada's secondary school graduates are prepared for further study and determining whether the institutions they attend are meeting Canada's needs for an educated populace are complex tasks that require attention to factors that are not always immediately apparent. It is a lesson that CCL must learn quickly because it will be producing an annual report on Canadian post-secondary education beginning in 2006.

## Recent developments in provincial plans to expand post-secondary enrolment

Provincial plans to expand university enrolment:

British Columbia promises to create 25,000 new college and university spaces by 2010.

Alberta promises to create 60,000 new postsecondary spaces by 2020.

Ontario will invest an additional \$6.2 billion in post-secondary education.

## References

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