

**Flagship 2030 Final Report
University of Colorado at Boulder
Undergraduate Education Task Force
September 2008**

Part I:

Introduction

The members of this task force (including some changes) are:

Michael Grant, Co-Chair

Professor, Ecology and Evolutionary Biology, Assoc. Vice Chancellor for Undergraduate Education

Robert Schulzinger, Co-Chair

Professor, History and former Director of International Affairs Program

Polly McLean, Associate Professor, Journalism and Mass Communication

Michael Breed, Professor, Ecology and Evolutionary Biology

Margaret Asirvatham, Director, General Chemistry Program

Michael Klymkowsky, Professor, Molecular, Developmental and Cellular Biology

Darin Toohey, Professor, Atmospheric and Oceanic Sciences, Director, Baker RAP

Kendra Gale, Assistant Professor, Journalism and Mass Communication

Rolf Norgaard, Senior Instructor, Writing and Rhetoric

Liza Hensleigh, Staff, International Education

Lisa Lovett, Staff, Career Services

Peter Freitag, Staff, Assoc. Director, A&S Advising Center

Elizabeth Guertin, Assistant Dean, Director A&S Advising Center

Cindy Kraft, Staff, International Education

The Undergraduate Education group focused on these elements of the core and flagship initiatives: enhance education, ensure access, diverse world, residential colleges, customized learning, experiential learning and global crossroads.

We divided the committee into five groups working in parallel with each other, according to the flagship initiatives of residential colleges, customized learning, experiential learning and global crossroads. The core initiatives—enhance education, ensure {financial} access and diverse world— were treated as being congruent with each of the flagship initiatives.

Each sub-group invested significant time in investigating what other high-quality institutions were doing in their respective areas, consulting “best practice” literature and attending professional conferences on topics related to these areas of responsibility. Each group drafted written suggestions for our UE priority list to the whole UE Task Force for comment via email. The entire group met weekly in the spring semester to discuss, critique and modify the recommendations plus we have had numerous regular email exchanges on concepts, priorities and text language. We developed a relatively long list of items we could have recommended to accomplish the initiatives, but we realized we needed to order that list into fewer priorities as described below.

The ‘Big Ideas’ Overview

After much discussion, our group arrived at a consensus that the strategic planning for this campus must stress our primary identity and strength: We are a comprehensive, research institution, situated in the western U.S. Our recommendations strengthen the ways in which undergraduates learn about, understand, and participate in the scholarly creative and cutting-edge research work of this institution. Most of our recommendations focus on enhancing the ways in which faculty and curriculum requirements generate more direct interaction with the large majority of students who do not fall into the top or bottom ranges of academic preparation or performance. Our vision emphasizes this institution developing greater, not diminished, student-faculty interactions. We see this strategy as fundamental to our view of CU-Boulder as a premier residential campus. In addition we recognize that the campus needs to also be more innovative in thinking about ways in which modern Information Technology (IT) tools can augment and strengthen student-faculty interactions. There are many new options for faculty and student “tool-kits” which can significantly contribute to improving the quality of the undergraduate experience.

We focused on recommendations which should be thoroughly integrated into a cohesive and sustainable curriculum. We avoided the option of simply adding on a list of desirable items, programs, or approaches while leaving intact the current undergraduate curricular design. We recognized that the degree to which our recommendations would change the undergraduate

coursework culture may vary significantly among the different schools and colleges on the campus.

We have assumed our current credit-hour requirements for earned degrees are not elastic and will not be expanded. This means all curriculum changes must be implemented by some combinations of substitution, inter-change, re-direction, and improved efficiency. Elective, ancillary or major degree requirements in some combinations will require modification.

For every recommendation we forward, anticipated effects on faculty instructional effort, cost for students, and responsibilities for staff potentially loom large and must be assiduously attended; enhanced quality in our undergraduate programs will necessarily entail enhanced costs and enhanced attention to student financial access issues. Workloads, rewards, costs, and reactions of students, faculty and staff to each recommendation need to be carefully evaluated before implementation. Initiatives to institutionalize regular, systematic, assessment and monitoring of effectiveness, or lack thereof, must accompany these changes. We have focused on “best practices” or “top quality” approaches. We clearly recognize that some—though not all—of our recommendations imply a major increase in financial and other resources required.

We stress the need for high quality and direct assessment of the efficacy of the programs; those assessments must be accomplished professionally and routinely. These assessments should, for example, employ external evaluators, utilize standardized content tests where appropriate, hire expert consultants to provide advice, establish modification protocols based on the evaluation results, etc. We acknowledge that student learning assessments by the instructors-of-record, or even by the sponsoring department are valuable but on their own, will generally be insufficient.

Recommendations in priority order

(1) Generate a faculty and administrator outlook with a deep and broad commitment to a flexible, customized, and distinctively experiential view of baccalaureate degree programs.

This would require significant structural changes in instructional modes and many new earned degree pathways but, if implemented, the culture of undergraduate education on this campus will become distinctive and attractive—perhaps bordering on uniqueness--for a large public, comprehensive, research university. Our recommendations will dramatically improve the following aspects of the undergraduate experience: undergraduate pedagogy, student enthusiasm and flexibility, faculty responsibilities, faculty numbers, plus change faculty and student attitudes about the way credits for a degree can and should be earned. Most importantly, commitment to these recommendations is essential to significantly enhance the quality and ambience of the typical undergraduate experience. Significantly more inclusive merit and promotion procedures, which explicitly take into account these more time-demanding modes of instruction, will need to be spelled out in advance by faculty and deans' offices. Such procedures should recognize the potential value of academic technologies to support teaching and learning.

(2) The campus should greatly expand its customized and experiential curricular models and pathways along which an undergraduate can proceed to earn a baccalaureate degree.

This recommendation rests upon the foundation of substantial learning research which clearly shows great benefits to undergraduates who can combine some direct, hands-on, practical experience closely connected to classroom concepts. We recommend that inquiry-based methods which directly connect course concepts but demand active student participation be greatly expanded from levels. One pathway to implementing such a strategy will be to have

adequate support for faculty, staff and students to effectively employ enabling technologies such as digital curation, defined as the capability to establish and sustain long term repositories of digital assets for current and future reference by researchers, scholars, scientists, students, and historians. Additionally, enabling technologies can be used to evaluate hands-on, practical experience in several ways.

(3) We recommend that high-quality ‘global crossroad options’, such as Independent Study and Independent Research outside of the U.S., under direct faculty guidance, be accepted for degree requirements. In some cases such degree requirements might be part of the major or they may be for elective credit or they may meet certain ancillary requirements. We encourage a much broader view of ‘acceptability’ than at present

(4) We recommend that substantive student engagement in ‘hands-on’ opportunities be recognized in such a way as to count toward earned degrees. This can be accomplished by greater flexibility in degree specifications. For example, some of these accomplishments could be counted toward meeting some major requirements, some by meeting a critical thinking requirement, some by meeting elective or ancillary requirements, etc. We envision these options for such things as (a) the Undergraduate Research Opportunities Program (UROP) where, hopefully, refereed publications result, (b) faculty approved, supervised and evaluated (senior or junior?) thesis projects, (c) internships which have adequate academic content and supervision, (d) teacher certification programs including CU Teach Step courses, (d) Learning Assistant positions, (e) service-learning projects with adequate academic focus and supervision, (f) civic engagement projects with adequate academic focus and supervision, and (g) some study abroad

projects not already recognized in our current programs, international exchanges, (h) co-op programs, and the like. We recognize there can be significant cost obstacles to this style of education for the institution in terms of faculty and staff time and salaries but also to students in terms of special program costs; to be successful, protocols to successfully address these accessibility costs will need to be integral to programmatic changes.

(5) We strongly recommend that the Honors Program be significantly expanded to serve more effectively students who now qualify for participation. We note that CU-Boulder is the home of one of the oldest honors program in the country. It stresses customized learning by requiring an honors thesis for Latin honors (*cum laude, magna cum laude, summa cum laude*). Approximately 7-8% of students in Arts and Sciences now graduate having written an honors thesis. With sufficient support, this figure can easily grow to 15%. Expanded resources would also enable the Honors Program to extend its work to other schools and colleges as part of a broad and more closely integrated and coordinated campus honors initiative. Our Honors Program currently offers faculty in all schools and colleges the opportunity to serve on the Honors Council and to provide the Latin honors option for their students. In particular, we also recommend that the Honors Program expand its “Honors Fellow” initiative for faculty members, so that one Honors Fellow could be chosen from each school and college, and multiple fellows from the larger schools and colleges. Central to our recommendation is that Honors increase the number, range, and reach of honors courses/sections, and that it increase the opportunities for Latin honors, which requires an appropriately customized learning experience of a thesis.

(6) For all of our recommendations, appropriate, sustained assessment protocols will need to be in place to ensure the academic quality, and the mechanism for implementing further changes where needed, for these pathways. We also recognize that there are, in many cases, major cost implications for faculty supervision, faculty teaching responsibilities, faculty rewards and promotions, staff support, physical facilities, and administrative infrastructure. We recommend that four or more of these new options be developed and approved for students by the fall semester of 2010. If they are as successful as we think they will be, future steps such as consideration of making one or more of these experiences required, could then be considered.

(7) We recommend continued expansion of the residential college concept with the intermediate term goal, by 2015, of making the Residential College concept available to all first year students. In the longer term, 2015 to 2025, we recommend development of programs which include 2, 3 and 4 year residential college options, a strategy partly underway already, and we observe that the Bear Creek apartment complex may provide a beginning option. We strongly recommend developing encouragement and support mechanisms whereby there is a much closer connection between students in the residential colleges and Tenure or Tenure Track (TTT) faculty. Such mechanisms would necessarily require ways to make it in the individual TTT faculty member's best interest and, simultaneously, to make the home academic department's best interest congruent with the residential college program. In addition, the merit and promotion reward systems should clearly recognize such participation as central career teaching accomplishments and responsibilities and not treat them as simply voluntary or over-load activities. One possibility would be to assign tenure track lines directly to the residential colleges. Academic departments would then have a strong incentive to propose joint roster

identification for purposes of gaining faculty expertise to be employed in common curriculum instruction, research or creative work, and graduate education from those joint identifications. Again, more inclusive merit evaluation and promotion procedures would need to be carefully addressed and spelled out in advance.

Some of the residential programs might be successfully organized as teaching and learning communities with disciplinary-oriented research strategies as outlined earlier; others may continue to follow the academic themes concept, as at present. Some programs might develop short course options modeled after MayMester or summer school offerings. International education as a regular faculty assignment should also be a part of this strategy. We also recommend that the residential college program strive to build, remodel and modify physical facilities (residence halls) with a strong outlook toward academic function as an important element. Student access, financially, must also be ensured so that these programs do not sort students along a financial means gradient.

(8) We recommend implementing an increased emphasis on inter-disciplinary or multi-disciplinary (e.g., inter-departmental) education. Specifically, we recommend a strong emphasis on providing undergraduate students with inter-departmental certificate programs, worthy of recognition on the academic transcript, whereby students span two (perhaps three) departments to earn such recognition. This would, in many ways, emulate the General Honors program except that it would be encouraged as an option for any interested student, not just those who qualify for the Honors program. We recommend these certificate programs be structured so that they are highly attractive to students and not unduly burdensome with additional

requirements beyond those for an ordinary baccalaureate degree. At present, some certificates require 24 semester hours of work, others 18, and others correspond roughly to a minor of 12 semester hours or even fewer. We recommend the certificates roughly follow the requirements for a minor where individual courses may meet more than one requirement. As one example, an EBIO student might earn a degree in that department by having 6, say, hours of EBIO major requirements and 6-9 hours of EBIO electives met by earning 12-15 hours within Applied Math. This strategy, ideally acknowledged by a certificate in "mathematical biology," would give students more flexibility, while simultaneously responding to the current trend of contemporary biology becoming increasingly mathematical. We also recommend these inter-departmental certificates be encouraged to span more than one school or college.

Faculty-to-student and student-to-student interaction could also be significantly enhanced with a stronger emphasis on the use of collaborative technology tools such as blogs and wikis. We expect the instructor's role to become less of a source of information (the sage on the stage) and much more of an expert evaluator, guide, and mentor for the students who have correspondingly greater responsibilities to access information. Students will read, think, analyze and interact both with the instructor and with fellow class members.

We also urge that students be afforded opportunities to engage in these inter-disciplinary protocols with international universities and to add options for study within the U.S. when there are compelling reasons to do so (e.g., via exchange programs among U.S. universities).

(9) We recommend developing a much stronger supporting infra-structure for both student and faculty international exchange as well as developing new exchange study opportunities with other universities in the U.S. Most of the needed infra-structure will be in the form of professional exempt staffing plus the required office space. For the faculty exchange program, we think that much of the infra-structure of our current student exchange programs could work quite well where the general arrangement would be for each home institution to continue to pay the normal salary to their faculty member while he or she teaches elsewhere and vice versa. In addition, there may often need to be supplemental institutional support for such asymmetries as housing or health insurance costs. The campus might choose, for example, to employ some of the family housing facilities for this purpose. A more active faculty exchange program would mesh very well with the international undergraduate Independent Study and Independent Research emphases mentioned above.

(10) We recommend development of a CU at DC program modeled after similar successful efforts at some other major public universities. This program initially would entail leasing classroom space in Washington D.C., developing internship and co-op options for students who ‘go to D.C.’ for a semester, arranging housing for CU or other faculty instructors in the program as well as for students, and developing a strong customized, experiential field study, hands-on, direct contact, style of program, especially attractive for political science and international affairs students. There will be also be opportunities for other disciplines in public policy, health, science, fine and performing arts, and engineering.

Timelines:

We recommend that the campus faculty in all the schools and colleges begin in the fall of 2008 to address the specific ways in which recommendations #1, #2, #3 and #4 can be implemented. We recommend a phased strategy whereby the first accomplishments would focus on incorporating student research (e.g. via UROP), student internships, and study abroad can be counted for degree requirements more broadly and more flexibly than at present. We recommend the deans of the various schools and colleges be charged with organizing task forces within their units to generate a cohesive strategy of accomplishment that will be flexible enough to encompass the varied requirements of each school and college and which can begin not later than the fall 2010 semester.

We recommend a program of faculty meetings, workshops, and seminars be developed, starting Spring 09, by and for faculty and students to focus on addressing the long list of issues entailed in recommendation #1.

We recommend the current efforts focused on the residential college concept plan expand their scope and rate of progress with respect to recommendation #7.

We recommend appointment of a new task force, fall 2008, to be charged with planning implementation of recommendation #10 with the goal of having our first students in DC in the fall of 2010 or 2011.

Part Two:

The recommendations discussed above all contribute to our identity as a comprehensive graduate research institution with selective admission standards. The recommendation to emphasize direct, experiential undergraduate learning via expanded research and creative work opportunities builds on having high quality students and a vigorous scholarly faculty engaged in research and creative work. This recommendation also conforms well to best pedagogical practices which recognize that hands-on elements in an undergraduate curriculum improve retention, graduation and career path success, most especially with under-represented student groups. The recommendation to fortify our residential college efforts recognizes that small classes offered inside a well-constructed living and learning environment provide a very effective pedagogical model. The residential college models also enhance graduation rates, institutional loyalty and student satisfaction. The recommendations about customized learning and global crossroads contribute to an enhanced intellectual, cultural, geographic and racial diversity on campus and encourage a global perspective in our graduating students.

The recommendations as a whole entail a reallocation and shifting of some resources from traditional lecture and lab formats to better accommodate a higher level of experiential learning. They also entail a shift in the faculty's outlook regarding multiple pathways available to students to earn their baccalaureate degrees. The recommendations will require a significant shift in the space planning and use analysis for residence halls in order to make them highly conducive for academic purposes. We also believe the shift to a higher proportion of credits for students from experiential and customized and inter-departmental certificates will require a better (i.e. lower) student to faculty ratio and a significant shift in how faculty earn merit raises, promotion and tenure.

The recommendations focus explicitly on the goal of improving student learning. The committee has followed research literature results on effective pedagogy, on student and faculty desires, and on a model which is rather distinctive among Research I institutions. We recommend changes which greatly increase student engagement in the processes of creative work and research as powerful adjuncts to traditional classroom instruction. We also recognize that future trends are likely to demand intellectual flexibility on the part of our graduates. Valuable training and experience in such flexibility can be afforded by our inter-departmental certificate program approach. Our emphasis on enhanced student and faculty international exchange programs, as well as one off-campus recommendation, is aimed at expanding the intellectual and learning experiences of our undergraduates with special emphasis on a globally-oriented perspective.

We know from substantial direct experience, as well as from the student-learning literature, that early engagement in actual, on-going research and creative work brings significant benefits to every undergraduate who participates. They develop a deeper appreciation for inquiry based modes of thought, they understand better how new knowledge is acquired, they develop an abiding appreciation and allegiance to life-long learning and they dramatically sharpen their intellectual tools of critical thinking. They also strengthen the mental skills needed to teach themselves when opportunities arise in the future.

Since our primary missions are to create and disseminate knowledge, all the improvements in undergraduate education will, directly or indirectly, enhance their future careers as physicians,

attorneys, nurses, teachers, business people, engineers, entrepreneurs, public servants, etc. and as engaged, knowledgeable and creative citizens. We will graduate students, with many practical skills, e.g., the ones required for good writing, strong critical thinking, problem solving, the ability to acquire new knowledge, and the ability to engage in innovative and creative thinking. We also expect our students to be informed, engaged, and highly ethical citizens, comfortable in a dynamic world environment.