College Student Achievement Project

Inside this issue:

A very happy new year to all our readers! 2013 has been the busiest year the CSAP can recall as we look back on the integration of language into our research and extension of our data collection from first semester college courses to include second semester as well. As if that were not enough, we have been busy with two additional projects: the Assessment Development Project (ADP) and the Learning Outcomes Development Project (LODP) both of which have the potential to have a significant impact on college mathematics. In addition, the informal use of the college numeracy assessment (see the report on the Assessment Development Project below) by students still in secondary school has been described by one observer as a "game changer."

This issue of CSAP News contains reports of the provincial forum held by CSAP in October 2013 and about progress being made by the Learning Outcomes Development Project (LODP) and the Assessment Development Project (ADP). As we publish this issue, the CSAP team is also completing its final report on CSAP Cycle 1 (research on the mathematics and language achievement of students who entered college in Fall 2011 and the subsequent deliberations). The report will be submitted to the Ministries of Education and Training, Colleges, and Universities by the end of January and will be released by them later in the winter. Data for cycle 2 (relating to students who entered college in Fall 2012) has been collected and is currently being validated by the colleges.

CSAP Provincial Forum

Research without thoughtful and creative deliberation can merely add to the body of knowledge sitting on the shelf. Correspondingly, deliberation uninformed by research can become anecdotal and trading of opinions. The CSAP forum is therefore an integral part of the overall *deliberative inquiry* model and is designed to lead towards feasible and evidence-based ways forward. Accordingly, CSAP brought together over 120 representatives from schools, colleges, universities, government and other agencies for the day on October 25, 2013 to reflect on the CSAP research and to consider what we are presently doing well and what we need to do better. Participants were presented with a preliminary research report (essentially a first draft of chapters 1-4 of this report) and worked at tables of 8 people – each table being selected to contain a cross-section of stakeholders.

The forum was introduced by Mary-Jean Gallagher (Assistant Deputy Minister and Chief Student Achievement Officer, Ministry of Education) who stressed the Ministry's commitment to raising levels of student achievement, particularly in mathematics – which she described as "the fundamental problem of practice in K-12." She called on forum participants to better understand each other's roles and realities, to celebrate their successes, and to contribute to the quality of the CSAP final report through their discussions.

Following this introduction, the CSAP research was presented and table discussions focused on specific questions arising from the research. Effective use of technology enabled participants to "tweet" their personal thoughts to a continuously running Twitter stream and for each table to submit their conclusions and responses to questions at the end of each discussion period. This enabled the CSAP team to analyse the contributions of all participants. Another innovation this year was the reversal of the normal balance of long presentations and short Q&A sessions; instead, this forum was made up (typically) of 15 minute presentations followed by 45 minute discussion periods. This enabled the participants to share their thoughts most effectively. The morning discussions focused on reflections on the CSAP research and the afternoon discussions on ways forward.

The highlight of the day was an inspiring presentation at lunchtime by Craig Alexander (Senior Vice-President and Chief Economist, TD Bank Group) who talked about the economic and social importance of improving literacy and numeracy of Canadians. Drawing on the recently released OECD study of Adult Skills, Mr Alexander showed how the levels of both literacy and especially numeracy among Canadians was actually falling and how an investment in literacy and numeracy were of huge economic benefit to individuals, companies and society as a whole. He called education "the single best investment" society could make in its economic and social development.

In discussing ways forward, there was no shortage of ideas. Better communication was a recurring theme: communication between schools and colleges; communication across program areas both in colleges and schools; communication to parents and students about the importance of learning skills; and communication between Ministries. Finally, the value of research was noted in helping participants. Finally, the value of research was noted in helping participants discuss ways forward and the need to strengthen the research capabilities of some colleges and school boards.   In conclusion, participants' evaluations of the forum were overwhelmingly positive. The CSAP team appreciated the contributions made by all those involved.

Learning Outcomes Development Project: Progress Report

This project is designed to develop a common set of learning outcomes for college mathematics courses in three program areas: pre-business foundation programs; pre-technology foundation programs; business diploma programs. For the background to the project, readers may wish to review the Feasibility Study conducted during 2012-2013 and available on the CSAP web site (http:// csap.senecacollege.ca).   This fall, LOPD activities focused on the development of guidelines and preparation for writing the learning outcomes.

Guidelines for Learning Outcome development

The CSAP Learning Outcome (LO) writing team will conduct their work based on the following guidelines.

1. CSAP LOs will be SMART – Specific, Measurable, Achievable, Relevant, and Time-related.

2. Individual colleges and faculty can select some or all the LOs when designing mathematics courses.

3. LOs will be aligned with the mathematical processes outlined in The Ontario Curriculum: problem solving, reasoning and proving, reflecting, selecting tools and computational strategies, connecting, representing, and communicating.

4. LOs will use the three cognitive domains described by TIMSS (Trends in Mathematics and Science Study) – knowing, applying, and reasoning – which are also being used by the CSAP Assessment Development Project for classifying test items.

5. LOs will reflect notions of independent and collaborative learning, metacognition, and an appreciation of mathematics used in society and industry.

6. LOs for pre-technology mathematics will differ from LOs for pre-business mathematics in ways that reflect the different contexts for student learning.

7. LOs will reflect MTCU program standards.

To support the development of the LOs, outlines for foundation and business program mathematics courses have been gathered from colleges during the fall and have been mined for mathematics topics and learning outcomes. The LOs have been further analyzed with respect to taxonomy and topics. The compilation of this information indicates a consensus among college educators and the curriculum experts of mathematics knowledge and skills students should have upon completion of course. A writing team of mathematics specialists will now begin developing common CSAP learning outcomes on behalf of the system. The LOPD team now consists of:

> Laurel Schollen, CSAP Director, Seneca College
> Patricia Byers, LODP Coordinator, Georgian College
> Sarah Brumwell, Administrative Assistant, Seneca College
> Margaret Mason, Business Mathematics Lead, Fanshawe College
> Tanya Jessup, Pre-Technology Mathematics Lead, Durham College

Assessment Development Project: Progress Report

The ADP has been busy assembling a collection of assessment items for its numeracy assessment and classifying them according to the mathematical content and to the performance expectations which they assess. At the same time, the CSAP has contracted Vretta Inc., a Toronto-based technology company with special expertise in the areas of on-line learning in college mathematics, to build a testing platform and database to enable the items to be field tested. To date, some 400 items have been incorporated into the database and plans have been made for these to be adapted for use in French. Psychometric expert, Professor Ruth Childs from OISE, has joined the team to provide expert advice concerning the data to be collected through the field trial in order that the characteristics of all test items are known and that tests based on them are as reliable as possible. Former mathematics teacher Emily Brown, working with Charles Anifowose from Vretta, has been coordinating the development of the assessment items.

Field trials of all assessment items are scheduled to begin in February and run through May 2014. CSAP plans to recruit both college and secondary school classes to try out and review the test items (and be compensated for this work!). !). If readers are interested in participating in these field trials, they should contact us as soon as possible (csap@senecacollege.ca) for further information.

In the fall, further trials of the overall system incorporating both the assessment and the linked on-line learning modules will take place. Melanie Christian, from St. Lawrence College, will be joining the ADP team in January to coordinate the development of these remedial modules.

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

Seneca

8 The Seneca Way
Markham, Ontario   L3R 5Y1

Phone: 416-491-5050 ext. 77848
E-mail: csap@senecacollege.ca
Website: http://csap.senecacollege.ca