

ANNUAL REPORT 2015-2016



ADVANCING STUDENT LEARNING

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INTRODUCTION

Through its wide range of programs, services, research and scholarship, the Searle Center for Advancing Learning and Teaching seeks to assist all members of the Northwestern community who are engaged in the development and promotion of effective and innovative learning environments and experiences for their students, their colleagues and themselves. We work with everyone in this enterprise: faculty, postdocs, graduate research fellows and teaching assistants and instructors, undergraduates and undergraduate peer mentors, clinicians, and administrators. The Center also engages in broad national and international scholarship, conversations and collaborations with those who study and promote the facilitation of learning in higher education.

The Searle Center is composed of four major units: Faculty Programs, Graduate and Postdoctoral Programs, Undergraduate Programs, and Research & Evaluation projects. A Center Associate Director leads each of these units. In each of the first three we develop and deliver engaging workshops and seminars that build participants' skills and provide practical guidance on specific topics of learning and teaching, as well as long-term programs designed to promote more profound changes in participants, such as our year-long Searle Fellows faculty program, our Teaching Certificate Program, and our Gateway Science Workshop program. We also provide a wide variety of linked services, including individual consultation and classroom analysis, as well as resources, both online and through an extensive collection of books on teaching and learning housed in our Center Library. In the research and evaluation unit, we collaborate with faculty, staff and students on a wide variety of disciplinary and cross-disciplinary projects. These range from individual faculty experimenting with new teaching techniques, to large nationally and internationally funded programs.

Notes on my first month

I joined the Searle Center because of its national reputation as a leading center of learning and teaching in higher education, accomplished and effective staff, deep integration into the broad fabric and mission of a great academic institution, and the support of the administration for future growth and broad impact. Every one of these reasons has been proven beyond doubt in my first month. Numerous times the Searle Center staff have demonstrated the central role they play in supporting student academic success, engaging faculty and promoting course transformation, preparing graduate students and postdocs to be great teachers, and collaborating with faculty and programs around the world to advance scholarship. Associate Directors Marina Micari and Susanna Calkins and I attended the CIC Directors meeting in June, comparing notes on programs and impact and discussing new collaborative initiatives with units from a dozen institutions, an experience that reinforced my view of Searle as a leading national program. The faculty and administrators I've met in my first month have been overflowing with praise and exciting new ideas and opportunities for near-term and long-term projects.

The Searle Center has already had one staff retreat and has another scheduled in early September. The first developed mechanisms for improving how we work together effectively and the second will build our strategic goals for the coming year and beyond. We will meet with regularity as small and large collectives to reflect on and refine our teamwork, our mission, and our progress.

We are at a special time and place, both at Northwestern and across the country. Searle has an opportunity to grow, to positively impact student learning at every level, and to become *the* resource at the center of one of the University's primary missions. We seek to build capacity in departments and colleges, support faculty innovation and day-to-day efforts, help guide the growth of digital learning, support learning both inside and outside of classrooms, and help create a more inclusive learning climate, from Summer Bridge to postdocs.

Selected 2015-2016 Highlights

In the past academic year we have continued to innovate in and evolve our programs and projects, responding to and in some cases shaping the changing landscape of learning in higher education and serving the growing demand and participation of faculty and graduate and undergraduate students across Northwestern. We continued to advance funded programs and began implementing new projects we had won in the previous year. Highlights include:

I. Support for Transition Students: In our Undergraduate Programs area, over the past year we have focused on supporting the population of students who may face a more challenging transition to Northwestern than the traditional student population including low-income students, first-generation college students, and students who attended under-resourced high schools. These efforts align with the broader University goal of reaching a 20% Pell-eligible population by 2020. Of particular note, in 2015-2016 we launched the pilot of our Academic Peer Coaching program, an individualized peer-to-peer service that pairs students seeking support on general academic skills with trained undergraduate coaches; revamped our Academic Strategies Workshops, another peer-to-peer program in which trained undergraduates facilitate interactive one-hour sessions on academic success at Northwestern; and expanded both the Academic Mentoring Program (AMP) and the PLUS drop-in tutoring program, a collaboration with Residential Academic Initiatives.

II. CIRTL at Northwestern: This year the Graduate and Postdoctoral Programs and CIRTL at Northwestern (Center for the Integration of Teaching and Learning) worked at integrating CIRTL learning objectives into the Teaching Certificate Program. Though CIRTL is aimed at graduate students and postdocs in the Science, Technology, Engineering and Mathematics (STEM) and Social, Behavioral, Economic (SBE) disciplines, we asked all participants, including those in the Humanities, to develop a "research question" to frame inquiry about their teaching within the context of their course design projects. Our national search for a CIRTL postdoctoral fellow resulted in the hire of Dr. Lauren Woods to help us to develop, facilitate, and evaluate our CIRTL at Northwestern programs.

III. Spring Graduate Teaching Symposium

We initiated a Spring Graduate Teaching Symposium in which the Graduate Teaching Fellows (a select group of 7-8 graduate students who lead workshops at Searle and work with graduate students in their home departments to improve student learning in their field) and Graduate Teaching Mentors (those who lead small group discussions for the Teaching Certificate Program) served on two panels to discuss disciplinary cultures of learning and teaching across campus as well as the positive role that preparation in instruction plays in career transitions and

engaging in the job market. Fifty graduate students, postdocs, faculty and staff participated in the symposium.

IV. Assessment of Student Learning

We actively promote university-wide constructive conversations around the assessment of student learning, and lead several critical aspects of the University's learning assessment outcomes efforts. Three recent initiatives stand out:

(a) **Annual Learning, Teaching and Assessment Forum:** In the Fall, we held our third university-wide Annual Learning, Teaching and Assessment Forum, "Building on a Culture of Assessing Student Learning," (<http://www.northwestern.edu/searle/programs-events/faculty/learning-teaching-and-assessment-forum.html>) which is designed to provide faculty, doctoral students, postdocs, administrators, and staff the opportunity to showcase their assessment initiatives at the class, department/program, school, and/or university levels; share and highlight teaching, learning and assessment innovations, strategies, practices, and outcomes; demonstrate the University's assessment framework in practice; and promote dialogue about assessment, its purpose, and its value for improving learning and teaching. 191 people attended the event.

(b) **Assessment Associate:** In January 2016, the Searle Center added a full-time assessment associate, Sharisse Grannan, to our team. This new position was created in order to help meet the increasing demand for assessment support and capacity-building across schools. The assessment associate's primary role is to lead and support assessments of learning and evaluations of curricular innovations and other initiatives.

(c) **Assessment Website:** In collaboration with Northwestern's Assessment/Accreditation council, we developed a new assessment of student learning assessment website (<http://www.northwestern.edu/searle/assessment-of-student-learning/index.html>) which communicates important messaging about the University's priorities around assessment, serves as a resource for staff and faculty, and shares real-world examples of assessment in action.

IV. Research and Evaluation

We have collaborated with faculty on over 25 projects including: institutional projects such as the CTEC pilot and the curriculum redesign project in Biology (funded by HHMI), faculty-led projects such as the Improving Undergraduate STEM Education (IUSE) project in Biomedical Engineering (funded by NSF) and several graduate student, post-doc and junior faculty training programs (funded by NIH and AHRQ). In addition to contributing to research and evaluation projects at Northwestern, the Center has worked on a number of international projects including the JUAMI materials science summer institute in Tanzania (funded by NSF) and center and program evaluations for An Najah University in the West Bank (funded by AMIDEAST and USAID).

Searle Center staff also continues to work on independent research projects. This year the Center was awarded a research grant by USAID to investigate attitudes towards critical thinking, emotional intelligence and non-formal education across the Middle East, and to design and test a

program to develop students' critical thinking skills and emotional intelligence in Jordan and Lebanon.

We have been awarded a new NSF grant that builds a collaboration of Searle and The Graduate School to create an inclusive climate for underrepresented STEM graduate students and postdocs with evidence-based interventions for faculty and grad students.

In addition to all of these activities, our staff have taken leadership roles in a wide range of new cross-university strategic ventures.

Our future priorities include creating a new strategic plan, building capacity in and integrating and collaborating with more departments and programs, and developing new efforts that expand and coordinate services for student academic support, graduate student advancement, and faculty change in departments and colleges. We look forward to collaborating closely with schools and academic departments, key units of Student Affairs, Northwestern Information Technology, and other campus partners. And finally, we will continue to build on and enhance the excellent programs and services that the Searle Center has become recognized for across campus, nationally, and internationally.



Bennett Goldberg,
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I. PROGRAMS

To achieve our mission of advancing student learning, engaging the passion of faculty for teaching and enhancing the skills of all instructors, the Searle Center provides a variety of programs for faculty, graduate students, and undergraduate students. These range from one-off workshop sessions to year-long programs designed to change participants' approach to teaching.

FACULTY PROGRAMS

At the Searle Center we seek to build capacity in individual faculty members, as well as in the departments and schools, in areas related to teaching, assessment of student learning, course design and curriculum planning, diversity, mentoring, and enhancing learning and teaching with technology. In the past year, 30 faculty engaged in high impact deep learning activities through our more substantial programs, while another 300 participated in our interactive roundtables, workshops and sessions. Please see the Appendix for more detailed information on participation numbers and evaluation of these programs.

The Searle (Junior/Early Career) Fellows Program

The Searle Fellows program is a comprehensive, year-long (eight month) faculty development program for pre-tenure, early career faculty. The program seeks to provide faculty with the expertise and knowledge to critically assess and solve problems in their courses. To participate in the program, applicants must provide a description of a teaching project related to a course they teach. In most cases, faculty are nominated for the program by deans or department chairs or self-select.

The program has two main objectives: 1) to strengthen the participants' knowledge, understanding, and expertise in learning and teaching, and 2) to help them develop a project that will foster deep student learning. These projects usually focus on the development of a new course or curriculum, the revision of an existing course or curriculum, or the revision of a key assessment strategy in a course, curriculum, or other learning context. During the year, faculty participate in 4 dinner meetings, an overnight retreat in fall, a full-day retreat in spring, 3-4 workshops, 3 project meetings, and evaluation activities (small group analysis of their class etc.). Fellows must communicate their project findings and reflections through a written critical account, a group poster, and presentation at the final celebratory dinner. This year, 16 early-career tenure-line faculty completed the full program. Fourteen senior faculty served as their mentors. Of these, 6 were returning mentors, and 1 was a former Fellow. In addition, we asked one prominent Searle Fellow to return and speak about his pedagogical innovations: Aaron Shaw from Communication Studies spoke about Teaching and Learning with Small Group Projects. In addition, a number of current and former Searle Fellows facilitated sessions in the university's third annual Learning, Teaching, and Assessment Forum.

Searle Fellows Research and Evaluation

Over the past 11 years, we have pursued a variety of research and evaluation questions related to patterns of change in 250 faculty participants (which includes both Searle Fellows and Mentors), developing and implementing innovative assessments associated with the exploration of conceptions of teaching, learning, research and mentoring. We have also used a range of measures to examine the short and long-term impact of the program—focusing on ideas of

relevance, critical thinking, and reflection—using surveys, interviews, and other practices that promote critical reflective thinking. This year, we presented the results of a study at the Professional Organizational Development Network, in which we conducted a delayed post evaluation, asking faculty in the last four cohorts of the program about the changes they may have made in their teaching since their time in the program. Out of the 27 respondents, 23 (85%) were able to carry out most of the changes described in their projects; and all 27 (100%) indicated that they continued to reflect critically on their teaching post-program. These results suggest that by providing faculty with the space, time and tools to reflect deeply on their teaching and their students' learning during the program, they will continue to reflect deeply on their own, resulting in a long-term benefit to Northwestern. We have submitted the results of this study to *The Journal of Faculty Development*.

Conferences, Workshops, and Roundtables

Learning, Teaching, and Assessment Forum, “Building on a Culture of Assessing Learning.”

This year, in collaboration with the Office of the Provost and the University Assessment/Accreditation Council, we offered the third annual university-wide annual Learning, Teaching, and Assessment Forum, “Building on a Culture of Assessing Learning.” Over 191 faculty, staff, and graduate students attended the event. See Table 1 in the Appendix for more details of the Concurrent Sessions. This university-wide event is designed to:

- Provide faculty, doctoral students, postdocs, administrators, and staff the opportunity to showcase their assessment initiatives at the class, department/program, school, and/or university levels;
- Share and highlight teaching, learning and assessment innovations, strategies, practices, and outcomes;
- Demonstrate the University’s assessment framework in practice; and
- Promote dialogue about assessment, its purpose, and its value for improving learning and teaching.

Evaluation: A week after the forum, a 19 item evaluation survey was sent via e-mail to 191 participants with two follow-up email reminders. 64/191 forum participants completed the survey. Overall, quantitative and qualitative analysis of the survey revealed that participants’ attitudes, perceptions, and reflections were very positive. Participants generally agreed that the forum goals had been achieved and suggested improvements for the future.

Faculty Workshop Series

We offered 15 interactive workshops and 2 information sessions this year, focusing on a range of topics including: promoting critical thinking, assessment and grading, and course evaluation. One session focused on the roles of assessment and lecture in student learning. Two of these workshops (Developing Effective Learning Objectives) were offered online to improve access for instructors who find it challenging to come to our workshops in person. Each workshop is evaluated for usefulness, applicability, and overall satisfaction. See Table 2 for more details.

Learning and Teaching with Technology Workshops

In partnership with NUIT, MMLOC, and AccessibleNU, we offered 4 workshops which centered on universal design and accessibility, focusing on making technology accessible for all learners. We also offered an interactive session, *Designing Effective Assessments to Improve Learning*, for the Educational Technology Teaching Fellows in which a group of instructors collaborated on and explored blended learning opportunities together. (<https://digitallearning.northwestern.edu/canvas/educational-technology-teaching-fellow>).

New Faculty Workshop (NFW)

The New Faculty Workshop is a full-day interactive workshop designed to help new faculty (e.g. full-time, part-time, tenure-line, non-tenure line, adjunct) reflect critically on learning and teaching at Northwestern, engage in a dialogue about key issues in learning and teaching, and become acclimated to both student issues and concerns as well as campus resources. The workshop featured activities related to designing learning objectives, promoting active learning and critical thinking, and assessing student learning. We also offered (1) a panel featuring undergraduates answering faculty questions and concerns and (2) a resource panel with representatives from various campus divisions (CAPS, Athletics, disabilities, and academic integrity). Twenty-seven new faculty participated in the program. Participants completed a post-workshop evaluation which they were very satisfied with the workshop overall.

University Teaching Roundtables (UTR)

The UTRs are sponsored by the Provost and hosted by the Searle Center. Each roundtable – meant to be an interdisciplinary forum exploring current topics in teaching and learning – is led by a Charles Deering McCormick Professor of Teaching Excellence, a McCormick Distinguished Lecturer, or an Alumnae of Northwestern Teaching Professor, the highest awards for teaching offered by the University. Recipients are appointed as fellows of the Searle Center and contribute to Searle events. See Table 3 in the Appendix for more details. Roundtable topics included:

- Learning the Wrong Thing is Easy
- Learning to Sketch
- Fostering Creative Criticism in the Classroom
- Teaching across Northwestern: lessons learned and challenges ahead in interdisciplinary courses
- Crazy Assignments: Larks in Assessment

Specialized Internal Workshops and Sessions for Faculty

We also conducted specialized workshops and sessions for specific units at Northwestern, tailored to the needs of individual departments and programs. We offered

- “Developing the Educational Component of a Grant.” Presented to the Feinberg School of Medicine (Medical Education Day), September 2015
- Neurology Retreat: Creating an Effective Learning Environment for Neurology residents. Feinberg School of Medicine, August 2016

GRADUATE AND POSTDOCTORAL PROGRAMS

Our mission at Searle is to support graduate students and postdoctoral fellows in becoming reflective teaching practitioners with the aim to improve student learning, thereby advancing the instruction provided to more than 4,000 Northwestern undergraduates each year. The Center leads professional development programs and events to support these future faculty and researchers throughout their career trajectory. Programs such as the New TA Conference, NTAC Workshop Leaders, the yearlong Teaching Certificate Program, the Graduate Teaching Mentor program, the Graduate Teaching Fellows program, and CIRTL at Northwestern are all aimed at developing reflective approaches to learning and teaching. This past year, over 500 graduate students and postdocs participated in our programs: 295 attended our New TA Conference, 129 attended our Searle workshops, and 62 completed our yearlong Teaching Certificate Program. We also had 97 graduate students and postdocs from STEM and SBE disciplines participate in our CIRTL at Northwestern programs.

New TA Conference (NTAC)

The New TA Conference (NTAC) is a one-day conference for new teaching assistants (TAs) at Northwestern held each September serving graduate students across campus. Through a series of peer-led workshops, new TAs prepare for their roles and responsibilities, as well as reflect on effective teaching strategies in their discipline. The conference also includes a panel that introduces TAs to student support services and resources on campus, including Accessible NU, CAPS, and the Office of Academic Integrity. In 2015, we offered 23 discipline-specific workshops and 14 sessions on topics such as “How to Give Students Feedback” and “Keeping STEM Discussions Focused and Engaging.” This year, 331 new TAs registered for the event, and 296 new TAs attended. See Table 6 in the Appendix for more details.

Evaluation: At the Conference, participants rated each session on a 5-point scale as well as provide comments on “what went particularly well” and “what aspects of this workshop could be improved.” The average rating for all sessions was positive: Workshop 1 (4.65); Workshop 2 (3.79); Workshop 3 (4.34). Discipline-specific workshops (Workshop 1) were well-received as TAs commented favorably on the opportunity to ask questions related to teaching in their specific departments, grading student work, and navigating challenging situations in the classroom.

NTAC Workshop Leaders

The Searle Center provides four days of training for the NTAC Workshop Leaders to develop and implement workshops at the New TA Conference. Over the two days of training in June, Workshop Leaders and Graduate Teaching Fellows (GTFs) learn about effective approaches to teaching and learning while developing the skills necessary to implement two co-facilitated interactive workshops, one for students in their discipline and another on a cross-disciplinary topic. In August 2015, we provide a venue for the NTAC Workshop Leaders and GTFs to run through portions of their workshops and receive peer feedback. This year we had 23 NTAC Workshop Leaders participate in the program from a variety of disciplines.

Teaching Certificate Program (TCP)

The Teaching Certificate Program is a year-long interdisciplinary program for graduate students and postdocs designed to help participants prepare for college teaching. Through a series of interactive seminars, mentoring, workshops, and small-group discussions, participants work on iterative versions of a learner-centered course and teaching statement. Seminar topics focus on learner-centered course design, intercultural pedagogy, assessment of student learning, and evaluation techniques. Reflective activities are integrated throughout the program to encourage reflection on their disciplinary commitment to teaching. This year, there were 62 participants who completed the program, 6 of whom were postdoctoral fellows.

Evaluation: Participants in the program were asked to complete pre-, mid-, and post-evaluation surveys assess the program. The post-evaluation was administered in the summer 2016. 58/62 participants completed the survey. 81% of the respondents indicated they had an opportunity to implement the assessments, activities, and evaluations they developed in the Teaching Certificate Program. The integration of the “research questions” received a mixed reception; therefore, we will continue to develop this effort next year with the objective of helping participants be more intentional about their course design.

Graduate Teaching Mentors (GTM) program

Graduate Teaching Mentors guide peers in the Teaching Certificate Program (TCP). Six mentors are appointed for a full academic year with a \$3,000 stipend, three of which are funded by the Searle Center and three from The Graduate School. They mentor 2-3 discipline-specific groups of TCP participants (10-12 total), guiding their growth as reflective practitioners, providing oral and written feedback on their work, and discussing and applying relevant literature on teaching and learning.

Graduate Teaching Fellows (GTF) program

The Graduate Teaching Fellows are a select group of eight advanced graduate students across disciplines who develop their teaching and professional skills while contributing to the pedagogical development of other graduate students on campus. Fellows are appointed for a full academic year with a stipend of \$3,000 funded by the Graduate School. Among other activities, the Graduate Teaching Fellows develop workshops for the New TA Conference and Searle’s Graduate and Postdoctoral Workshop Series; conduct teaching observations for graduate students; and develop discipline-specific projects aimed at providing mentorship and improving undergraduate student learning and graduate student teaching in their home departments.

CIRTL at Northwestern

The Center for the Integration of Research, Teaching and Learning (CIRTL) is a national NSF-funded teaching and learning center in which member institutions work to advance the teaching of STEM disciplines in higher education, particularly by providing programs for future faculty professional development. The program emphasizes three CIRTL core ideas: Learning-through-Diversity, Learning Communities, and Teaching-as-Research.

CIRTL at Northwestern is comprised of a suite of programs and events aimed at improving student learning in the STEM and SBE disciplines through future faculty professional development at Northwestern. There are four central programs: Mentored Discussions of

Teaching, a STEM-focused track of the Teaching Certificate Program, CIRTl Workshop Series, and the Searle Teaching-As-Research Program. Mentored Discussions of Teaching was offered twice (fall and spring of 2015-2016 academic year) serving 23 graduate students and nine postdoctoral fellows. The STEM-track of the Teaching Certificate Program produced 11 new CIRTl Practitioners, those who developed a research question in the context of their Course Design Project. In conjunction with the Graduate and Postdoctoral Workshop Series, 4 CIRTl workshops were offered on topics such as “Building Community in the STEM Classroom” and “Classroom Assessment Techniques: Keys to Unlock Student Learning Potential in STEM.” See Table 6 in the Appendix for more details.

The Searle Teaching-as-Research (STAR) program is a two-quarter classroom-based research initiative aimed at improving learning and teaching in STEM and SBE disciplines. Through the duration of the program, participants develop research questions in a classroom context; review literature to inform the project design; select and implement appropriate research methods; collect, analyze, and interpret research data; reflect on research findings and implications. The STAR pilot program was launched in January 2015. The five participants in this pilot program designed and implemented classroom based Teaching-as-Research projects and presented their projects at a poster session. While the program did not formally run during the 2015-2016 academic year, we supported individual participants with their own Teaching-as-Research projects and integrated components of the STAR program into the Teaching Certificate Program.

Graduate and Postdoctoral Workshop Series

To provide continuing support to graduate students in their teaching, we offer interactive workshops in the fall, winter, and spring quarters. Workshops are developed and facilitated by Center staff as well as trained Graduate Teaching Fellows. This year, we offered 12 workshops on topics such as promoting critical thinking, creating inclusive learning environments, and facilitating discussion. We had a total of 151 graduate students and postdocs attend our workshops throughout the year, with a range of 8-20 at each session. On a 5-point scale, the evaluation average rating for this series was 4.5. See Table 6 in the Appendix for more details.

Specialized Workshops and Sessions for Graduate Students and Postdocs

In addition to our regular programs, we worked with interested departments and programs to provide workshops aimed specifically at their particular interests. These included workshops on how to develop teaching portfolios for the Departments of Music Theory and Cognition, Spanish & Portuguese, and English, as well as a workshop on developing a teaching statement for graduate students in the Screen Cultures program. Additionally, we offered a three-day “Teaching Portfolio Bootcamp” open to all graduate students and postdocs at Northwestern. A total of 32 participants attended the first day and 18 attended the second and third days. Feedback for these sessions was overall positive.

UNDERGRADUATE PROGRAMS

Our mission at the Searle Center is to advance the learning of all Northwestern students by collaboratively creating and implementing with strategic partners across the campus a broad and comprehensive range of student support and enrichment programs, successfully delivered in many venues and modes. To achieve this, the Searle Center offers three types of Undergraduate Programs: I. Academic Support & Enrichment Programming, II. Research Preparation

Programming, and III. Academic Leadership Programming. This year, we had more than 2,000 registrations in our various undergraduate programs, representing more than 1,200 individual students. An additional 170 undergraduates served as peer learning leaders in the programs, facilitating others' learning and developing critical leadership and academic skills of their own.

I. Academic Support and Enrichment Programming

Course Support

Academic Mentoring Program (AMP)

AMP provides academic support for undergraduates enrolled in gateway courses known to be difficult for many students. Mentors – fellow undergraduates who have taken and done well in the course – meet weekly with a small group of students to discuss and work through questions and challenging course concepts. Mentors participate in training and meetings with Searle staff, and provide regular feedback about their group's progress. Peer mentors also take an education course concurrent to their mentoring, which supports their development as group facilitators and as facilitators of learning (see SESP 291 below). Student participants are required to commit for the full quarter, so that the groups build a sense of community, and so that the students and mentor become comfortable with one another. The groups meet at a set time and location each week for two hours. Students are expected to attend all sessions and prepare for each session in advance. This year, AMP had 478 registrations, up from 342 last year, with 37 peer mentors leading weekly group meetings.

Evaluation: A matched-group analysis shows that AMP participants earn higher grades in the courses than do non-participants, and this holds across SAT/ACT-math quartiles. We also measure change over the quarter of participants and nonparticipants in their approach to study and related factors; participants tend to fare better than nonparticipants in terms of the amount of “unrelated memorizing” (studying without understanding) they engage in, as well as the amount of productive self-regulating study behavior they engage in, and their degree of self-efficacy for the course. (Differences are statistically significant.) Student satisfaction ratings are uniformly high, with average scores for items such as “AMP helped me understand the course material better,” “I benefitted academically,” and “I would participate in AMP again” above 4 on a 5-point scale. AMP findings were presented this past April at the Culturally Responsive Evaluation & Assessment Conference in Chicago.

Gateway Science Workshop (GSW) program

Begun in the late 1990s, the GSW program brings undergraduates together in small groups (5–7 students) with a peer mentor, to work on challenging conceptually oriented problems related to a STEM course. Groups meet weekly for two hours, and peer mentors meet an additional 2 hours with the course professor or TA to review the worksheet problems. Peer mentors also take an education course concurrent to their mentoring; see SESP 291 below. During 2015–2016, we had 779 registrations within 27 courses within the Chemistry, Biology, Physics, and Mathematics Departments, as well as the McCormick School of Engineering. Groups met with 81 peer mentors, 16 of whom are second-year “senior” mentors who also help lead weekly training meetings.

Evaluation: We have continued to build a database, now pooling data from more than 13 years. These pooled analyses reveal an overall positive impact of the program on course grades and retention, with larger retention effect sizes seen for minority students in several courses. The book *Making Scientists*, which draws on the GSW experience was published in 2012 by Harvard Press, and a paper presenting the 10-year results has been published in the *Journal of Educational Research and Evaluation*.

This year, we also held a series of conversations, including a GSW Advisory Board meeting, to help identify current challenges in the program and to better define the program's mission. In the coming year, we expect to use these conversations as a basis for making decisions about the shape of the program moving forward.

Peer-Led Undergraduate Study (PLUS)

This year, the Searle Center continued its partnership with Brad Zakarin in the Office of Residential Academic in running the PLUS program. In PLUS, students meet with others in their course to study, and peer leaders (fellow students who have taken and done well in the courses) are available to provide guidance. Unlike AMP, students are not asked to pre-register, and sessions are drop-in. PLUS events are held in campus dining halls, and snacks are provided.

The program provided support in Macroeconomics (Econ 201), Microeconomics (Econ 202), Introduction to Statistics for the Social Sciences (Stat 210), Biology 216, Organic Chemistry (Chem 210), Physics 135, the Calculus sequence courses, and the General Chemistry Sequence (Chem 101-2-3), as well as writing support through the Writing Place. PLUS had 539 student sign-ins this year, up from 455 last year, with 20 student leaders facilitating.

Evaluation: Because this is a drop-in program and many students come just once or twice, we do not expect to see systematic differences in course performance between participants and nonparticipants. However, we do track attendance and student characteristics, and we send out a quarterly feedback survey to participants. PLUS tends to draw slightly higher percentages of underrepresented minority students, women, and Pell-eligible students than exist in the associated courses. PLUS also draws students with slightly lower SAT-math scores than the general student population in the associated courses. Student feedback is positive, with spring quarter participants generally agreeing that they would attend again (4.4 out of 5), as well as that they feel more confident (4.0) and are more aware of their misunderstandings (3.95). Student comments indicate that participants find PLUS to be a more comfortable support environment than office hours or TA tutoring; a typical comment is "It's not as intimidating [as office hours or TA tutoring]. I don't have to feel like I know everything when I go to PLUS, and the PLUS peer leaders are way nicer and friendlier than most professors and TAs."

General Academic Skills Support

Academic Strategies Workshops

This year, Searle developed a set of Academic Strategies Workshops, based on the previous NULearn program. These are peer-led, interactive sessions designed to help participants develop insights about learning that can help them maintain academic success. Workshops are held in residence halls and other locations.

This year, 65 students attended workshops, with 4 student leaders facilitating. Sessions included “Professors Don’t Bite: Building and Leveraging Faculty Relationships,” “Finals Prep Workshop,” and “Study and Test Taking Strategies.” Feedback from participants was positive. We plan to expand offerings for next year.

Peer Academic Coaching program - Pilot

This year, we launched a formal pilot of our one-to-one peer coaching program. Six students, referred by advisors, and four peer coaches participated. Coaches supported students primarily with general studying and learning issues, such as time management, motivation, organization, and referrals to campus resources. Feedback from participants is mainly positive; we will use participant comments to make improvements to program structure and coach training. We plan to expand to accommodate additional students in the coming year.

Undergraduate Program for Advancing Learning (UPAL)

In response to the University’s broad concerns related to students matriculating with fewer previous academic enrichment opportunities than most of our students have, the Searle Center proposed the UPAL program and was funded in 2012 to develop and run it. The program launched in fall 2014. Starting in winter 2015, UPAL began to serve a number of students in the WCAS probation pool.

UPAL is a small-group experience, with students meeting weekly throughout a quarter with a group of 5-7 peers and one or two peer mentors. In the weekly sessions, students focus on topics such as: “smart studying” for optimal learning; interacting effectively with faculty; managing time effectively; managing academic stress; and staying focused on learning in a competitive environment. The goal is for participants enhance their awareness of how they learn best within the Northwestern academic environment, fine-tune their academic skills, and create and carry out individual academic advancement plans.

This year, 112 students participated in UPAL, up from 90 last year, with 15 peer mentors leading groups.

Evaluation: Our analysis focuses on two key measures: 1) WCAS probation status pre- and post-participation, and 2) change in study and learning habits. 1) For 2015-2016, participants were more likely than nonparticipants to have been removed from the WCAS probation list at the end of the quarter: 55% of UPAL students were off the probation list at the end of the quarter, versus 29% of those who were not in UPAL. This difference is statistically significant. 2) Data from both years also show that participants are more likely than comparable nonparticipants (with statistical significance) to make improvements over the quarter in belongingness, help-seeking orientation, approach to peer learning, time management, and academic self-regulation. Satisfaction ratings are also high, with the average 2015-2016 rating for “UPAL benefitted me” 3.9 on a 5-point scale. We are pleased with this average, given that many participants are required by their dean’s office to participate.

Additional Resource: Academic Resource Portal

This year, we continued to develop the online Academic Resource Portal (www.northwestern.edu/searle/academic-portal). This is a comprehensive listing of academic-support and academic-enrichment opportunities at Northwestern. The site also offers student-to-student advice on succeeding at Northwestern, advice on study and learning strategies, and more. A key addition to the Portal this year were two videos, one featuring faculty and the other students (<http://www.northwestern.edu/searle/resources/undergraduate-academic-resources/study-smarter/academic-insights-from-northwestern-students-and-faculty.html>), focusing on the habits of successful Northwestern students (for instance, asking questions, seeking help, finding balance, etc.). The Portal had more than 3,500 page views during the 2015-16 year.

II. Research Preparation Programming

Science Research Workshop (SRW) Program

The Science Research Workshop program prepares students for authentic science research experiences by engaging them in fall and winter workshop sessions designed to help them successfully complete a research proposal. Each session comprises two broad activities: "Faculty Cafés" and peer-led workshops. Faculty Cafés are weekly discussions in which faculty members share stories of how they got interested in science research; peer-led workshops train participants on components of the research process, including:

- Appropriately contacting and interviewing with faculty leading Northwestern science laboratories.
- Developing a valid research project.
- Discovering strategies for funding research ideas.
- Identifying and applying key techniques in scientific writing.
- Integrating feedback from experts and peers.

This year, we had 12 students participating for the full winter quarter, 11 of whom were ultimately funded for research. There were 64 students who attended at least one of our workshops.

Arts, Humanities, and Social Science Research Workshop - Pilot

This year, we proposed and collaborated with Office for Undergraduate Research (OUR) to launch a pilot of the Arts, Humanities, and Social Science Research Workshop. The pilot was a response to a felt need for research support for students not working in labs. This pilot was a spin-off of the successful Science Research Workshop (SRW) program, run by Searle since 2009. In the pilot, students attended weekly sessions throughout winter quarter designed to prepare them to write a successful undergraduate research grant proposal. Sessions were run by Peter Civetta in OUR, supported by peer leaders trained by Searle. Eight students participated in the full pilot. Feedback from participants was very positive, with useful suggestions for making improvements. We plan to continue working with OUR to bring this new program and the SRW program under one umbrella, jointly managed by Searle and OUR. We will soon be recruiting for a single part-time program coordinator to manage these two programs.

III. Academic Leadership Programming

SESP 291: Mentoring Learning in the STEM Disciplines

SESP 291 is the training course for the GSW and AMP peer mentors. It is a 0.5-credit course that extends over two quarters. In 2015–2016 we enrolled 70 students in the course; students engaged in readings, reflection papers, and discussions on teaching and learning in a small-group environment. CTEC data suggest students appreciate the course and feel it supports them in developing as group leaders.

Student-Organized Seminars (SOS) Leader Training Program

This program supports undergraduates who lead student-organized seminars (SOSs). These seminars are student-created, student-led, credit-bearing courses, sponsored by a faculty member in the relevant department, and offered through the School of Communication, the School of Education and Social Policy, and the Weinberg College of Arts and Sciences. The seminars are pitched to the schools by students who are interested in leading them, so there are a relatively small number running each quarter. Undergraduate SOS leaders gain depth of knowledge of their seminar topic, as well as valuable leadership, organizational, and mentoring experience.

The Searle Center program focuses on developing leaders' understanding of teaching and learning concepts, ability to effectively facilitate learning for individuals and groups, and skill in using reflection and feedback for continuous improvement. This year, 18 undergraduate leaders from SESP, SoC, and WCAS took part in the program. Participant ratings are high; in spring, the average rating for “How well did this series aid in your development?” was 4.6 out of 5 (5=extremely well).

Undergraduate Student Associates

This year, we had had four Student Associates, who investigated topics in teaching and learning, and ended the year with a faculty/grad/postdoc brownbag discussion session on these broad topics: Assessment and Lecturing. These students also contributed to the teaching and learning resources on our website.

Additional Undergraduate Programs Projects

Benchmarking Project

This year, we undertook a benchmarking project, talking with key leaders in academic-support units or subunits at 13 peer institutions. From these conversations we have produced a report which will help guide our short- and long-term strategic planning and can contribute to broader University planning efforts.

Staff Expansion

This year, we added a 0.5 FTE position to our undergraduate area, allowing us to expand AMP and PLUS and to develop the peer coaching program.

II. RESEARCH, ASSESSMENT AND EVALUATION PROJECTS

The Searle Center’s mission in research, assessment and evaluation is to help measure the impact and effectiveness of Northwestern projects and programs aimed at improving learning and teaching; to help our stakeholders and partners use evidence derived from research, assessment and evaluation initiatives to make meaningful change; to build evaluation and assessment expertise in Northwestern staff and faculty; to utilize our expertise to add to public discourse and published scholarship in learning and teaching; to extend our research to programs and partners around the world; and to guide, through a research and inquiry lens, all of our programs and services at the Searle Center.

The majority of our efforts involve collaborations between Searle Center Staff and Northwestern faculty, often across multiple departments, and some projects are independent collaborations by the Searle Center with external partners. Activities with NU include conducting research studies, evaluating programs and assisting faculty with writing of the pedagogical components of grant proposals to funders such as the National Science Foundation (NSF), the United States Agency for International Development (USAID) and the National Institutes of Health (NIH).

New Projects

Collaborative Research: IUSE: EHR - Enhancing and Expanding Experiential Learning Modules across Disciplines and Institutions (NSF; Gloria Kim, Biomedical Engineering PI)

This two-year, exploratory project in Engaged Student Learning brings together engineering faculty members from Northwestern and the University of Florida with the aim of supporting the adaptation, implementation, and dissemination of best practices in experiential learning in a three-quarter course sequence in Northwestern’s Department of Biomedical Engineering and a two-course sequence in Florida’s Department of Electrical and Computer Engineering. Main goals of this research project are to: 1) assess the strengths and weaknesses of Northwestern’s BMED_ENG 305/306/307 course sequence in terms of the “How People Learn” framework, and 2) enhance and expand effective experiential learning modules for broader adoption and implementation. The Searle Center is involved in all aspects of assessment and evaluation in this project and is overseeing a postdoc who is working on the project.

Critical Thinking and Calculus

In collaboration with a postdoctoral lecturer in the Department of Mathematics, we are in the early stages of designing a study to understand whether peer feedback and reflective activities can foster critical thinking in the context of a calculus course. An intervention will be piloted this fall in preparation for a quasi-experimental design study, with the idea that the data may inform decisions related to teaching methods and assessments in the calculus sequence.

Design Thinking and Communication Courses and the Faculty Experience

Core faculty and administrators for Design Thinking and Communication (DTC), a two-quarter course required of all first-year engineering students, engaged Searle Center staff to conduct an evaluation focused on the teaching experience. In spring 2016, faculty from the Cook Family Writing Program and the McCormick School of Engineering and Applied Science who co-teach the course participated in a survey and focus groups. Through the study, we provided

administrators with a fuller picture of what DTC faculty value most about teaching DTC, their levels of satisfaction with various operational aspects of teaching it, and the specific challenges and benefits associated with the co-teaching experience. Findings provoked concrete ideas about what to preserve and what might be adjusted. A DTC committee is meeting this summer to determine specific strategies for putting the findings to use. Aspects of the study will be replicated in subsequent years to track progress and changing perceptions, as well as the impact of any interventions.

Evaluation of Calculus Course Sequence (Math 220, 224, 230)

The Department of Mathematics asked the Searle Center to conduct a confidential study of student experiences of the Math 220, 224, 230 course sequence. Calculus faculty sought to understand student perceptions of the overarching sequence narrative, which course components best support student learning, and to identify possible barriers to learning. Nearly 300 students taking these courses during the 2015 fall quarter or the 2016 Winter Quarter participated in a survey and/or a focus group or interview. Class observations and a review of course CTECs provided us with additional context for the findings. In a final report synthesizing the quantitative survey data and qualitative findings, we suggested implications and topics for consideration. Calculus faculty will begin implementing data-supported changes in the fall, such as a modified structure for TA discussion sections.

Evaluation of Social Inequality & Diversities Pilot Courses

Weinberg College of Arts and Sciences has asked us to help evaluate the impact of their pilot courses for a possible Social Inequalities and Diversities Requirement, proposed by the Academics/Education subcommittee of the University Diversity Council. This possibility—what such a requirement might look like, how it might fit with other requirements, and also whether it should be instituted at all—is being discussed in various venues across the College. We have designed a survey for students who have taken a pilot course over the past three years as well as a survey for course instructors. The findings will help the College deans and others understand whether, and to what degree, the courses have impacted the attitudes, understandings, and behaviors of students, as well as the perspectives and teaching approaches of faculty.

Impossible Challenge Competition (Private Funder; Jeffrey Strauss Project Director)

Northwestern's Impossible Challenge Competition is a multi-year initiative cosponsored by the Buffett Center for Global Studies, the Farley Institute for Entrepreneurship and Innovation and the Institute for Sustainability and Innovation to help students learn how to evaluate and refine practical solutions that can mitigate highly complex global problems such as global warming. Undergraduate and graduate students work in small interdisciplinary teams of 4-6 in consultation with a faculty mentor to evaluate a solution to global warming using a standardized methodology based on the methodology proposed in the book, *Standards that Measure Solutions: A Guide to Solving 21st Century Problems*, by David L. Paul. A cash prize is awarded for the best solution by a team of judges comprised of industry representatives. The Searle Center has been evaluating this initiative using focus groups, interviews and surveys with students, and surveys of faculty mentors and the judges. Key aims of the evaluation are to assess the impact of the program on students and to obtain formative feedback on components of the program. Evaluation data will also be used to inform decisions as to whether program aims can be achieved best through the current competition format or by way of a traditional course.

Joint US-Africa Materials Institute (JUAMI) (NSF; Sossina Haile, Northwestern PI)

One strategy for addressing the challenge of economic development in Africa is to create a scientifically and technically literate pool of individuals who can serve to drive the engine of home-grown innovation. JUAMI is an NSF funded collaboration between Northwestern, Columbia University and the University of Michigan that aims to 1) help build research level scientific knowledge and capabilities in Materials Science in Africa 2) establish US-African collaborations 3) teach frontier research topics to young US and African researchers and 4) increase awareness and international communication. JUAMI consists of a series of three two-week schools to be held between 2016 and 2020. Each JUAMI school focuses on a thematic topic at the frontier of materials research and seeks to enhance cross-cultural understanding and goodwill, and to foster collaborations that extend beyond the duration of the school.

The first JUAMI workshop was held in Arusha, Tanzania from May 29th to June 10th. Focused on sustainable energy, the school attracted graduate students from across East Africa (38), the US (26) and Israel (1). Students attended daily lectures, hands-on activities, cutting edge research presentations and developed collaborative research proposals. Denise Drane from the Searle Center observed all the activities at the school, obtained formative feedback on the lectures, interviewed students, conducted mid-program and end-of -program surveys and focus groups. She also surveyed female participants about challenges they face working in Materials Science and ways that JUAMI can enhance the participation of women in JUAMI schools and in the STEM workforce more broadly.

NanoRING (NSF; Matthew Grayson PI)

Searle Center staff developed pre, formative, and post surveys for students participating in the NSF-funded “NanoRING” program which is based out of the Materials Research Center and takes place in Munich. The surveys yield data about the students’ research experiences in materials nanotechnology and the program’s potential impacts in areas such as students’ confidence in decision-making and their understanding of STEM career options.

Testing the Effectiveness of Tailored Non-Formal Education Programs in the Middle East (USAID; Denise Drane, Northwestern PI)

UNESCO estimates that there are currently 7 million children and youth out of school across the Middle East, due largely to the Syrian refugee crisis. Educational needs of many of these children and youth are met through Non-formal Education (NFE), a mode of education that operates in cooperation with formal education systems to help children and youth transition successfully into formal education systems and to meet school-based learning and psychosocial needs related to conflict.

This research project, funded by USAID, is a collaboration between Northwestern, the University of Michigan and the Salam Institute. The first broad goal of the project is to evaluate the barriers that have limited the success of non-formal education (NFE) across the Middle East and North Africa, particularly as they apply to critical thinking and emotional literacy, by developing a battery of questions to be included on nationally representative public opinion surveys across 10 countries. The second goal is to use this information to design interventions on critical thinking and emotional literacy that are tailored to specific regions and conditions, and to

test the effectiveness of these interventions in different contexts in Jordan, Lebanon and the West Bank.

Ongoing Research, Assessment and Evaluation Projects in Faculty/Instructor Development & Learning

Assessment Report for the Higher Learning Commission

Searle Center staff continued their efforts collaborating with the Assessment/Accreditation Council to capture and document assessment initiatives at the university. This year, we contributed significantly to an Interim Report on Assessment for the Higher Learning Commission. During the 2015 reaffirmation of accreditation process, the Higher Learning Commission's Institutional Actions Council determined that, while it was clear Northwestern had demonstrated commitment to student learning assessment and had made progress in assessment over the last decade, Northwestern could continue to strengthen its culture of assessment and to work toward "fully and systematically" implementing student learning outcomes assessment across the University. The report summarizes recent advances toward that end, such as the development and activation of a new *University Strategic Framework for Assessment* and efforts to build capacity for assessment, including the Center's new student assessment website and its new assessment associate position. The report was delivered on June 27, 2016.

Course and Teacher Evaluation Council (CTEC) Pilot Study

In collaboration with the Office of the Registrar, the Searle Center piloted a small study of the University's new student rating system called Blue by eXplorance. Blue is a robust tool that will provide the University with an improved user interface, more flexibility for designing surveys, and better reporting capabilities. The system has been piloted with all classes in the Medill School of Journalism, Media, Integrated Marketing Communications; the School of Communication, a select number of classes from the School of Professional Studies, and a small group of classes from The Graduate School. These schools continue to work in collaboration with the Searle Center to evaluate the system and its potential for enhancing learning and teaching. We surveyed students and faculty about what features would be most helpful to facilitate effective learning and teaching. These pilots built on an earlier pilot conducted in collaboration with the Office of the Registrar and the University Assessment/ Accreditation Council, in which questions about learning outcomes were added to the university CTECs. Quantitative data from previous quarters may suggest that making students aware of learning objectives, and assessing outcomes accurately, are strongly correlated with high instructor and course ratings. These findings were shared with faculty and staff at the Learning, Teaching, and Assessment Forum in fall 2014 and included in Northwestern's 2015 *Assurance Argument*.

Enhancing Critical Thinking in STEM Disciplines: A Faculty Development Model (NSF: Course, Curriculum and Laboratory Improvement (CCLI) award \$227,000 over 3 years)

This project involved a collaboration between the Searle Center and the City Colleges of Chicago (CCC) to design, pilot and study a Science, Technology, Engineering, and Mathematics (STEM) faculty development program focused on improving higher order learning outcomes in STEM students by introducing activities to promote critical thinking and developing course-

specific assessments of critical thinking. Sixteen STEM faculty – 9 faculty from CCC and 7 from Northwestern completed the program. We are continuing to analyze data on changes in faculty conceptions of critical thinking, and assessment. We are preparing a manuscript for potential publication in the *Journal of Community College Research and Practice*.

Evaluation of MOOCs taught by Northwestern Faculty

We developed a short evaluation of the 25 NU MOOCs, using broad strokes to compile key aspects associated with learning, teaching, assessment/evaluation and faculty research/dissemination efforts. Of the 25 NU MOOCs (5 were run three times; 4 were run twice; 16 were run once for a total of 39 instances); 23 were session-based; 14 were on-demand/automatic cohorts. Courses ranged from 4-12 weeks/modules with an average length of 6 weeks, with 613,714 total enrollments and 20,182 completions (3%). 10 had a single instructor, 7 had paired instructors; 2 had 4 or more instructors. 3 were run to coincide with related/on-ground NU course. Interviews with 11/12 first cohort faculty indicated that: 1) Faculty thought more flexibly about learning and teaching after conducting the MOOC (e.g. remarking that they no longer believed that courses and individual classes had to be fixed durations; that they now recognized that students learn from a variety of instructional modes; a new awareness that peer feedback can be a powerful mechanism for student learning; 2) Faculty introduced at least one aspect from MOOC back into their on-ground NU class (e.g. products like videos and resources; or strategies/methods; or examples & questions) 3) All but one faculty member from the first two cohorts has sought to disseminate their experience with the MOOCs more broadly (e.g. campus talks, conferences, publications). Surveys of first two cohorts of TA/support staff demonstrated that all felt they learned something about learning and teaching; all felt sufficiently trained for the process. Finally, faculty who conducted research/shared experience on their own MOOCs focused mainly on: 1) issues related to the impact of the MOOC on advancing or expanding their discipline/field or 2) the impact of pedagogical strategies on learning, or 3) teaching.

Ongoing Research and Evaluation Projects in Graduate and Postdoctoral Education

Northwestern has more NIH T32, T90 and K12 grants, NSF- funded training grants, and training grants funded by private foundations training grants than any other university in the nation, representing tens of millions of funding annually. These awards are highly competitive and our success and prestige contributes to Northwestern's reputation as a national leader in graduate and post- graduate training and the scholarship and research that it creates, particularly in the areas of biomedical, life sciences, and behavioral sciences research. Evaluation is a requirement, competition for new and renewal awards are fierce, and training grant PIs and the director of OSR have requested that the Searle Center be provided the resources to conduct the evaluations.

Mentoring for Success; Developing Fundamental Skills for Biomedical Research (NIH; Rick McGee PI)

This program aims to increase the number of students from underrepresented backgrounds who are admitted to and retained in doctoral programs in the biological and life sciences at Northwestern. The Center continues to support both formative and summative evaluation of the program by providing feedback on surveys that have been designed by the Program Director and Assistant Director and by conducting focus groups. Program directors have been very responsive

to participant feedback and have made major changes to the program over the years on the basis of evaluation data.

National Institutes of Health T32 Training Grants (NIH; multiple PIs)

The Center currently evaluates eighteen doctoral and postdoctoral training grant programs in Biophysics, Biotechnology, Endocrinology, Chemistry of Life Processes, Information Storage, Mechanisms of Aging and Dementia (MAD), Motor Control, Neuroscience of Human Cognition, Physical Therapy, Reproductive Medicine (K-12 BIRWCH) and Research Training in Cardiovascular Epidemiology and Prevention. In addition the Center supported competing renewals for Movement and Rehabilitation Science, Pathophysiology and Rehabilitation of Neural Dysfunction, the Neuroscience of Human Cognition. During the upcoming academic year the Searle Center will be conducting focus groups for Northwestern's Clinical and Translational Sciences Institute's (NUCATS) TLI, KL2 and SIP training programs.

Requests for the Searle Center to evaluate training grants at Northwestern have increased dramatically over the past 5 years. To meet this demand and to enhance the quality of training experiences for graduate students and postdocs, the Searle Center is proposing that an Evaluation Associate position be funded in FY17 and forward to support evaluation of the effectiveness and success of training grants and programs for doctoral students, postdoctoral scholars, and junior faculty at Northwestern.

Northwestern University-Patient-Centered Intervention and Engagement Training K12 Faculty Scholars Training Program (NU-PATIENT)

This Agency for Healthcare Research and Quality (AHRQ) funded NU-PATIENT K12 program is designed to support the early research career development of junior faculty who are engaged in patient-centered outcomes and comparative effectiveness research. The Searle Center has consulted on evaluation of trainee competences and has conducted annual focus groups.

Ongoing Projects in Undergraduate Education

Academic Mentoring Program (AMP) Evaluation

Please see Undergraduate Programs section above.

An Interactive Steel Connection Teaching Tool: A Virtual Structure (NSF; Karen Chou PI)

This project was a collaboration between Northwestern University and Minnesota State University led by Professor Karen Chou from the department of Civil and Environmental Engineering at Northwestern. To enhance students' understanding of steel connections, Professor Chou created an innovative, web-based interactive version of a steel sculpture. The Searle Center worked with Professor Chou to develop surveys to gather formative data on students' experience interacting with the tool. In addition, the Searle Center helped Professor Chou evaluate the impact of interacting with the steel sculpture on student learning. Students were randomized either to interact with the virtual steel sculpture or to a textbook. Students completed 2 hands-on construction activities with cardboard structures. While there was no difference between the groups on the first activity there was a substantial difference in performance on the second activity, with the majority of pairs who had interacted with the sculpture forming correct connections and the majority of pairs who had interacted with the textbook forming incorrect

connections. Results of the study will be published in the *International Journal of STEM Education* in September 2016.

Curriculum Reform in Biology (Howard Hughes Medical Institute (HHMI); Gregory Beitel PI)

Funded by the Howard Hughes Medical Institute, this project aimed to reform the undergraduate biological science training at Northwestern by emphasizing inquiry-based learning both in lecture and laboratory courses, introducing students to laboratory research in their freshman year and altering the course sequence. The Searle Center was involved in all aspects of the program from faculty and teaching assistant training, program design for BioEXCEL and NU Bioscientist programs to assessment and evaluation. One manuscript on inquiry-based laboratories has been accepted for publication in the *Journal of College Science Teaching*. Manuscripts on the NU Bioscientist program and the NU Bioscientist Mentoring Training Program have been submitted for publication and a manuscript on the BioEXCEL program is currently being prepared.

Gateway Science Workshop (GSW) Evaluation

Please see Undergraduate Programs section above.

Mellon-Mays Undergraduate Fellowship Program Evaluation

The Searle Center is managing the evaluation of this program, for which Northwestern was awarded \$500,000 over 5 years. The program aims to increase diversity in the faculty ranks in the humanities and social sciences. The goals of this primarily qualitative evaluation are to better understand students' experiences in the program, including their development as academic researchers, their relationships with faculty mentors, and their general satisfaction with the program structure and policies. We provide findings each year to Program directors; recommendations based on these findings have contributed to continued improvement of the Program. Evaluation is ongoing.

Student Conceptions of International Experience (SCIE)

To better understand students' international experience through study abroad, the Buffett Center for International and Comparative Studies and the Searle Center launched a collaborative project in the summer of 2007 called the Student Conceptions of International Experience (SCIE). Based on results of a phenomenographic study of undergraduate students' conceptions of international experience, a 70 item survey instrument to assess students' conceptions of and approaches to international experience was developed. The new 45 item survey was piloted with 646 students from 7 US universities in 2013. A latent profile analysis conducted by our collaborator, Dr. Fred Bryant from Loyola University Chicago, found that the new survey has 3 valid and reliable subscales for 'interacting,' 'participating' and 'embracing' with a total of 16 questions. Survey questions for the 'observing' subscale were not reliable. A new proposal has been submitted to the Buffett Center to fund the final phase of the research which will include piloting of the new 16 items survey and developing new questions for the 'observing' subscale. A number of manuscripts on the project are underway. Greg Light and Denise Drane presented on how latent class analysis was used to confirm the results of the initial phenomenographic analysis and to develop the survey instrument at the European Association for Research on Learning and Instruction (EARLI) Special Interest Group conference on Phenomenography and Variation Theory at the University of Gothenburg in Sweden in August 2016.

Student Attrition in Introductory Chemistry and Calculus Courses

The Searle Center has collaborated with faculty from Chemistry and Math departments over the past 2 years to analyze data on student attrition in the introductory chemistry course sequence and in a number of calculus courses. Multivariate statistical approaches such as multiple regression, logistic regression and neural networks have been used to identify risk factors for attrition.

Undergraduate Program for Advancing Learning (UPAL) Evaluation

Please see Undergraduate Programs section above.

Ongoing International Research and Evaluation Projects

Adaptation for the Critical Thinking Assessment Test for Use in Palestine

Critical thinking is a key learning outcome for all students. In Palestine, there are a number of initiatives underway to enhance the critical thinking skills of university students. However, there are no validated critical thinking tests in Arabic. Dr. Sami Basha, our Fulbright Scholar from Ahliya University in Bethlehem, collaborated with the Searle Center to assess the suitability of the US-developed Critical Thinking Assessment Test (CAT) for use in Palestine. The test was piloted with university students in Palestine in English (n=30) and four questions were piloted in Arabic (n=48). Students responded to the test favorably and their scores were comparable with those of US students. Only two students found the content of the CAT test to be problematic. One-hundred-twelve (112) Palestinian faculty reviewed the skills tested by the CAT. There was moderate agreement that they represent critical thinking. Results of the study have been published in the *Journal of Education and Learning*. Data on teaching practices to promote critical thinking that Palestinian faculty report using in their classes are currently being analyzed, as are data on the attitudes of Palestinian students towards critical thinking.

Palestinian Faculty Development Program (AMIDEAST/USAID/Open Society; Greg Light & Denise Drane PIs)

The Searle Center has partnered with three universities An Najah University (ANU), Palestinian Polytechnical University (PPU), and Palestinian Technical University Khadoorie (PTUK) in the West Bank over the past 5 years as part of a USAID/Open Society funded program to increase the use of student-centered teaching in these particular universities and across the West Bank more broadly. All three universities have established teaching centers and are using a train-the-trainer approach to develop a cadre of faculty who deliver workshops on teaching and learning to faculty. The Searle Center has designed, implemented and evaluated a number of workshops for trainers and university administrators. In addition, the Searle Center worked with Dr. Zaher Nazal from the Department of Community Medicine at ANU and a team of ANU Masters students to conduct an impact analysis for their Center for Excellence in Learning and Teaching (CELT) using a counter-factual analytical design. A substantial impact of the center on teaching practice and university policies to support student centered teaching was found and a publication is currently being prepared. Greg Light and Denise Drane are currently co-authoring a monograph about the project for USAID. Denise Drane is collaborating with the ANU CELT and has designed focus group protocols to evaluate a new initiative in the ANU Department of Computer Science which involves industry representatives working with faculty to redesign the

curriculum. We have also recently submitted a proposal in collaboration with ANU to the US Consulate IN Jerusalem to develop a new undergraduate curriculum in computer science that integrates problem- and project-based learning informed by internships and input on projects from local industry.

III. SERVICES

The mission of the Searle Center is to provide high-quality services that meet the needs of learning and teaching for faculty, post-docs, and graduate student instructors across the University.

Services for Faculty & Instructors

MOOC Initiative

Since 2013, the Searle Center has been actively involved in the development of Coursera MOOCs taught by Northwestern faculty. We have consulted on five MOOCs this year, as well as two specializations consisting of five individual courses and capstone projects, offering advice on course design, the alignment of learning objectives and assessment strategies, and feedback on specific assignments and course activities. Through our representation on the Coordinated Service Center (CSC), we have helped develop different processes related to the successful creation and running of MOOCs and are working on assessing the overall impact of the MOOCs on faculty and students. The preliminary findings suggest that while learner completion rates may have been low overall (3%), the multi-course specializations had far higher completion rates. Moreover, faculty who taught the MOOCs generally developed a more flexible understanding of teaching and learning overall, adapting strategies and resources fostered in an online environment to their standard in-person Northwestern courses. See evaluation section for more details about initial evaluation and findings.

End-of-Term Focus Groups

Course and Teacher Evaluations (CTECs) are not administered by the university in courses with fewer than 5 students out of concerns over anonymity and confidentiality, so the Searle Center offers CTEC-style focus groups for these instructors at the end of the term. A trained staff member or Teaching Consultant (TC) will pose questions drawn from the university CTEC and from Searle's Small Group Analysis questionnaire, noting points of agreement and disagreement. After grades have been submitted, the staff member will share the student responses with the instructor. This year, we completed one end-of-term-focus group.

Grant Writing Assistance

The Center has collaborated with faculty to prepare the education and evaluation sections of proposals to external funders such as NSF and NIH. Center staff have also presented overviews of the education and evaluation components of proposals at site visits with external funders. To enhance the grant writing capacity of Northwestern faculty, the Center continues to offer yearly workshops on how to write the pedagogical and evaluation sections of grants.

During the 2015-2016 academic year, the Searle Center assisted faculty with the following proposals:

- 2 NSF Early CAREER awards
- 5 other NSF awards
- 4 NIH T32 (training grant) awards
- 3 other NIH awards

Individual Consultations

The Center provides individual consultations to faculty and other instructors at the University, from Evanston, Chicago and NU-Q campuses. These are often carried out in conjunction with either a Small Group Analysis or structured observation, or faculty choose to seek expertise in response to CTECs or other end-of-term course evaluations. They can also be stand-alone or ongoing meetings to engage in a variety of teaching, curriculum planning, and grant writing activities, for individuals or in campus units. Searle Center senior staff worked individually with approximately 150 faculty members this year, consulting on issues of teaching, assessment, and grant writing.

Innovative Grants for Teaching

The Searle Innovative Teaching Grants are designed to support faculty, staff, postdocs and graduate students who wish to experiment with new ways to help students learn. This year, we provided a \$1200.00 innovative grant to Nicoleta C. Arva, MD/PhD for her project, “Development of a Web-Based Assessment Method for Trainees in Pediatric Pathology.” Dr. Arva will share her findings in the upcoming year in a roundtable or in the Learning, Teaching and Assessment Forum. (<http://www.northwestern.edu/searle/resources/innovative-teaching-grant.html>)

Small Group Analysis (SGA)

The SGA is a confidential service provided by the Searle Center for Northwestern faculty, postdocs, and graduate students. During a Small Group Analysis (SGA), Center staff and trained graduate-student Teaching Consultants (TC) conduct a structured focus group with students in a class, and provide instructors with detailed and candid feedback during a follow-up meeting. The Searle Center employed 13 TCs this year. In 2015-2016, we conducted 54 SGAs for faculty and graduate instructors: 14 in fall 2015; 16 in winter 2016; 23 in spring 2016; and 1 in summer 2016. A yearly evaluation of the service indicates that faculty are generally satisfied with the helpfulness of the report and consultation in helping them identify strengths and weaknesses of their teaching, with specific strategies on how to improve. Ongoing feedback collected from the TCs indicates that they benefit professionally from conducting the SGAs, thinking more deeply about how students and faculty often have different expectations and understandings, and about strategies for enhancing student learning more broadly.

Structured Observations (SOs)/Teaching Observations

In structured observations of teaching, Center staff and Graduate Teaching Fellows observe an instructor’s teaching, taking detailed notes about key areas, including student engagement, critical thinking, and effectiveness of teaching approaches, and follow up with the instructor afterwards. On occasion these observations may be combined with SGAs. In 2015-2016, we conducted 26 structured observations for faculty through our faculty programs and 40 for

graduate students and postdocs through our graduate student and postdoc programs.

Services to the University and Broader Community

NEW: Assessment of Student Learning Website

In collaboration with Northwestern's Assessment/Accreditation Council, we developed a new Assessment of Student Learning website (<http://www.northwestern.edu/searle/assessment-of-student-learning/>) which communicates important messaging about the University's priorities around assessment, serves as a resource for staff and faculty, and shares real-world examples of assessment in action. Specifically, the website:

- Offers an overview of the University's assessment strategy and guiding principles
- Provides practical advice and guidance for anyone interested in the assessment of learning at the activity, course, or program/unit
- Addresses school-level assessment (e.g. curriculum mapping; assessing capstones)
- Showcases faculty and staff testimonials in order to deepen faculty engagement with assessment

Searle Center Website

The Center website (www.northwestern.edu/searle) serves as a significant resource to the Northwestern community by offering information about specific programs and services, ongoing and new research projects, dissemination and publications, as well as specific resources related to learning and teaching in higher education. It links to the Undergraduate Student Portal and the new Assessment of Student Learning website. Staff members develop and maintain content, regularly updating information and checking links.

Robert E. Menges Library

The Center continues to add to and curate its 1000 holdings (books, articles, journals, and DVD/videos), providing faculty, staff, graduate students and postdoctoral fellows with easy access to the rich literature on teaching and learning. We have continued to donate materials to the University Archives including video recordings of University Teaching Series events, foundational materials and professional correspondence, so that they may be archived properly. In addition, we have continued to use substantial new technologies to the library (cameras, interactive white board, and other specialized equipment) to communicate with our stakeholders and collaborators and to model effective integration of teaching and technology. View the holdings at <http://www.northwestern.edu/searle/resources/searle-center-library.html>

Twitter Account

The Center's twitter account (@searlelearning) promotes Center programs and events, disseminates news about our work, and links to compelling articles on teaching and learning in the media and scholarly publications. The Center tweets an average of 2 times a week and has garnered over 800 followers. The Twitter account can be found at <https://twitter.com/searlelearning>

IV. DISSEMINATION

ACADEMIC PUBLICATIONS & PRESENTATIONS

Publications September 2015-August 2016

Baiduc, R., Linsenmeier, R.A., & Ruggeri N. (2015). Mentored discussions of teaching: An introductory teaching development program for future STEM faculty. *Innovative Higher Education*, DOI: 10.1007/s107/s10755-015-9348-1.

Micari, M. & Pazos, P. (2015). Fitting in and feeling good: The relationships among peer alignment, faculty connectedness, and self-efficacy in undergraduate satisfaction with engineering. *European Journal of Engineering Education*. 41(4), 380-392.

Basha, S., Drane, D., & Light, G. (2016). Adapting the Critical Thinking Assessment test for Palestinian universities. *Journal of Education and Learning*, 5(2) 60-72.

Streitwieser, B., & Light, G. (2016). The grand promise of global citizenship through study abroad: The student view. *The local and the Global in Higher Education Internationalization: A crucial nexus*. In Jones, E., Coelen, R., Beelen, R., & de Wit, H. (Eds.). (Series editor: Philip Altbach). Rotterdam. Sense Publishers.

In Press

Baiduc R., Drane D., Beitel G.J., & Flores L. (2016). A Research Preparatory Program for First Year College Students: Student Selection and Preparation Leads to Persistence in Research. *Innovative Higher Education*, 43(3).

Chou, K., Moaveni, S., & Drane, D. (2016). Virtual steel connection sculpture: Learning assessment. *Journal of STEM Education: Innovations and Research* 17(3).

Micari, M., Van Winkle, Z., & Pazos, P. (In press). Among Friends: The Role of Academic-Preparedness Diversity in Individual Performance within a Small-Group STEM Learning Environment. *International Journal of Science Education*.

Mordacq, J., Drane, D., Swarat, S., & Lo, S. (In press). Development of course-based undergraduate research experiences using a design-based approach. *Journal of College Science Teaching*.

Under Review

Brace, J.L., Baiduc, R., Drane, D.L., Flores, I.C., Beitel, G.J, Lo, S.M. Design and Evaluation of a Multi-Disciplinary Research Mentor Professional Development Program. Submitted to *Mentoring and Tutoring*.

Calkins, S. & Harris, M. Promoting Critical Reflection: A Case Study Evaluating the

Longer-Term Impact of a Substantial Faculty Development Program. Submitted to *Journal of Faculty Development*.

Jacoby, S. & Calkins, S. (Resubmitted 2016). Mixing Oil and Vinegar: Student Perceptions of Effective Pedagogy for Enhancing Critical Thinking in a Large Lecture Course. Submitted to *International Journal of Learning and Teaching in Higher Education*.

Invited Talks and Presentations (External to Northwestern)

Baiduc, R.R., & Ruggeri, N. (November 2015). *Disciplinary conceptions of teaching in a graduate teaching development program*. Professional & Organizational Development Network in Higher Education Conference, San Francisco, CA.

Baiduc, R.R., Linsenmeier, R., & Ruggeri, N. (October 2015). *CIRTL at Northwestern: Preparing future faculty for innovative teaching in STEM*. Association of American Universities Conference, St. Louis, MI

Calkins, S. (October 2015). Invited keynote. *Engaging and Motivating Students*. Student Success Conference. Indiana State University, Terre Haute, IN.

Calkins, S. (October 2015). Invited workshop. *Exploring a Learning-Focused Framework*. for Student Success Conference. Indiana State University. Terre Haute, IN

Calkins, S. & Harris, M. (November 2015). *Promoting Critical Reflection: Assessing the Longer-Term Impact of a Substantial Faculty Development Program*. Professional & Organizational Development Network in Higher Education Conference, San Francisco, CA.

Drane D. & Knowles E. (November 2015). *Graduate Teaching Programs of the Future: General, Discipline-specific or Both?* Professional & Organizational Development Network in Higher Education Conference, San Francisco, CA.

Haynes A., Lisic E, Drane D., and Basha S. (October 2015). *Leading Faculty to Change Course Assessments to Improve Students' Critical Thinking Using the CAT (Critical thinking Assessment Test)*. International Society of the Scholarship of Learning and Teaching, Melbourne, Australia.

Micari, M., & Baiduc, R. (April 2016). *Broadening Participation in a Selective University: Northwestern's Academic Mentoring Program*. Presentation at Center for Culturally Responsive Evaluation and Assessment 3rd International Conference, Chicago.

Molina, D. & Simonian Bean, C. (November 2015). *Reflecting on Diversity, Reconsidering Course Design: Diversity Reflection as Critical Practice*. Professional & Organizational Development Network in Higher Education Conference, San Francisco, CA.

Nazzal, Z., Drane D and Light G. (November 2015). *Evaluating an Educational Development*

Program in a Developing World Context. Evaluation 2015: American Evaluation Association Conference, Chicago, IL.

Invited Talks and Presentations at Northwestern

Baiduc, R., Flores, L., Drane, D., & Beitel, G. (November 2015). *A research preparatory program for first year college students: Effects on science self-efficacy and persistence in STEM*. Learning, Teaching, and Assessment Forum at Northwestern University. Evanston, IL.

Drane, D. & Calkins, S. (September 2015). *Developing an Effective Educational Component of Your Grant Proposal*. Medical Education Day. Northwestern University Feinberg School of Medicine, Chicago, IL.

Drane, D. (June 2016). *Introduction to Scientific Writing*. Northwestern University Clinical and Translational Sciences Institute. TL1 SIP Seminar, Chicago, IL.

Hoversen, J. (Fall 2015). Panel Participant. *Strategies in Networking*. M.S. Higher Education Administration and Policy.

Ruggeri, N. (May 2016). Panel Participant. *Safe Spaces*. Department of Political Science.

UNIVERSITY CONTRIBUTIONS/OUTREACH

Committee and Board Work

Internal

- Assessment and Accreditation Council (Susanna Calkins, Sharisse Grannan)
- Assessment of Student Learning Website (subcommittee chair, Susanna Calkins)
- Learning, Teaching, and Assessment Forum Planning Subcommittee (Susanna Calkins, chair; Sharisse Grannan; Muveddet Harris)
- Coordinated Service Center (CSC) (Susanna Calkins)
- CTEC Committee (Susanna Calkins, Marina Micari)
- CTEC/BLUE Subcommittee: Pilot survey BLUE platform in place of CTEC (Susanna Calkins, Muveddet Harris, Allison Phillips).
- Educational Technologies Advisory Committee (Susanna Calkins)
- Learning Management Systems Administrators Committee (Muveddet Harris)
- Mellon Mays Undergraduate Fellowship Review Committee (Marina Micari)
- MSHE Informational Interviews for potential and incoming students (Susanna Calkins, Jamie Hoversen)
- Prosthetic Orthotic Center Education Program (NUPOC) Advisory Board (Susanna Calkins)
- Searle Center Director Search Committee (Denise Drane)
- Student Enrichment Services Advisory Council (Marina Micari)

- Student Learning Outcomes Assessment Subcommittee (Susanna Calkins, Sharisse Grannan)
- Student Surveys Planning Group (Marina Micari)
- TEACHx Day (Promoting Experiments in Teaching and Learning) Planning; Subcommittee - Digital Poster Committee (Muveddet Harris)
- Transition Programs Council (Marina Micari, Erica Green, Jamie Hoversen, Una McGeough, Luke Flores)
- Transitions Programs Assessment Committee (Marina Micari, co-chair)
- Undergraduate Research Advisory Council (Marina Micari)
- Undergraduate Research Assistant Program Review Committee (Marina Micari)
- Undergraduate Research Grant Committee (Luke Flores)
- University Diversity Council (Marina Micari)
- Women's Center Advisory Board (Nancy Ruggeri)
- Women's Center Change Makers Program (Nancy Ruggeri)
- Weinberg First-Year Advisers Committee (Luke Flores)
- Weinberg Assistant Dean Selection Committee (Marina Micari)

External

- Committee on Institutional Cooperation (CIC) Teaching Center Directors Group (Susanna Calkins, Marina Micari, Nancy Ruggeri)

Teaching and Reviewing

Teaching

- Baiduc, R. CIRTL Network Course - Students Reading Real Science [Fall 2015]
- Baiduc, R. MSC1 445 - Writing and Peer Reviewing for Publication for Clinical Investigators [Spring 2016]
- Calkins, S. MSHE 467 - History and Philosophy of Higher Education (SESP) [Spring 2016]
- Calkins, S. MSHE 405 - Learning and Teaching in Higher Education (SESP) [Winter 2015]
- Flores, L. BIOL SCI 100-0 - Introduction to Biological Sciences [Summer 2015]
- Flores, L. CHEM 100-0 - Introduction to Calculus and Chemistry [Summer 2015]
- Flores, L. BIOL SCI 116-6 - Science Research Preparation [Winter 2016]
- Flores, L. GEN LA 190-0 - Science Research Workshop [Winter 2016]
- Green, E. CMM 121 - Fundamentals of Public Speaking (College of Lake County) [Fall 2015, Spring 2016]
- Harris, M. MED INF 498-DL - Capstone Project (MHI) [Winter 2016]
- Harris, M. MED INF 403-DL - Introduction to Medical Informatics (MMI) [Fall 2015]
- Micari, M. SESP 291 - Peer-Led Learning: Theory and Practice [Fall 2015, Winter 2016]
- Micari, M. Master of Science in Learning & Organizational Change (SESP) - Capstone Advisor
- Ruggeri, N. BIOL SCI 115-5 - Biological Thought and Action [Fall 2015]
- Ruggeri, N. LING 480 - The Language of Teaching and Learning [Summer 2016]

Reviewing

- *Active Learning in Higher Education* (Marina Micari)
- *American Journal of Audiology* (Rachael Baiduc)
- *International Journal of Science Education* (Marina Micari)
- *International Journal of Teaching and Learning in Higher Education* (Susanna Calkins, Marina Micari)
- *Journal of Nano Education* (Denise Drane)
- *Journal of STEM Education* (Marina Micari)
- *Pediatrics* (Denise Drane)
- *PLOS Biology* (Denise Drane, Marina Micari)
- *Professional & Organizational Development Conference* (Nancy Ruggeri)
- *Society for the Advancement of Biology Education Research Conference* (Nancy Ruggeri)

PROFESSIONAL DEVELOPMENT ACTIVITIES

External

- *Center for Culturally Responsive Evaluation & Assessment Conference*. April 2016, Chicago, IL. (Erica Green, Marina Micari)
- *Evaluation 2015: American Evaluation Association Conference*. November 2015, Chicago, IL. (Denise Drane)
- *Higher Learning Commission Conference*. April 2016, Chicago, IL. (Susanna Calkins & Shariisse Grannan)
- *International Society for the Scholarship of Teaching and Learning Conference*. October 2015, Melbourne, Australia. (Denise Drane)
- *National College Learning Center Association Conference*. October 2015, Milwaukee, WI. (Marina Micari)
- *Professional and Organizational Development (POD) Conference*. November 2015, San Francisco, CA. (Rachael Baiduc, Susanna Calkins, Muveddet Harris, David Molina, Nancy Ruggeri, Christine Simonian Bean)
- *Refresher on multiple regression for the applied researcher*. April 2016. Offered by Percontor LLC. (Marina Micari)

Internal

- *Team Building 1 – Common Vision, Culture of Reflection and Participation*. Searle Center for Advancing Learning and Teaching Mini-Retreat. August 2016. (All Staff)
 - The Searle Center held an internal mini-retreat for staff designed to support team building. This event was designed to start the process of defining the culture staff at Searle want to have, and identifying what's working well already and what could be improved upon in order to achieve that culture.
- *Accessibility Workshop Series I-III*. Multimedia Learning Center. February, April 2016. (Muveddet Harris)
- *Business Administrators Meeting, Provost's Units*. November 2015. (Dreana Rubel)
- *Cost Studies Networking Event*. Accounting Services for Research and Sponsored Programs. June 2016. (Dreana Rubel)
- *Critical Cultural Competency Workshop*. Organized by Learning Sciences graduate students and led by Chicago ROAR. May 2016. (Nancy Ruggeri)

- *InfoEd Upgrades 2015 Webinar*. Office of Sponsored Research. September 2015. (Dreana Rubel)
- *Integrating Cognitive Science with Innovative Teaching in STEM Disciplines: Spatial Learning in STEM Conference*. October 2015. (Rachael Baiduc)
- *Leveraging Social Media: Introduction*. Office of Human Resources: Learning & Organization Development. July 2016. (Muveddet Harris, Stephanie Walaszek)
- *Medical Education Day*. Northwestern University Feinberg School of Medicine. September 2015. (Susanna Calkins, Denise Drane, Muveddet Harris)
- *NUPlans Upgrades 2015 Webinar*. Accounting Services. December 2015. (Dreana Rubel)
- *Procard Training*. Accounting Services. October 2015. (Stephanie Walaszek)
- *ProCard Webinar*. Accounting Services. January 2016. (Dreana Rubel)
- *Supporting Our Students' Success: Wellness and Mental Health at Northwestern Panel*. AHEAD@NU. October 2015. (Muveddet Harris, Stephanie Walaszek)

V. PEOPLE

Principal Staff

- Oluremi Akinyemi, Project Coordinator
- Rachael Rebecca Baiduc, Research and Evaluation Associate**
- Christine Simonian Bean, Graduate Associate**
- Susanna Calkins, Director, Faculty Programs, Co-Interim Center Director***
- Denise Drane, Director, Research and Evaluation
- Luke Flores, Senior Associate: SRW, BioExcel & NU BioScientist programs**
- Bennett Goldberg, Center Director*
- Sharisse Grannan, Assessment Associate*
- Erica Green, Undergraduate Academic Program Coordinator
- Muveddet Harris, Program Associate, Faculty Programs
- Jamie Hoversen, Undergraduate Academic Program Coordinator*
- Una McGeough, Undergraduate Academic Program Coordinator*
- Marina Micari, Director, Undergraduate Programs, Co-Interim Center Director***
- David Molina**
- Dreana Rubel, Center Manager
- Nancy Ruggeri, Director, Graduate and Postdoctoral Programs
- Stephanie Walaszek, Program Associate, Graduate and Postdoctoral Programs
- Lauren Woods, Postdoctoral Associate*

*Joined during 2015–2016

** Left during 2015–2016

***One year appointment Sept 1, 2015-July 31, 2016

Temporary Staff

- Penelope Johnson, Temporary Undergraduate Academic Program Coordinator
- Amy Webb, Temporary Website Designer

Interns

- Lorato Anderson (Spring 2016)

Work-Study Students

- Ayo Olagbegi
- Nicholas Ahern
- Xavier Kirkham
- Elvira Salgado

Advisory Board

- James Edward Colgate, Professor, Mechanical Engineering, McCormick School of Engineering & Applied Science
- Robert Linsenmeier, Professor, Neurobiology & Physiology, Weinberg College of Arts & Science
- Franziska Lys, Associate Professor, German, Weinberg College of Arts & Sciences
- Lawrence Pinto, Professor, Neurobiology & Physiology, Feinberg School of Medicine
- Chris Riesbeck, Associate Professor, Electrical Engineering & Computer Science, McCormick School of Engineering & Applied Science

Searle Fellows 2015-2016

- Fadia M. Antabli
Arabic, African and Asian Languages
Weinberg College of Arts and Sciences
Mentor: Fatima Khan
- Moran Cerf
Kellogg & Neuroscience Program
Kellogg School of Management and Weinberg College of Arts and Sciences
Mentor: Bobby Calder
- Margaret Chapman
Division of Hospital Medicine
Feinberg School of Medicine
Mentor: Gary Martin
- Haydon Leslie Cherry
History
Weinberg College of Arts and Science
Mentor: Melissa Macauley
- Jing Dong
Industrial Engineering and Management Sciences
Robert R. McCormick School of Engineering and Applied Science
Mentor: Barry Nelson

- Marina E. Henke
Political Science
Weinberg College of Arts and Science
Mentor: Jacob Smith
- Patrick Lank
Emergency Medicine
Feinberg School of Medicine
Mentor: Michael Gisondi
- Daniel Joseph Majchrowicz
Asian Languages and Cultures
Weinberg College of Arts and Science
Mentor: Laura Brueck
- Mary E. McBride
Pediatrics – Divisions of Cardiology & Critical Care Medicine
Feinberg School of Medicine
Mentor: Katherine Barsness
- Ohad Perry
Industrial Engineering and Management Sciences
Robert R. McCormick School of Engineering and Applied Science
Mentor: Barry Nelson
- Ariel Rogers
Department of Radio/Television/Film
School of Communication
Mentor: Jacob Smith
- Malika Shah
Pediatrics, Newborn Nursery
Feinberg School of Medicine
Mentor: Irwin Benuck
- Amanda Stathopoulos
Civil and Environmental Engineering
Robert R. McCormick School of Engineering and Applied Science
Mentor: Joseph Schofer
- Ranya Sweis
Division of Cardiology, Interventional Cardiology
Feinberg School of Medicine
Mentor: Gary Martin

- Erica Weitzman
German
Weinberg College of Arts and Science
Mentor: Peter Fenves
- George F. Wells
Civil & Environmental Engineering
Robert R. McCormick School of Engineering and Applied Science
Mentor: Aaron Packman

Graduate Teaching Fellows (GTF) 2015-2016

- Benjamin Aspray
Screen Cultures
School of Communication
- Stephanie Brehm
Religious Studies
Weinberg College of Arts and Science
- Tracy Dobie
Learning Sciences
School of Education and Social Policy
- Renee French
Earth and Planetary Sciences
Weinberg College of Arts and Science
- Matthew June
History
Weinberg College of Arts and Science
- Grace Larson
Psychology
Weinberg College of Arts and Science
- Polina Maksimovich
Slavic Languages and Literatures
Weinberg College of Arts and Science
- Ashley Paz y Puente
Materials Science & Engineering
Robert R. McCormick School of Engineering and Applied Science

Graduate Teaching Mentors (GTM) 2015-2016

- Lauren Beck, Theatre and Drama
- Pradeep Bugga, Chemistry

- Laura Dingeldein, Religious Studies
- Alyssa Haynes, Chemistry
- Amanda Kleintop, History
- Esther Liu, Communication Studies
- Leigh Meredith, Rhetoric and Public Culture

Teaching Consultants (TC) 2015-2016

- Benjamin Aspray, Screen Cultures
- Stephanie Brehm, Religious Studies
- Tracy Dobie, Learning Sciences
- Kate Dugan, Religious Studies
- Renee French, Earth and Planetary Sciences
- Sidra Hamidi, Political Science
- Alyssa Haynes, Chemistry
- Matthew Henke, Interdisciplinary Biological Sciences
- Emily Lane, Music Studies
- Saoirse McSharry, Interdisciplinary Biological Sciences
- David Molina, Rhetoric and Public Culture
- Ashley Paz y Puente, Materials Science & Engineering
- Matilda Stubbs, Anthropology

NTAC Workshop Leaders 2015

- Tomas Andreani, Interdepartmental Neuroscience Program
- Stephanie Brenzel, Religious Studies
- Kyle Burke, History
- Jennifer Callaghan, Religious Studies
- Katherine Damme, Psychology
- Yana Gallen, Economics
- Megan Geigner, Theater and Drama
- Sidra Hamidi, Political Science
- Anna Invergo, Chemistry
- Sureshi Jayawardene, African American Studies
- Ashty Karim, Biological Engineering
- Ha-Kyung Kwon, Materials Science & Engineering
- Matthew LaCombe, Political Science
- Emily Lane, Music Studies
- Laura LaPlaca, Screen Cultures
- Saoirse McSharry, Interdisciplinary Biological Sciences
- Zachary Mills, Rhetoric and Public Culture
- Todd Nordgren, English
- Cheryl Patrick, Physics
- Christopher Pike, Slavic Languages and Literatures
- Caroline Vial, French and Italian
- Matilda Stubbs, Anthropology

Teaching Certification Program (TCP) participants 2015-2016

- Rosa Abrahams, Music
- Fashina Aladé, Media, Technology & Society
- Grace Andrews, Earth & Planetary Sciences
- Nicole Azores-Gococo, Clinical Psychology
- Savina Balasubramanian, Sociology
- Rodrigo Barrenechea, Political Science
- Hayley Belli, Biomedical Engineering
- Lillian Boxman, Media, Technology & Society
- Stephanie Brenzel, Religious Studies
- Maria Cabezas, Chemistry
- Sara Clifton, Engineering Science & Applied Mathematics
- Charlotte Cover, History
- Katherine Damme, Psychology
- Lauren DeLaCruz, Rhetoric and Public Culture
- Quentin Dudley, Chemical and Biological Engineering
- Jiawei (Sophia) Fu, Media, Technology and Society
- Elliot Gardner, Plant Biology & Conservation
- Lauren Geary, Biological Sciences
- Salih Emre Gercek, Political Science
- Estefania Gonzalez Solveyra, Biomedical Engineering
- Sidra Hamidi, Political Science
- Joel Harrison, Religious Studies
- Sean Harvey, History
- Aron Heleodoro, Mathematics
- Matthew Henke, Interdisciplinary Biological Sciences
- Kevin Hsu, Clinical Psychology
- Bethany Hughes, Theatre and Drama
- Elizabeth Hunter, Theatre and Drama
- Muhammad Islam, Chemistry
- Alan Kellner, Political Science
- Kristina Knowles, Music
- Pamela Krayenbuhl, Screen Cultures
- Matthew Lacombe, Political Science
- Morganna Lambeth, Philosophy
- Kristin Landau, Anthropology
- Laura LaPlaca, Screen Cultures
- Margaret Lebron, Performance Studies
- Stephanie Levy, Anthropology
- Yen-Sheng Lin, Physical Medicine and Rehabilitation
- Boris Litvin, Political Science
- Rikkert Nap, Biomedical Engineering
- Kyle Oberfell, Biological Sciences
- Grace Overbeke, Theatre and Drama
- Lital Pascar, Rhetoric and Public Culture
- Stephanie Pentz, English

- Danielle Perszyk, Psychology
- Jane Pryma, Sociology
- Colleen Reczek, Medicine-Pulmonary and Critical Care
- Benjamin Ricciardi, Religious Studies
- Matthew Rickert, Physics and Astronomy
- Shoniqua Roach, Performance Studies
- Christopher Robertson, Sociology
- Elena Rodina, Media, Technology & Society
- Jared Rodriguez, African American Studies
- Natalia Smirnov, Learning Sciences
- Hannah Spaulding, Screen Cultures
- Swati Srivastava, Political Science
- Amanda Stein, Music
- Annie Sullivan, Screen Cultures
- Christy (Mara) Suttman-Lea, Political Science
- Min Wu, Engineering Science & Applied Mathematics
- Andrew Wymer, Religious Studies

VI. APPENDIX

This appendix includes relevant data associated with the programs, services and initiatives described above.

FACULTY PROGRAMS DATA

Table 1. Learning, Teaching, and Assessment Forum 2015

CONCURRENT SESSIONS, November 18, 2015
<i>The Loft: Designing a Crowd-feedback System for Formative Feedback on Complex Problem Solving Learning</i> , Matthew Easterday* (School of Education and Social Policy), Daniel Lewis (Learning Science), and Liz Gerber (Mechanical Engineering, Communication Studies, and Segal Design Institute)
<i>Assessing Student Engagement and Learning on the Yellowdig Interactive Platform</i> , Daniel Gruber* (Media, Integrated Marketing Communications and Kellogg School of Management)
<i>Social Distance and Anonymity to Promote Quality Peer Feedback in Higher Education</i> , Bruce Ankenman* (Industrial Engineering and Management Sciences) and Jacqueline Ng* (Industrial Engineering and Management Sciences)
<i>A Competency-Based Model for Enhancing Academic Knowledge</i> , Jason Washburn* (Northwestern Medical Faculty Foundation, Psychiatry and Behavioral Sciences) and Derin Cobia* (Psychiatry and Behavioral Sciences)
<i>A Comprehensive Approach to the Assessment of Student Learning Beyond the Classroom</i> , Mary Desler* (Student Affairs Assessment) and Kelly Iwanaga Becker* (Student Affairs Assessment)
<i>Do-Review-Redo: A Critique-Based Alternative to Homework, Exams and Grades</i> , Christopher Riesbeck* (Electrical Engineering and Computer Science)
<i>Portfolio Assessment of Behavioral Competencies: Lessons Drawn from the Feinberg School of Medicine</i> , Celia O'Brien* (Office of Medical Education and Faculty Development) and Marianne Green (Office of Medical Education and Faculty Development)
<i>Assessing the Critical Thinking of Undergraduates in a Humanities-Based Large Lecture Context</i> , Sarah Jacoby* (Religious Studies) and Susanna Calkins (Searle Center for Advancing Learning and Teaching)
<i>Part I - Effectiveness of the Northwestern Bridge Program</i> , Scott Ogawa* (Economics), Eric Zaslow* (Mathematics), Frederick Northrup* (Chemistry), and Owen Patrick Priest (Chemistry) <i>Part II - A Research Preparatory Program for First Year College Students: Effects on Science Self-Efficacy and Persistence in STEM</i> , Rachael Baiduc (Searle Center for Advancing Learning and Teaching), Luke Flores* (First-Year & Transition Programs and Searle Center for Advancing Learning and Teaching), Denise Drane (Searle Center for Advancing Learning and Teaching), and Greg Beitel (Molecular Biosciences)
<i>Student Presentations: Assessing Student-Generated Content and Peer-Led Feedback</i> , Shayna Silverstein* (Performance Studies)
<i>Full Partners in the Learning Process: Assessing Student Learning Through the Medical Leave and Reinstatement Process When Mental Health Concerns Interfere with Academic Performance</i> , Mona Dugo* (Dean of Students Office) and Mary Goldenberg* (Dean of Students Office)
<i>Nebula Discussions: Visualizing Online Discussion Boards as Network Graphs to Improve Student Interaction and Learning</i> , William White (Industrial Engineering and Management Sciences), Jacqueline Ng* (Industrial Engineering and Management Sciences), and Jacob Collins* (IT Academic & Research Technologies)

*Denotes presenter. There were 15 poster sessions in addition to the 12 concurrent sessions listed above.

Table 2. Faculty Workshop Series, 2015-2016

Workshop Title	Date	Attendance	Average Rating*
Lecturing for Learning: Connecting with the Crowd - Lecturing for Learning in Small and Large Classes	10.14.15	9	4.3
Online Course Design Workshop: Designing a course that focuses on learning	10.19.15	7	
Leading Effective Discussions	10.20.15	5	4.75
Enhancing Critical Thinking	11.13.15	7	3.3
Course Design: Setting Your Students Up to Succeed: Designing a Learner-Centered Course	11.19.15	5	4.6
Assessment: Grading with Intent - Designing Effective Assessments to Improve Student Learning	12.10.15	11	4.5
Grant Writing: Developing an Effective Educational Component for Your Grant Proposal	01.12.16	8	4.75
Assessment: Grading with Intent - Designing Effective Assessments to Improve Student Learning	01.27.16	4	5
Course evaluation	02.16.16	5	4.75
Lecturing: Connecting with the Crowd: Lecturing for Learning in Small and Large Classes	02.18.16	8	4.2
Teaching students from different levels and backgrounds	03.01.16	8	4.0
Writing to Learn: Developing and Evaluating Writing Assignments within the Disciplines	04.08.16	8	
Infusing Critical Thinking into Your Course Design	04.19.16	10	4.6
Online - Designing Learning Objectives	05.06.16	14	
The roles of assessment and lecture in student learning: A panel discussion with Northwestern undergraduates	06.03.16	9	

*Average Rating: Overall, the workshop benefited me. (1 Strongly Disagree – 5 Strongly Agree)

Table 3. University Teaching Roundtable Series, 2015-2016

Roundtable Titles	Date	Attendance
Learning the Wrong Thing is Easy	10.21.15	8
Learning to Sketch	01.13.16	15
Fostering Creative Criticism in the Classroom	02.11.16	12
Teaching across Northwestern: Lessons learned and challenges ahead in interdisciplinary courses	05.17.16	11
Crazy Assignments: Larks in Assessment	05.25.16	14

GRADUATE AND POSTDOCTORAL PROGRAMS DATA**Table 4. New TA Conference Participation by School**

School	Attendance
Weinberg College of Arts and Science	187
School of Communication	57
McCormick School of Engineering and Applied Science	39
Bienen School of Music	5
Feinberg School of Medicine	4
School of Education and Social Policy	3
Total	295

Table 5. Teaching Certificate Program Participants by Discipline

Discipline	Participants
STEM (Science, Technology, Engineering, Math)	19
Humanities	23
Social Sciences	20
Total	62

Table 6. Graduate and Postdoctoral Workshop Series

Workshop Title	Date	Attendance	Average Rating*
Visual Aids: Using Video Technology to Enhance Learning and Teaching in the Humanities	10.22.15	9	4.6
Beyond the MOOC: Introduction to Online Teaching	10.29.15	8	4.9
The Role of Power Dynamics to Foster Inclusive Classroom Climate	11.2.15	12	3.8
Active Learning Strategies to Engage STEM Students during Lecture**	11.18.15	18	4.0
The Art of Learner-Centered Planning	1.28.16	13	4.4
Building Community in the STEM Classroom**	2.25.16	9	4.7
Classroom Assessment Techniques: Keys to Unlock Student Learning Potential in STEM**	3.3.16	14	4.8
Community and Civic Engagement in Your Courses: Why and How?	3.9.16	20	4.5
Stay SMART: Aligning Assessments with Learning Objectives	4.13.16	12	4.2
Larva, Chrysalis, Butterfly: Designing and Implementing Rubrics (PART 1)	4.21.16	14	4.6
Larva, Chrysalis, Butterfly: Designing and Implementing Rubrics (PART 2)	5.3.16	8	4.8
Promoting Critical Thinking in STEM**	5.18.16	9	4.4
UTR: Crazy Assignments: Larks in Assessment***	5.25.16	14	n/a

*Average Rating: Give an overall rating for the workshop (1 Not at all Useful – 5 Very Useful)

**Part of the CIRTl Workshop Series

***Joint Faculty/Graduate Program

UNDERGRADUATE PROGRAMS DATA

Table 7. Undergraduate Programs Participation and Peer Leaders by Program

Program	Participants	Peer Leaders
Academic Mentoring Program (AMP)	478 (Registrations)*	37
Academic Strategies Workshops	65	4
Arts, Humanities, & Social Science Research Workshop (<i>Pilot</i>)	8	3
Gateway Science Workshop (GSW)	779 (Registrations)*	81
Peer-Led Undergraduate Study (PLUS)	539 (Registrations)*	20
Peer Academic Coaching (<i>Pilot</i>)	4	6
Science Research Workshop (SRW)	12	4
Student Associates	4	n/a
Student-Organized Seminar Leader Training	18	n/a
Undergraduate Program for Advancing Learning (UPAL)	112	15
Total	2,019	170

*An individual student can register for more than one section of GSW/AMP or attend PLUS more than once. We served approximately 1,200 unique students last year.