

College Student Achievement Project



Inside this issue:

CMP 2011 Research Highlights	2
CSAP 2012	5

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Welcome to the first issue of CSAP News! With this renamed newsletter, we are happy to introduce the College Student Achievement Project (CSAP), successor to the College Mathematics Project (CMP). The new project is designed to build on the work of CMP but it will include language as well as mathematics and will analyse college student achievement in their second semester as well as their first. As before, CSAP is funded by the Ministry of Education and the Ministry of Training, Colleges and Universities and operated by a team of researchers based at Seneca College. A small steering committee representing colleges, school boards as well as the Ministries, oversees the project and an advisory committee made up of a broader range of stakeholders is also planned. Because of the planning involved, the new project has started a bit later than usual but we aim to catch up over the next few months. In this issue, we share some highlights of the CMP 2011 final report and we take a look forward to some of the new features of CSAP. Readers with thoughts and ideas about these are welcome to email us at csap@senecacollege.ca. CSAP News is also available in an entirely French version and copies of both English and French versions are emailed to all on our mailing list.

The final report of CMP 2011, the third year in which we have had data from all 24 colleges in Ontario, was published in the spring and you are encouraged to download your own copy from the CMP web site (<http://collegemathproject.senecac.on.ca>). If you do not have time to read the full report, you can also download an executive summary, which includes the highlights of the research and the main recommendations. An article in this newsletter highlights the research reported in this year's report.

On a sad note, a valued member of the CMP team from the beginning of the project, Dr. Margaret Sinclair, professor of mathematics education at York University, passed away in February after a long and bravely fought illness. Her wisdom and advice was always constructive and appreciated and she is sorely missed by all who knew her. The CMP 2011 final report was dedicated to her memory.

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Acknowledgment:

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CMP 2011 Research Highlights

Highlights of the CMP 2011 research include the following:

- 67.6% of students achieved good grades (A, B or C) in first-semester college mathematics, while 32.4% were considered to be “at risk” (having received a D or F or having withdrawn from the course). This percentage (of good grades) represents very little change from the previous two years.
- Of the Very Recent Ontario Graduates – those who have taken the most recently revised mathematics curriculum in secondary school – 61.6% of the males and 68.7% of the females achieved good grades.
- Second Career students achieved better than other students: 80.0% of males and 84.5% of females achieved good grades.
- Graduates of French-language school boards attend English- and French-language colleges in approximately equal numbers; the mathematics achievement of students attending French- language colleges has increased since last year while that of students attending English-language colleges has shown very little change.
- Older students, particularly females, achieve significantly better than younger students: for example, 77.6% of males and 85.5% of females aged 30-39 obtained good grades.
- Patterns of achievement analysed according to secondary school mathematics pathways follow similar patterns to those found in the past:
 - Many more students came to college with MAP4C than MCT4C in Grade 12 but their achievement was lower overall. The same applies to MBF3C and MCF3M in Grade 11.
 - However students with high marks in MAP4C do well in college mathematics; 76.8% of those with 80% and over in MAP4C obtained good grades in college.
 - Over 3,000 students in our sample took no mathematics after Grade 11; only 50.2% of those who took MBF3C as a terminal mathematics course achieved good grades in college mathematics.
 - The numbers of students transferring from Grade 10 Applied Mathematics to MCF3M is increasing each year from 0 (in 2007) to 381 (in 2008) to 806 (in 2009) to 1,213 (in 2010). 63.9% of the 2010 students go on to obtain good grades in college mathematics.

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- Systematic qualitative research was undertaken this year into the content of first semester mathematics courses, particularly those of a foundational or preparatory nature. This was set in the context of curriculum case studies corresponding to the complete mathematical experience of students taking selected programs in Business and Technology.
 - The case studies illustrated how mathematics is taught both as standalone courses and as embedded into specialist courses within each program (such as accounting or electrical theory).
 - They also demonstrated how, at different colleges, the curriculum of programs focused on the same occupation may differ, while still being based on the same provincial program standard and aimed at the achievement of the same learning outcomes.
 - CMP analysis of a systematic selection of foundation program mathematics courses from across the province showed that they share a common emphasis on the numeracy skills required for college diploma programs and the occupations for which these programs prepare students.
 - Analysis of diploma level mathematics courses showed a greater proportion of program-specific mathematics topics but also a strong continued emphasis on numeracy skills.
 - The numeracy skills most frequently encountered in first-semester college mathematics courses were also mapped onto the provincial curriculum for Grades 1-8 and 9-12 mathematics. This analysis showed that the grades at which these key numeracy skills were most frequently taught were Grades 6, 7 and 8.

Numeracy Skills

Arising from the qualitative research that formed part of CMP 2011 (see highlights above), a major theme both at the provincial forum held in October 2011 and in the final report has been the need to improve students' numeracy skills. It appears that the skills students are first taught in elementary school are the key to their success not only in secondary school but also at the college level and that many of those who struggle in college mathematics have not mastered those skills. Amongst the recommendations of the final report therefore is the suggestion that the province develop a new strategy to increase numeracy. Such a strategy would have several components but one of these is a public awareness campaign to impress on parents the importance of numeracy to their children's futures. There are suggestions for other components of such a strategy, some of which may be controversial, so readers are encouraged to discuss them and make their opinions known.

'Making the transition from secondary school to college successfully requires that students master all four of these skills'

College Knowledge

Mastering the academic subjects required for college programs is an important step towards success at college but it is not the only one. Research on college success from the United States has revealed at least four important categories of what has been called 'college knowledge':

- **Key Cognitive Strategies:** Examples include analysis, interpretation, precision and accuracy, problem solving and reasoning. According to David Conley, author of *College Knowledge*, abilities such as these have been "consistently and emphatically identified by those who teach entry-level college courses as being of equal or greater importance than any specific content knowledge taught in high school."
- **Key Content Knowledge:** This refers to the "big ideas" of the subjects most related to a student's college program – of the sort that the CMP has focused its research on – but also other key academic skills such as writing.
- **Key Self-Management Skills:** These include skills and attitudes required for success not only in college but also in life and work more generally – including study skills, time management, awareness of one's performance, persistence, and the ability to work in groups. There is a strong link here to the learning skills identified by the Ministry of Education and essential employment skills by the Ministry of Training Colleges and Universities and discussed at length in the final report of the CMP last year.
- **Key Knowledge about Postsecondary Education.** This is important contextual knowledge about colleges, about college programs, and about the admission requirements and other expectations of colleges for their students. It also includes understanding about the costs associated with going to college, and (as Conley puts it) "perhaps most important, understanding how the culture of college is different from that of high school."

Ensuring that students making the transition from secondary school to college requires that they master all four of these skills, not just the second, which is the one emphasized by college admission requirements. Both colleges and secondary schools need to support students in the other three areas and the report recommends that they be studied further as a provincial priority, not only by ministries but also by educators at both the school and college levels.

College Student Achievement Project 2012

The College Student Achievement Project (CSAP) has goals and a methodology essentially similar to those of the College Mathematics Project. This year, it will seek to analyse the Mathematics and Language achievement of students entering college programs in the Fall Semester 2011. In the past, CMP has collected data for courses in the fall semester only. Now, data will be collected for both the fall semester and the winter semester. The analyses of these data will be related to similar factors that we have used in the past, including students' secondary school backgrounds. Because of the extra data, research reports from this student cohort will not be ready until early 2013 for deliberations at forums throughout Ontario. The final report for this cycle of CSAP will be prepared in late 2013, by which time a second cycle of research will also have begun. CSAP will therefore continue to collect data and publish reports each year but the project is planned as overlapping cycles beginning in January in one year and ending in September the following year. The summer and fall will be important times for reflection on the report just published and consideration of research questions to be investigated in the cycle about to begin.

As was the case with CMP, CSAP will publish all reports in both English and French and all reports will be made available on the project web site (<http://csap.senecacollege.ca>). The interactive database enabling educators from both colleges and school boards to investigate their own institutional data will be updated to accommodate the new research. Until then, the CMP database is still open and the CMP 2011 data has been open for analysis. For more information about accessing the database, consult the website. (<http://collegemathproject.senecac.on.ca>).

CSAP is also embarking on some new initiatives in collaboration with the whole college system, designed to promote student success at college. These will include research and development into ways of assessing incoming college students so as to provide better for their individual needs. As these projects develop, we will be encouraging input from all our readers. Further information will be provided in the next issue of CSAP News.

To join the CSAP mailing list and receive regular email updates about the project, send us an email at csap@senecacollege.ca.

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