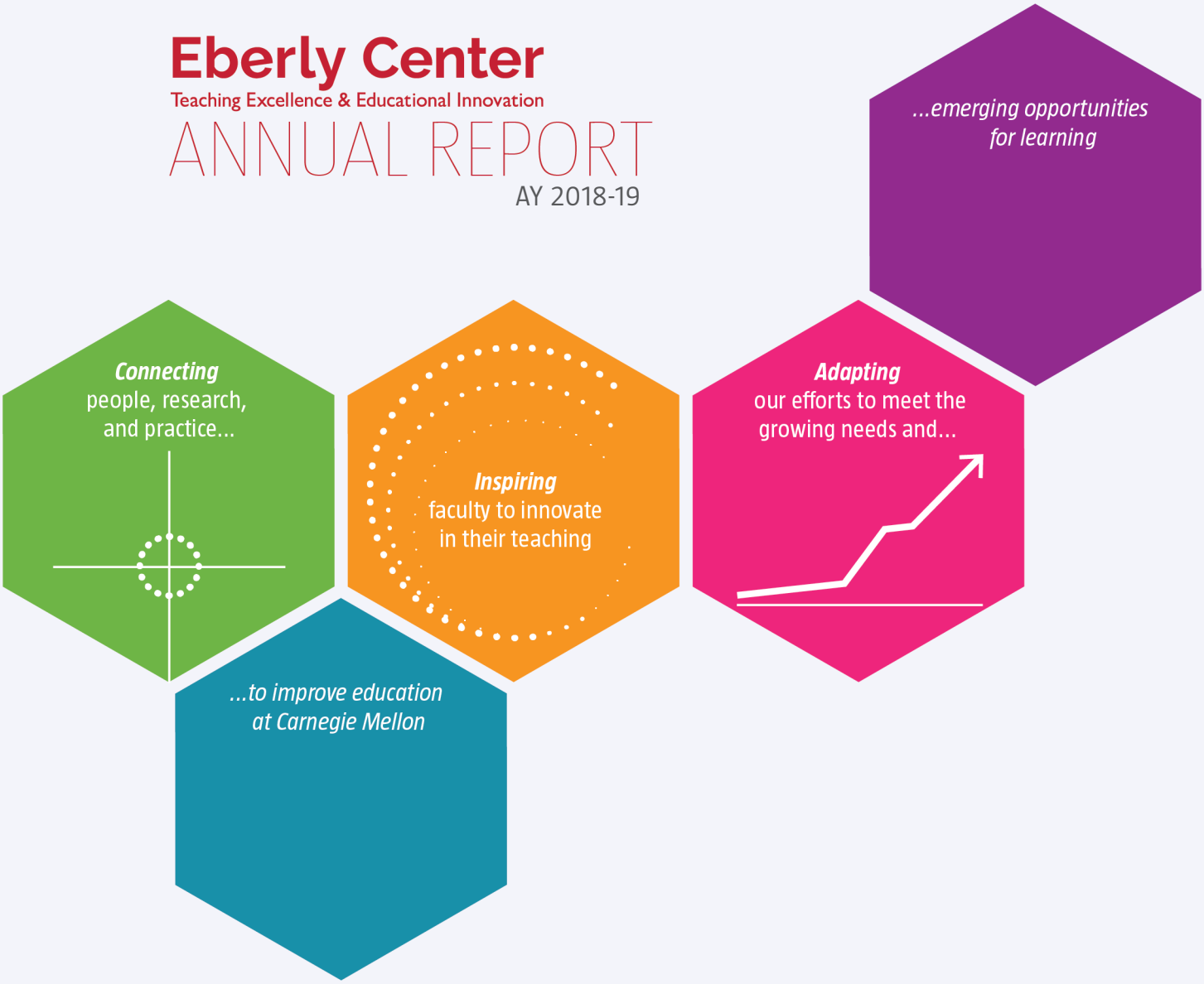
Eberly Center

Teaching Excellence & Educational Innovation

ANNUAL REPORT

AY 2018-19



Carnegie Mellon University

Eberly Center for Teaching Excellence & Educational Innovation

Annual Report AY 2018-2019

Executive Summary

Connecting people, research, and practice to improve education at Carnegie Mellon.

We helped 111 faculty members in their selection and use of technology for learning.

Connecting. Inspiring. Advancing. It has been another successful year for the Eberly Center. A significant milestone this year was holding CMU courses in our state-of-the-art instrumented classrooms – and supporting instructors to collect data on their teaching innovations and students' learning. (For more on our role in promoting teaching as research, see p. 12.) In the educational technology realm, we saw increased adoption of the technology-enhanced learning tools we support for the CMU community. (For more on our overall support of educational technology, see p. 22.) We are also proud to have collaborated with our CMU colleagues in Doha, Qatar to provide more dedicated teaching consultation support to faculty teaching there. And last but certainly not least, we continued our commitment to incorporate more inclusive practices into our own workflows and to highlight inclusive teaching in our professional development programs. (For more on our numerous activities related to faculty support, see p. 6.)

Amidst these exciting new developments, the support and services we provide continue to be in high demand, as the record-setting numbers in this report attest. We are proud to have maintained our high-quality offerings and extended our impact on teaching and learning at CMU.

In AY 2018-19, we have...

Supported 608 faculty and staff educators through all of our events and services combined. Of these, 362 instructors received individualized consultations on teaching and learning.

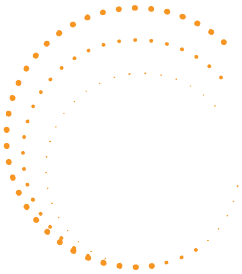
Served 620 graduate students and postdocs from 78 academic programs through our seminars, workshops, one-on-one consultations, and TA orientations.

Trained 228 Teaching Assistants and Instructors of Record at campus-wide Graduate Student Instructor Orientations, preparing them for their CMU teaching responsibilities across 32 academic units.

Advised 50 programs and units on effective strategies for curriculum design and assessment, technology-enhanced learning, learning space design, and TA training.

Offered a 2.5-day Incoming Faculty Orientation to 62 new faculty hires.

Hosted the third annual CMU Teaching & Learning Summit, attended by 137 CMU community members.



Inspiring faculty and graduate students to innovate in their teaching.

Advancing our efforts to meet the growing needs and emerging opportunities for learning.

Through these efforts, we reached faculty and graduate students across all schools and colleges at CMU.

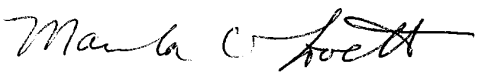
Leveraging expertise in pedagogy, technology, and assessment, the Eberly Center is an internationally recognized leader among university teaching centers. The book, *How Learning Works: 7 Research-Based Principles for Smart Teaching*, co-authored by current and former Eberly members, continues to receive acclaim. It has a world-wide audience, with translations into Korean, Chinese, Japanese, Spanish, Arabic, and Italian. Our award-winning website received more than 2 million visits this year and is referenced by universities and teaching centers around the globe.

An important aspect of our work involves helping instructors incorporate technology effectively to enhance student learning – starting with what is known from learning science research and collecting additional data to inform ongoing improvement. As such, ***we exemplify the best of The Simon Initiative*** and are proud to play a central role in translating these practices to teaching and learning at Carnegie Mellon University.

Even with all our achievements, we recognize the need to stretch and grow. Given the expanding responsibilities and opportunities that today's educators face – and the increased demand for Eberly Center services – we must continue to connect, inspire, and advance our work.

In the coming year, we envision making an even greater impact on teaching and learning at CMU by helping more colleagues introduce evidence-based innovations into their teaching and then leverage data to study the impacts of those innovations and improve student outcomes.

We are confident that, with our responsive approach to a dynamically shifting environment, we can empower our educator colleagues to create the conditions for Carnegie Mellon students to learn and, through this learning, transform their world.



Marsha C. Lovett, PhD
Director

We supported 151 colleagues in using learning data to improve outcomes in the context of 89 courses, 41 academic programs, and 10 technology-enhanced learning tools.

Creating a Community of Educators

Our mission is to distill the research on learning for faculty and graduate students and collaborate with them to design and implement meaningful educational experiences.

We believe that combining the science and art of teaching empowers our colleagues to create the conditions for students to learn and, through this learning, transform their world.

The Eberly Center Works With...

All faculty members, postdocs, and graduate students who want to reflect on and improve their teaching, including those who are:

- new to Carnegie Mellon and want to calibrate to our students and the institution.
- experienced and successful teachers who want to try new techniques or technology.
- encountering difficulties in their courses and want help addressing problems.
- new to teaching and want help getting started (including graduate students who anticipate pursuing an academic career).

Our Approach Is...

Learner-centered | We put student learning at the center of the teaching process, helping faculty, postdocs and graduate students to develop course objectives, assessments, and instructional activities that together support and promote student learning and performance.

Educational | We help faculty members, postdocs and graduate students gain a deeper understanding of the principles that underlie effective learning and teaching so that they can make appropriate teaching decisions for their own courses. We do not simply dispense teaching tips.

Collaborative | We work closely with faculty, postdocs and graduate students to help them identify their strengths as teachers and to jointly devise strategies for course improvement and educational innovation.

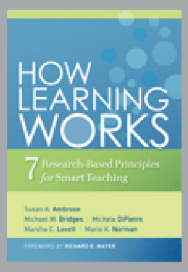
Constructive | We focus on providing constructive and practical feedback to help our colleagues succeed as educators. Our role is to support teaching, not to judge performance.

Data-driven | We help faculty members, postdocs and graduate students to enhance their teaching by collecting information from student artifacts and performance, classroom observations, student focus groups, and examination of teaching materials.

Research-based | We synthesize and apply research, distilled from a range of disciplines, to help faculty and graduate students design and teach more effective courses. We also help faculty colleagues conduct educational research where gaps in the literature exist.

Significant milestones in Eberly Center's recent history

How Learning Works published



2010

Learning Principles pedagogical framework for Open Learning Initiative

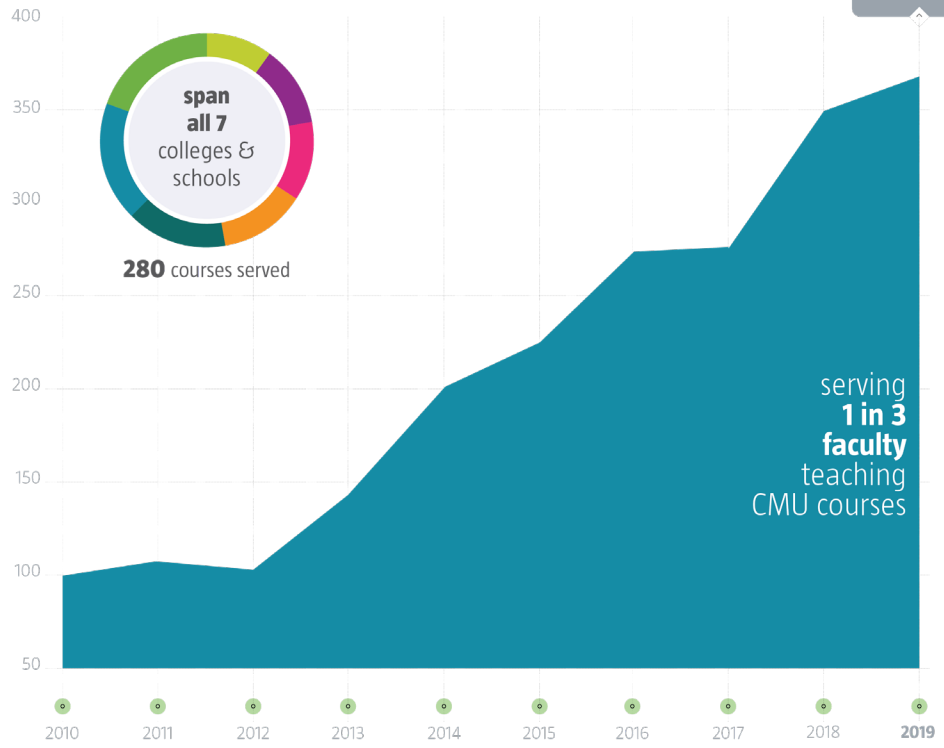
2010

Welcome Marsha Lovett, PhD New Director

2012

CMU faculty and staff served by consultations

362



Consultations Are...

Strictly confidential | We do not disclose any information from our consultations. This includes the identities of those with whom we work, the information they share with us, and data we gather on their behalf via classroom observations and interactions with TAs and students.

Documented for faculty and graduate student purposes alone | We provide written feedback to the colleagues with whom we consult, summarizing and documenting the consultation process.

We do not write letters of support for reappointment, promotion or tenure, but faculty can choose to use our documentation as they see fit.

Voluntary | We do not seek out faculty or graduate students for teaching consultations, but we are happy to meet with anyone who contacts us.

www.cmu.edu/teaching

Eberly Center for Teaching Excellence and the Office of Technology for Education merge, integrating technology and pedagogical support.

Eberly Center
Teaching Excellence & Educational Innovation

2013

The Simon Initiative announced! Marsha Lovett named Simon Co-Coordinator; Eberly Center fine tunes support model to address emerging need

The Simon Initiative

2013

Eberly Center instituted the Teaching Innovation Award to recognize faculty for innovative teaching strategies that enhance student outcomes in individual courses

Teaching Innovation Award

2016

Eberly Center initiates first-ever conference for CMU educators at the Teaching & Learning Summit.

TEACHING & LEARNING SUMMIT 2016

2016

Faculty Support

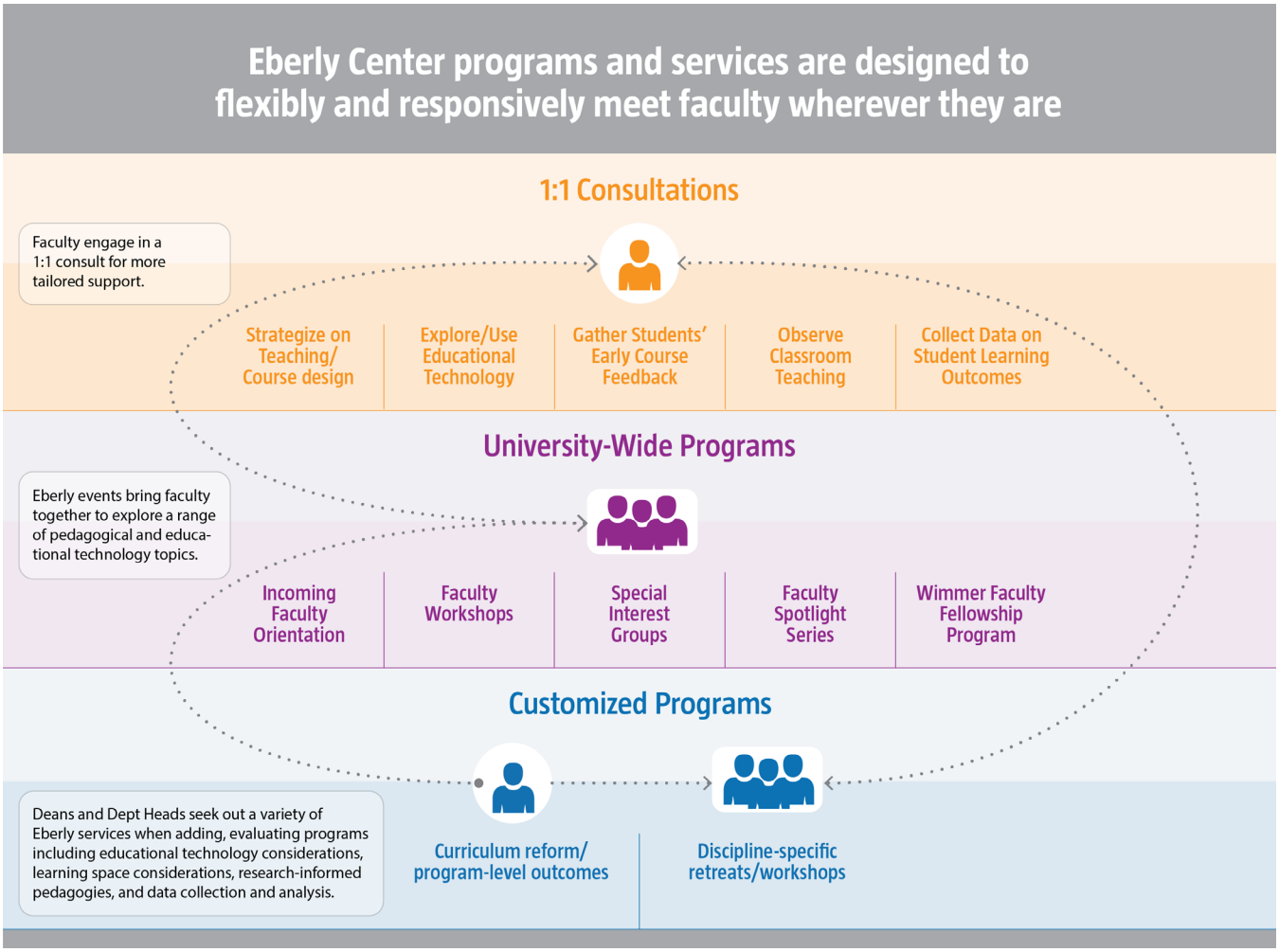
"It's been a pleasure working with Eberly Center consultants... They're really helping us as a department reflect on our process, which is going to lead some great improvements in how we teach... "

– Department Head

The Eberly Center offers an array of evidence-based programs and consultation services to support the diverse teaching needs of all CMU faculty. Designed to flexibly and responsively "meet faculty wherever they are," our menu of services offers various pathways for timely and ongoing support. For example, faculty may attend an Eberly workshop or event to learn about an instructional strategy or tool and then request a one-on-one consultation for help implementing changes in their teaching practice.

At the same time, consultations reveal emerging patterns in faculty needs and interests, informing our design of targeted programs that disseminate relevant research findings and bring together faculty to share their experiences and exchange ideas.

Several of our university-wide and customized, unit-level programs addressed educational challenges frequently raised during consultations with instructors and program administrators.



Highlights of AY 2018-19

Faculty demand for Eberly Center programs and services reached a new all-time high. **Overall, 680 CMU faculty and staff members** took advantage of Eberly Center programs and services, representing over **50% of instructors** who taught CMU courses in AY 2018-19.

Delivering tailored support to faculty

We provided **consultation services to 362 faculty and staff members** with educational responsibilities, addressing their particular situations regarding **280 courses and 92 programs and 17 TEL tools.**

We helped **151 faculty and staff members leverage learning data** to improve teaching and learning outcomes associated with 89 CMU courses, 41 academic programs, and 10 technology-enhanced learning tools.

We supported **111 faculty in their selection and use of educational technology**.

We provided **Early Course Feedback services to 74 faculty instructors in 91 CMU courses** (including 88 focus groups and 4 surveys) to gather anonymous, consensus-checked, formative feedback from students.

We supported over **50% of CMU-Qatar instructors via consultation services**.

Disseminating evidence-based teaching practices

419 faculty and staff members filled 747 seats at our university-wide and customized, unit-level programs.

62 newly hired faculty members attended Incoming Faculty Orientation, where we fostered an interdisciplinary community around evidence-based teaching and learning.

We coordinated CMU's **Teaching Innovation Award**, recognizing instructors for innovative teaching strategies that enhance student outcomes in CMU courses and programs.

We hosted the third annual CMU **Teaching & Learning Summit**, attended by 137 members of the CMU community, and featuring the innovative and evidence-based approaches of over 60 CMU faculty, staff, postdocs and graduate students.

Responding to emerging needs

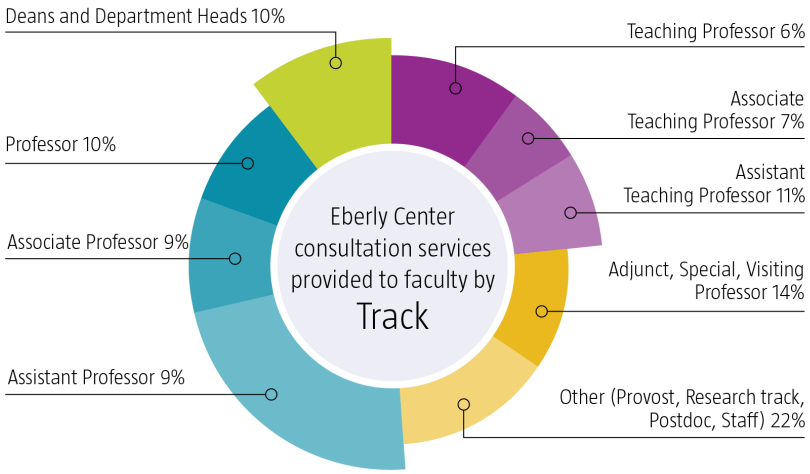
We facilitated **19 customized seminars, attended by 188 faculty filling 264 seats** during departmental faculty meetings, targeting the specific needs identified by instructors.

14 CMU courses were taught in our two instrumented, active-learning classrooms, enabling instructors to collect data on student learning and/or engagement, test new pedagogies, or iteratively refine their classroom teaching skills.

We hosted our **fourth annual, multi-day Teaching as Research Institute** on "Which Active Learning Strategies Work Best in Lecture, Lab, and Discussion-Based Courses?"

"Eberly Center teaching consultations and resources have been absolutely invaluable in preparing and delivering my course. My teaching consultant helped me think through areas I had not considered, answered a variety of questions, and gave me confidence with challenges that came up while delivering the class. She did so much to help this first run of the class go smoothly for me and the students, so they could focus on learning the material. For that, I am forever grateful."

– *New faculty member*



Teaching & Learning Summit

"I am very grateful to you and the staff at the Eberly Center for teaching me to be a teacher, for the continuous support, and for the organization of great events like this Teaching & Learning Summit. "
– Full Professor

On November 1, 2018, we held the third annual CMU Teaching & Learning Summit, a half-day conference focused on teaching and learning. This highly interactive event gathered the CMU community to:

- foster dialogue, networking and collaboration within and across disciplines.
- showcase the educational research of CMU instructors and learning scientists.
- disseminate transferable, evidence-based and innovative teaching strategies employed by CMU instructors.

Randy Bass, Vice Provost for Education at Georgetown University, delivered the plenary session on **"Imagining the future of higher education: The critical role of instructors and pragmatic strategies for course design."**

"In the 15 years I've taught at CMU, your [Eberly Center] 3-part course was the first time I'd been formally taught how to do the job I was hired to do. So, thanks! [What I learned] will be very useful in the fall when I teach the class again."*– Professor*

The event also included presentations, posters, and demonstrations highlighting over 60 CMU faculty, staff, postdocs, and graduate students sharing their innovative and evidence-based teaching strategies, course designs, and technology-enhanced learning practices.

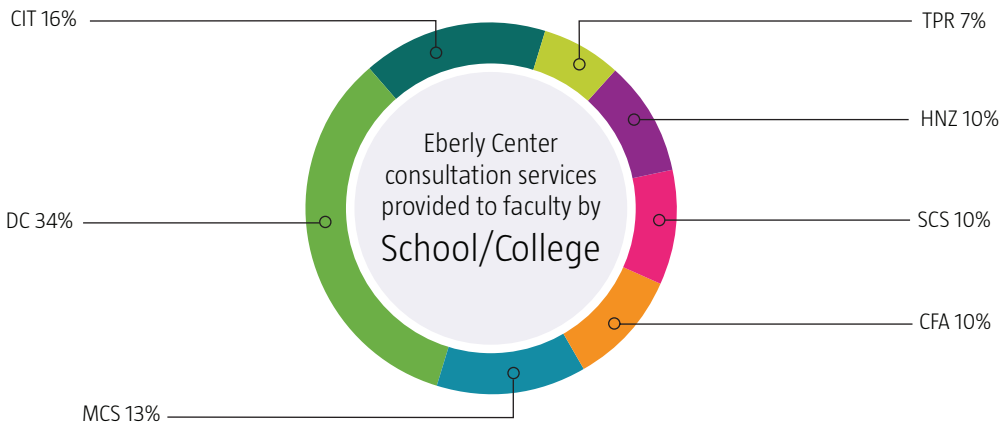
Summit participants (137 total) represented all seven schools and colleges, and included **82 faculty, 29 graduate students, 6 postdocs, and 20 staff members** who contribute to CMU's educational mission.

Teaching as Research Institute

To help promote a culture of data-informed teaching and course/program design at CMU, the Eberly Center hosted the fourth Teaching as Research Institute, in June 2019. **Twenty faculty members** attended. The Institute focused on examining the extant educational research on active learning strategies, with particular focus on which techniques work best in particular teaching contexts (e.g., lab, lecture, discussion, studio). The program also introduced faculty to a toolkit of strategies on classroom research methods as well as Eberly Center services to support faculty in this work. Sixteen participants initiated collaborations with Eberly Center colleagues to design, implement, and disseminate studies of student learning outcomes in CMU courses and programs.

Special Interest Groups (SIGs)

SIGs bring together small, multidisciplinary groups of faculty to build community and sustain dialogues around teaching by exploring topics in depth, beyond what is possible in a single, stand-alone seminar. Eberly colleagues design and facilitate SIGs, tailoring programs to meet the emerging needs of participants via seminar or roundtable formats. In seminar-style SIGs, faculty experience novel pedagogical strategies "hands-on" and then reflect upon and discuss their experiences from the perspectives of both students and instructors. Seminar-style SIGs often conclude via small group or 1-on-1 consultations in which faculty members discuss with an Eberly colleague how the focal strategies might be effectively transferred to their future teaching. In roundtable-style SIGs, faculty currently implementing particular teaching strategies meet periodically



to discuss their experiences, share effective strategies, discuss feedback gathered from students via Early Course Feedback surveys or focus groups, and engage in collaborative problem solving to address ongoing challenges. In AY 2018-19, we facilitated four new seminar-style SIGs:

- Teaching Critical Reading Skills in Your Discipline
- Community Practices and Models of Student Engagement
- Active Learning: Theory and Evidence-Based Approaches
- How Learning Works:The Role of Students' Prior Knowledge on Learning

Overall, **39 faculty** engaged in these series of 90-minute interactive sessions to explore how to apply educational research and evidence-based teaching strategies to their CMU courses.

Seminars

Our 90-minute seminars cover a wide variety of topics related to teaching, learning, and professional development as an educator. All are evidence-based, highly interactive, and provide practical strategies.

In response to the Tree of Life shooting in Pittsburgh, and other recent tragic global events, we developed a new university-wide seminar, delivered multiple times in AY 2018-19 for faculty: **"Teaching in Tumultuous Times."** This seminar promoted discussion on a number of research-based strategies instructors can employ in class sessions following a tragic or traumatic local or global event.

Wimmer Faculty Fellows Program

The Wimmer Faculty Fellows program is designed for junior faculty members interested in enhancing their teaching through concentrated work designing or redesigning a course, innovating new materials, or exploring a new pedagogical approach.

Eberly Center colleagues work individually with each Wimmer Faculty Fellow according to his/her particular needs. Each fellow receives a stipend, funded by a gift from the Wimmer Family Foundation, to acknowledge the work it takes to improve one's effectiveness as an educator.

During AY2018-19, Eberly Center consulting teams supported the following Wimmer Fellows by helping each faculty fellow design and implement evidence-based teaching strategies and measure the effectiveness of these interventions.

- Rosalyn Abbott, Assistant Professor, Biomedical Engineering, College of Engineering
- Robin Mejia, Adjunct Professor, Statistics and Data Science, Dietrich College of Humanities and Social Sciences
- Daphne Peters, Assistant Teaching Professor, Design, College of Fine Arts
- Rebecca Taylor, Assistant Professor, Mechanical Engineering, College of Engineering
- Zachary Ulissi, Assistant Professor, Chemical Engineering, College of Engineering

Additionally, in April of this year, the Eberly Center selected the following new Wimmer Fellows who will work with Eberly Center consulting teams to complete their proposed Wimmer projects during AY2019-20.

"The seminars and special interest groups are a great way to meet other educators on campus, exchange ideas and share experiences and best practices. Presenting my course in last year's seminar was a great opportunity to reflect on my teaching practice too!"
– Special Faculty

"Many thanks for your collaboration on planning and delivering the recent [customized] faculty workshops for [my program]. Your expertise in running pragmatic and effective workshops were invaluable as we launch these efforts. "

– Program Coordinator

- Mohamed Bouaouina, Assistant Teaching Professor, Biological Sciences, Carnegie Mellon University, Qatar
- Mindy Eshelman, Associate Professor, School of Drama, College of Fine Arts
- Saugata Ghose, Systems Scientist, Department of Electrical & Computer Engineering, College of Engineering
- Raelin Musuraca, Assistant Teaching Professor, Human-Computer Interaction Institute, School of Computer Science
- Dani Nedal, Special Faculty, Institute for Politics and Strategy, Dietrich College of Humanities & Social Sciences

Incoming Faculty Orientation

For over 30 years, the Eberly Center has offered programming to support newly hired faculty regarding their teaching responsibilities. Incoming Faculty Orientation is designed to:

- help faculty calibrate their teaching to CMU students and standards
- uncover and challenge assumptions about teaching and learning
- disseminate practical, research-based strategies for teaching promote effective uses of technology
- facilitate dialogue across disciplines
- communicate the Eberly Center's approach, programs, and services.

Since 2016, we have collaborated with the Vice Provost for Faculty. This year, we presented a **2.5-day program of interactive, research-based workshops** on topics related to teaching and learning as well as securing research funding, understanding how the university works, and maintaining a healthy work-life balance. The program also included a panel discussion with experienced faculty as well as case study discussions on CMU academic policies, led by the Vice Provost for Education, to give participants ample time to ask questions about their new academic community.

We invited all faculty members who are new to CMU-Pittsburgh (e.g., tenure-track, teaching-track, visiting, adjunct) to participate.

Year after year, the majority of incoming faculty members attend this optional orientation program, even though most are in the midst of transitioning to Pittsburgh and CMU. In 2018, **62 new faculty attended**.

Customized Unit-Level Seminars and Programs

The Eberly Center responds to requests from individual academic units based on their particular needs for faculty professional development. Eberly colleagues collaborate with CMU Deans and Department Heads to design and facilitate workshops, faculty meetings, and retreats tailored to address discipline-specific needs. Last year, the Eberly Center provided the following customized programs:

Mellon College of Science

- Teaching Effectively with Canvas
- Designing Effective Assessments
- Supporting Students to Develop Master

Dietrich College of Humanities & Social Sciences:

- Grand Challenge Seminar Courses: Designing Effective Learning Objectives and Aligning Assessments
- Grand Challenge Seminar Courses: Teaching Effectively in Faculty Teams
- Providing Effective Feedback
- Teaching Discussion-Based Courses on Provocative Topics: Feedback from Student Focus Groups
- Student Intellectual Development
- Facilitating Difficult Dialogues
- Special Interest Group: Teaching Writing and Communication Skills
- Department of Psychology: Aligning Assessments with Learning Goals

College of Engineering:

- Information Networking Institute Retreat: Inclusive Teaching
- Department of Mechanical Engineering: Peer Observation
- Engineering and Technology Innovation Management Faculty Retreat

Heinz College of Public Policy and Information Management:

- Providing Effective Feedback
- Formative Assessment of Teaching

Tepper School of Business:

- Engaging Students Effectively Via Active Learning
- Teaching and Reaching All Students

College of Fine Arts:

- Drama Department: GenZ Implications for Teaching and Learning

Faculty Support at CMU-Qatar

In August 2018, **we expanded our support for CMU-Qatar** (CMU-Q) faculty by offering evidence-based programs and one-on-one consultations, both on-site and at a distance. We collaborated with the CMU-Q Dean, Mike Trick, to design and fund an Eberly Center staff position dedicated to connecting CMU-Q faculty to the support and resources provided by the full Eberly Center team. Leading up to this new dimension of our support for CMU-Q colleagues, the Eberly Center has had a history of supporting our global campuses with educational technology tools and support services.

In the sections below, we celebrate our collaboration with CMU-Q by explicitly highlighting newly added services targeted for CMU-Q colleagues. (Statistics below are included in the CMU institution-wide data reported in other sections of this annual report.)

Needs assessment explored faculty needs and interests

We conducted a series of four focus groups attended by a total of **39 faculty and staff** to inform the refinement and application of existing Eberly Center services and the development of new services, specific to CMU-Q faculty needs. Additionally, we interviewed Program Directors and Area Heads from all five academic programs, including Arts & Sciences, Biological Sciences, Business Administration, Computer Science, and Information Systems, to assess priorities and goals at the program-level.

We also met with Program Deans, Directors, and Leaders from five student-focused campus programs to gather information on student learning and wellness. Finally, we coordinated a campus-wide focus group with students about their experiences in CMU-Q courses.

Consultations supported faculty in context

We provided consultation services, in-person and at a distance, to **32 faculty and staff** with educational responsibilities (50% of all instructors at CMU-Q), addressing their particular situations and academic contexts. Fourteen consultations leveraged learning data to improve teaching and learning outcomes associated with 12 courses and 2 technology-enhanced learning tools. Eight faculty teaching 7 CMU-Q courses received Early Course Feedback Focus Group services to gather anonymous, consensus-checked, formative feedback from students.

Campus-wide and unit-level programs responded to faculty needs and interests

Fifty-eight CMU-Q faculty and staff members filled 174 seats at 6 campus-wide and 5 customized, unit-level programs, offered on-site in Qatar or at a distance. Campus-wide programs included three Special Interest Groups:

- Community Practices and Models of Student Engagement
- Active Learning: Theory and Evidence-Based Approaches
- How Learning Works:The Role of Students' Prior Knowledge on Learning

Customized programs included case-based discussions of teaching challenges and workshops on course and syllabus design. Additionally, 14 CMU-Q faculty filled 46 seats, in person, at programs offered on the Pittsburgh campus, including 6 attendees at the four-day Teaching as Research Institute.

"Thanks so much for meeting with the teaching group in our department. It was an excellent discussion, and there was universal agreement that it would be great to continue."

– Teaching Professor

Promoting Research on Teaching & Learning

"Improvement in post secondary education will require converting teaching from a solo sport to a community based research activity."

– Herb Simon

Not only do CMU faculty seek Eberly Center support to engage in evidence-based teaching, we are seeing many faculty interested in conducting educational research themselves – in the context of their courses. This year, we supported **151 faculty and staff members** in using learning outcome data to improve teaching and learning outcomes associated with 89 CMU courses, 41 academic programs, and 10 technology-enhanced learning tools. These faculty members are taking a data-driven approach to improving education.

We support our colleagues' work in this area through one-on-one consultations, supporting the ProSEED/ Simon Initiative and A.W. Mellon Faculty Seed Grant programs, and contributing to education-related grant work. In addition, this year we offered the fourth annual Teaching as Research Institute.

Faculty Teaching as Research Institute

To help promote a culture of data-informed teaching and course/program design at CMU, the Eberly Center hosted a 4-day Teaching as Research Institute. **Twenty faculty members attended**, learning a toolkit of strategies on classroom research methods and how the Eberly Center can support this work. The pedagogical theme of the Institute was "Which Active Learning Strategies Work Best in Lecture-, Lab, and Discussion-Based Courses?"

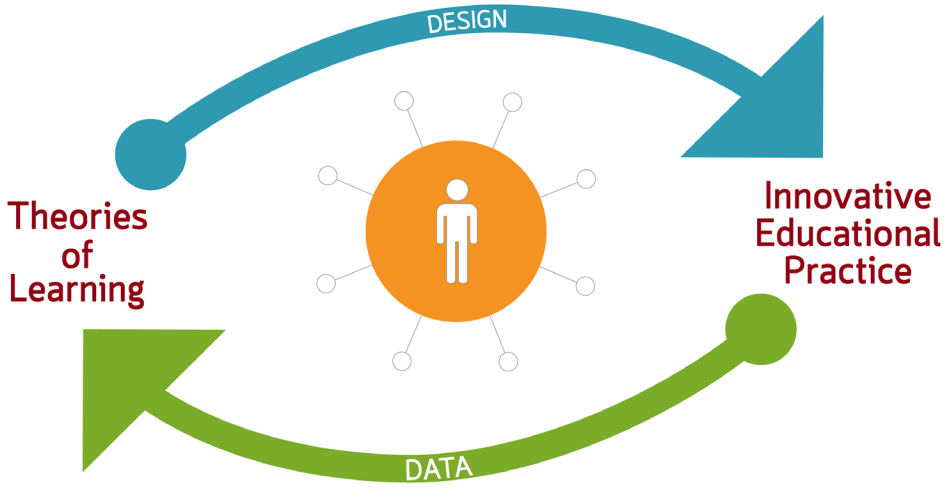
At the end of the program, faculty members were invited to work with an Eberly colleague to initiate a "teaching as research" project – to be conducted in one of their upcoming courses. At the time of this writing, **sixteen of the faculty participants** have begun work on classroom-based research projects.

Consultations on the Scholarship of Teaching and Learning

Regardless of participation in our Teaching as Research institute, we will work with faculty colleagues on discipline-based educational research – from designing a study and planning instructional interventions, to creating valid and reliable measures of learning, to identifying relevant journals and conferences for disseminating the work. Often these consultations stem from a faculty member's initial interest in trying out a new pedagogy or educational technology, and that grows into a quest to study and improve the intervention's effectiveness. Some of these projects are already in the stage of getting disseminated across CMU and beyond via peer-reviewed academic conferences and publications. For examples, please see our Teaching as Research website showcasing such projects (https://www.cmu.edu/teaching/teaching-as-research).

Examples include:

- Comparing inquiry-based lab activities to traditional (cookbook-like) instructions in a materials science laboratory course with Sarah Christian, Assistant Teaching Professor of Civil & Environmental Engineering.
- Investigating the impact of a simulation-based game environment (Minecraft) on students' visualization skills and conceptual learning with Reeja Jayan, Assistant Professor of Mechanical Engineering.
- Comparing several approaches to active learning, such as how much one should discuss right vs. wrong answers, in a Masters-level information systems course with Mike McCarthy, Associate Teaching Professor of Information Science, and Joseph Mertz, Teaching Professor of Information Systems & Heinz.



ProSEED Simon Initiative Seed Grants

The ProSEED program was launched in 2014 to "play a catalytic role in supporting promising, creative ideas in education and research." The Eberly Center continues to support The Simon Initiative Seed Grants within the ProSEED program by:

- Answering questions about effective learning outcomes assessment when faculty are writing their proposals
- Serving on the proposal review panel
- Providing support and consultation to awardees on instruction, assessment, and educational technology design.

Education-Related Grant Proposals and Grant-Funded Work

Eberly Center personnel are regularly invited by faculty colleagues to contribute to education-related grants. Depending on the project's needs, we contribute expertise in course and curriculum design, assessment planning, and/or educational technology development. This year we consulted or collaborated on **ten new grant proposals** with an educational innovation or learning research component. These included NSF CAREER proposals and research proposals to various government agencies and philanthropic foundations. We continued our participation in the following funded projects:

- Cultivating Digital Scholarship and Technology-Enhanced Learning in the Humanities. (09/01/2014-08/31/2019). Andrew W. Mellon Foundation, $2 million.
- Supporting Innovation at CMU (10/26/16-10/25/19). The Eberly Foundation, $90,000.
- Incorporating Systems Thinking and Systems Engineering Concepts in Undergraduate Engineering Courses. (08/01/2018-07/31/2020). Office of Naval Research, $130,700.

Collecting Data on Teaching and Learning in our Instrumented Classrooms

During the 2018-19 academic year we collaborated with **14 faculty teaching CMU courses** in our instrumented classrooms. These classrooms are outfitted to collect audio, video, and other sensor data on the teaching/learning process. Faculty using these rooms benefit from Eberly support as they pilot-test new teaching strategies and educational technologies, collect data from the classrooms' state-of-the-art infrastructure, get feedback on their teaching, and/or conduct learning science research. To the best of our knowledge, these classrooms provide a resource for research on teaching and learning that is *unique across all of higher education*.

Graduate Student & Postdoc Support

"I felt so prepared for teaching this semester because of everything the Eberly Center taught me. I have been incorporating a wide breadth of active learning activities in class including: Just in time teaching, muddiest point, Think-Pair-Shares (about 3 - 7 in just about every class) and I did my first jigsaw activity this week. It's been nothing but FANTASTIC to be able to apply everything you've taught me in my class. I'm extremely happy at my new job, and I don't think this would have been possible without your help."

– Graduate student alum, upon becoming a faculty member

We offer a wide range of services to graduate students and postdocs, to support them as teaching assistants (TAs) or instructors during their time at Carnegie Mellon and as future faculty members at other institutions. From a first-time TA to an experienced instructor of record, our services accommodate graduate students' and postdocs' diverse needs, goals, and time available. And regardless of current teaching duties, the common goal across all of our services is to disseminate evidence-based teaching strategies in ways that are accessible and actionable. In addition to providing these services directly to graduate students and postdocs, we participate in university- and unit-level orientations and professional development series, and we support graduate program coordinators and individual faculty members as they train and support their graduate students and postdocs to be teaching assistants or instructors of record.

Highlights of AY 2018-19

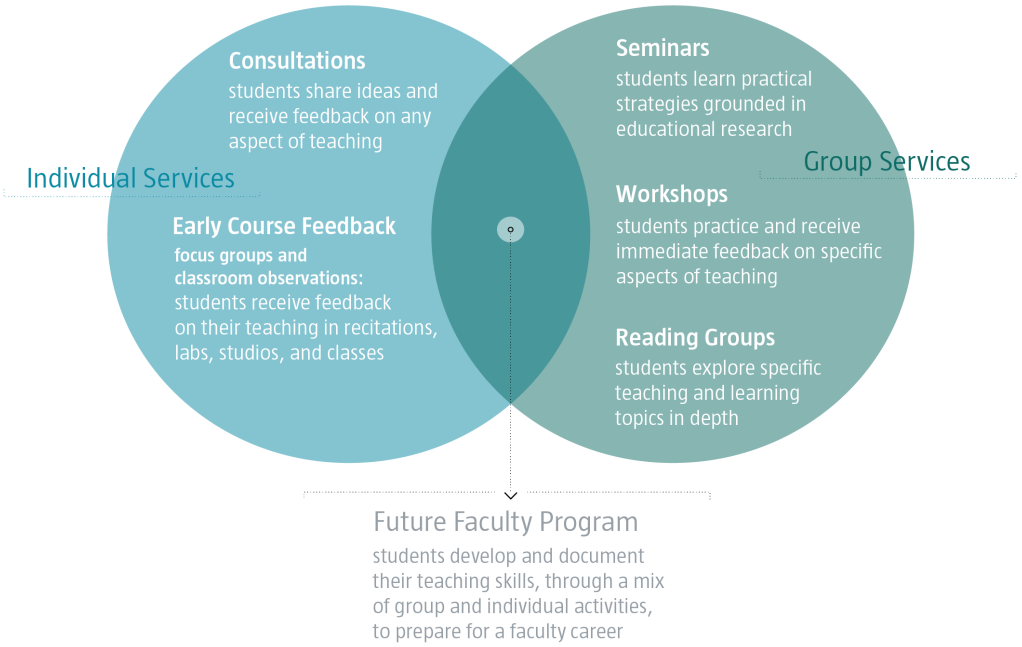
Serving the diverse CMU community: Across all of our programs and services, we served more than 620 unique graduate students and postdocs from all seven schools and colleges, representing 78 academic programs.

Disseminating evidence-based teaching practices: 364 graduate students and postdocs filled 851 seats at our university-wide programs, and 202 graduate students attended our 13 customized, unit-level TA training events. .

Supporting individual CMU graduate students and postdocs: We provided 278 consultations to 170 unique graduate students and postdocs.

Training Graduate Students for their CMU Teaching Appointments: We hosted two, campus-wide Graduate Student Instructor Orientation events that prepared 228 instructors and teaching assistants from 32 academic units.

Graduate Student Programs



Preparing graduate students and postdocs to teach as faculty: The number of graduate students and postdocs participating in our Future Faculty Program continued to grow this year. Eighty-one new participants enrolled in the program and a grand total of 196 individuals participated. This year, 23 participants finished the program requirements.

Responding to emerging needs and interests: We developed 6 new programs (2 customized TA training events and 4 university-wide seminars to respond to new CMU policies and initiatives, new trends in TA responsibilities, and emerging needs of graduate students, postdocs, and academic units at CMU).

Graduate Student Consultations

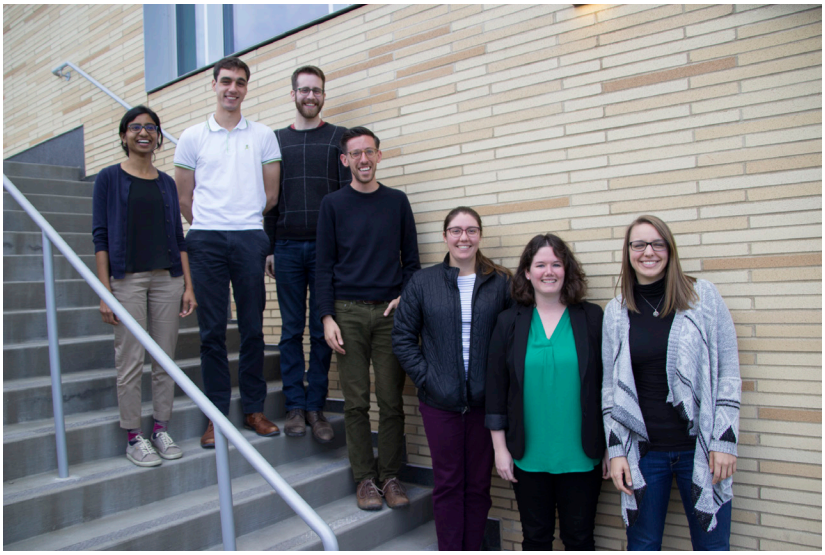
Graduate students can work one-on-one with an Eberly consultant to ask questions, discuss ideas, and get feedback on teaching strategies, activities, or materials. Many of these consultations involve multiple interactions as well as multiple methods of collecting data on student learning, such as classroom observations of teaching and student feedback surveys and focus groups. For example, a graduate student may meet one-on-one with an Eberly consultant prior to beginning a TA appointment to discuss strategies for facilitating student participation; then, during the semester of the TA appointment, the graduate student may request a classroom observation from an Eberly consultant to gain additional feedback. Because so many graduate students are enrolled in multi-year programs, we often have the opportunity to work with graduate students over several semesters and play a significant role in their development as educators. We provided 278 consultations to 170 unique graduate students and postdocs. The vast majority of graduate students were enrolled in doctoral programs, but masters degree students were also served.

Graduate Teaching Fellows

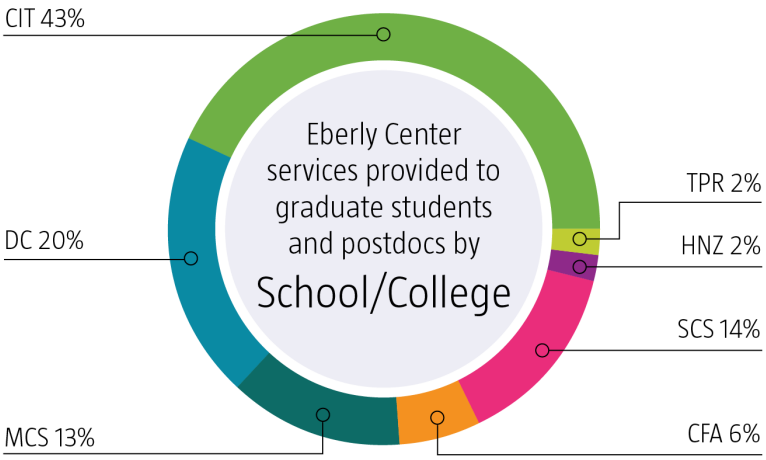
Graduate Teaching Fellows (GTFs) are a select group of experienced CMU graduate student instructors from a variety of disciplines, who are recognized for their teaching effectiveness and commitment to student learning. Full-time Eberly Center staff provide GTFs with advanced training in evidence-based teaching strategies and teaching consultation techniques through regular "teaching circle" meetings.

Besides receiving the most in-depth professional development we provide to CMU graduate students, Graduate Teaching Fellows (GTFs) in turn contribute to the Eberly Center's activities to support graduate students. Last year, GTFs provided 97 of the one-on-one, confidential consultation services (i.e., classroom observations, microteaching video consultations, or teaching philosophy consultations) to 75 unique graduate students and postdocs.

We hosted two Graduate Student Instructor Orientation events, serving a total of **228 instructors** and teaching assistants from **32 academic units**.



Pictured from left to right: Niranjini Rajagopal (ECE), Antoine Remond-Tiedrez (Math), Patrick Walsh (Philosophy), Nicholas Cheadle (Modern Languages), Amy Shannon Cook (HCII), Maggie Goss, (English), Alexis Adams (Modern Languages)



University-Wide Programs

This year, 364 unique graduate students and postdocs, representing all 7 CMU schools/colleges, attended our university-wide seminars and workshops, filling a grand total of 851 seats. Our university-wide programs integrate educational research and theory with practical pedagogical strategies and give graduate students from all schools and colleges the opportunity to interact with and learn from each other. The popularity of our seminars and workshops makes them a highly effective "gateway" service in that many students participate in several seminars and then pursue our small group activities and one-on-one services to go into greater depth with some aspect of teaching and learning.

Teaching & Learning Summit

On November 1, 2018, we held the third annual CMU Teaching & Learning Summit, a half-day conference focused on teaching and learning. This highly interactive event gathers the CMU community to:

- foster dialogue, networking and collaboration within and across disciplines;
- showcase the educational research of CMU instructors and learning scientists; and
- disseminate transferable, evidence-based and innovative teaching strategies employed by CMU instructors.

Randy Bass, Vice Provost for Education at Georgetown University, delivered the plenary session on "Imagining the future of Higher Education: The critical role of instructors and pragmatic strategies for course design." The event also included Quick-Fire Talks highlighting CMU instructors who use innovative teaching strategies or course designs and a poster session showcasing evidence-based and innovative teaching and technology-enhanced learning practices.

Participants (137 total) represented all seven schools and colleges, and included 29 graduate students and 6 postdocs who contribute to CMU's educational mission. Many of these graduate student and postdoc participants contributed posters and/or presentations.

Seminars

Our 90-minute seminars cover a wide variety of topics related to teaching, learning, and professional development as an educator. To help graduate students learn the fundamentals of teaching and learning, we offer a minimum of 8-10 "core" seminars at least once each year, including sessions offered at Graduate Student Instructor Orientation (*core seminars). Note that our Future Faculty Program includes these core seminars as one of its requirements.

We presented 17 seminars, including four new topics to respond to the expanding teaching responsibilities and practices of graduate student TAs and instructors.

Fall 2018
- Crafting a Teaching Philosophy Statement
- Designing Effective Assessments: Open-Ended Questions*
- Engaging Students in Active Learning*
- Handling Problematic Student Behavior
- Leveraging Diversity & Promoting Equity in the Classroom*
- Motivating and Engaging Students*

Spring 2019
- New! Designing, Managing & Assessing Team Work
- New! Teaching in Tumultuous Times
- Course and Syllabus Design*
- Designing Effective Assessments: Open-Ended Questions*
- Helping Students Develop Mastery & Critical Thinking*
- Planning & Delivering Effective Lectures*
- Teaching Inclusively: Fostering a Positive Climate for Learning*

Summer 2019
- New! Leveraging Canvas to Support Learning*
- New! Teaching Metacognitive Skills
- Leveraging Slides to Support Learning

Workshops

Our 2.5-hour Microteaching Workshops give participants the opportunity to practice and receive immediate feedback on specific aspects of teaching. This year, **51 unique graduate students participated in microteaching workshops**. During these workshops, students teach a five-minute lesson and receive immediate feedback from colleagues and an Eberly Center teaching consultant or Graduate Teaching Fellow. Lessons are video recorded and participants can meet with an Eberly consultant to review and discuss the recording later.

Graduate Student Instructor Orientation (GSIO)

Twice per year, the Eberly Center hosts university-wide orientation programs for graduate student instructors (Teaching Assistants and Instructors of Record). GSIO events occur during the week prior to classes in Fall and Spring semesters. Participation by students and academic units is voluntary. All CMU graduate students, regardless of whether or not they had teaching appointments, are welcome to attend.

Both GSIO events this year featured the same day-long program, which includes five 90-minute seminars:
- Teaching Inclusively: Creating a Supportive and Welcoming Climate from Day One
- Grading and Delivering Feedback on Quantitative Assignments
- Grading and Delivering Feedback on Writing Assignments
- Conducting Productive and Engaging Discussions
- Working Well One-on-One with Students

GSIO sessions are based on needs assessment data and aligned with the responsibilities of common teaching appointments, including instructors of record, graders, TAs holding office hours and TAs leading lab, recitation or discussion sections. During seminars, participants are grouped by discipline and participate in hands-on practice exercises using disciplinary-relevant examples.

Customized Unit-Level Programs

To complement our university-wide programs, we develop and deliver hands-on seminars that address specific, unit-level needs of graduate student instructors. Requests come from a variety of sources: graduate program coordinators, faculty members in a supervisory role (i.e., instructors of record, course coordinators, or TA trainers), and graduate students

who coordinate professional development activities for fellow students in their departments. **202 unique graduate students participated in 17 customized unit-level sessions**, 2 of which were new topics.

Academic Units Served:

Civil and Environmental Engineering
- Problem Solving in Small Groups, Fall 2018
- Experienced TA Panel, Fall 2018
- Engaging Students in Active Learning, Fall 2018

Computer Science
- Engaging Students in Active Learning, Fall 2018 and Spring 2019

Dietrich College of Humanities & Social Sciences
- Technology-Enhanced Learning (TEL) Bootcamp, Spring 2019
- Effective Uses of TEL for Active Learning
- Using TEL to Extend the Classroom: A Deep Dive into Canvas
- Creating Multimedia that Works for Learning
- Designing for Online/Blended Learning

Electrical and Computer Engineering
- Teaching a Solid Recitation, Fall 2018
- Handling Problematic Student Behavior, Fall 2018 and Spring 2019
- Teaching Inclusively: Fostering a Positive Climate for Learning, Fall 2018

Mellon College of Science
- Engaging Students in Active Learning, Fall 2018

Tepper School of Business
- Course and Syllabus Design, Fall 2018

School of Computer Science (Societal Computing Program)
- Course and Syllabus Design, Fall 2018

We also consult one-on-one with graduate program coordinators and faculty members to help them develop training sessions, TA feedback forms, and other materials for their TAs and graduate student instructors.

Future Faculty Program

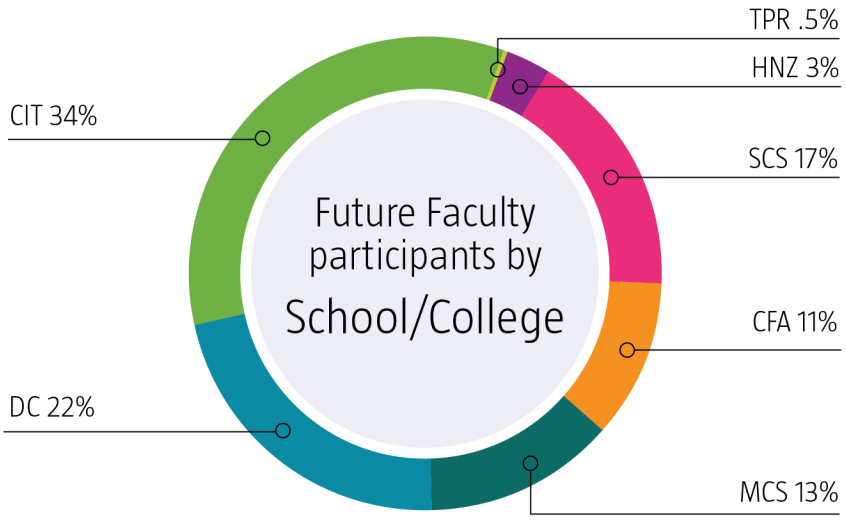
Our Future Faculty Program helps graduate students and postdocs develop and document their professional development in teaching as they prepare for a faculty career. Participants who complete the program praise it as giving them a competitive advantage in securing faculty positions. The program's requirements are:
- attending at least eight seminars, at least four of which must be designated as core topics
- participating in two teaching feedback consultations (e.g., classroom observation, early course feedback focus group) to receive formative feedback on teaching
- designing a course and syllabus that align with the participant's discipline and teaching goals
- creating a teaching philosophy statement.

Upon completing these four requirements, participants receive a record that lists all of their Eberly activities.

As of June 30th 2018, **196 students were enrolled** in the Future Faculty program. This year the program attracted **81 new graduate students and postdocs**. In AY 2018-2019, **23 students completed the program**.

Invited Orientations

Each August, we participate in both university- and department-level orientations for new graduate students. These orientations are a highly effective means of outreach and generate significant follow-up requests for one-on-one consultations as well as registrations for our seminars and workshops. At the university level, we presented a 50-minute session called "PhD Students and Teaching at CMU". 141 newly admitted doctoral students attended. This session provided both an overview of our services and evidence-based strategies appropriate



for first-time graduate student instructors. We also participated in the Graduate Student Resource Fair during the university-wide orientation for new graduate students that typically draws several hundred doctoral and master's degree students.

We also presented an overview of our graduate student services to 14 departments, attended by 271 new graduate students:

- Art
- Architecture
- Biomedical Engineering
- Chemical Engineering
- Computer Science
- Institute for Software Research
- Mathematical Sciences
- Mechanical Engineering
- Modern Languages
- Philosophy
- Physics
- Psychology
- Statistics
- Tepper School of Business

Support for Undergraduate Teaching Assistants

Some departments rely heavily on undergraduate TAs. This year we presented 9 customized unit-level sessions in 4 departments. Approximately 78 unique undergraduate TAs participated in these sessions.

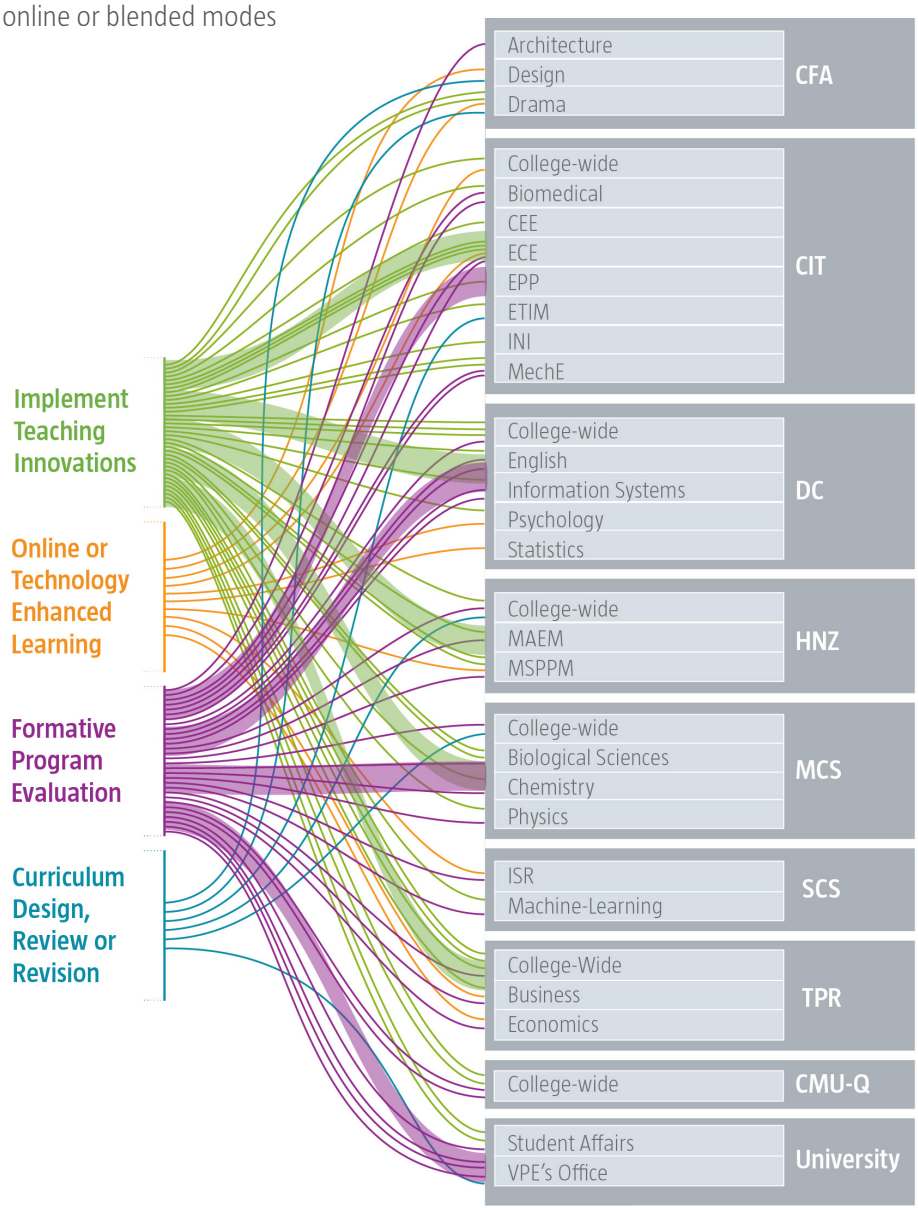
Program-Level Support

TThe Eberly Center provides customized consultation services to departments, schools, colleges and administrative units to support academic degree programs. For instance, Eberly colleagues help Deans, Department Heads, and groups of faculty to plan and implement program-wide educational activities, including:

- deliberate integration of emerging educational technologies
- iterative review and revision of programs and curricula
- design and preparation for teaching in online or blended modes
- collection of student learning data to inform formative program assessment
- training of teaching assistants
- professional development for faculty.

In 2018-19, we provided discipline-specific, program-level consultation services to 92 faculty and staff coordinating 50 CMU academic programs, representing all seven CMU Schools and Colleges, and the Provost's Office. Program-level consultations often involve intensive work, leveraging multiple Eberly services.

We provided **program-level consultation services** to 92 faculty and staff coordinating 50 programs, representing all seven schools and colleges.



Examples of Our Work at the Program Level

Dietrich College: Grand Challenge Courses

The Dietrich College of Humanities and Social Sciences recently created a new Grand Challenge Interdisciplinary Freshman Seminar initiative, significantly expanding its first-year seminar offerings. The new seminars are designed to tackle complicated societal problems from multiple angles and perspectives. These courses take an interdisciplinary approach, and are taught by faculty teams representing multiple disciplines from within the college and across campus.

To support this initiative and its complex and challenging course design efforts, the Eberly Center designed and facilitated a customized faculty special interest group that met twice in Spring 2019. Instructional teams engaged in hands-on, design-based activities to apply evidence-based strategies to their course design. Activities focused on: (1) exploring the research on effective teamwork and the discussion of a team charter to guide productive faculty collaboration on course design and implementation and (2) refinement of learning objectives, assessments of student learning, and alignment among teaching strategies, assessments and learning objectives.

An Eberly teaching consultant was embedded in each instructional team during small-group activities, to help facilitate productive discussions and provide support and feedback. After whole-group meetings, instructional teams had opportunities to meet independently with their Eberly consultants, who connected teams with additional Eberly services:

- Early Course Feedback Focus Groups
- consultations on technology-enhanced learning
- consultations on collecting data on learning outcomes.

Electrical & Computer Engineering

Faculty from the Department of Electrical and Computer Engineering (ECE) reached out to work with Eberly Center assessment specialists in order to take a more systematic, data-driven approach to the ongoing assessment of their undergraduate programs. During the 2018-19 academic year, ECE faculty and Eberly Center colleagues:

- Implemented pre- and post-assessments to measure students' fundamental knowledge and skills via questions that asked students to define key terms and solve conceptual problems.
- Conducted student focus groups and administered surveys in the introductory and capstone courses.
- Assessed students' capstone projects along multiple dimensions.

Based on the results of these assessments, ECE and Eberly are collaborating on several data-informed enhancements to the program:

- Incorporating new strategies and activities in introductory courses to address gaps and misperceptions in students' knowledge of key ECE terms.
- Developing additional low-stakes practice problems and implementing them online so students can get targeted practice with tailored feedback via educational technology.

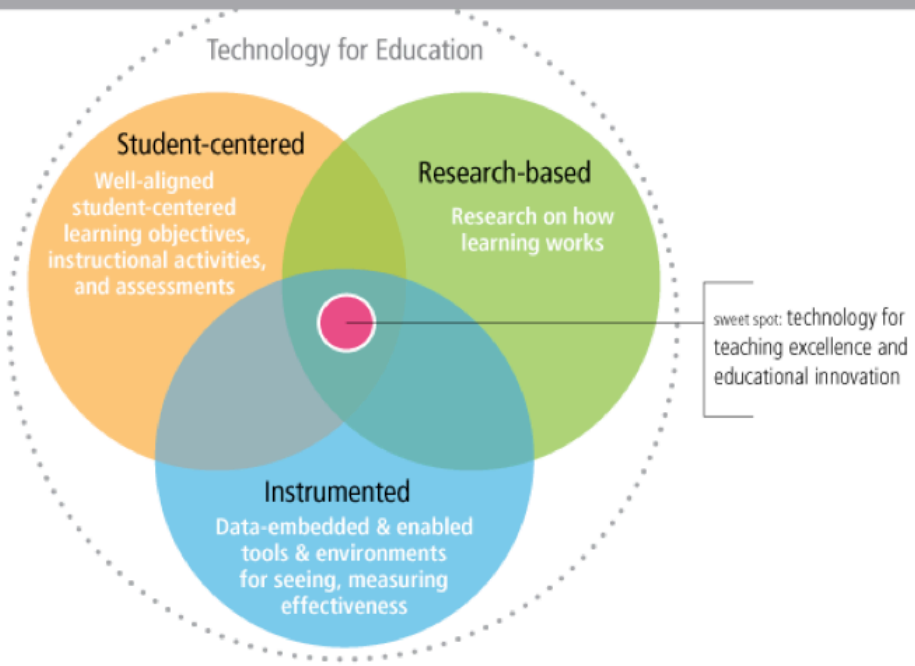
Ongoing work includes (1) refining the pre- and post-assessments and re-administering them to measure the impact of these changes on students' learning, and (2) continuing to assess this first-year cohort's development longitudinally across the ECE curriculum. A longer-term goal is to institutionalize these assessment-for-improvement strategies into the department's regular workflows.

"It's been a pleasure working with Eberly Center consultants... They're really helping us as a department reflect on our process, which is going to lead some great improvements in how we teach... "

– Department Head

Technology for Teaching, Learning, and Educational Innovation

When Eberly Center looks to the potential of technology for education, we look to these 3 dimensions or enablers:



31% of our faculty clients received help regarding how to teach effectively with technology.

In addition, we responded to **3,168** instructor requests for technical support for various educational technologies including Canvas.

The Eberly Center *brings together key strengths in pedagogy and technology* to fortify and invigorate teaching excellence and educational innovation at CMU. With the ever-changing landscape of educational technology, this union is key to serving the immediate needs and growing aspirations of our teaching community.

- We supported **111** faculty and staff in their *effective use of technology-enhanced learning (TEL), aligned to their teaching/learning goals*, often providing multiple TEL services (e.g., use of discussion boards for readings, use of clickers for active learning in class).
- We consulted with **89** instructors to identify and optimize the *match between tools and teaching/learning goals*.
- We consulted with **8** instructors on effective design and use of *instructional videos*.
- We worked with **58** instructors to develop *instructional materials and integrate tools* within CMU's TEL ecosystem.
- We worked with **26** instructors to *develop **20** new TEL tools*.

We continue to fine-tune and grow our portfolio of technology-enhanced learning tools and services. Our TEL services included:

- **Learning engineering** new Canvas and OLI modules/courses implementing best practices and measures of learning.
- **Design and production** of multimedia materials for learning, including instructional videos, simulations, interactives.
- **Software engineering** development of and integrations for a variety of tools.
- **Collaborative development of tools** and integrations for The Simon Initiative, including: The Gallery, The Project Zone, CTAT, and OLI course environment tools.
- **Tool matching** to help faculty identify tools that are well-aligned to their teaching and learning goals.
- **Investigating new design approaches, processes and/or tools** to support emerging needs (e.g., eportfolios, AR,VR).
- **Piloting** Zoom video conferencing software for educational use (e.g., distance teaching, remote office hours).
- **Help desk and how-to support** including phone and email intake channels; small and large group training sessions.

Educational Technologies

The Eberly Center licenses and/or supports several core educational technologies:

- *Canvas*, learning management system
- *Open Learning Initiative*, online learning environment
- *Autolab*, programming assignment autograder
- *Gradescope*, online grading for written assignments and tests
- *Turnitin*, plagiarism detection, peer review
- *Respondus,* browser for secure testing
- *CATME*, group formation and evaluation
- *Clickers*, classroom response system
- Various Learning Tool Integrations (LTI) including: *NameCoach, Piazza, Zoom*

Online course development efforts:

- Chinese Learning Game
- Collaborative U
- Conflict U
- Dexign Futures
- DiaGrammar
- Discrete Math Primer
- Engineering practice problems
- Imperative Programming
- Eberly-initiated OLI modules to support faculty and graduate student programs (e.g., Writing Effective Learning Objectives, TA Training/Grading)

Tool development and integration efforts:

- *DocuScope,* faculty-developed tool: design consultation, integration, data hooks
- *PageTracker,* Eberly-developed tool to collect OLI page-level interaction data
- *Hammock,* faculty and Eberly-developed tool: development, integration, data hooks
- *Adobe Captivate and Unity,* tool integrations for customized learning activities, data hooks
- *Syllabus Registry*, continued development

TEL programs we facilitated:

- Dietrich College Summer TEL Bootcamp
- LearnLab Summer School - OLI track
- Pittsburgh Council on Higher Education
- Gradescope small group trainings
- Canvas small group trainings

Technical Help/How-to requests:

We provide technical how-to training for faculty and instructional staff for the educational technologies that we license and/or have vetted for use in teaching and learning (e.g., Canvas, Gradescope, Turnitin, OLI).

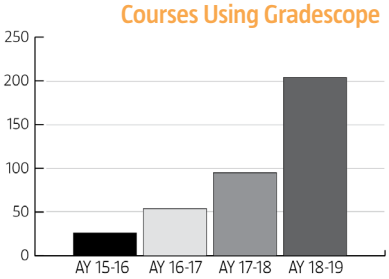
This aspect of our support includes technical how-to help requests, 1:1 consultations, and group trainings. This academic year our **front-line help desk team** provided to faculty and instructional staff:

- **3,168** Email and phone help desk requests
- **179** One-on-one how-to consultations
- **15** Group training sessions
- **4703** Total number of Canvas courses

"Eberly's help has been steadfast and appreciated. Now that my students have seen how they can learn in the online context, they will never let me return to my old methods, even if I wanted to."
— Professor

Spotlight on Gradescope:
An Eberly-supported tool in our TEL ecosystem

Gradescope is an edtech tool designed to help instructors and TAs grade and provide feedback on homework and exams efficiently and effectively.



Eberly staff help CMU faculty incorporate Gradescope into their practice in a variety of ways, with more than 420,000 assignment submissions to date.

Beyond reducing the need to shuffle papers among a team of graders and the time spent returning graded work in class, Gradescope also:

- Integrates with Canvas for easy access and combined functionality.
- Promotes fairer grading by facilitating question-by-question (rather than student-by-student) grading and by enabling anonymous grading.
- Allows faculty to monitor the grading/feedback process and manage re-grade requests
- Analyzes and displays data in multiple ways so faculty can see patterns in students' performance (e.g., overall score distribution, low-scoring questions, common reasons for score increments/decrements).

Design of Learning Spaces

The Eberly Center brings research-backed principles and technology-enhanced learning strategies to learning space design. We bring our expertise in pedagogy, technology, and assessment, partnering with several other units to design and re-design CMU classrooms so they function more effectively for teaching and learning.

Our approach involves:

- Designing spaces to align with modern pedagogies.
- Integrating technology to increase learning opportunities and decrease cognitive load.
- Instrumenting the learning process to enable data-based improvement.

In AY2018-19, Eberly engaged in several key projects related to the design, assessment, and improvement of learning spaces:

Informed Classroom Design: Eberly Center expertise was sought and incorporated during all phases of CMU's $20 million classroom renovation project. We also helped translate faculty perspectives into classroom design patterns.

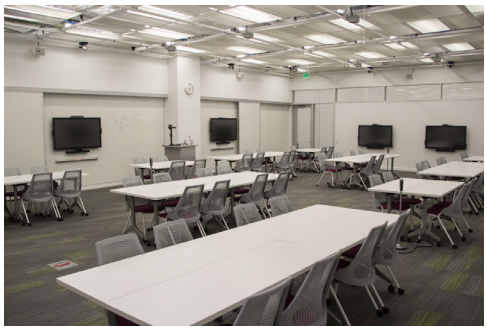
Pre/post data collection: We quantitatively and qualitatively assessed a subset of renovated classrooms – before and after they were renovated – by conducting *in vivo* observations and collecting survey data from teachers and students.

"This space simply invites innovation and collaboration!" - CFA Professor

Instrumented Classrooms

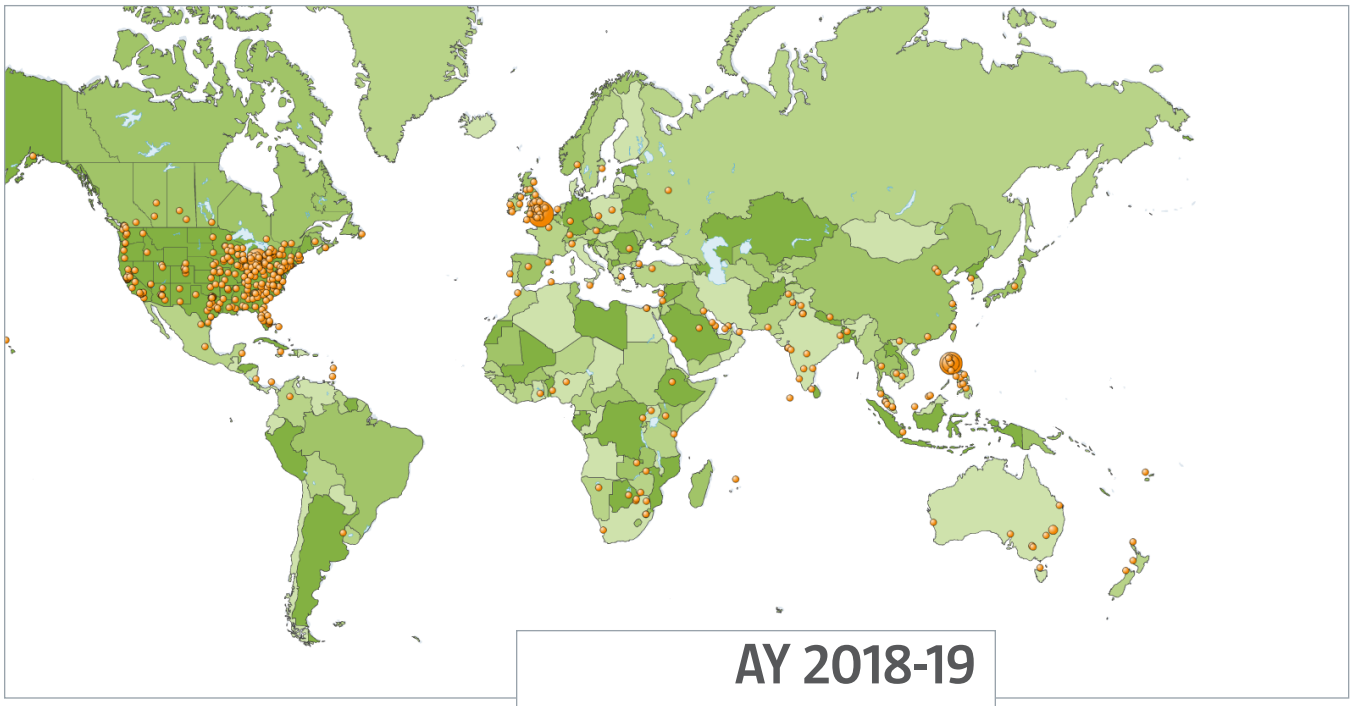
The Eberly Center's Teaching & Learning Laboratory includes two classrooms outfitted to collect video, audio, and other sensor data on how teachers and students are interacting in the room, with each other and the course material. Our work in these state-of-the-art rooms also involves investigating how such rich data sources can contribute to learning science research and provide faculty with feedback on their teaching.

During the the 2018-19 academic year, 15 CMU instructors taught CMU courses in these rooms, leveraging Eberly support on pedagogy, technology, data collection, and more.



Eberly Center's Teaching & Learning Laboratory catches the eye with its flexible furniture, interactive monitors, and plenty of collaborative whiteboard space. But don't miss the ceiling's pipe-grid system that is instrumented to facilitate rich data collection on student-student, student-teacher, and student-material interactions.

Eberly Center Website



AY 2018-19	
Pageviews	2,372,844
Visitors	1,329,907
Visits/Day	4,410

Eberly Center's teaching website located at www.cmu.edu/teaching is designed to guide instructors through the processes of designing and teaching courses, solving teaching problems, incorporating technology, and assessing student learning. The website allows us to support a far broader group of faculty, postdocs, and graduate students – including CMU faculty at overseas campuses and programs – than we could through direct interaction alone.

Top 3 Most Viewed Areas of the Site

40% Asessment
37% Design & Teach a Course
14% Solve a Teaching Problem

Percentages are proportion of all page views. Statistics for July 1, 2018 - June 30 2019

We leverage the teaching website to respond rapidly to emerging needs by providing targeted, practical resources and support. For example, when Faculty Senate passed a resolution on course syllabi, we created a new web resource on the topic www.cmu.edu/teaching/designteach/syllabus/.

Other recent additions and updates to the site include:

- Namecoach: provides a way to learn proper pronunciation of student names, supporting inclusive teaching practices.
- Gradescope: significantly speeds up grading of written work enabling faculty to provide effective and timely feedback to students.
- Additions to our Canvas support website: supports all CMU campuses
- Teaching as Research: showcasing more faculty projects
- Making the Most of Your Upgraded CMU Classroom

We believe that maintaining a well designed, informative, and user-friendly website is critical to our mission of improving education and supporting CMU colleagues in Pittsburgh and around the world.

"Thank you for making your Eberly website available to the public – so often these pedagogical goldmines are password-protected. Your material represents a resource we could never compile in a small school like ours."

– sent to us from an international educator

Service to the Carnegie Mellon Community

To contribute to the CMU community and educational mission, Eberly Center staff serve on university committees, mentor CMU students, and teach CMU graduate and undergraduate courses. Our service during AY 2018-19 is listed below.

University Committee Service

Lovett

- Simon Initiative, Co-Coordinator
- PIER Steering Committee, Member
- University Education Council, Member
- Associate Deans of Graduate Programs, Member
- Associate Deans Council, Member
- Ryan Award Committee, Chair
- Doherty Award Committee, Co-Chair
- Lazarus Award Committee, Chair
- Mellon College of Science LEAD committee, Member
- Dietrich College General Education Assessment Committee, Co-Chair
- Formative Assessment of Teaching Working Group, Co-Chair
- Classroom & Learning Spaces Renovations Steering Committee, Member
- Classroom & Learning Spaces Working Group, Member
- Task Force on CMU Experience, Member & Academic Policies, Co-Chair
- Collaboration/Teamwork Core Competency Working Group, Co-Chair
- Intercultural Competency Working Group, Co-Chair
- Communication Competency Working Group, Co-Chair

Hershock

- Teaching Innovation Award Committee, Chair
- Academic Advising Award Committee, Chair
- Doctoral Mentoring Working Group, Member
- Search Committee for Executive Director,
  Center for Student Diversity and Inclusion, Member

Brooks

- Classroom & Learning Spaces Working Group, Member
- Digital Accessibility Working Group, Member
- Dietrich College General Education Committee, Member
- E-Portfolio Working Group, Member

Richards

- Alumni Association Board, Member
- SCS Dean's Masters Student Advisory Council, Member

Walsh
- Graduate Student Concerns Committee, Member
- Graduate Student Teaching Award Committee, Chair

Weiss
- Mellon College of Science, EUREKA! (First-Year Seminar) Committee, Member
- Mellon College of Science, PROPEL (Junior Seminar) Committee, Member

Harrell
- Communications Core Competency Working Group, Member
- Graduate Student Concerns Committee, Member
- TEL Writing Group, Member

Graduate Student Advising

Lovett
- Anita Delahay, Psychology/PIER, Ph.D. student, advisor
- David Gerritsen, HCII/PIER, Ph.D. student, dissertation committee member
- Amy Shannon Cook, HCII/PIER, Ph.D. student, dissertation committee member

CMU Courses and Classes Taught

Gerritsen
- 05-748: Research Methods for the Learning Sciences, Guest instructor, Spring '19

Harrell
- 76-358: Rhetoric and Storytelling, Instructor, Spring '19

le Blanc
- 84-318: Politics of Developing Nations, Instructor, Fall '18

Lovett
- 05-748: Research Methods for the Learning Sciences, Co-Instructor, Spring '19

Richards
- Summer College Preview Program, Qatar, Instructor, Summer '18

Weiss
- 38-101: EUREKA! Discovery and its Impact, Instructor, Fall '18

External Visibility/Professional Work

For over 30 years, the Eberly Center has been one of the premier teaching and learning centers in US higher education. To maintain the visibility of the Eberly Center and contribute to the national and international dialogue in educational development and the learning sciences, we engage in a variety of professional activities outside of CMU. In addition to publications, awards, and invited presentations, this work includes serving on external committees, boards, and peer-review panels. We also frequently host visiting faculty and administrators from other institutions seeking to learn from the Eberly Center's work.

Publications and Conference Proceedings

Blakesley, C., Menke, D., & Jacob, J. (2019). Global higher education trends: Implications for policy and practice. In Larry E. Suter, Emma Smith and Brian D. Denman (Ed.) The SAGE Handbook of Comparative Studies in Education. London, UK: SAGE Publications Ltd.

Christian, S.J., **Hershock**, C., & **Melville**, M.C. (2019, June), Guided Inquiry-based Lab Activities Improve Students' Recall and Application of Material Properties Compared with Structured Inquiry. Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. https://peer.asee.org/32881

Delahay, A.B., & **Lovett**, M.C. (2019). Distinguishing two types of prior knowledge that support novice learners, Proceedings of the 41st Annual Meeting of the Cognitive Science Society, Montreal, QC: Cognitive Science Society

Haidar, D., & **Melville**, M.C. (2019). Students' self assessment of modern making skills. Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. https://www.asee.org/public/conferences/140/papers/27552/view

McCarthy, M.J., Mertz, J., Barrett, M.L. & **Melville**, M.C. (2019). Debriefing Lab Content Using Active Learning. In Proceedings of the 50th ACM Technical Symposium on Computer Science Education (SIGCSE '19). ACM, New York, NY, USA, 1258-1259. DOI: https://doi.org/10.1145/3287324.3293843

Moussawi, S., Quesenberry, J., Weinberg, R., Sanders, M., **Lovett**, M. et al. (2018). Improving Student-Driven Feedback and Engagement in the Classroom: Evaluating the Effectiveness of the Speed Dating Model. ACM SIGMIS CPR, Buffalo, NY.

Scupelli, P., & **Brooks**, J. (2018) What Features of a Flipped Course Improve Design Student Learning Experiences? Next wave: Design Management Academic conference, August 1-2, Ravensbourne London, UK. Presentation

Scupelli, P., Wasserman, A., Wells-Papanek, D., & **Brooks**, J. (2018) The Futures of Design Pedagogy, Learning, and Education. Next wave: Design Management Academic conference, August 1-2, Ravensbourne London, UK.

Walsh, K. (2018). A Humanist's Guide to Interpreting Empirical Educational Research. The National Teaching & Learning Forum 27, no. 5.

Walsh, K., Sanders, M., and **Gadgil**, S. (2019). Equivalent but Not the Same: Teaching and Learning in Full Semester and Summer Courses. College Teaching, 67(2), 138-149.

External Presentations, Seminars and Workshops

Brooks, J. Online Course Design (OLI Track). Learnlab Summer School, July 2018.

Brooks, J. Online Course Design. Pittsburgh Council on Higher Education, June 2018.

Burkert, A. and **Lovett**, M. Walking the talk at CMU. Empirical Educators Summit, Pittsburgh, PA, May 2019.

Harrell, J., Goss, M. Performing Learning Objectives: Strategies for Improving Student Learning and Writing Transfer, Interactive Panel Presentation at the Conference on College Composition and Communication (Pittsburgh, PA). March 2019.

Hershock, C. How Learning Works: Evidence-Based Teaching Strategies, Keynote address, United States Army War College, , PA. July, 2018.

Hershock, C., Lovett, M, Steiner, H., & Chick, N. (2018, November). Greasing the rails: Lowering barriers for faculty engagement in SoTL. Interactive session presented at the annual meeting of the Professional and Organizational Developers Network, Portland, OR.

Lovett, M. C., Henshaw, R., Pavlechko, G., & Winer, L. (2018). Exploring teaching centers' roles in learning space (re)-design. Professional Organizational Development Network Annual Meeting, Portland, OR, November 2018.

Lovett, M., & **Hershock**, C. (2018, November). A systems approach to cultivating and sustaining a faculty culture of data-driven teaching and learning. Interactive session presented at the Reinvention Collaborative 2018 National Conference, Arlington, VA.

Lovett, M. C. How do we define "active learning" – in research and in practice? Learning Research and Development Center, University of Pittsburgh, Feb 2019

Lovett, M. The university of the future – physical vs. virtual. Times Higher Education Summit on Innovation, Korea, April 2019.

Lovett, M. C., Pittsburgh as a Living Lab. Inauguration Symposium, Carnegie Mellon University, Pittsburgh, PA, October 2018.

Lovett, M. C., Creating self-directed learners. Art Institute, Pittsburgh, PA, October 2018.

Lovett, M. C., Feedback that enhances learning. Art Institute, Pittsburgh, PA, October 2018.

Lovett, M. C., Using data to enhance teaching and learning. Colorado School of Mines, Golden, CO, August 2018.

Stimson, J., & **Hershock**, C. (2018, November). Teaching across boundaries: Facilitating conversations about designing effective interdisciplinary courses. Interactive session presented at the annual meeting of the Professional and Organizational Developers Network, Portland, OR, November, 2018.

Weiss, E.D. Exam wrappers in general chemistry: Research on dosage, delivery, and use. Conference Presentation, Biennial Conference on Chemical Education. (Notre Dame, IN). July 2018.

External Committees, Boards and Journal/Proposal Reviews

Hershock

- Core Committee (Board of Directors) for the Professional and Organizational Development Network, Member

Lovett

- National Science Foundation, Grant Proposal Reviewer
- Pittsburgh Regional Conference on Teaching & Learning, Reviewer
- Professional and Organizational Development Network Annual Conference, Reviewer
- Summer Institute on Equity in the Academic Experience, hosted by the American Talent Initiative, Georgetown University and University of Texas at Austin, Steering Committee Member

le Blanc

- Professional and Organizational Development Network Annual Conference, Reviewer

Rodriguez

- Professional and Organizational Development Network Annual Conference, Reviewer

Walsh

- Professional and Organizational Development Network, Scholarship Committee, Member
- POD Scholarly Reads, Scholarship Development Subcommittee, Co-Chair
- Professional and Organizational Development Network Annual Conference, Reviewer
- Pittsburgh Regional Faculty Symposium, Reviewer

Weiss

- Professional and Organizational Development Network Annual Conference, Reviewer
- Pittsburgh Regional Faculty Symposium, Reviewer

External Colleges and Universities Visiting to Learn About Eberly Center's Work/Approach

- Case Western Reserve University (August 2018)
- Wake Forest University (November 2018)
- Youngstown State University (December 2018)
- Ellis School (January 2019)
- University of New Hampshire (February 2019)
- Dartmouth University (May 2019)
- Johns Hopkins University (June 2019)
- Suffolk University (June 2019)
- Tufts University (June 2019)
- Seton Hill University (June 2019)

AY 2018-19 EBERLY CENTER STAFF MEMBERS

Marsha Lovett, PhD
Associate Vice Provost for Educational Innovation and Learning Analytics
Director, Eberly Center for Teaching Excellence & Educational Innovation
Co-Coordinator, The Simon Initiative
Teaching Professor, Psychology
Chris Blakesley, PhD, Learning Engineer
Judy Brooks, MDes, Director of Educational Technology & Design
Jude Folino, Educational Technology Help Desk Support
Raphael Gachuhi, Software Engineer
Soniya Gadgil, PhD, Data Science Research Associate
David Gerritsen, PhD, Postdoctoral Research Fellow
Jessica Harrell, PhD, Teaching Consultant
Chad Hershock, PhD, Director of Faculty & Graduate Student Programs
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Sophie leBlanc, PhD, Teaching Consultant
Nathan Mazur, Senior Multimedia Designer
Michael Melville, PhD, Data Science Research Associate
Zachary Mineroff, METALS, Learning Engineer
Elizabeth Onstwedder, METALS, Learning Engineer
Michelle Pierson, Business Administrator
Laura Pottmeyer, PhD, Data Science Research Associate
Meg Richards, Senior Systems Software Engineer
Marisella Rodriguez, PhD, Teaching Consultant & Eberly Liaison to CMU-Qatar
Jacqui Stimson, PhD, Teaching Consultant
Martin van Velsen, Senior Software Engineer
Katie Walsh, PhD, Teaching Consultant
Lorelei Walch, MLIS, Educational Technology Support Specialist
Emily Weiss, PhD, Teaching Consultant

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