Reviewing and Developing Undergraduate Curricula at SFU: A Discussion Paper

The primary purpose of this paper is to stimulate discussion about ways in which the undergraduate curricula at SFU can be enhanced. To this end, the paper outlines the main goals of undergraduate education, the methods SFU and other universities have developed to achieve them, and some opinions about the effectiveness of various methods. The paper ends by describing a set of initiatives that the Ad Hoc Senate Committee to Review and Develop the Undergraduate Curricula thought deserved special consideration. The Committee is interested in receiving feedback about the present state of curricula at SFU and ideas for improving them. In this document, asterisks (*) refer to reference material available in the electronic version of this paper at http://cgi.sfu.ca/~senucc/cgi-bin/introduction/terms_of_reference.cgi.

I. INTRODUCTION

A. TERMS OF REFERENCE

The Ad Hoc Senate Committee to Review and Develop the Undergraduate Curricula (hereafter abbreviated to “Curriculum Committee”) was created in the Spring semester of 2001. This committee was charged with two main tasks: (a) reviewing the existing undergraduate curricula to ensure that they fulfill the principles set out in the University’s Values and Commitments document (VC) * and (b) proposing strategies for enhancing opportunities for broad cross-disciplinary learning and ensuring that SFU graduates have the academic preparation for future success *.

Principle 1 in the Values and Commitments document states: “We enable students to be literate and numerate, think critically and discover new knowledge, celebrate the unconventional, express creativity, possess the habit of lifelong learning, and exercise their personal and civic responsibilities.” Other principles refer to the value of ethical awareness, interdisciplinary courses, information technology, international experience, and establishing partnerships with agencies and organizations beyond the campus.

B. MEMBERSHIP

Members of the Curriculum Committee during the year 2001 were: Kieran Egan (Education), Maureen Fizzell (Business Administration), Dennis Krebs (Psychology), Tina Loo (History), Joseph Peters (Computing Science), Sue Roppel (Academic Relations), Geoffrey Rosen (Student representative) and Michael Wortis (Physics). Elizabeth Nadeau, Laura Farrelly, and Paul Yeung supplied administrative and research support for the Committee. Jack Bates created the web site.

C. PREVIOUS COMMITTEES

During the past two decades, six committees have examined Simon Fraser’s undergraduate curricula: (a) The President’s Advisory Committee on University Priorities (PACUP, 1984), (b) The President’s Task Force on University Curriculum (PTFUC, 1985), (c) The Dean of Arts’ Ad Hoc Advisory Committee (DA, 1985), (d) The Senate Committee on Instructional Methods and Organization (SCIMO, 1993), (e) The Presidential Committee on University Planning, (PCUP, 1996), and (f) The Ad Hoc Committee on Planning Priorities (CPP, 1996,*). The reports of these committees are available from the office of the Vice President, Academic. Recommendations made by these committees are summarized in Compendium link 1 and Abridged Compendium link 2.

CPP identified a set of “distinguishing strengths” of SFU that, it believed, “must be maintained, enhanced and built upon.” This set included: (a) innovation, (b) tutorial systems, (c) use of technology in instruction, (d) co-operative education programs, (e) interdisciplinary programs, (f) non-traditional programs and students, (g) distance education, (h) community outreach and responsiveness, and (i) partnerships (mechanisms that
allow students to take courses elsewhere and joint offering of specialized courses and programs, such as video conferencing, joint research initiatives, and international opportunities). Other distinguishing characteristics of SFU are its trimester system, continuous intake of students, relatively large number of part-time and transfer students, relatively small number of students entering directly from high school, and culture of decentralization.

Another document relevant to the Committee's work is the Statement of Purpose, prepared by the Office of the Vice President in 1999, and approved by Senate in 2000.

D. TASKS UNDERTAKEN

The Curriculum Committee met regularly during the 2001 year. It resolved to fulfill its mandate using the following four-step process: (a) gathering information, (b) producing a discussion paper summarizing information it believed relevant to its mandate, (c) seeking feedback from the SFU community about the issues raised in the discussion paper, and (d) “submitting a Final Report to the Senate Committee on University Priorities (SCUP) for discussion and consideration for approval in principle” as prescribed by its Terms of Reference. Following approval in principle by SCUP and subject to favorable reception by Senate, the Vice President, Academic will be responsible for coordinating proposals for implementation, subject to the usual approval processes.

The Curriculum Committee defined its task primarily as examining the goals and structure of undergraduate curricula at a university-wide level. It did not examine the curricula of particular programs except as they seemed relevant to university-wide issues. Previous committees have made recommendations about:

- **The accessibility of the undergraduate curriculum** (CPP II 2.3, 2.7; PACUP 22; SCIMO R.3, R.4, R.27)
- **The efficiency of the undergraduate curriculum** (PACUP 3; PACUP Discussion Paper; PCUP R7.E, F, G, H, I, J; CPP II 1.2)
- **The quality of undergraduate teaching** (VC 1, 5; PCUP R7 A, B, C; CPP II 1.3, 2.2; PACUP 7, 8; SCIMO R 6, 9, 10, 13, 16, 17, 18, 20, 21, 25)
- **The responsibility to provide good guidance and mentoring to undergraduate students** (CPP II 1.3; R6; C; 1.4; VC 1)

(See the Compendium link 1 and Abridged Compendium link 2 for summaries of these recommendations.). Although this Committee did not focus on these issues, it recognizes that initiatives aimed at improving undergraduate curricula need to be attentive to interactions among the structure of the undergraduate curricula, the accessibility of courses and other resources, the effectiveness of various modes of delivery and instruction, and good guidance.

E. PRINCIPLES GUIDING THE PROCESS OF CURRICULUM REVIEW AND REVISION

Many universities have reviewed and revised their curricula. There is an extensive literature evaluating the successes and failures of such revisions. It is generally held that “ambitious and extensive curriculum changes may produce the following gains: a stronger sense of institutional identity, greater faculty satisfaction, increased enrolments (particularly of high quality students), significantly higher levels of student retention and performance, and an improved public profile, often reflected in more success in fundraising” *. Reviewers have suggested that the process of curriculum review and revision is as important as the nature of the revision itself. Ideally, curriculum renewal is a “community-building process” (Gaff & Wasescha, 1991). However, if mismanaged, the process may leave an institution “deeply divided and embittered, even when the changes themselves have been highly successful” (Kanter, Gamson & London, 1997, pp. 126-127). See * for
an informative comparison between the successful curriculum revision process at Duke University and the unsuccessful process at Rice University.

Attentive to the experiences of other universities, the Curriculum Committee resolved to proceed in an open collaborative manner, consult widely, avoid ‘top-down’ impositions, and respect the autonomy of Programs, Departments, Schools, and Faculties in structuring their programs.

F. PURPOSES OF THIS PAPER

In this report, the Curriculum Committee sets out to answer five main questions: (a) what are the main purposes of undergraduate education, (b) what methods do other universities employ to achieve these purposes, (c) how is the undergraduate curriculum structured at SFU, (d) how well are we at SFU doing, and (e) what are the advantages and disadvantages of various strategies? With respect to suggestions for change, the Curriculum Committee is attentive to the fact that although many units within SFU have invested considerable time and energy in structuring and revising their undergraduate curricula, the university as a whole has not collectively developed an overriding framework for its undergraduate curriculum.

It is important to read this paper in the spirit in which it was drafted, as a discussion paper designed to stimulate feedback from the community. Our hope is that support—indeed enthusiasm—will emerge in the university community for initiatives with promise to improve the quality of undergraduate education at our university.

G. HOW THIS PAPER IS ORGANIZED

In Section II we describe the purposes of undergraduate education identified by other universities, writers, and SFU committees. In Section III we consider three related matters: (a) strategies adopted by other universities to help students develop foundational thinking and communication abilities, (b) strategies adopted at SFU, and (c) data relevant to the evaluation of the effectiveness of these strategies. In Section IV we consider the main strategies other universities employ to ensure that their students are exposed to the forms of thought and modes of inquiry of more than one discipline. In Sections V and VI we describe and evaluate the strategies adopted at SFU. In Section VII we review curriculum models employed by other, mainly Canadian, universities. In the final section (Section VIII) we present for discussion a selection of ideas for improving our undergraduate curricula at SFU. From feedback evoked by this paper, we hope to identify the strategies that members of the SFU community view as containing the greatest potential, refine them, and, as prescribed by our terms of reference, propose them to SCUP for approval in principle.

II. THE PURPOSES OF UNDERGRADUATE EDUCATION

A. INTRODUCTION

The most obvious purpose of undergraduate education is to enhance students’ knowledge of the subjects they study. Most people also would agree that, as implied in Principle 1 of the Values and Commitments document, undergraduate curricula should instill in students attitudes conducive to learning, such as a thirst for knowledge, respect for truth, openness to new ideas, and tolerance for divergent views. In addition, undergraduate curricula should equip students for lifelong learning, prepare them to be citizens of a pluralistic, multicultural, democratic society, and enable them to contribute to a diverse, complex, and highly interdependent world in an ethical manner. To achieve these overriding purposes, we distinguish three overlapping goals of undergraduate education: (a) the acquisition of communication and thinking abilities that provide a foundation for life-long learning (which we call “foundational abilities”), (b) an appreciation of the forms of knowledge and modes of inquiry of more than one discipline (which we call “breadth”), and (c) the acquisition of expertise in an area of specialization (which we call “depth”).
B. FOUNDATIONAL ABILITIES

Foundational abilities have been classified in many ways. At the core of virtually all classifications of foundational abilities are communication and thinking abilities.

B. 1. Communication Abilities (reading, listening, writing, and speaking). Communication abilities pertain to the ability to understand what is read and heard, and to the ability to communicate knowledge and explain new ideas to others, both orally and in writing. Communication may involve discussion, debate, collaboration, and teamwork.

B. 2. Thinking Abilities (qualitative, quantitative, analytic, critical, synthetic, creative, interpretive, reflective, and aesthetic). Thinking abilities involve interpreting, organizing, and evaluating the ideas of others, creating new ideas, solving problems, and making decisions. These abilities provide the basis for advancing knowledge effectively, ethically, and productively.

Among communication and thinking abilities, verbal and mathematical abilities are usually emphasized (e.g., PACUP 20, PACUP Discussion Paper; PCUP 1.3, 1.4, R2, R7; CPP II.1.3; VC 1). As stated in Yale’s guidelines for undergraduate studies, “It is axiomatic that educated men and women should be able to express themselves effectively in their own language, both in speech and writing. To suppose that anyone who cannot write clearly can think clearly is an illusion: words are the most basic tools of thought. Those who cannot use them skillfully will be handicapped not only in communicating ideas to others, but also in defining, developing, and understanding those ideas themselves.” “Mathematics is the basic language of the natural and social sciences, and has become a useful tool in many humanities. So pervasive are mathematical techniques that contemporary men and women may not consider themselves truly educated until they have an understanding of the fundamentals of mathematics.”

In addition to verbal and mathematical abilities, past SFU committees and other universities have included the following among the qualities they seek to foster in undergraduate students.

• Critical and creative thinking (PACUP 20; PCUP 1.1, 1.4, 3.2; CPP II 1.3, VC 1),

• Research abilities (PACUP 20; PCUP 1.1, 1.4; R7, R7D; CPP II 1.3; VC 1; SCIMO 13; VC 1). (For a discussion of the value of teaching research abilities to undergraduate students at research universities, see the Boyer Commission Report *.)

• A sensitivity to ethical issues (CPP II.1.3; VC 1, 3, 6). As stated in Harvard’s guidelines for undergraduates: “The curriculum should give students some practice in thinking critically about moral and ethical problems, examining their own moral assumptions, and judging with some objectivity the assumptions of various alternative traditions of ethical thought and practice.” *

• Personal and social qualities such as self-esteem, confidence, integrity, a positive attitude, initiative, the ability to manage time and set priorities, the ability to recognize and respect diverse communities, creativity, and teamwork skills (CPP II 1.3; PCUP 1.4; PACUP 20; VC 1, 3, 6).

C. BREADTH

Breadth of knowledge is an awareness that there are many perspectives and points of view, different ways of thinking, different modes of inquiry, different methods of research, and different kinds of knowledge. Breadth involves learning, comparing, and integrating the basic ideas, forms of knowledge and modes of inquiry from several fields. As stated in Duke’s Curriculum 2000 report *, “[To meet the challenges of modern society, students] will need to be open-minded and see issues from a variety of perspectives, often global and cross-cultural. They will need skills of integration to deal with the increased fragmentation of knowledge and specialization, on the one hand, and to be able to synthesize new issues and information on the other.” Past SFU committees have emphasized the importance of breadth (e.g., PACUP 20; PCUP 5.2; VC
1), especially as fostered by interdisciplinary experiences (CPP II 2.6; VC 1, 6), international experiences (CPP II 1.5; VC 8), and partnerships with outside agencies (PCUP R3, R3 B, R3 C; CPP II 2.3; VC 1).

D. DEPTH

Depth of knowledge is a specialized understanding of the fundamental ideas, modes of inquiry, and methods of research in a particular discipline. We say relatively little about specialization in this paper, attending instead to what is commonly called general education.

The Values and Commitments document *, past Simon Fraser University committees (link1 to Abridged Compendium) and other universities (see Gaff & Ratcliff, 1997, for a review) have endorsed these purposes of undergraduate education.

E. OVERLAP BETWEEN THE PURPOSES OF UNDERGRADUATE EDUCATION AND QUALITIES SOUGHT BY EMPLOYERS

There is considerable overlap between the basic goals of undergraduate education outlined above and the qualities in graduates sought by employers (Jones, 1994). Employers value qualities such as higher-order applied problem-solving abilities, enthusiasm for learning on a continuing basis, interpersonal skills (including teamwork and collaboration), oral and written communication skills, a sense of responsibility for action (both personal and collective), the ability to bridge cultural and linguistic barriers, and a sense of professionalism (Romer, 1995). (See editorial page A2, Vancouver Sun, Dec. 7th 2000 and Allan Report, *.)

III. CULTIVATING FOUNDATIONAL ABILITIES

A. APPROACHES USED BY UNIVERSITIES TO HELP STUDENTS DEVELOP FOUNDATIONAL ABILITIES

Almost all universities have structured their curricula to cultivate foundational abilities. Although there is general agreement among post-secondary institutions that the students they graduate should possess the capacity to write and to communicate clearly and effectively, to think critically, to analyze and to solve problems in a variety of environments, and to possess a certain level of competency in mathematics, computing, and research methodology, universities differ significantly in the approaches they employ to help students develop such qualities.

A. 1. Admission Requirements and Entrance Examinations

By setting the bar for admission at a certain level and/or (in relatively rare cases) requiring students to pass an entrance examination testing certain basic foundational skills, some universities shift the burden for cultivating foundational abilities to the secondary school system. Students who meet the requirements and/or pass the entrance exam are assumed to possess the necessary skills to undertake university-level studies. Depending on the university, students who fail entrance examinations, particularly those geared towards specific skills such as writing or mathematics, may be given a conditional acceptance, subject to completion of remedial English, composition, or mathematics courses. (See an article in the Chronicle of Higher Education, Feb. 9, 2001, discussing a $1.2 million project in the USA aimed at the identification of the skills high school students need to enter universities and the development of tests to assess such skills *. (See * for a survey of admission requirements and other information pertaining to English in Canadian Universities.)

A. 2. Remedial Assistance
Some universities help students develop foundational abilities by offering remedial courses or individual tutoring, usually in writing or mathematics. As an example, UBC offers a remedial course in writing (Writing 098).

A. 3. Skill Development Centres

Skill Development Centres typically provide students with assistance in the development of their writing capabilities by way of one-on-one reviews of written work, tutoring, and/or special classes to teach students to write more effectively within the academic environment. Such Centers often offer remedial services. In Canada, the University of Manitoba, * has developed an exemplary writing center. At the University of Toronto, Mississauga, the Academic Skills Centre* offers workshops that provide instruction on specific writing tasks. These workshops may be led by peer mentors or faculty members seconded to the Academic Skills Centre.

A. 4. Stand-Alone Courses Dedicated to Developing Specific Foundational Abilities

Many universities offer courses devoted to the development of a single skill, often-times removed from the discipline of inquiry in which students are studying. Most common among such courses are writing, mathematics, and statistics courses. Other examples are courses devoted to speech and communication, research methods, foreign languages, critical thinking, and ethics. In some instances these courses are "mini" versions which provide students with the level of proficiency required to engage in more advanced study of a discipline area. See * and * for examples of stand-alone foundational skill courses.

A. 5. “Skill-Intensive” Versions of Existing Courses that Integrate the Cultivation of Foundational Abilities with the Content of the Disciplines in which They are Offered

In a collaborative effort, seven consortia involving forty institutions are developing teaching approaches and interdisciplinary materials for mathematics education in conjunction with disciplines. For example, Dartmouth has developed sixteen new mathematics courses, eight of which link mathematics with a humanistic discipline *.

Some universities also have developed writing intensive courses. Writing-intensive courses are usually - but not always - offered by the departments dealing with the content in question. For instance, an existing history course or section of the course might be given a “W” designation (e.g., History 101-W) indicating that it will be “writing-intensive;” that is, will contain an intensive focus on teaching students to “write in the discipline.” For a discussion of “writing-intensive” courses, see *. See *, *, * for examples of initiatives aimed at the development of writing-intensive courses at the University of Toronto.

Other universities have created other types of skill-intensive course. The most extensive use of this kind of course can be found at Duke University, which classifies all skill-intensive courses in its core curriculum with designations such as “writing-intensive”, “research-intensive”, “ethical inquiry” and “quantitative, inductive and deductive reasoning”. See * for an example of a “research-intensive” course.
A. 6. Exit Examinations

Increasingly, and in response to demands for greater accountability, a number of post-secondary institutions in the United States have instituted exit examinations to ensure their graduates have a certain level of competency in foundational abilities.

B. DEGREE TO WHICH STUDENTS ARE REQUIRED TO DEVELOP FOUNDATIONAL ABILITIES

Universities differ widely in the extent to which they require students to develop foundational abilities and in the approaches they employ. In Canada, the norm is for universities to require relatively few foundational courses, although most Canadian universities require students to take courses in English. In British Columbia, University of Victoria requires all undergraduate students to take an English course *, but offers exemptions to students able to demonstrate competence in writing. UBC requires students in virtually all programs to take at least 6 credits of English or English-equivalent courses *.

Most American universities require undergraduate students to achieve a specified level of competency in writing and in mathematics or quantitative skills. Some universities extend this to include research methodology, second language proficiency, oral communication and/or experiential learning. A few universities identify technological or computing ability as a foundational requirement.

C. HOW WE HELP STUDENTS DEVELOP FOUNDATIONAL ABILITIES AT SFU

At SFU, most courses have pedagogical features that foster foundational abilities, but without a course-by-course examination it is difficult to identify what foundational abilities are fostered in which courses. SFU also provides students with the opportunity to develop their foundational research, essay writing and computing skills through workshops offered by units outside of academic departments, such as the Library, Academic Computing Services, and Student Services.

C. 1. Admission Requirements and Entrance Examinations

In recent years at SFU, we have admitted approximately 5,000 new undergraduate students each year. At present we have approximately 14,000 annualized FTE undergraduate students and 22,000 annualized head count. We award approximately 3,000 Bachelor degrees each year.

Students admitted to SFU come from three main sources: B.C. Secondary Schools (in 2000-2001: 42%), B.C. Colleges and Universities (32%), and Other (26%). “Other” includes degree holders (10%), transfers from other universities (5%), graduates from secondary schools outside BC (3%), mature students (3%), and transfers from colleges and technical institutes, visiting, and special entry (5%).

Some admission requirements apply to all students; others vary across categories of admission and units within SFU. The main criterion for admission is academic performance. Up to 10% of applicants may be admitted on the basis of criteria other than academic performance (see p. 29, 2001-2002 Calendar). According to the Calendar, the minimum GPA for Arts students accepted in 00-3 as college transfers was approximately 2.7 and the mean GPA for high school graduates was 78%.

All applicants whose primary language is not English “must demonstrate a command of English sufficient to meet the demands of classroom instruction, written assignments and participation in tutorials and discussions” (Calendar, p. 29).

Students admitted from B.C. or Yukon secondary schools must have passed English 11 and English 12 or Francais Premiere Langue 11 or 12, Language 11 or Introductory Language 11, Principles of Mathematics 11, one or more Science 11 courses, plus “breadth” courses selected from three lists (Calendar, p. 30-31). Students granted direct entry to the Faculties of Business Administration and
Science, and to the Schools of Engineering Science, Kinesiology, and Computing Science also must have Mathematics 12.

Students admitted from B.C. or Yukon community colleges and other recognized universities are required to have completed “at least one full year of transferable work with a minimum average of 2.0 or 60%” (Calendar, p. 31). The Faculties of Business Administration and Science, and the Schools of Engineering Science, Kinesiology, and Computing Science have additional requirements. Note that students transferring to SFU are not required to meet the same admission requirements as students entering from high schools. In particular, they need not have graduated from high school and they need not have taken English 12 or Mathematics 11 (although some Faculties and Schools require students to take SFU courses in English, Mathematics and/or other subjects.)

“The University limits new international students to not more than 7% of each year’s entry” (Calendar, p. 37).

“Simon Fraser University is interested in extending learning opportunities to B.C. residents who may not qualify under the regular categories of admission. The number of such admissions is limited by the availability of resources, and is not automatic. Four categories are available: mature student entry, early entry, concurrent studies, and irregular admission” (Calendar, p. 32).

C. 2. Remedial Assistance

Although we do not offer a remedial writing course, the SFU Language Training Institute offers a 10 week intensive English program, called the English Bridge Program, which is “designed for students who are otherwise fully admissible to the University but who do not completely meet the English language requirements” (Calendar, p. 29). SFU also has a Writing Center that has offered remedial assistance in writing. A committee is currently reviewing the mandate of the Writing Center.

Although we do not offer any formal remedial assistance in mathematics, some departments offer drop-in tutorials and workshops in mathematics and statistics in conjunction with some courses (Calendar, p. 271 and 289).

C. 3. Skill Development Centers

In the past, SFU’s Writing Center has provided assistance to students with specific writing assignments. Student Services * provides workshops for students in the areas of “How to Study,” “Coping with Exam Stress,” etc. The Learning and Instructional Development Center (LIDC) * plans to contribute to the development of foundational abilities by offering a web literacy program in collaboration with Academic Computing Services and University departments. In this program, students will learn to create a personal website, which will involve writing, graphic design, information retrieval and online communication with peers and others. The LIDC also plans to help improve the quality of undergraduate teaching by offering faculty and graduate students (1) workshops, seminars, conferences and programs featuring instructional methods that have been found to be effective in developing students’ foundational skills; (2) personal support and assistance with the design or re-design of courses aimed at emphasizing active learning approaches; and (3) support in helping students integrate the use of technology into their courses.

C. 4. Stand-Alone Courses Dedicated to Developing Specific Foundational Abilities

SFU offers many stand-alone courses designed to cultivate foundational abilities. Examples include: ENGL 199 - Introduction to University Writing, MATHEMATICS 100 – Precalculus, STAT 101 - Introduction to Statistics, ENSC 101 - Writing Process, Persuasion and Presentations; CRIM 220 - Research Methods in Criminology; ECON 435 - Quantitative Methods in Economics; BUS 360 - Business Communication; HIST 400 - Seminar in Historical Methods; PHIL 001- Critical Thinking;
PHIL 120: Fact and Values, PHIL 421- Ethical Theories; CMPT 100 - Software Packages and Programming.

C. 5. “Skill-Intensive” Courses that Integrate the Cultivation of Foundational Abilities with the Content of Disciplines

SFU offers skill-intensive courses designed to cultivate foundational abilities. Examples include PHIL 100 - Knowledge and Reality (revised by Steven Davis & Wendy Strachan (link) to include a writing-intensive component), PSYC 100 and 102- Introduction to Psychology (tutorials include computerized learning, interactive group work, critical thinking exercises, writing, and oral presentations). Paul Percival has developed a proposal for integrating research skills into the Chemistry undergraduate curriculum (link 3).

C. 6. Co-op Education Programs

Co-operative education intersperses academic semesters with work experience semesters. The goal of the Co-op program is to enable students to test, develop, and apply the theoretical and conceptual knowledge and skills they gain through traditional schooling, and to help them develop new knowledge and abilities in workplace settings. SFU’s Co-op program is the fifth largest in Canada, with more than 2000 placements per year. Approximately half of the placements are from the Faculty of Applied Sciences, followed by the Faculties of Business Administration, Science, and Arts (approximately 200 placements). All students in the School of Engineering Science are required to take a Co-op program. See * for a fuller description of SFU’s Co-op program.

C. 7. Exit Examinations

SFU does not require any of its students to take exit exams, but many departments require honors students to do honors projects and theses, some followed by oral examinations.

C. 8. Requirements

C 8. 1. University-wide requirements. Unlike UVic and UBC, SFU does not require students to take particular courses designed to cultivate writing abilities on a University-wide basis. SFU does not have a mathematics requirement or a second language requirement.

C 8. 2. Departmental requirements. There is considerable variation across Faculties and Majors in the extent to which students are required to take courses specifically designed to foster foundational abilities. As examples, (a) the School of Computing Science requires students to take PHIL 00: Critical Thinking; (b) Computing Science, Engineering Science, Kinesiology, Cognitive Science, Business Administration, Statistics, Economics, and all of the Science programs require 3 credits or more of Mathematics courses; (c) Engineering Science has a series of required communication courses; and (d) Business Administration requires a business communication course and 6 credits of English/Philosophy, although specific courses are not identified. The Faculty of Education requires that all students to whom it awards BE. D. degrees obtain a Certificate in Liberal Arts.

D. HOW WELL DO WE CULTIVATE FOUNDATIONAL ABILITIES AT SFU?

D. 1. Admission Requirements and Entrance Examinations

In general, our standards of admission for high school students are as rigorous as those of other Universities in B.C. The level of mathematics required by the Faculty of Arts and School of
Communication (Mathematics 11) is not as advanced as the level required by other Faculties and departments (which require Mathematics 12).

There is evidence that, on average, B.C. college transfer students do not perform as well as direct-entry B.C. secondary school graduates when they enter SFU (see *). This disparity probably stems from our policy of selecting the best secondary school graduates for direct entry but allowing students with lower grades in secondary school and/or less rigorous courses or programs to enter as transfer students. Transfer students entering some SFU programs also are not required to have taken the same breadth of courses as students entering from secondary school.

**Commentary:** One way to ensure that the students we admit to SFU have achieved an acceptable level of proficiency in foundational abilities such as mathematics and writing is to require students who have not established proficiency to achieve a particular score on a proficiency test, such as the one used for writing at UBC * or the one used as an exit exam in the English Bridge Program *.

**D. 2. Remedial Assistance and Skill Development**

We did not examine the effectiveness of the remedial services we offer or of our skill development centers. A committee chaired by the Dean of Arts is examining the terms of reference of the Writing Center. SFU once offered a general course—GS 101 (link 9) designed to help orient new students, but it has been discontinued.

**D. 3. Courses**

SFU offers students plenty of opportunity to cultivate foundational abilities by taking stand-alone and skill-intensive courses. The question is, do our students take a sufficient number of them? As noted above, there is considerable disparity in the number of such courses departments require, and relatively few units require that their students take a coordinated, complementary, or cumulative set of such courses. Because SFU does not have university-wide requirements, some students are able to avoid courses designed to develop foundational abilities. Indeed, it is possible that students whose foundational abilities, especially in mathematics or English, are most deficient are particularly prone to avoid courses designed to cultivate these skills.

**D. 4. Co-op Programs**

There is good reason to believe that the Co-op Program at SFU has been very successful. As one example, a survey of Arts graduates who have taken Co-op programs from 1992-2000 (available from Caroline Rose: carose@sfu.ca) found that 94% of the respondents would recommend the Co-op program to other students. When Co-op alumni were asked to rate, on a scale of 1-7, the usefulness of the skills they developed during their Co-op positions, they gave the following mean ratings: problem solving (6.1), critical thinking (5.7), written communication (5.6), oral communication (5.6), meeting deadlines (5.6), teamwork (5.5), computer facility (5.5) and research (5.4). Previous SFU committees have recommended expanding Co-op opportunities (Compendium link 1).

**D. 5. Conclusions Reached by Previous Committees**

In recommending that we change the ways in which we cultivate foundational abilities, past committees have implied that we could do a better job. As examples, PACUP (4.3) recommended offering fundamental programs devoted to the cultivation of basic skills in learning. (See page 1 for the names of committees abbreviated in this section and relevant links.) PCUP (R7) recommended designing all programs in ways that enable holders of SFU degrees to acquire a set of foundational skills. PCUP further recommended requiring all students to acquire proficiencies in written and oral communication, computer use, and the interpretation and presentation of numerical information (R2). PACUP (13.2, 20.2, 21) recommended designing courses, especially lower-levels courses, in ways that cultivate basic skills in learning. VC (1) and CPP (II 1.3) recommended integrating more research experience into the
D. 6. Opinions of Students about the Acquisition of Foundational Abilities: Survey Data

Data from the Canadian Undergraduate Survey Consortium: Graduating Students Survey 2000 (available from the Office of Analytic Studies) failed to reveal any substantial differences between students’ ratings of SFU and students’ ratings of other Canadian universities with respect to the acquisition of foundational abilities. Like students from other universities, SFU students—especially from the Faculty of Arts—rated SFU relatively low (C+) on the acquisition of Mathematical Skills (compared to B ratings for most other abilities). Engineering Science and Science students rated their programs lower than the mean on written and oral communication. (See Abridged Compendium link 2.)

Data from The B.C. University 1999 Two-year Follow-up Survey of 1997 Baccalaureate and PDP Graduates (Office of Analytical Studies) (see *) revealed that SFU graduates rated SFU relatively high on cultivating analytic and critical thinking abilities and relatively low on cultivating mathematical skills. (By low, we mean ratings of “to a small extent” and “to no extent at all” in response to the question, “indicate the extent to which your bachelor’s program developed the following skills or abilities”. Approximately 25% of the students sampled rated SFU low on helping them develop the abilities to work effectively with others, think creatively, and speak well. With respect to differences among faculties, more Education and Arts students than Business and Science students gave low ratings on “ability to use mathematics appropriate to your field” and “ability to solve problems” (but note that almost 20% of Arts students did not find the ability to use mathematics applicable to their field). More Science students than Education students gave low ratings on “ability to think creatively.” More Applied Sciences and Science students than Business and Arts students gave low ratings on “ability to write well” and “ability to speak well” (74% of students in Computing Science (total N = 39) gave low ratings on ability to speak well). More Science and Arts students than Business students gave low ratings on “ability to work effectively with others.”

Preliminary results from the Fall 2001 SFU Undergraduate Student Survey (N = approximately 1000) revealed that students ranked “develop communication abilities” (98%) and “develop critical thinking and problem-solving abilities” (98%) highest in importance in acquiring a good undergraduate education (percentages of the sample giving “very important” + “somewhat important” ratings in parentheses) *.

D. 7. Questions and Caveats

The responses of SFU students to the surveys reported above led us to wonder whether some SFU programs could do more to help students develop the ability to work effectively with others, to think creatively, and to speak well. We also wondered whether we should be doing more to cultivate (a) mathematical abilities in Arts and Education students and (b) verbal abilities in Science and Applied Sciences students. At this point, we have little data on the acquisition of other foundational abilities, such as critical thinking.

Commentary: We did not attempt to conduct a thorough assessment of how well the various programs at SFU are cultivating foundational abilities in their students. Such assessments require a significant commitment of time and resources. Another way of approaching the issue is to adopt strategies that have been found by other universities to enhance foundational abilities, perhaps followed up with an assessment of the effectiveness of the methods. We would be interested in hearing what members of the community think about this issue.
IV. CULTIVATING BREADTH

A. INTRODUCTION

All universities are committed to cultivating breadth among their students—that is, to ensuring that students are exposed to a range of areas of knowledge, modes of inquiry, and research methods during their courses of study. To accomplish this, virtually all universities require students to take courses outside their majors. In addition, many universities support extracurricular experiences such as cooperative education, exchange programs, and field placements in foreign countries.

B. METHODS USED BY UNIVERSITIES TO HELP STUDENTS ACQUIRE BREADTH

B. 1. Courses.

B. 1.1. “Great Books” or “Masterpieces” courses

Such courses focus on aspects of the Western canon of art, literature, philosophy, and music deemed to be part of the cultural capital of an “educated person.” For instance, see Columbia University’s core offerings: “Masterpieces of Western Literature and Philosophy,” “Masterpieces of Western Art,” and “Masterpieces of Western Music” at *.

B. 1.2. Thematically-focused interdisciplinary courses

By organizing a course around a specific theme, such as war, globalization, or climate change, students are introduced to a variety of modes of inquiry, and may learn to appreciate both the distinctiveness of such modes and their potential for a creative synergy across disciplines. For instance, Fairleigh Dickinson University has a quartet of core courses: “Perspectives on the Individual,” “The American Experience: the Quest for Freedom,” “Cross-Cultural Perspectives,” and “Global Issues” *.

B. 1.3. Courses emphasizing an understanding of other cultures

As one university put it, such courses are designed, “to reveal connections, influences, parallels, and blurry boundaries between cultures as much as to show their partial distinctness.” In so doing, such courses promote “learning and thought about the variety of civilizations and the diversity of traditions that have formed the world and continue to interact in it today.” See Columbia University’s “Major Cultures” course at * and the global perspectives theme school at McMaster University at * for examples.

B. 1.4. Topical or focus courses for non-majors

Some university departments provide special courses designed specifically to introduce non-majors to significant aspects, issues, or problems in their disciplines. Consider, for example, the set of courses offered in the Faculty of Science at the University of British Columbia: Astronomy 310 and 311 (Exploring the Universe I and II); Biology 343 (Plants and Peoples), Biology 344 (Human Ecology), Biology 346 (Microbes and Society), Biology 446 (History and Philosophy of Biology); Earth and Ocean Sciences 310 (The Earth and the Solar System), Earth and Ocean Sciences 311 (The Earth and its Resources); and Physics 340 (From Atoms to the Universe) and 341 (Physics of Music).

B. 1.5. “Capstone” courses

While most general education and core curricula structures and models focus on the first and second year undergraduate experience, capstone courses—seminars offered in the final year of
undergraduate study—aim to bring together the ideas, knowledge and awareness that students have
developed over the course of their degrees. These seminars are often interdisciplinary in approach
and theme- or issue-based. For instance, the University of Nevada, Reno, requires all undergraduate
students to complete two capstone courses: one that builds upon the core curriculum and one in
students’ majors. This pair of courses “deal with ethical and substantive issues, problems and
themes that affect the world community” and offer students an “analysis of different cultures and
traditions, or issues relating to science and society.” See *.

B. 2. Course Clusters or Learning Communities

An alternative to a single interdisciplinary course or a single thematically-focused course, a Learning
Community or Course Cluster, is a collection of courses in different departments that are organized
around a common theme. The material presented and the assignments required in each seminar in the
course cluster or learning community are designed to be complementary. In many cases these
independent but related courses are augmented by a common seminar where questions are posed and
issues discussed that cross the boundaries of the individual courses. The Honors program at Western
Michigan University affords one example of a Learning Community where undergraduate students take
“Peoples of the World”, consisting of a cluster of courses in English, Anthropology and Geography *
Mark Winston’s Undergraduate Semester at the Morris J. Wosk Center for Dialogue, entitled “Nature,
Environment, and Society” is a local example (see below).

B. 3. Programs

Some universities offer entire programs of study dedicated to achieving a general rather than a
specialized education. An extreme example is St. John's College, which has a single four-year
undergraduate program for all students *. This program has “three components: tutorial (mathematics,
language, and music), laboratory, and seminar, each embodying a different way of learning [designed to]
complement and enrich the others” ( Alive at the Core, 2000, p. 44). It offers an integrated approach to
learning undivided by course divisions or disciplinary boundaries. Students learn by reading the “great
books” of Western civilization across all major subject areas. Continuation from one year to the next is
conducted by a faculty-wide review of all students to determine whether they have learned the subject
matter, developed their writing skills sufficiently, and made a contribution to the debates and in-class
discussions. A slightly different approach to a full program is the Integrated Learning Center at Queen's
University for the study of engineering. This program combines learning of theoretical and practical
knowledge in team-based environments (See *).

B. 4. Non-Classroom-Based Experiences

Many universities cultivate breadth by encouraging—and in some cases requiring—undergraduates to
participate in cooperative education programs, exchange programs with other universities, and
international field placements. For example, as part of the Canadian University Study Abroad program,
UBC is offering students an opportunity to study in Europe for one or two semesters. Student may apply
the courses they take abroad to their UBC degrees. Still others make volunteering in the community of
which the university is a part an integral aspect of the undergraduate experience. (For a review of
evidence on the educational benefits of international experiences, see Randall Martin’s review of the
literature; link 4.)

B. 5. Distribution Requirements

At many universities, undergraduate courses are grouped into broad distribution groups (e.g., natural
sciences, social sciences, and humanities). Students are required to take a certain number of courses
designed to foster foundational abilities as well as a number of courses outside the distribution group that
contains their major. Yale University encourages students to sample broadly by allowing them to take
some breadth courses on a pass/D/fail basis *. Such a system ensures that students do a certain amount of
work to a certain standard to receive a “pass”, but students’ overall grade point averages are not affected
by exploring disciplines outside of their areas of expertise. Other universities achieve the same range of course-sampling by imposing restrictions designed to ensure breadth is achieved. At Harvard, for instance, students must choose breadth courses from areas identified as the most remote from their course of study *. Many departments at Simon Fraser University employ a distribution model.

C. ASSUMPTIONS ABOUT THE OPTIMAL AMOUNT OF BREADTH

Breadth requirements at North American universities range from one-tenth (at Cornell University) to one-half of an undergraduate’s program (at the University of Chicago). When combined with variation in the way in which breadth courses are structured, the range in breadth requirements across North American universities is quite remarkable.

V. HOW WE CULTIVATE BREADTH AT SFU

A. INTRODUCTION

It is important to distinguish between the opportunities a university offers students to acquire breadth and the extent to which students avail themselves of such opportunities. In this section we summarize the opportunities SFU offers students, then discuss issues related to the extent to which students avail themselves of these opportunities.

B. COURSES

B.1. “Great Books” or “Masterpieces” Courses

SFU has three courses in the Humanities - Humanities I, II, and III entitled Great Texts in the Humanities. They cover the time period from ancient to modern times.

B.2. Thematically-focused Interdisciplinary Courses

SFU has courses in many disciplines that are designed to foster interdisciplinary thinking and discussion. Some examples include: GEOG 102 World Problems in Geographic Perspective; POL 481 Ethnic Politics and National Identity: Comparative Issues; EDUC 341 Literacy, Education and Culture; HIST 310 Women and the Family in Modern Europe; LING 260 Language, Culture and Society; BUS 303 Business, Society and Ethics; WS 200 Women in Cross-Cultural Perspective.

COMMENTARY: Theme-based courses that span disciplinary boundaries are consistent with SFU’s commitment to interdisciplinary studies. Students have indicated considerable support for interdisciplinary-based learning, both at SFU and at other institutions. Expanding and/or formalizing theme-based courses that incorporate a variety of disciplinary perspectives raises a number of issues for faculty. As examples, multi-disciplinary courses may require cross-disciplinary learning for faculty members and collaboration among faculty from different disciplines in the design, development and offering of courses. Participating in such collaborations may have a positive or negative impact on research productivity. Decisions would have to be made as to whether one or more of these courses were required by students and how these courses fit within overall degree requirements.

B.3. Courses Emphasizing an Understanding of Other Cultures

SFU has courses in various disciplines that are designed to increase the understanding of other cultures. Examples include: ARCH 272 Archaeology of the Old World; ASC 200 Introduction to Chinese Culture; GERM 141 Introduction to German Civilization; HIST 105 Western Civilization from Ancient World to Reformation Era; HIST 249 Classical Islamic Civilization; HUM 330 Religion in Context;
LAS 140 Cultural Heritage of Latin America; SA 286 Aboriginal Peoples and British Columbia: Introduction; HIST 146 Africa in Recent History; HIST 151 The Modern Middle East; LING 241 Languages of the World; EDUC 441 Multicultural/Anti-Racist Education.

B. 4. Topical or Focus Courses for Non-majors

Most programs have introductory 100 level courses that are designed to provide an introduction to disciplines for majors and non-majors. Examples include: PHIL 244 Introduction to the Philosophy of Natural and Social Science; MATHEMATICS 157 Calculus for the Social Sciences; CMNS 110 Introduction to Communication Studies; WS 101 Introduction to Women's Issues in Canada; BISC 100 Introduction to Biology; CMPT 100 Software Packages and Programming.

B. 5. “Capstone” Courses

Very few departments have a capstone course designed to bring together the various facets of the disciplines. One exception is BUS 478: Seminar in Administrative Policy, which is designed to integrate the various areas of business.

C. COURSE CLUSTERS

SFU offers students relatively few course clusters. Exceptions are discussed below.

C. 1. Certificate in Liberal Arts

This program provides a broad exposure to areas of knowledge and methods of inquiry that are considered to be essential to a liberal education (Calendar, p. 126). Students must complete ten courses, for 30 credits. The courses must be spread across 12 categories as follows: two from verbal skills, the study of theory and theory building, and the analysis of contemporary issues; two from the study of literature, fine and performing arts, and studies of culture and civilization; two from the study of period and place, foundations of social science, and social and behavioral analysis; and two from natural science, the impact of science and technology, and quantitative skills. The final two courses can be taken from any two categories. The courses in each of these categories may change from time to time and are listed on the SFU website *.

C. 2. Special Course Clusters

The undergraduate semester designed by Mark Winston * consists of three linked courses that include discussions, guest visits, extensive reading and several individual and group projects. Students are expected to speak, write, conduct research and interact. Each semester's focus topic is different, involving broad questions, such as ‘Nature, Environment and Society’, which are studied from several perspectives.

COMMENTARY: Offering a larger number of coordinated clusters of courses within (and perhaps between programs) might have the advantage of maintaining the decentralized approach to course offerings at SFU. If an additional “bridging” seminar were offered, students could gain the opportunity to discuss issues that span their own disciplines. To take such semesters, students must (a) be granted sufficient flexibility in their electives, (b) be able to count the courses they take toward the requirements of their departments, and/or (c) be willing to take more than 120 credits at SFU. It has been suggested that credentials be granted for taking such semesters.
D. PROGRAMS

D. 1. Interdisciplinary Departments and Programs

Many SFU departments are interdisciplinary in nature (e.g. Criminology, Communication, Women's Studies, Cognitive Science). In addition, SFU offers several interdisciplinary programs (e.g., Asia-Canadian Studies, Latin American Studies, Canadian Studies). The Department of Humanities offers the "study of a broad range of ideas and subjects drawn from philosophy, art, literature, history, religion, science and social and political thought. Through a comparative and interdisciplinary approach to classical, medieval, renaissance, and modern culture, study of the humanities raises critical questions about achievements and controversies associated with civilization itself" (Calendar, p. 156).

D. 2. Bachelor of General Studies

"This non-specialist degree program is designed for students whose educational goals are not met by other, more structured, undergraduate degree programs. Students may complete one or more minors or extended minors (but no major), in any academic area(s) as part of the BGS degree" (Calendar, p. 125).

D. 3. Integrated Studies Programs

“Integrated Studies programs within the bachelor of general studies degree are highly structured cohort based programs designed to meet the educational needs of specific student groups. Such programs integrate liberal studies with knowledge and skills associated with a particular field of practice, or with a background common to its students. ...Integrated studies programs will typically be designed and structured in consultation with external agencies or employers…” (Calendar, p. 125). SFU also offers two integrated studies programs: the Liberal and Business Degree Completion Program at Harbour Center *, and a program in conjunction with the justice institute. A third is being developed in community services.

D. 4. Field Placements

Two programs at SFU have field placements built into their major. The Faculty of Education has two courses: EDUC 401 (a half semester of observation and experience in BC schools) and EDUC 405 (a full teaching semester). The Department of Earth Sciences has 3 field experiences built into its program: EASC 206 (7 days of field excursions), EASC 306 (a 10 day field camp) and EASC 406 (a 14 to 18 day field component built into the course).

E. JOINT MAJORS

Most units at SFU have established joint majors, joint honours, and double major and minor programs with other disciplines that enable students to obtain breadth in flexible ways that meet their individual needs. Few students in most, but not all, departments take joint majors.

F. NON-CLASSROOM-BASED EXPERIENCES

F. 1. Exchange Programs

SFU has bilateral exchanges with institutions in 27 countries in the world (see *). In a bilateral exchange, students come to SFU from a university in another country, and SFU students go the international institution. SFU also has unilateral agreements with some international institutions in which students come to SFU, but SFU does not send students. (link 4 to Randall Martin’s article.)
F. 2. Field Schools

Various departments and faculties arrange annual or bi-annual field schools in various countries around the world. In the Summer of 2001, SFU sponsored field schools in China, Czech Republic, Fiji, France, Ghana, and Greece. In the Fall of 2001, field schools are planned in Mexico and the Philippines. A field school is a group of students plus a faculty member who travel to another country for a semester. The students take four or five courses in the foreign country, often traveling and learning about the people and the culture. Field schools often have a specific theme. For example the Ghana field school studies African music and dance.

F. 3. Co-operative Education

In addition to cultivating foundational abilities, co-operative education programs at SFU may cultivate breadth by providing different contexts for students to apply the knowledge and skills they have acquired in the classroom. See Section III C. 6 and * for a fuller description of SFU’s Co-op Program.

G. DISTRIBUTION REQUIREMENTS

SFU does not have a breadth requirement that is applicable to all undergraduate students. Breadth requirements vary considerably across faculties, schools, departments and programs.

G. 1. Faculty of Arts

All students completing an Arts degree must complete 65 credits in Arts subjects. Arts students must obtain 30 credits from no fewer than 5 departments outside their Arts major, with no more than 9 credits from any one department.

G. 2. Faculty of Education

All students who obtain B. Ed. degrees must complete a Certificate in Liberal Arts. Courses that can be applied to the Certificate are listed in 12 sets. Each set includes courses from various University departments. Students must complete 10 courses according to the following distribution requirement: Two courses from any two of sets 1-3; 2 courses from any two of sets 4-6; 2 courses from any two of sets 7-9; and 2 courses from any two of sets 10-12. The final two courses can be selected from any two sets.

G. 3. Faculty of Business Administration

All students must complete 50 non-Business credits. Fifteen of the 50 credits are specified as a mathematics course, two economics courses and two English/philosophy courses. The remaining 35 credits must be taken from three groups of courses: Group A (languages, history, humanities), Group B (social science courses) and Group C (sciences).

G. 4. Faculty of Science

All students must complete 12 credits outside of Science including 6 credits in the Faculty of Arts. Some individual programs require 3 credits of computing science. These programs require only 9 additional credits outside of Science.

G. 5. Faculty of Applied Sciences

There are no Faculty-wide breadth requirements. Rather, individual schools have their own requirements. The School of Communication requires that 60 credits be chosen from disciplines other
than communications. The courses must be chosen from three groups of courses (the groups are similar to the groups in Business). The School of Computing Science requires that students complete at least 9 credits of external breadth courses from more than one department. A list of approved courses is published each year. The School of Engineering Science is very highly prescribed leaving only 6 credits for courses outside of engineering science, mathematics, physics and computing science. The School of Kinesiology partially specifies 6 credits at the lower division; 3 upper division credits are unspecified, in addition to 23 credits of free electives.

G. 6. General Comment

SFU offers students many ways of cultivating breadth, but programs differ significantly in the extent to which they encourage or require students to acquire a solid general education. Some programs prescribe fewer than 60 credits in the discipline, thus leaving students plenty of room to sample courses from other departments. Other departments require a large number of courses in their major and honours programs, leaving students little room to explore topics outside of their disciplines. Some programs require students to take courses specially designed to cultivate foundational abilities and instill breadth; others do not. Few programs encourage or require their students to take sequences of courses, or course clusters, designed to cultivate breadth in a coordinated way.

VI. EVALUATION OF THE WAYS IN WHICH WE HELP STUDENTS ACQUIRE BREADTH AT SFU

A. OPPORTUNITIES

As discussed in Section V, SFU offers students many opportunities to acquire breadth, through courses, programs, and non-classroom related experiences. Four questions arise: (a) to what extent do SFU students avail themselves of such opportunities, (b) should more be done to make students aware of the opportunities and their value, (c) should the opportunities be organized in more coherent ways, and (d) should any be increased to meet demand? Past SFU committees have recommended increasing opportunities for students to familiarize themselves with the content and modes of inquiry of several areas, by (a) minimizing specialization requirements (PACUP 20, 20.1; CPP II 2.6), (b) increasing opportunities for international experience (CPP II 1.5; VC 8), (c) developing new interdisciplinary programs and courses (CPP II.2.6; VC 1), (d) increasing opportunities for students to acquire applied and co-operative education experiences (CPP, II 1.4; PCUP, R3, R3 B, R3 C; CPP II 2.3; VC 1), and (e) establishing university-wide endowed professorships to promote the development of courses that provide access to interdisciplinary ways of understanding the world (VC 6).

B. REQUIREMENTS

B. 1. Variations Across Departments in Breadth Requirements

As revealed in Section V, most programs at SFU have distribution requirements. However, the number of courses students are required to take outside their majors varies a great deal, ranging from approximately 2-4 in the Schools of Engineering Science, Kinesiology, Computing Science and the Faculty of Science to between 10 and 20 in the School of Communication and Faculties of Business Administration and Arts. Programs also vary in the extent to which they specify courses that count toward their breadth requirements. The questions raised by such variations are (a) to what extent do they affect the cultivation of breadth in their students, and (b) is this variation warranted by the goals of the programs in question?
B. 2. Examinations of Transcripts

In an attempt to get a sense of the breadth of exposure to forms of thought and modes of inquiry outside majors obtained by SFU students, members of this Committee examined the transcripts of a sample of students (coded by number, not name) who have graduated from SFU. Although it was relatively easy to evaluate the acquisition of mathematical abilities and exposure to the methods of particular disciplines, it proved much more difficult to evaluate the extent to which the courses listed on transcripts were equipped to cultivate foundational abilities such as writing and critical thinking and to expose students to different forms of thought and modes of inquiry. To do a thorough analysis, one would have to examine the content and structure of the courses the students took, which would entail obtaining syllabi and talking to instructors.

B. 3. Limitations of Unstructured Distribution Requirements

Requiring students to select a specified number of courses from departments other than those in which they are majoring is a limited way of cultivating breadth for the following reasons. First, different departments may offer essentially the same courses—statistics, for example; thus, students may avoid exposure to different modes of thought and forms of inquiry by selecting a narrow range of courses from other departments. Second, although some courses are better equipped than others to cultivate breadth, all courses in a department are treated as equal. Third, open distribution requirements offer students little guidance in combining or sequencing courses in pedagogically meaningful ways. As stated in a recent article by Rhodes, (2001) *:

Today's students are offered hundreds and thousands of courses in catalogs more than an inch thick, but rarely receive any overarching, meaningful statement of educational goals and intellectual purpose within a larger, coherent framework. Because professors have been reluctant to suggest that one subject is more valuable or significant than another, they have replaced requirements with electives and substituted excessive numbers of undergraduate courses for any critical assessment of their relative merits.

Articles and books read by some members of this Committee (e.g., Gaff, Ratcliff, et. al, 1997) did not view open distribution requirements as an optimal way of cultivating breadth. To quote one review of the literature, “The available evidence…suggest[s] that the best outcomes for students are achieved neither by a true core nor by a loose distribution approach, but by distribution requirements involving a carefully structured set of options, i.e., a selection from discrete arrays of coursework” (Jones and Ratcliff, 98). Some units at SFU (e.g., The Faculty of Education, B. Ed.) employ this approach; most do not. Following an extensive program of research, the Association of American Colleges and Universities concluded that an optimal way for Arts and Sciences programs to structure their majors is to offer sequences of courses that help students learn in a cumulative way: “first to use the field, then to gain critical perspectives on it, and finally to connect the field’s approaches with those of other communities” (Schneider, 1997, p. 253).

B. 4. Conclusions Reached by Previous Committees

Previous committees have raised questions about the structure of breadth requirements at SFU. Particularly pointed were questions raised by the Dean of Arts’ Ad Hoc Committee (1985) about requiring students to sample courses from departments classified into groups (called “ABC” requirements by the Committee). This committee identified what it believed was a “fatal conceptual flaw” in ABC requirements, namely that groups “drawn along departmental lines” inevitably end up somewhat arbitrary. Many departments teach courses that fit in more than one category. As a result, “any student…who wishes to … restrict his/her horizons can do so within …ABC requirements. There are enough type-B courses in Group A, and enough type-A courses in Group B, to allow students who want to avoid breadth to do so” (p. 13; copy available from the VP Academic’s Office). On the recommendation of the Ad Hoc Dean of Arts’ Committee, ABC requirements were dropped in the
Faculty of Arts. Arts students were then required to take 30 hours outside their majors in at least four departments. As stated above, Arts students are now required to take 30 credits outside their majors in at least five departments, with no more than nine credit hours in any one department. Did these changes solve the problem?

Other SFU committees have recommended requiring students to take breadth courses inside or outside their areas of specialization (PACUP 20; CPP II 1.3).

C. STUDENT FEEDBACK

C.1. Student Evaluations: Survey Data

Data from the Canadian Undergraduate Survey Consortium: Graduating Students Survey 2000 (see Section III D. 5) revealed that, like students from other Canadian universities, SFU students rated SFU relatively low (C+) on “appreciation of the Arts,” “understanding national and global issues,” and “moral and ethical development.” Engineering Science and Science students rated their programs lower than the mean on “cultivating appreciation of the Arts” and “interpersonal/leadership skills.” Arts students rated their programs lower than the mean on “understanding Science.” Business students rated their programs lower than the mean on “understanding and applying scientific principles” and “appreciation of the Arts.”

Business students from SFU responding to The B.C. University 1999 Two-year Follow-up Survey of 1997 Baccalaureate and PDP Graduates (Office of Analytical Studies) (see Section III D. 5) gave higher ratings than Arts and Science students on ability to work effectively with others.

C.2. Student Preferences: Surveys of Undergraduate Opinions

More than 1000 SFU students responded to the SFU Undergraduate Student Survey—Fall 2000 *. With respect to interdisciplinary experiences, more than half of the students rated the following features of the undergraduate curriculum as “very important” or “somewhat important”: (a) taking courses in disciplines outside their intended majors (80%), (b) gaining an understanding of the liberal arts and sciences by taking at least one course from each of the faculties (64%), (c) taking courses from several faculty members who come together from different disciplines to integrate the concepts and ideas from their fields of study around a common theme (64%), (d) learning in a setting with students who come from a broad range of disciplines (63%), and (e) participating in a theme-based seminar series incorporating ideas from different disciplines (53%).

Fewer than half the students gave “very important” or “somewhat important” ratings for: (a) learning and studying as part of a cohort…taking the same courses at the same time…(45%), (b) taking an integrated first-year program that contains a core set of courses in the liberal arts and sciences (44%), (c) taking courses with modular components where students from different courses come together for short periods (40%), (d) gaining an understanding of the liberal arts and sciences by taking a predefined set of core courses (33%), and (e) taking a core set of courses in the liberal arts and sciences at an advanced level (i.e., 3rd or 4th year) (21%).

In general, the later students were in their programs, the more likely they were to give “very important” and “somewhat important” ratings. Transfer students tended to give more “very important” and “somewhat important” ratings than high school entry students.

Preliminary results from the Fall 2001 SFU Undergraduate Student Survey * (N = approximately 1000) revealed the following rank order of “very important” + “somewhat important” ratings (percentages of the sample giving such ratings in parentheses) for qualities related to a well-rounded undergraduate education: “have an opportunity toward the end of studies to integrate what one has learned in previous courses” (92%), “learn how to use resources available in departments, libraries, and the internet to help gain access to information” (89%), “develop teamwork abilities” (89%),
“increase awareness of cultural diversity and international issues” (82%), “increase ethical awareness” (81%), “be exposed to the modes of thought and forms of inquiry in different disciplines” (81%), “develop quantitative, mathematical abilities” (71%), “develop the ability to speak a second language” (44%).

VII. PUTTING IT ALL TOGETHER

A. INTRODUCTION

Canadian universities cultivate foundational skills and breadth by offering students such options as special first year courses, other first year program options, and special degree programs. Some Canadian and American Universities have developed overriding frameworks for curriculum development.

B. FIRST YEAR COURSES AND OTHER PROGRAM OPTIONS

A sense of the range in both the content and structure of alternative options in Canada can be obtained by examining the following programs.

B. 1. The Foundation Year Program at the University of King’s College

Of the Canadian programs we surveyed, the Foundational Year Program at King’s College best exemplifies the “great books” approach (*). This program is open to students in Arts and Sciences and can (with some modification for Science students) constitute the first year in a B. A. or B. Sc. program. In a single year-long challenging course consisting of lectures and seminars (worth the same as five standard first year courses), 230 students examine major works of western civilization such as Plato’s Republic, Marx and Engels’ Communist Manifesto and Eliot’s The Waste Land.

B. 2. The Quartet of First Year Programs Offered at the University of British Columbia: Arts One, Foundations, Science One, and the Coordinated Science Program

Arts One, established in 1967, * is the oldest form of “alternative learning” available at UBC. It is designed to immerse first year students in significant literary and historical texts that span the centuries. These texts are woven together by common themes or questions. Through a combination of lectures, seminars, and small tutorials, the 200 students in Arts One learn to analyze these texts, formulate arguments, and approach subjects from an interdisciplinary perspective.

Foundations * is the newest program in the repertoire of alternative learning options at UBC. It builds on and extends the Arts One model to both the humanities and the social sciences. Using seminar groups of no more than twenty students, the Foundations program promotes interdisciplinary study of broad questions and is particularly attentive to developing thinking, writing, and speaking skills.

Science One * is a “learning community” consisting of 72 first year Science students. Like the traditional first year curriculum, Science One is designed to teach the fundamental concepts of first year biology, chemistry, mathematics, and physics. However, in Science One seminars, students are asked to explore scientific questions in an interdisciplinary fashion, bringing together different ideas and viewpoints. In addition, through group work and writing projects, Science One students are given the opportunity to develop their critical thinking and communication skills.

The Coordinated Science Program (CSP) * aims to give the same supportive learning and social community found in Science One to a larger number (180) of students, but at the same “academic intensity” as the standard first year science program. CSP instructors in biology, chemistry, mathematics,
and physics meet weekly to coordinate the material to be taught and spread the workload throughout the term. CSP students take CSP sections of each course together and attend weekly two-hour CSP workshops where they study specific problems that span several disciplines and learn problem-solving, critical thinking, and communication skills.

B. 3. McMaster University’s Theme Schools

McMaster's Theme Schools represent loosely structured curricula for undergraduate students *. Completion of a Theme School is equivalent to completing a “minor.” As described on its web pages, “a Theme School is a center of interdisciplinary learning in which a group of faculty members identifies a set of intellectual problems or questions arising out of their research, establishes a programme of study focused on these issues, and gathers a group of students interested in learning about these problems or questions. Students and faculty form an intellectual community that explores these issues through self-directed learning and independent study. Theme Schools have a lifecycle of only five years and accept approximately 80 students for each of the first three years of the School's existence. Presently, McMaster offers Theme Schools on “Science, Technology, and Public Policy,” and “Globalization, Social Change, and the Human Experience.”

COMMENTARY: Could we develop Theme Schools at SFU in conjunction with research institutes and centers?

B. 4. The First Year Seminar Courses Offered by the University of Toronto and McGill University

Students in a First Year Seminar (FYS) course at Toronto * and McGill * might study some of the same material as students in the Foundation Year Program at King’s, but they would do so much less intensively, and as only one course in their first year of studies. FYSs at Toronto and McGill are open to all first year students on a first come, first served basis. With offerings ranging from “Weather, Climate, and History,” “Beautiful Algorithms,” “Hollywood’s Rome,” and “The Transition from School to Work,” these seminars are not designed as introductions to particular disciplines or exhaustive treatments of their subject matter. Instead, they are opportunities for “entering undergraduates to work closely with an instructor in a class of twenty students” and to be exposed to advanced research methods. FYS students are “introduced to the excitement of discovery inherent in academic work” and are “encouraged to develop their ability to think analytically and to express ideas and logical arguments clearly and coherently, both orally and in writing.” Participation in a FYS is not required, and they are taken alongside the standard first year courses for students in Arts and Science.

C. SPECIAL DEGREE PROGRAMS

C. 1. McMaster University’s Arts and Science Program

This program serves sixty students and is a three or four-year program leading to a unique degree: a B. Arts Sc. or a B. Arts Sc. (Honours) *. It consists of small classes designed to give students substantial work in the disciplines of both the Arts and Sciences, to further the development of communication and critical thinking skills, and to “foster the art of scholarly inquiry into issues of public concern.” In both three- or four-year programs, all students take two to five core courses every year, along with electives. About half of the students in this program also opt to combine their Arts and Science degrees with a further honours specialization in a discipline of their choice.

C. 2. Carleton University’s College of the Humanities

The approximately one hundred students who enroll in this four-year program examine some of the most important religious, philosophical, literary, and historical texts produced by both Eastern and Western as well as ancient and modern cultures *. The program is structured around a sequence of four year-long
core seminars, each focusing on a different topic, time period, and theme: Myth and Symbol; Reason and Revelation; Culture and Imagination; and Science, Language, and Power. In addition, students in this program also take four other year-long courses (chosen from a list of approved humanities courses) designed to complement the material presented in the core seminar. They also must choose from one of four concentrations: Liberal Arts, Philosophy, English Literature, and History. The Liberal Arts concentration is for students who wish a comprehensive education in the humanities. The remaining concentrations are available for students who wish a balanced training in the humanities with an element of disciplinary specialization. Graduates of this program receive a distinctive Carleton degree – a Bachelor of Humanities (with Honours).

C. 3. The University of Waterloo Faculty of Arts’ Honors Applied Studies Co-op Program

This program may be of particular interest to the Simon Fraser community because like SFU, Waterloo is a university that operates on a trimester system. Indeed, the trimester system is the foundation for this particular program innovation. Students in Waterloo’s Applied Studies Co-op Program * take a very different core curriculum from those in the Arts and Science Program at McMaster or the College of the Humanities at Carleton. The Waterloo program offers a combination of business and liberal arts courses featuring critical thinking, academic writing, foreign languages, history or politics, and an introduction to humanities, as well as courses in management, introductory economics, computing science, and financial accounting. In general, these courses are completed by the end of the second year, after which students pursue an Honours Arts degree in the field of their choice. From the start, however, each Applied Studies Co-op student spends at least part of each trimester in a private or public sector Co-op placement. Like other Co-op students, students in Applied Studies have the opportunity to apply the knowledge they gain in the classroom to the world of work – and vice versa – and to hone their communication and collaborative skills in different ways and in different contexts. Although Applied Studies Co-op students take somewhat longer than usual to complete their degrees, they graduate unburdened by debt, with an Honors degree and an expanded skills portfolio.

D. OVERRIDING FRAMEWORKS

D. 1. Introduction

A final way in which universities have fostered foundational skills and breadth in their students is by establishing overriding frameworks to guide curriculum development and to structure students’ choices. Although the most common framework is a distribution model, two new models have emerged that merit consideration as possible models for Simon Fraser University: the curriculum frameworks developed at the University of Calgary and Duke University.

D. 2. Distribution Models

We discussed distributional approaches to curricula earlier. At some universities, distribution requirements are structured across fairly well defined disciplinary categories (e.g., see the National University of Singapore); other universities employ other categories, such as Foundational Skills, Area of Concentration (i.e. major), Integrated Learning and/or Expanded Learning with “x” credits required in such broad areas as the Sciences, the Social Sciences, etc. (link).

D. 3. The University of Calgary Framework

Within Canada, the most extensive curriculum framework to have emerged in recent years is that of the University of Calgary *. The University of Calgary hopes its graduates will be able to: pose questions that approach the frontiers of knowledge; solve the academic, professional, and ethical problems they face; relate theory and practice; establish and realize goals, working alone and with others; communicate meaning in competent and effective ways; engage meaningfully with those from other cultural and
linguistic communities; and understand the world from a variety of perspectives. To achieve these overriding goals, the University of Calgary has directed all undergraduate programs to assist students in the acquisition of the following “core competencies”: (1) Critical and creative thinking, (2) Analysis of problems, (3) Effective oral and written communication, (4) Gathering and organizing information, (5) Logical calculation, (6) Abstract reasoning and its application, (7) Insight and intuition in generating knowledge, and (8) Interpretive and assessment skills. In addition, it has established seven curricular redesign features to guide the revision of all undergraduate programs at the university: (1) a clearly identifiable field of study, (2) a defined interdisciplinary component, (3) an international component, (4) an experiential learning component relevant to program objectives, (5) provision for broad and extended faculty-student interaction at the program level, (6) integration of research, and (7) an explicit program syllabus, which sets out in advance the knowledge and skills to be acquired in a program of study. While departments and programs are asked to redesign their offerings with these competencies and features in mind, they have a great deal of flexibility in how they do it.

Commentary. One strategy for curriculum revision at SFU would involve working with units to develop sets of goals like those developed at Calgary and encouraging units to ensure that their undergraduate programs are designed in ways that optimally enable their students to achieve the goals they have identified. We would be interested in feedback about this possibility.

D. 4. The Duke University Framework

Another approach can be found at Duke University, which has structured its curriculum around a matrix based on the following categories: (1) Areas of Knowledge (Arts & Literature, Civilizations, Social Sciences, and Natural Sciences & Mathematics), (2) Modes of Inquiry (Quantitative, Inductive & Deductive Reasoning, and Interpretive & Aesthetic Approaches), (3) Focused Inquiries (Cross Cultural Inquiry, Science, Technology & Society, and Ethical Inquiry), and (4) Competencies (Foreign Language, Writing, and Research) *. Students are required to take a prescribed number of courses in each of the sub-categories from each major category.

VIII. POSSIBLE WAYS OF IMPROVING THE SFU UNDERGRADUATE CURRICULUM: IDEAS FOR DISCUSSION

A. INTRODUCTION

In this section we sketch a subset of the many ideas we have considered that might improve our general undergraduate program. We feature them here because they seem particularly worthy of further discussion.

Because we are assuming that the major programs and specializations in particular disciplines are best dealt with by the departments, we have focused our attention on Foundational and Breadth issues.

B. CULTIVATING FOUNDATIONAL ABILITIES

B. 1. Should we implement University-wide programs designed to foster communication abilities?

There seems to be a general perception that many students’ writing is not adequate to deal with conceptual material in their disciplines and/or to enable them to communicate their ideas to others and/or to understand others’ ideas. In Section III we outlined a variety of ways in which universities help students improve their verbal abilities. Although it might reasonably be argued that all professors and all courses already contribute to improving students’ writing and reading skills, we have been largely persuaded that improving inadequate literacy requires particular kinds of help not easily given in normal courses. The crucial element seems to be to ensure that students write a good deal, get frequent and
intensive correction of their work, and are encouraged to rewrite and receive further correction (link 5
Description of writing intensive courses).

Possible ways of doing it:

One way of improving the level of reading and writing proficiency of SFU students might be to ensure
that they have acquired an acceptable level of proficiency before they are admitted, as UBC does.
Although it might be argued that such requirements would block access to a university education for
some students, it could be counter-argued that venues are available to all applicants for improving their
writing skills. The main arguments against this idea are (a) the type of writing taught in high school
differs in significant ways from the type of writing valued in universities, (b) the costs of adequately
assessing proficiency in reading and writing may be prohibitive to students or to universities, (c) adding
such admission requirements might discourage students from applying to SFU.

Because university writing is in some degree different from high school writing, it might be argued we
should offer more remedial assistance. UBC offers a remedial Writing Course. We might also increase
the range of services offered in our Skill Development Centres. On the other hand, we might conclude
that we expect students to have acquired these abilities before coming to SFU, and that our resources
should be used for other purposes.

The information we have reviewed suggests that the most promising way to enhance the writing abilities
of students is through writing-intensive courses (link). If this proves to be the case, we would need to
decide what kinds of writing-intensive course to develop. We could follow what has become a common
model, a variant of which is proposed at UBC as a new Writing Requirement (link6 “Write, Write, And
Rewrite”). In the UBC proposal, writing-intensive courses are marked with a WI in the calendar.
Writing-intensive courses emphasize careful reading and extensive writing, providing frequent
opportunities for re-writing, criticism, and further re-writing. The style and formal standards of such
courses are those of the departmental discipline. Writing-intensive courses are designed to increase
students’ critical reading and writing abilities. Extra teaching credit might be given for such courses, or
T.A. assistance provided. A commitment to writing-intensive courses will require significant funding.

Alternatively or additionally, we could offer “stand-alone” writing courses. Such courses would likely
be offered by the English department. Like writing-intensive courses, they might be designed in ways
that improve speaking, listening, and critical thinking abilities. The Writing Centre might play a role in
the development of discipline-based writing-intensive courses. For a possible way of implementing
writing-intensive courses at SFU, see (link 7: proposal for writing program at SFU).

Another approach used in some institutions is to require students to pass “exit examinations”
demonstrating adequate literacy. Such exams could be taken many times, but graduation would be
dependent on the student achieving a pass. From our reading, we are not encouraged to believe that such
exams are particularly effective. In addition exit exams seem redundant if one institutes an effective
system within the undergraduate program.

If we require students to take writing-intensive courses, should they be university-wide requirements or
faculty- or department-based? A faculty or department might require successful completion of one, two,
or more such courses before students take upper division courses. Alternatively, faculties or departments
might require students to take one or two such courses in lower division coursework and an additional
course or two, at an increased level of sophistication, in upper division coursework. To avoid increasing
students’ requirements, departments could redesign some of their already required courses in writing-
intensive ways.
B. 2. Should we implement University-wide programs designed to foster thinking abilities?

B. 2.1. Quantitative Abilities. We can safely assume that students in quantitative fields of study (e.g. most sciences) have more than sufficient quantitative skills, so requiring students to acquire such skills would largely affect students in the Humanities and Arts. All departments may reasonably claim already to develop the quantitative reasoning abilities required for successful work in their disciplines, but the survey data we reviewed in Section III D. 5 challenges this claim. Quantitative skills are important in most, if not all, disciplines and professions; they are also, simply, good for minds to possess. The kind and level of quantitative work will vary across disciplines, but students in all disciplines may benefit from further development of skills appropriate to quantitative reasoning in their discipline. This would be true of the relatively sophisticated computations in Mathematics or Computer Science or the ability easily and skillfully to read charts and tables in History or English.

A possible way of doing it:

Following the model used for literacy, departments that conclude that more systematic attention to quantitative reasoning in their discipline would be beneficial could institute courses designated with a Q in the catalog. Students would be required to complete successfully one, two, or more of such courses before graduation, as decided by each department. These courses would emphasize the quantitative reasoning appropriate to the departmental discipline.

These courses could be a part of the normal set of prerequisite understandings required in a discipline, and be offered in the first two years of a student's program.

Alternatively, or additionally, the mathematics department might offer “stand-alone” courses aimed systematically at improving quantitative reasoning. Students might take such courses voluntarily, or, by some mechanism decided by the major department, be required to take them. (Course titles such as "Understanding statistics in your world" were considered.) A practical mathematics course was recently introduced in the Liberal and Business Studies program.

B. 2.2. Critical Thinking Abilities. Faculty from our Department of Philosophy and Faculty of Education have expertise in teaching critical thinking abilities. Roland Case and Sharon Bailin have criticized traditional approaches to teaching critical thinking and outlined guidelines for effective courses (e.g., Bailin, 2001 and link 8 to Case papers). Roland Case has recommended two initiatives for discussion: (1) departments identify core “critical thinking tools” required in their area and develop procedures (e.g., non-credit workshops, tutorials embedded in courses, designated courses) for systematically teaching these tools to their students; (2) departments sponsor workshops for instructors to encourage thinking critically about course content (e.g., problem-based learning, learning to frame critical thinking tasks, creating exams that assess thinking about/with the course content) and to develop sample resources (sample modules, assignments and exams) that support critical thinking within their disciplines.

B. 2.3. Research Abilities. Past committees (e.g., CPP, Abridged Compendium link 1) have recommended that SFU provide undergraduate students with more opportunities to participate in research conducted by faculty, especially as members of research teams (See also the Boyer Report *).

B. 3. Should we design programs to develop other foundational abilities?

The Committee considered a set of other foundational abilities whose development might improve the general quality of our undergraduate program. There have been varying degrees of interest in introducing initiatives designed to foster development of a second language, ethical awareness, and oral
language abilities. The latter, some thought, along with critical thinking abilities, could be adequately addressed in requirements designed to improve writing abilities.

Should we introduce a second language requirement? If so, what criteria could we use to determine which languages satisfy the requirement? For example, would a native speaker of Spanish or Korean, who has adequate English, automatically satisfy our language requirement, or would we want to impose some further conditions? Are second language requirements more appropriate in some programs, such as International Business, than in others?

C. CULTIVATING BREADTH

The Committee spent a lot of time exploring the current provisions in the University for achieving the goal we are summing up in the word “breadth”—the notion that an undergraduate degree should be based on something more than specialization in a particular discipline. As documented in Section V, the current breadth requirements at SFU are enormously varied from program to program, and it is hard to feel confident that they are all successfully meeting the purposes for which they have been designed. Although some form of the present system of requiring students to take courses outside their major areas might, in the end, be preferred, we offer a set of alternative methods that seem worth considering. Section IV of this report describes, and has links to, many other means of cultivating breadth.

C. 1. Should we develop more courses for non-majors, or more courses with an inter-disciplinary, multi-disciplinary, cross-disciplinary, or special focus?

Many undergraduate courses at SFU are specifically designed as introductory courses for disciplinary majors or, if more advanced, require such introductory courses as prerequisites. This often makes it difficult for an undergraduate from one discipline to be exposed in a serious but non-professional way to the modes of thought and enquiry in other non-related disciplines.

One way to allay this problem is to promote a palette of rigorous but specifically non-professional courses whose purpose would be to provide exposure and experience for students outside the often-narrow confines of their disciplinary major requirements. Such courses might be of several different types, best illustrated, perhaps, by examples: Black Women Writers, The Immigrant Experience in Canada, Aboriginal Experience through the Eyes of Native Writers, Revolution and Change in Modern China, Parliamentary Democracy: Comparative Studies, Darwin and His Critics, The Management of Canadian Natural Resources, The Impact of Technology on Society, Statistics and Risk Assessment: Public Policy, Private Choices.

Some such courses already exist. Others could be developed. Resources could be earmarked for this purpose, and guidelines or an approval mechanism could be developed. Courses in this category might be jointly taught by faculty from different departments and even different faculties, exposing students to the characteristically distinct approaches/cultures of different disciplinary areas. To the extent that such courses could attract students from different disciplines, they might provide opportunities for group work among students of different disciplinary backgrounds. Writing or quantitative reasoning might explicitly be made part of some of these courses (see B.1. and B.2. above).

Other issues that would have to be addressed: Would such courses be aimed at a particular level (first year, third year)? Would such courses be off limits for students in closely related disciplines? If not, would non-specialist students be at a disadvantage with respect to grades? What impact would design, development and participation in such courses have on faculty teaching loads?

C. 2. Should we develop more "A for B" courses?

A related idea would involve providing a set of courses whose general character might be caught by labels such as: Literature for Scientists; Science for Educators; History for Creative Artists; Science for Historians; Social Sciences for Computer Scientists, etc. These courses could be co-designed and co-taught by scientists/historians, social scientists/computer scientists, educators/historians, etc. Issues similar to those raised above would be
relevant to such courses. The purpose of these courses would be to introduce students in particular disciplines to the problems and methods of other disciplines. In each case, we would expect the overall objective to be achieved by dealing with some specific topic, e.g., the development of science in 19th century England; the influence of African art on modern iconography; attempts to apply scientific methodologies to education; etc.

C. 3. Should we encourage the development of portfolios?

Instead of taking a particular range of out-of-major courses, students might be encouraged in their first year to select a general topic that they will explore and elaborate over the time of their degree. (A Physics major might prepare a portfolio on the crusades; a History student might choose the geology of the solar system; a Performing Arts student might choose hunter-gatherer societies; a Philosophy student might choose the circus.) Students could take courses in a variety of departments. Some system of alternative grading might be required so that portfolio students would not be at a disadvantage compared to majors in the areas in which they take courses. The amount of coursework taken might vary somewhat depending on the nature of a student's portfolio. Assistance in setting up portfolios, choosing a topic, etc., and criteria for their assessment would need to be developed, and this would have implications for resources devoted to student advising. A set of templates or models might be provided to incoming students, guiding but not inhibiting unduly their construction of a portfolio.

C. 4. Should we offer alternate grading options?

One barrier to students attaining “breadth” by taking courses outside their disciplinary specialties is the fear of competing with students majoring in the departments in which the courses are offered. The fear is that grades received in such courses will lower the GPAs of the non-majors and jeopardize scholarship support and admission to graduate or professional schools.

One way of dealing with this problem is for the major department to identify for each student those courses that are part of the major program (e.g., Mathematics or Computer Science courses for Physics majors). On this basis, the student’s record would be divided into “major” courses and “other” courses, and GPAs would be quoted separately for the “major” courses and the "other" courses. If SFU scholarship aid were judged on the basis of the “major” courses only, then no student would need to fear loss of scholarship because of lower-than-acceptable performance in “other” courses that might supply needed breadth.

This dual reporting of student records would require a major change in programming. A covering document explaining the system would have accompany students’ transcripts. A potential benefit of this procedure is that potential graduate schools and employers would have a more sensitive measure of student performance, which could give an edge to SFU students.

Alternatively, non-major courses might be graded on a Pass/D/Fail system.

C. 5. Should we develop more Certificate programs?

We might consider implementing programs based on SFU’ program leading to a Certificate in Liberal Arts *, perhaps expanded to include other mixes of courses. Inter-disciplinary, multi-disciplinary, cross-disciplinary, and special-focus courses (see C.1. and C.2. above) could easily be included in the Certificate model by placing them on the appropriate lists. Certificates of this sort could be associated with regular degree programs and identified on students' records, thus enhancing students’ attractiveness to employers or graduate schools. Different faculties or departments might use a common set of lists but with different distribution requirements (e.g., science courses might be available to Arts students obtaining a Certificate, but not to Science students). A variant of this idea would be to introduce a variety of “mini-certificates” in different areas. Descriptions of such Certificates could be included on students’ transcripts, so that potential employers or graduate schools would understand their significance. Such programs would be most successful in promoting breadth if the Certificate came to be viewed by students as valuable in itself and, thus, attractive to a significant number of students.
One advantage of an optional approach is that requirements for majors would not have to be modified unless the host faculty felt that changes would be beneficial. The 30-hour requirement for a Certificate in Liberal Arts would, however, be difficult to meet in existing major programs that are highly prescribed. If the Certificate program became popular, Faculties with highly prescribed major programs would have to loosen their requirements in order to enable more of their students to participate.

D. PUTTING IT ALL TOGETHER

D. 1. Should we make changes in our breadth requirements?

University-Wide Breadth Requirement? We could institute a general, university-wide breadth requirement to be satisfied by all undergraduate students. The effect of a mandatory approach is that all students entering the University after the effective date of the new requirement would have a broader education, and the SFU undergraduate degree would develop a new meaning.

A disadvantage is that all present programs would have to be re-examined for compatibility with the new requirements. Programs lacking sufficient elective space to accommodate the requirements would have to be modified. This would be time-consuming, and the necessity of modifying successful programs would likely excite opposition.

Another problem pertains to the granting of credit to transfer students who have taken a significant portion of their lower division courses elsewhere.

Assuming that the lists of courses that constitute the breadth requirement are university-wide, there remains the issue of how the distribution requirements are set. Questions include: Which lists? How many course from each list or group? How many courses overall? Such requirements would presumably differ somewhat from faculty to faculty, and could even be different from department to department and/or program to program. A balance would have to be struck between a too-rigid set of requirements that would not fit the needs of individual units and an overly flexible set that could render the program meaningless or lead to perceptions of unequal treatment.

Faculty or Department breadth requirements? This is the model we currently use. Is it working satisfactorily? There is wide diversity from department to department. Should we employ models for cultivating breadth other than the distribution models employed in most programs?

D. 2. Should we develop cohort general programs?

Some of the major enhancements of university programs that the committee has studied involve quite large-scale changes from the normal course-accumulation systems. We have included links to some of the more prominent of these programs in Section IV, and will add here some of the ideas the committee has considered. Again, our purpose is not so much to propose these as changes, but rather to use them as stimulants to thinking about possible directions of change.

D. 2.1. Should we develop cohort programs?

Following models employed by many universities, we might develop cohort programs. One way of doing this involves developing general cohort programs that provide a distinctive set of courses for incoming students; either for all such students or a significant proportion of them (e.g. UBC’s Arts One and Science One programs). Another way involves developing more particular cohort programs within individual units or areas (like the Winston proposal at SFU*). It might be desirable to encourage units in SFU to help compose a menu of such options, each on a small scale.
A significant obstacle to cohort programs, and to the proposal in D.2.2. below, is the relatively large number of transfer students accepted by SFU and the tendency of many students to attend SFU part-time and sporadically.

D. 2.2. Should we develop distinctive semesters?

As an aspect of the proposal outlined below in D.2.3, the 5th semester of a students’ program, or as close to it as is convenient, could involve taking a set of courses within their major designed to provide them with a general orientation to their discipline and its place in the wider intellectual world. A number of SFU programs currently offer single courses that have this character, giving a philosophical introduction to the discipline (e.g. HIST 300: Approaches to History, GEOG 302: Geographic Ideas and Methodology). We could expand such courses to provide 15 credits. The 5th semester would involve an introduction to the most powerful ideas within the discipline, and how these relate to similar or competing ideas in other disciplines. Students would consider the role of their major discipline in human cultural existence, its historical development, the kind of sense it makes, the security of that sense, and so on.

D. 2.3. Should we develop more comprehensive programs?

We have looked at a variety of large-scale, comprehensive programs, and a number of them are described in Section VII. Most of these programs are designed for the introductory semester or year. Their aim is to help students make the transition from forms of thought that are common in high school to those that are appropriate to higher education. We have included links to a number of these programs, and sketch here one further example, which includes a number of the features of programs mentioned above--just to indicate that we can invent such things to suit ourselves. Assuming an 8 semester undergraduate program. Semester 1 and semester 5 would be different in character from the others. The others would be more like the current norm of varied coursework for a major. Note that a comprehensive program such as the one sketched below would be appropriate only for students entering SFU in the first year.

Semester 1: Students would be in cohorts of approximately 15 students. The cohorts would take programs in each of the following four topics:

- **Making sense**
  - How have people made sense of their experience and of the world?
  - Oral cultures and the cognitive implications of literacy. Rational forms of inquiry. Inquiry into the past, and its purposes. Modern sciences and limits of sense they offer. The arts; their earliest forms and purposes. What kind of sense is made in music, painting, poetry, the novel?

- **The human mind**

- **Human cultures**
  - The range of human cultures across time and place; variability and constraints. Close look at a distinctive and “exotic” culture (Canada?). Forms of religious experience. The cultural nature of humans.

- **The cosmos**
  - Developing understanding of the cosmos through history. Contemporary understanding. Bases of our current understanding, and their reliability.

Semester 5: Described in D. 2.2. above.
References


