

April 2008 Update

This is an update of the Departmental activities in their respective CWSEI programs. These programs have been phased in beginning in the summer of 2007, thus the departments are at different stages. The department list below is roughly ordered according to how long the department's CWSEI program has been active, and how large of an effort is underway, with the larger programs listed first.

STLF: Science Teaching & Learning Fellow — Many of the departments have chosen to hire STLFs. An STLF has a combined expertise in the specific departmental discipline as well as knowledge in relevant science education methodology and research. Thus they have a unique ability in assisting faculty members to implement the evidence-based education improvement model.

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EARTH AND OCEAN SCIENCES

There are currently 3 STLFs in EOS: Francis Jones, Brett Gilley, and Ben Kennedy. Tom-Pierre Frappe is no longer working directly with eos-sei; the Attitude Survey work is now handled by Ben Kennedy. The STLFs work with the EOS CWSEI department liaison Sara Harris, the EOS Teaching Initiatives Committee, and individual faculty. For the Department's own website outlining work and people involved please see <http://www.eos.ubc.ca/research/cwsei/>

Course transformation – Major efforts are underway in 7 EOS courses:

EOSC 111 – Laboratory Exploration of Planet Earth

Faculty: Sara Harris (and Stuart Sutherland except 2008 while he is on leave)

STLF: Brett Gilley

Students: Leigh Gurney and David Cassis (Graduate students)

- Developed lab learning goals and learning goals assessments.
- Spring Term: pre-assessment was given in the first week of class and post assessment is being done after each lab.
- Surveying students after each lab to evaluate the effectiveness of learning goals.
- Developed a new introductory lab and redesigned the plankton lab. Several other labs have been identified as candidates for redesign

EOSC 114 – The Catastrophic Earth - Natural Disasters

Faculty: Roland Stull, Erik Eberhardt, MaryLou Bevier, and Sara Harris

STLFs: Francis Jones (primary), Brett Gilley and Ben Kennedy also involved

Students: Jamil Rhajiak (Workstudy student, involved with interviews & focus groups),

Kirsten Hodge (TA supporting in-class activity development)

- Updated the end-of-term evaluation questionnaires for students and administered the survey to nearly 500 students at the end of the Fall Term. The purposes are to (a) provide feedback about how well aspects of the course are helping students learn and how well the students feel they understand the material, and (b) serve as a prototype for end-of-term surveys in other courses in the Department.
- Learning goals at the course level and topic level have been developed and refined. A list of key concepts was developed based on the topic-level goals.
- Developing in-class activities to foster significant interaction between professor and students. Activities include improved clicker questions and “think-pair-share” 5-minute paper problems. Use of video is being modified from 15 min “movies” to short clips which are tightly coupled with the lecture content.
- Developing a database of exam questions for this course (and others).
- Investigating Just-in-time teaching and associated change from a text book to use of custom content provided by a major publisher.
- Conducting student interviews and focus groups to gain a better understanding of the student experience in the course, what they are learning, and what they are having difficulty learning.

- Adjusting content to focus on newly developed course-level goals (particularly in the “Storms” module, which used to focus on atmospheric physics).

EOSC 221 – Introductory Petrology

Faculty: MaryLou Bevier, Maya Kopylova

STLFs: Brett Gilley

Students: TA Chris Leslie

- Developing lab learning goals and redesigning lab activities, the new activities will tie more closely into both the course framework and the development of petrologic skills.
- Developed lecture level goals and linkages to lab activities.
- Pre-assessment was developed and was given on the first day of class (Spring Term); post assessment will be given on last day of Spring Term.
- Comparing student success to which first year courses they have taken (and at which institution).

EOSC 112 – The Fluid Earth - Atmosphere and Oceans

Faculty: Roger Francois and Leah (May) Ver

STLF: Ben Kennedy

Students: Mark Halverson

- Refocused the class towards a more relevant theme of climate change past and present.
- Developed course level goals and sketched out topic level goals (and hence course structure) for the whole course.
- Currently working in detail on lectures and lecture activities for an individual topic to develop a template for further topics.
- Developed an end of year survey designed to help address questions we have about the course.

EOSC 210 – Earth Sciences for Engineers

Faculty: Erik Eberhardt and Ulrich Mayer

STLF: Brett Gilley

- Began working on this course in December 2007.
- Draft course-level goals completed.
- Course characterization underway (including focus groups and interviews).

EOSC 212 – Imaging the Earth

Faculty: Mark Jellinek, Michael Bostock, Elizabeth Hearn, (others soon)

STLF: Francis Jones

- Initial course-level goals focusing upon high-level scientific thinking and communicating skills developed. Further refinement will add some content oriented goals.
- This project's aims are: (a) ensure the course is aligned with the Department's curricular context, (b) improve and broaden assessment options, (c) improve consistency of modules, (d) in each module, provide better guidance for students on what to focus upon when reading, (e) develop course guidelines to enhance transfer to new instructors, (f) consider whether this course can offer opportunities to study how students develop high level cognitive and metacognitive skills, and (g) develop ways of helping weekly guest speakers align their contributions to the course goals, and to assess student learning from guest speakers.
- The work plan is to investigate these aspects by focusing initially on the first module. Subsequent modules will be modified according to the resulting template, and will involve other faculty who give "guest lectures" in this course.

EOSC 220 – Introductory Mineralogy

Faculty: Stuart Mills and MaryLou Bevier

STLF: Ben Kennedy

Graduate Student: Jackie Dohaney

- Developed course level goals for the laboratory and lecture component of the course.
- Began restructuring the course, insuring a direct correlation between laboratory assignments and lectures.
- Conducted a focus group and email questionnaire and rejected the immediate introduction of a new course textbook in favor of directed weekly reading.
- Jackie Dohaney has developed a new, detailed and innovative laboratory structure introducing tested effective learning strategies.
- Jackie has also produced a template laboratory assignment and marking strategy.
- Email questionnaires were designed and sent to students and their responses collected in order to direct the course restructuring.
- Stuart Mills has begun developing goal-based, and more interactive lectures.
- Ken Hickey has been recruited to give a goal-based guest lecture that is integrated into the course.

Curriculum Development

Faculty: Sara Harris, Susan Allen, All members of TIC and Curriculum committees

STLF: Francis Jones

Graduate Student: Jamil Rhajjak (interviews and focus groups of service course students)

- Two aspects of curriculum review and development the Department are (a) service courses, and (b) degree program streams (of which there are 17). Are starting by focusing upon service courses.
- Completed interviews of faculty involved in courses for non-science majors to determine the curriculum goals.

- Undergraduate student Jamil Rahjiak has a workstudy position between February and end of April. He is helping with student interviews and focus groups to gain perspectives on EOS courses taken by non-majors.
- Discussions with geophysics and oceanography faculty are in progress.
- The EOS Teaching Initiatives and Curriculum committees are jointly developing a 3-4 year plan for involving Faculty and eos-sei staff in curriculum review and development for all programs.

TA Training

Faculty: Sara Harris

STLF: Brett Gilley

Graduate Student: Peter Lelievre

- The first cohort of the TA training course was smaller than expected, but a great success for the participants.
- We are currently planning and modifying the course based on feedback from the first semester's cohort.

Attitudinal survey

Faculty: Sara Harris

STLF: Ben Kennedy

- Data from the Fall Term non-majors courses has been analyzed and is quite favorable.
- Student interviews were performed to validate the survey and unvalidated questions were removed as were questions with too high (90%) agreements with experts.
- Expert answers have been validated by faculty completing the online survey.
- The early semester survey was completed and the end of semester survey is currently up and running.

General

Faculty: Sara Harris and many other faculty members.

STLF: Francis Jones, Brett Gilley, Ben Kennedy

- Broader departmental involvement is being fostered via brown bag seminars, the bulletin board, and paper of the week. Seminar topics have included Discussion of clicker questions, attitudinal survey report, end-of-term surveys.
- An EOS Learning Goals Workshop in late January was very successful and attended by many of the faculty who are working on courses being optimized under CWSEI, as well as several others who are not directly involved.
- Will be conducting interviews of candidates for a new STLF position at EOS in April and May.
- Other courses that are receiving "unofficial" help with establishing learning goals, archiving for transfer to new instructors, or in other ways include EOSC 252, 350, 324, and ENVR 200 and 300.

LIFE SCIENCES (DEPTS. OF ZOOLOGY, BOTANY, AND MICROBIOLOGY & IMMUNOLOGY)

There are currently 3 STLFs in Life Sciences: Tamara Kelly, Jared Taylor, and Harald Yurk. The STLFs work with the Life Sciences CWSEI department liaison George Spiegelman, Skylight Research Associate Gülnur Birol, working groups for several courses, and individual faculty.

Course transformation

Major efforts are underway in five Biology courses and learning outcomes are being developed for several upper level courses.

BIOL 111 – Cell and Organismal Biology

A first year non majors biology course that focuses on the understanding of current global and local issues through biological concepts in ecology, cells, and organisms.

Faculty: Kathy Nomme, Jennifer Klenz

Skylight Liaison: Gülnur Birol

Teaching Assistant: Sandra Keerthisinghe

- Conducted the essential biological concepts survey for students and faculty to revise the course.
- Finalized learning outcomes which have been implemented in the Fall offering of the course
- Created and conducted pre and post focus group interviews.
- Created and conducted midterm student feedback survey.
- In the process of analyzing data.

BIOL 112 – Cell Biology

A first year majors biology course that introduces students to basic cell biology using examples from the bacterial world.

Faculty: Tracy Kion, Julyet Benbasat, Karen Smith

STLF: Tamara Kelly

- Created a pre-test for the genetics unit in the Fall Term, which helped to identify a few surprising areas of students' previous knowledge and lack of knowledge.
- Voluntary learning groups have been established in the Spring Term and weekly problems sets have been developed. The course coordinator and 4 TAs facilitate these small group sessions. A midterm survey of students in the learning groups revealed that, overall, students are quite positive about the learning groups. Another survey, as well as focus groups is planned for the end of the Term.
- In the Spring Term students have "problem set notebooks" in which they work on their practice problems. These are handed in several times over the term and students are awarded marks for working on the problems. Focus groups are planned to elicit students' opinions about these books.
- A major course revision is being planned for Fall 2008; this is to be coordinated with other biology courses (notably BIOL 200).

BIOL 121 – Ecology, Genetics and Evolution

This first year majors biology course introduces students to the fundamentals of ecology, evolution and genetics.

Faculty: Rosie Redfield, Carol Pollock, Celeste Leander, Gary Bradfield, Martin Adamson, Jeannette Whitton, Wayne Goodey, Jennifer Klenz

STLF: Tamara Kelly

- Finalized the learning outcomes for the Spring Term and these have been implemented.
- Four instructors have a peer tutor this term. Peer tutors attend 121 lectures and spend 2 or more hours, per week, answering student questions in the 121 Learning Centre. During class, these peer tutors keep a log of topics discussed, questions asked by instructor, students' responses, questions posed by students, etc. Peer tutors meet with their section instructors and the STLF on a weekly basis to go over student questions and misconceptions.
- Conducting a study with Rosie Redfield on the effect of different types of assignments on the students' demonstrated clarity of thought. Developed 13 assignments and marking rubrics. Currently, conducting focus groups to determine student opinion of the different homework types. A class-wide survey is planned to gauge students' use of feedback on homework.

BIOL 201 – Cell Biology II: Introduction to Biochemistry

This second year biology course introduces students to the biochemistry of relevant micro- and macromolecules, protein structure and enzyme action, energy transfer, and selected metabolic sequences and their regulation.

Faculty: Wade Bingle, Sunita Chowrira, Jeff Richards

STLF: Jared Taylor

- Multiple-choice chemistry pre-test administered at the start of the Spring Term to gauge students' chemistry background. Test indicated that students have difficulties in thermodynamics and acid-base equilibria calculations.
- TAs and Peer Tutors are tracking questions asked by students in lectures, office hours, and tutorials; lists are given to the instructors to give them a better idea of student questions and areas of difficulty.
- 5 student focus groups (25 students total) were conducted to obtain student feedback on the course. Students were asked questions about their studying and learning, preparation in prerequisite classes, what they did during lectures, PRS clicker questions, problem sets, and the chemistry pre-test. A class-wide follow up survey is being developed to ask specific questions based upon the focus group results.

BIOL 204 – Vertebrate Structure and Function

This second year biology course introduces students to the vertebrate phyla and their evolution; a comparative study of vertebrate structure and function, with dissection of representative forms.

Faculty: Bill Milsom

Instructor: Angie O'Neill

- Investigated the learning outcomes of the third year physiology courses (BIOL 363 and 361) in relation to BIOL 204.
- Organizing and prioritizing course outcomes.

Upper Level Ecology and Evolution Courses

Faculty: LS-CWSEI liaison George Spiegelman and faculty teaching upper level ecology and evolution courses

STLF: Harald Yurk

- Working to define the learning outcomes for these courses. Draft learning outcomes have been developed for ecology courses (BIOL 302 and 303) and an evolution course. Outcomes are being used to determine content needs of lower level biology courses.
- Discussing potential reorganization of the content and of the two ecology courses to better align them with the needs of the different Biology program majors.
- Working on the reorganization of the content and format of the two third year ecology courses BIOL 302 and 303 to better align them with the needs of the different Biology program majors.
 - At a recent meeting, proposal for a re-organization has been presented.
 - A task force will be formed that decides on the new format of two introductory ecology courses.
 - Harald Yurk will look at course formats used in other institutions and work in support of the task force.

BIOL 310 – Animal Behaviour — Assessing Usefulness of Group Discussions

Faculty: Leticia Aviles

STLF: Harald Yurk

Teaching Assistant: Jessica Purcell

Harald Yurk conducted in-class observations and focus groups with students of BIOL 310, Animal Behaviour, on the usefulness of group discussions in medium class sizes (~ 60 students). Based on homework questions and exam outcomes, plan to test whether material presented in group discussions alone is better (or worse) retained than material presented in lectures. Results will be used to adjust the course design if necessary.

Program Satisfaction Focus Groups

Harald Yurk, Gülnur Birol, and George Spiegelman developed questions for 4th year student focus groups about their satisfaction and feeling of usefulness of biology education at UBC. Focus groups will be conducted during the second week of April.

General

- Administered the Biology Attitudinal survey to all sections of BIOL 111, 112, 121, and 201 classes. Have conducted student interviews to validate the survey and are also surveying faculty to gauge and validate the expert responses.
- In the Fall Term, an Intentions Survey was completed in all first year biology sections to gain a better understanding of how many students in these courses intend to major in Biology.
- Jared Taylor is analyzing all biology courses at UBC, with the goal of distilling out the relevant chemistry content that is required (either implicitly or explicitly) in each course.
- Harald Yurk is planning to conduct interviews with potential employers of life science graduates to assess needs of employers with regard to the biology curriculum and general scientific skill sets.
- STLFs are working with faculty and UBC staff to deal with problems involving the clicker systems.
- Analyzing data from BIOL 200 Course Improvement Survey.

PHYSICS & ASTRONOMY

The department has received commitments from three people to work in the department as STLFs. The first of these is Peter Newbury who has started April 1, 2008. The second STLF will start in late April and the third in the Fall. Jim Carolan, a retired professor, has been working part time to assist in the continuing development of the department archiving system and acting to coordinate the CWSEI related activities in the department.

Course projects

Instruction Labs PHYS 107 – Physics 1 & PHYS 109 – Introduction to Experimental Physics

Over the past two terms Professor Doug Bonn has been examining the lab component of PHYS 107 and its follow-up PHYS 109, with an eye to development of learning goals and a diagnostic test. The fundamental idea behind the courses is to encourage critical thinking in the laboratory context, where one makes judgments about data and models. A range of technical skills are acquired to work on this basic theme. The first term mainly builds up the repertoire of skills – estimating uncertainty, fitting data to models, linearizing data sets by rescaling axes, using semi-log and log-log plots. The second term's main focus has been to get students to reinforce these basic skills, while at the same time regularly confronting them with unknown situations such as experiments that are prone to systematic error or that yield results that differ from textbook expectations. A diagnostic test is now being developed and will be tried for the first time as a post-test for PHYS 109 at the end of the Spring Term.

PHYS 100 – Introductory Physics

During the Fall Term the first phase of the major revision of the introductory course PHYS 100 was completed. The course is now structured with physics concepts embedded in contemporary themes and taught with improved pedagogy. This project is led by Andrejz Kotlicki and is part of Sandy Martinuk's Ph.D. thesis research. The course has already been through the first phase of pre- and post-testing including interviews with individual students. Sandy is now working with the faculty teaching the course to fine tune the course for next year.

Future work on courses

Plans are being formulated for courses to be modified for '08-'09. The second phase of development of PHYS 100, PHYS 200 and ASTR 310 will be carried out. The reworking of the first year honours (PHYS 107/109/Science 001) lab will continue. Currently discussions are being held with Applied Science on the physics service courses for 1st year engineering. The departmental discussions in April 2008 will look to identify courses for redevelopment.

Archival system development

The development of the computer based teaching archive has continued this past semester. IT staff member Gerry Grieve has been adding to the capability of the archive. We have also employed a student to archive PHYS 100 and PHYS 420 material. Completing the system design to handle a multisectioned course with labs has been a challenge. Prof. Ingrid Stairs and Prof. Javed Iqbal have been further testing the system in their ongoing courses in the Spring Term. Most recently two more IT staff, Ron Parachoniak and Mary Ann Potts, have been working with Gerry Grieve to complete the testing of the archive. We expect to be able to have the archive system available for general input by all department faculty during the summer. At that stage we will be able to begin to clarify learning goals and syllabi for departmental courses. As part of the design of the archive we plan to be able to easily upload relevant teaching material from the department archiving system to the CWSEI archive system which is under development.

Faculty and TA feedback

The department online archival system has already been utilized to obtain faculty feedback on all courses taught in the Fall of 2007. In addition it has been extended to obtain feedback from graduate student TAs who taught in the courses in the Fall of 2007. This information along with student course evaluations will be used for departmental discussions on curriculum and pedagogy during April 2008.

TA Training

Graduate student Mya Warren spearheaded this effort and assembled a strong team (Joss Ives and Sandy Martinuk) to develop and run a very successful two-day workshop. The workshop, run at the beginning of the Fall

Term, was required for incoming graduate students. A system of mentor TAs was initiated to provide a structure in which senior graduate students can oversee other graduate students in the first year undergraduate courses and help to develop their teaching skills. Further improvements to the TA training program are underway and will be enhanced by a new graduate course in pedagogy in Physics & Astronomy. The TA feedback currently being obtained on courses also includes feedback on the effectiveness of the training program.

COMPUTER SCIENCE

Computer Science has one STLF, Beth Simon, and is currently advertising for more STLF positions. Beth has been working with many faculty members, primarily focusing on developing learning goals.

Course projects

CPSC 101 – Connecting with Computer Science

Fall Term was taught with emphasis on learning goals developed by instructors. Beth Simon and Steve Wolfman have conducted a study of the students' perception and use of these learning goals. Interviewed 10 students and developed and gave a survey to students at the end of the Fall Term. Currently analyzing results.

CPSC 111 – Introduction to Computation, and CPSC 121 – Models of Computation

Kurt Eiselt, Patrice Belleville, Steve Wolfman and Paul Carter worked with Beth to complete course and topic level learning goals; pending approval by curriculum committee.

Second year courses: George Tsiknis, Mike Feeley, Don Acton, Ed Knorr, Kim Voll, and Paul Carter have been working with Beth to develop learning goals for the core second year courses (CPSC 211, 213, and 221).

APSC 160 – Introduction to Computation in Engineering Design

Ed Knorr and Paul Carter have been developing learning goals. After attending Eric Mazur's presentation in the Fall semester, Paul Carter incorporated just-in-time teaching and active learning on an experimental basis for a week in APSC 160 in the Spring Term. Online videos were developed that introduced students to basic factual information. Students watched the videos before coming to class so that class time could be devoted, almost exclusively, to actively working on problems. Initial feedback from students was very encouraging.

Faculty interviews

Beth completed interviews with 26 faculty members about teaching and learning in computer science and summarized the issues raised by faculty.

Study on use of online collaborative multiple-choice question repository (PeerWise)

Donald Acton and Beth are conducting a study of the use of PeerWise by students in Computer Science 2nd and 4th year courses. A survey was given to the students about how they use PeerWise and whether they feel that submitting or answering questions helps them learn. In summer, plan to review end of term surveys, characterize the types of questions students posted, and review student usage patterns to see if the system engaged students in regular (weekly) reflective practices and assisted them in receiving feedback on their learning. Beth will work with the developer of PeerWise to establish a UBC interface to make it easier for UBC faculty to use the repository.

Growth mindset study

Conducting a study of the impact of students' self-theories (based on the work of Carol Dweck) on success and persistence in beginning programming courses. Through 30 years of research, Dweck has shown that students who adopt a "growth mindset" – that is believe that through hard work and learning from errors they can improve

their intelligence – perform better in a variety of academic settings. A minimal intervention to encourage students to adopt a growth mindset was investigated in both CPSC 111 and APSC 160. Results will be forthcoming summer 2008.

Study of a new type of exam question (Parson's puzzles)

This question type seeks to assess similar skills to code writing questions with the benefits of being a) easier to mark, b) more capable of separating students' syntax versus logic knowledge, and c) characterizing a stepping-stone level in student code writing ability that is more reasonable to test with paper and pencil. Preliminary results show that student marks on Parson's problems and code writing problems correlate, where code writing and code tracing marks do not – leading us to believe that they are valuable exam questions to have in addition to traditional code tracing and writing.

STATISTICS

STAT 200 – Elementary Statistics for Applications

Work is on-going transforming the introductory course STAT 200. Two sections are running in the Spring Term, and the instructors Bruce Dunham and Nancy Heckman have been developing their use of Personal Response Systems (clickers) to stimulate a great many of in-class discussions. Following suggestions by students the instructors have increased the number of homework assignments from two to three, hoping this will focus student learning more evenly throughout the course.

The major revision in the Spring Term has been to the laboratory sessions, which previously had often been viewed as optional by the students since the labs carried no assessment weighting. This term the weekly labs count a small part of the final grade. Students are allocated to groups that they work in throughout the term, with each group submitting a worksheet for grading at the end of each lab. Instructors have worked very hard to develop well-structured activities for these labs, including pre-reading documents for students to work through in advance, and efforts have been made to integrate the lab activities with the lectures. The hope is to be able to measure the success of the new labs in terms of improved student performance and retention.

Interviews with past students are taking place, as part of the CWSEI concept retention survey. Any student who has completed STAT 200 (but no additional courses in Statistics) should contact Bruce Dunham (at b.dunham@stat.ubc.ca) if they wish to be involved.

CHEMISTRY

The Chemistry CWSEI program just starting and concentrating on evaluation and redesign of the CHEM 123 lab – Physical and Organic Chemistry. The First Year Assessment sub-committee of the Chemistry Lab Committee is overseeing this project. The sub-committee members are: Laurel Schafer (chair), Brian Cliff, Greg Dake, Neil Dryden, Derek Gates, Anka Lekhi, Sophia Nussbaum, John Sherman, Jackie Stewart, and Peter Wassell.

In the Spring Term, data on student attitudes towards learning, laboratory preparation, and perceptions of the guided inquiry lab experience has been gathered to inform departmental steering committee decisions about the CHEM 123 lab evaluation/redesign project. To assist with the evaluation, the Department has hired an STLF who will start this summer.

MATH

The Math CWSEI program just starting and is currently advertising for a Skylight and an STLF position. There are two areas of focus for Math's first phase: computer labs, and first year calculus.

GENERAL CWSEI

In addition to general administration, oversight, and management, the CWSEI central staff has carried out a number of activities in the past year. These include:

- Running weekly reading group meetings that review and discusses relevant literature in learning and science education.
- Running a weekly development meeting for the STLFS.
- Created the CWSEI website containing a large amount information and instructional resources. (www.cwsei.ubc.ca)
- With the departmental CWSEI liaisons, conducted a survey of teaching practices used in all undergraduate courses offered in 7 science departments.
- With Ian Cavers, Associate Dean, Faculty of Science, ran focus groups with about 40 science students discussing their educational experiences. Provided summary of the focus groups results to the Dean and all Department Heads and led meeting, called by the Dean, with all Heads and Assoc. Heads for undergraduate studies to discuss these results.
- Ran 2 workshops for faculty members on developing learning goals.
- Arranged/sponsored well attended lectures on science education research and effective practices by a number of distinguished visitors (Mike Dubson, Gary Gladding, Eric Mazur, Katherine Perkins, Wendy Adams, Helen MacGillvray, Eric Riggs (with EOS CWSEI), Michelle Smith (with LS CWSEI) and one lecture by Carl Wieman.
- With STLFS and Colorado STFs, prepared and disseminated a guidebook on the effective pedagogical use of personal response systems ("clickers"). Also created and series of guides on teaching and learning, including short handouts/postings for students on how to maximize their learning and for instructors on maximizing the effectiveness of their teaching. These resources are posted at www.cwsei.ubc.ca/resources/
- Creating software for an online "educational repository." This has been under development since summer 2007 and a beta version will be available shortly. This will greatly facilitate the saving and sharing of educational resources and information.