



College Mathematics Project

Oct 28, 2011 Provincial Forum

*Preparing Students for Success in the
21st Century Economy*

Questions for Deliberation

1. *Foundation Programs and Preparatory Mathematics Courses*

Table 4 shows a 30% increase in the numbers of students taking college foundation programs over the past three years and a 20% increase in the numbers taking preparatory mathematics courses (where these are offered). These compare with an 11.3% increase in overall college enrolment over the same period.

1.1 How do you interpret these changes?

Observations(s)

- foundations courses are offered in areas where not previously required, or perhaps implemented on basis of previous observations.
- Math courses are being condensed in some Colleges in favour of more time over vocational subjects. Is this actually because prep math is being offered instead?

Interpretation(s)

- More applicants to postsecondary, more entrance overall, weaker students being accepted to college.
- Dual Credits and other initiatives increasing enrolment of students who not have previously come to college.
- Economy has changed the focus of students and thus the choice of prospective students.

CMP qualitative research shows that many of the mathematical skills and concepts taught in foundation programs and preparatory courses were first taught in Grades 6 through 9.

1.2 What are the implications of this finding for curriculum and assessment policy and practice in both the K-12 system and the college system?

Need for additional support for educators in math, to enable consistent, effective assessment in order to support individual learning skills needs for students in the early years. Early intervention will reap benefits to students, giving them the confidence to succeed in later years.

Introduce 'refresher' sections at the beginning of sections through K-12 and college.

Bring the collaboration/communication/transition discussions earlier between the high schools and the colleges.

Comments / responses/ discussion:

1.1 How to make adjustments to allow access for students to take courses, even if low numbers of 'applicants' to the course, e.g. MCT4C?

1.1 Conjecture: are math courses going through renewal in a timely manner at the College level. Is curriculum adjusting? How would we tell this?

1.1 Preparatory math courses are putting at risk, disadvantaged students at more risk by extending their program length and financial stress. Is there a way to effect funding assignment?

1.2 Increase in the guidance function in school to assist students in course choices.

Additional Analysis: Could we look at first year success rather than first semester,. (Many students are just 'getting their feet' in the first semester.

Questions for Deliberation

2. *Mathematics Achievement in College*

Figure 2 shows that mathematics achievement levels of first year college students have not increased significantly over the past three years. In addition, EQAO results have shown relatively modest increases in mathematics achievement at Grades 3, 6 and 9.

2.1 How do teaching and assessment methods used at both school and college levels affect student success? What other factors are at play here?

Teaching methods are only *an* influence in adult learning situation. Changing the teaching methods may not increase success as the adult learner may be inhibited by personal items (scheduling etc). PD is often required at colleges because Subject Matter Experts are not necessarily educators and need to be trained in facilitation of learning. At HS the teachers are trained but not necessarily subject matter experts.

HS: math tested in modules, less stress, more opportunity to succeed overall.

College: Comprehensive final course exams may inhibit success -> pressure and too much material at once.

In particular, Figure 7 shows that the proportion of students taking college mathematics after only three mathematics courses in secondary school (the minimum required for secondary school graduation) has increased over the past three years to over 18%.

2.2 Does this data, along with the growing importance of mathematics for many careers, suggest that the number of mathematics courses required for graduation should be increased to four, or what other policy changes might be considered?

Comments / responses/ discussion:

Suggestion: extend the exchange teaching between the college and high school teachers. Build on the connections already made with dual credits and team teaching. Use SCWI as the liaison.

Questions for Deliberation

3. *Learning Skills*

Participants at regional forums have often pointed out the importance of generic “learning skills” for student success in postsecondary education (and also in employment). The CMP 2010 Final Report references research from a variety of sources supporting this claim and both the Ministry of Education and the Ministry of Training, Colleges and Universities have policies stressing the importance of these skills.

- 3.1 What evidence is there that progress is being made at elementary, secondary, or postsecondary levels to enhance these skills?
- 3.2 What additional changes to policy and/or practice at all levels are required?
- 3.3 How can students and their parents become more aware that while marks on academic courses enable entry to postsecondary programs, learning skills can enable success at that level?

Comments / responses/ discussion:

Assessment of learning skills from K-12 is well-established, but it not matured yet in the College system. It is well-documented however, and also asked for repeatedly from employers.

Report card from HS contains marks and learning skills assessments, however applications to post-secondary only want the marks. College does assess the learning skills. Could we affect the change of the post-secondary institutions valuing the Learning skills portion of the individual.

Could examine the situation of recent-peer sharing of information, e.g. G6 to G3s, G9 to G6, and so on.