Lyman Briggs College Fall Planning Letter 2015
Elizabeth H. Simmons, LBC Dean
November 25, 2015

1. Changes to College’s Strategic Plan: n/a

2. Providing support for faculty resulting in greater scholarly productivity and instructional effectiveness

a) Recruiting and retaining a diverse faculty:
LBC uses inclusive hiring practices, including ads that stress how inclusive excellence forms a core part of the college’s operations, materials about inclusive recruitment on the college’s “open positions” website, and annual college-wide discussions about diversity, implicit bias, and related topics. Our FEA works closely with each search committee on the job posting, evaluation metrics, and screening processes. This year, to further improve consistency, we have implemented checklists for faculty and staff searches that specify who is responsible for each step of the process.

In the last four years our tenure-system faculty hires have been 77% women (offers went 69% to women) and our tenure-system hires have also been 31% persons of color and 31% persons with race unidentified (offers included 37% to persons of color, 31% to persons with race unidentified). As the LBC tenure-system faculty composition is now 36% women and 21% minority, our offers and hires are helping to improve diversity in the college. At the same time, examining the qualifications of the finalists shows that the college is attracting an ever stronger cohort of new faculty.

To retain a diverse faculty that includes many dual-career couples, LBC has entered into many partner accommodation arrangements. The salary bridging support LBC is providing for faculty partners has reached $100k/year.

b) Creating a more supportive work environment:
This year, LBC’s Standing Committee on Inclusion (LBC Inc) organized a workshop on Implicit Bias and Microaggressions for the faculty/staff annual retreat in August. A lively program of speakers, open discussion, and group work fostered a sense of community and left us all feeling better educated on how these topics impact us, our colleagues, and our students. LBC Inc is running a series of follow-up meetings for the faculty, focused on transforming items of concern identified at the retreat into policy updates and action items for the college. The first of these, held in November, also featured thought-provoking input from LBC students on issues ranging from student involvement in faculty hiring to mechanisms for matching students with faculty-mentored research opportunities; the second session will take place in January.

The LBC Dean is holding a series of open Conversations on a range of issues, including those impacting pre-tenure faculty, faculty outside the tenure system, faculty considering retirement, faculty of color, women faculty, LGBTQ faculty, and parents of young children. The meetings are enabling faculty to ask questions in a small-group setting and inform the Dean about areas where college policy or practice needs clarification. The first few meetings have been very productive.

c) Emphasize the University’s elevating expectations:
Over the last several years, consistent with expectations for the university’s upcoming re-accreditation review, the Briggs faculty have reframed teaching evaluations to emphasize data and reflections on students’ learning outcomes. They have identified concrete learning objectives for each disciplinary area and for the college as a whole. They have implemented an evaluation form (SALG) that documents students’ assessment of how each course element has helped them learn. Most recently, LBC’s annual merit
review process was revised to require faculty to provide annotated examples of student learning relative to specific objectives listed in course syllabi. These might range from a sequence of written assignments demonstrating increasing proficiency, to test answers showing the ability to explain core concepts, to lab reports proving mastery of key skills. As a result, self- and peer-evaluations of teaching have become less descriptive or summative and more analytical, reflective, and forward-looking.

In a similar spirit, the Briggs Advisory Council, which oversees the faculty evaluation process, is establishing new metrics for reporting on leadership and service, following up on what was done for teaching and learning. We expect that this will give faculty more guidance about opportunities to exert leadership, including how to align service roles with their teaching or research foci.

d) Culture of high performance:

LBC has created, and is about to release, an online grant pre-award web form that faculty will fill out in order to receive a timeline with all the steps required to submit the grant (e.g., getting permission for course buyouts, obtaining IRB approval, meeting CGA deadlines for e-transmittal submission). The web form will also send appropriate information to the Associate Dean for Research and the college’s Pre-Award staff members so they can help the faculty meet the various deadlines. We have adopted this as part of our ongoing effort to cultivate among our faculty the habits that are most likely to lead to successful grant applications and productive research careers.

With grants come expenditures of many kinds ... and for new faculty, the way to handle travel and reimbursements is seldom obvious. So LBC is creating standard checklists for how to submit travel authorization and reimbursement requests with all required documentation (e.g., meeting agenda, names of guests at a working lunch). This should speed the rate at which travel expenses and other reimbursements are processed. As with our hiring checklists and our pre-award web form, this is part of an effort to encourage faculty productivity by making processes simple and transparent.

As employees retire and committee membership turns over, institutional knowledge can be lost. This year, the BAC is having each disciplinary group and standing committee create a timeline of its annual responsibilities to inform future leaders and members. The college’s HR officer will, likewise, be working with staff members (and their supervisors) to create procedure manuals for their positions. These manuals should also be valuable for Briggs’s participation in the Service Delivery Pilot, as they should help us identify opportunities for partnerships and efficiencies.

e) Supporting scholarship by adding specialist [teaching] lines:

A powerful and cost-effective way to support the Briggs faculty and increase their scholarly and instructional effectiveness would be to add a continuing system academic specialist [teaching] to each disciplinary group. Faculty time now regularly spent on recruiting, training, supervising, and mentoring fixed-term instructors hired to replace colleagues on research, parental, or sabbatical leaves will instead be used for scholarly pursuits. Adding these continuing system lines will would also ensure that nearly all classes are taught by long-term, experienced, educators who engage in creating or applying pedagogical scholarship. While our specialists are not required to do research, most of them elect to do so, thereby further augmenting LBC’s scholarly output. In several disciplines, the flexibility and stability gained by adding specialists will enable Briggs to increase course capacity both to better serve INQUIRE students and to curtail the number of LBC students who must take CNS introductory courses due to lack of space in LBC.

Based on staffing data and enrollment trends over the last six years, on the status of ongoing or planned large-scale curricular initiatives in the disciplinary groups, and on the progress of INQUIRE students through the Briggs curriculum, the most immediate needs are in mathematics, chemistry, and biology. LBC therefore proposes a multi-year partnership with the Office of the Provost in which one continuing-system specialist [teaching] line is added to each disciplinary group over the next few years: with chemistry, mathematics and biology being addressed in fall 2016, while HPS and Physics wait until fall 2018.
3. Pursuing multiple strategies for expanding, enhancing and elevating scholarship

   a) Global impact initiative:
   Lyman Briggs College is partnering with the Colleges of Education, Engineering, and Natural Science in recruiting two senior scholars as part of the Global Impact Initiative. One search (led by CNS) is in Math Education Research; the other (led by Education) is in STEM Education Research. Both new hires will be affiliated with the CREATE for STEM research institute. We anticipate that at least one hire will have a joint appointment in Lyman Briggs to build on our college’s strengths in these areas and more fully coordinate DBER scholarship across the partner colleges.

   To further strengthen the relationship between LBC and CREATE, LBC chemistry faculty member Dr. Ryan Sweeder will henceforth have a 25% assignment in CREATE. This will support his STEM Education research program and enable him to act as a liaison between the units so that other Briggs faculty become more fully engaged with CREATE.

   As an offshoot of the Fall 2014 ACF proposal process, LBC and CAL discovered a mutual interest in creating an Artist in Residency program focused on transdisciplinary artworks. With AAHD, the Broad Art Museum, and the Abrams Planetarium, we are embarking on a three-year collaboration (BRIDGE) that will bring top artists to MSU to engage students and faculty in creative inquiry and research bridging the arts, sciences, and humanities. To further extend our work bridging the arts and sciences, Lyman Briggs has joined MSU’s Cultural Engagement Council and is contributing to the upcoming thematic “Year of Water.”

   b) Building physical infrastructure to support emerging work:
   With the support of the university, LBC is creating an Active-Learning Physics Studio Class-Lab and a REAL classroom in Holmes Hall to support pedagogical innovation and associated DBER scholarship. The first room will enable the physics faculty to realize their dream of transforming how physics is taught, while also increasing the capacity of our physics courses. The second room will be used by classes in biology, chemistry, math, statistics, and HPS; faculty are eager to use this space to begin teaching in new ways.

   Through the Space and A&I Processes this winter, LBC will request that the space RHS is vacating on the garden and first floors of West Holmes Hall be assigned to Lyman Briggs to meet long-term needs for:
   • Faculty offices, especially in light of the need to add academic specialists to meet enrollment pressure across all disciplines.
   • Spaces for engaged teaching and learning, incorporating new technologies, art-science collaboration, and computing across the curriculum.
   • Flexible space to be used for student research, student studying and teamwork, meetings of student organizations, large pre-exam review sessions, experiential learning, and co-curricular events such as research presentations, career fairs, alumni engagement, and study-abroad fairs.

   c) College research funds:
   The college offers several types of internal funds to support faculty scholarship. Travel funds support visits to remote facilities, archives, or collaborators and also presentations at conferences. Pilot research funds underwrite the costs of gathering initial data to support a planned external grant proposal. The LBC Trajectory Fund provides support for targeted projects that will keep tenure-system associate professors on track to achieve timely promotion to full professor. Conference funds support the interdisciplinary international research conferences that Briggs faculty organize on campus nearly every year; many of these lead to published papers or edited volumes. Underwritten by Indirect Cost return and alumni donations, these internal research funds now total ~$50k/year.
d) Cross-campus research partnerships:

LBC is a founding member of several research partnerships, including the AAU Gateway Fellows Program, the Undergraduate STEM Education Alliance, the HHMI Levers project, the Dow STEM Scholars project, and Science & Society @ State (S3). All of these are bringing LBC faculty members into scholarly collaborations with colleagues from other colleges.

In particular, LBC is the administrative home of the S3 collaboration, which promotes interdisciplinary research and education that utilizes methods, approaches, and scholarship from STEM, the health sciences, and science studies. S3 is now jointly funded by the OVPRGS, University Outreach & Engagement and a dozen colleges (LBC, JMC, CAL, EGR, LAW, RCAH, EDU, CSS, CANR, CAS, MUSIC, and CVM). Of the eleven interdisciplinary teams that were awarded two-year S3 grants in fall 2014, five have already submitted external grants totaling $2.3M and the others will follow suit in the coming months. Eight more intriguing projects, including “Music, Culture, and Carnivores,” “Dance of the Rare Isotope Beams,” and “Learning Science by Doing Science” have just received Fall 2015 awards.

e) American Association for the Advancement of Science Fellowship nominations:

While many awards valued by the Association of American Universities are focused purely on research, AAAS Fellowship is an exception: it also recognizes performance in teaching, leadership, and public engagement. LBC has several faculty members who are already AAAS Fellows. We are starting a systematic process to nominate full professors and senior associate professors for AAAS Fellowship, drawing on the portfolios and external reviewers previously employed in nominating them for MSU awards.

4. Pursuing multiple strategies for enhancing student success

a) Using analytics to understand and reform the teaching and learning process:

Briggs has a strong tradition of educational scholarship, in which faculty study the impact of specific pedagogical innovations on students’ learning within a given course or on students’ success at progressing along a sequence of courses within a major. The faculty use the results to improve teaching within Briggs, export proven methods to their joint appointment units, publish in the DBER literature, and secure external grants – often in collaboration with colleagues outside of Briggs.

In the past year, Briggs has joined other MSU units in investing in the creation of the Higher Ed Analytics Research (HEAR) laboratory, co-led by LBC Associate Dean Mark Largent and Michael Colaresi of CSS Political Science. Using coarsened exact matching techniques, the HEAR lab compares the impacts of distinct curricular trajectories on students with extremely similar incoming traits, without the need for imposing statistical assumptions or models. Briggs has already arranged for HEAR to analyze the impact of three long-term educational projects:

- the “alternative track” whereby LBC students may use certain designated HPS courses to satisfy upper-level IAH or ISS requirements, supporting their desire to complete minors, second majors, foreign language study, study abroad, or research;
- the INQUIRE curriculum that provides talented and motivated entering freshmen who have lower math placement scores a pathway into STEM majors; and
- an exploration of the differences in GPA’s in 300-level pre-med courses among students in various categories (i.e. by gender, race, or Pell eligibility) based on whether they took their 100- and 200-level courses in Lyman Briggs or in Natural Science.

In all cases, the case matching approach allows us to understand not only whether a given intervention or pathway leads to more desirable outcomes, but for whom it is most effective. We also anticipate that the HEAR lab’s analyses will provide invaluable formative assessment for newer projects like the integrative BioCore curriculum, the HPS Writing Studios, and the Studio Physics teaching model.
b) **Using technology to enhance teaching and learning:**

The LBC disciplinary groups already widely use technology to enhance teaching and learning in individual courses. For instance, members of the Biology and HPS groups have created Evo-ED and Avida-ED software and case studies through which students study evolution of digital organisms; the Physics group will use technology to underpin its new studio format classes; the HPS group has adopted Eli Review; and the Math, Chemistry and INQUIRE groups each employ online resources to give students greater practice with key calculation skills. The college also offers online summer courses in Medical Terminology (LB 270) and Health Care Organization & Policy - Entrepreneurialism (LB268) as a complementary curricular approach supporting student’s career aspirations in health care.

A pair of major endeavors now under consideration would broaden the use of technology to impact suites of courses reaching across disciplinary boundaries:

The LBC Mathematics group is planning to launch a project in computation and modeling across the mathematics curriculum that they hope to broaden into a Computation Across the Briggs Curriculum initiative. The first step will be to create digital worksheets and lab manuals related to the major topics in calculus and statistics courses; students will both use existing software to analyze scientific models and write computer code to implement simulations. These methods will then be extended to the algebra classes taken by INQUIRE students in order to build their strength in the use of digital techniques. The Physics, Biology, and Chemistry groups have already expressed strong interest in collaborating on this initiative. A new tenure-system faculty line joint with Engineering (e.g., in CMSE) would support this educational initiative and provide leadership for related grant-funded scholarship.

The HPS, Chemistry, and Physics groups are advocating for creation of a Two Cultures Workshop Studio to support informal learning, longer-term group projects, and citizen science. Work in this space would employ technologies such as multipurpose sensor kits for monitoring environmental or bodily health, transcription kits and GoPro cameras for ethnographic projects, and equipment to support video creation and editing. Rather than emphasizing the instrumental tasks of prototyping, modeling, and production as in more typical Maker Spaces, the focus would be on applying critical humanities approaches to scientific instruments, the technological design process, and historical artifacts. This Workshop Studio would draw on the skills of several of our newly-hired tenure-system faculty and continuing-system specialists with backgrounds in science communication and HPS of computation, in collaboration with their STEM colleagues.

In the near future, Briggs looks forward to collaborating with the Hub for Innovation in Learning and Technology on college-wide and campus-wide projects. Initial conversations between the Hub and the LBC INQUIRE group have already begun.

c) **New models for curriculum and instruction:**

Lyman Briggs is continually exploring and assessing new pedagogical models that include active, experiential, and inquiry-based learning across our STEM and HPS curricula. Several such innovations for teaching mathematics, statistics, biology, and HPS are currently supported by MSU’s AAU and HHMI grants or by internal grants from S3 or the Lilly Fellows program. Here are a few notable examples of our most recent projects:

- The BioCore project is creating a year-long introductory biology course that weaves together small biology (genes, cells, biochemistry) and big biology (biomes, ecology, evolution). This will remove an artificial segregation that is common to introductory curricula but not reflective of research practices. The LBC biologists, each of whose research spans multiple biological scales, have been piloting this new curriculum using baseline research systems (e.g., aquatic tanks and birdfeeders) and inquiry-based labs along with an integrative syllabus and textbook. BioCore can readily accommodate diverse class sizes and formats, along with different flavors of inquiry-based labs; adopting it will lend additional flexibility to the curriculum and support SoTL experimentation.
• The HPS group is continuing its pilot of Writing Studios attached to the Introduction to HPS (LB133) course that satisfies the Tier 1 writing requirement. Over the first year, the faculty worked to better integrate the Studio into their course assignments (e.g., making them more scaffolded). Meanwhile, a robust assessment tool was developed and the first generation of peer writing mentors became familiar with the goals of the program. By year’s end, students were showing significant achievement of learning goals related to writing (e.g., as documented through the Eli online peer review system) and building stronger portfolios.

• The Chemistry group is creating two new interdisciplinary teaching modules. One, which will be integrated into both the lecture and lab elements of second-semester general chemistry, will apply basic chemical concepts to the environment, with a specific focus on climate change in the Great Lakes region. The other, which will be piloted in the INQUIRE program, will be built around case studies (e.g., water quality in Flint, MI) to be applied in multiple courses throughout the Briggs experience.

• LBC offers a summer International outreach experience as part of the American Semester program for short-term inbound exchange or fee-paying students from partner institutions outside the U.S.

• The HPS group is developing a new “Maker Class” as a hands-on offering for Summer 2016 that will draw on the capabilities of several campus facilities.

The largest-scale curricular innovation within Briggs over the last five years has been the INQUIRE program, aimed at supporting STEM majors who enter college with low math placement scores. We have now extended the on-ramp curriculum through second-semester chemistry and are looking ahead to forge connections with the physics curriculum. At the same time, members of the INQUIRE team have been meeting with representatives of the ESSA and Dow STEM Scholars programs to strengthen our collaborations around student recruitment, coordination of AOP and summer bridge activities, the transition from summer bridge into the academic year, and cohort-building activities during the academic year. In spring 2016, LBC will appoint a faculty director for INQUIRE to coordinate curricular integration and assessment across the biology, chemistry, HPS, math (and soon, physics) components of the program.

d) Track institutional outcomes and goals:
A decade ago, Lyman Briggs was asked to increase its enrollment by 25%; accordingly, we increased the freshman class size from 500 to 625 and have maintained it at that level. Based on existing retention patterns, we projected that the college’s total enrollment would plateau at 1800. Instead, higher retention of juniors and seniors has yielded a total enrollment of 2000 students; we anticipate that the INQUIRE program will boost student retention still further over time.

This larger student cohort is being taught by a faculty that is not only larger but also more engaged in externally funded scholarship. These increases in students, faculty, course sections, and research grants have added significantly to the responsibilities of LBC’s administrative staff. We have met some of those needs by shifting positions to areas of higher demand and by using technology and software to streamline processes. The next logical step is to consider whether some routine back-office functions could be met through partnerships with other academic units, enabling in-Holmes staff to focus on higher-level responsibilities and those requiring intensive interaction with the college’s students or employees. We are therefore delighted that Lyman Briggs has been asked to join the MSU Service Delivery Pilot program as an in-scope college. This offers the possibility of continuing to improve our support of the academic mission, while drawing more fully on the capacities of senior staff and supporting their professional development.