Technical Leadership and Communication Programs

Leadership is a crucial skill for young engineers' professional success yet is rarely represented in today's engineering curricula. This educational gap has been highlighted by numerous studies and initiatives within the engineering community in general and MIT in particular. Efforts to fill this gap have resulted in the establishment of programs at MIT and at a growing number of peer and near-peer institutions. They have also catalyzed the formation of the Engineering Leadership Development Division (LEAD) within the American Society for Engineering Education (ASEE). LEAD has been the fastest growing ASEE division for each of the last five years and now boasts substantial and sustainable membership.

Among the initiatives designed to currently meet this need at MIT are four programs in technical leadership administratively housed together in the School of Engineering: the Gordon-MIT Program in Engineering Leadership (GEL), the Graduate Program in Engineering Leadership (GradEL), the Undergraduate Practice Opportunities Program (UPOP), and the School of Engineering Communication Lab. We see an opportunity to take the impact of these programs to the next level as we complement MIT students' world-class technical education with the leadership skills that they need to thrive wherever their interests may take them. This has resulted in intentional efforts over the last year to better collaborate and take advantage of synergies among the Technical Leadership and Communication (TLC) Programs.

Bernard M. Gordon-MIT Engineering Leadership Program

Launched in July 2008 through a $20 million gift by the Gordon Foundation—the largest gift made to MIT's School of Engineering for curriculum development—the Bernard M. Gordon-MIT Engineering Leadership Program was established to educate and develop outstanding MIT students as potential future leaders in the world of engineering practice and development, to endeavor to transform engineering leadership and in so doing, increase our national product development capability. Beyond the Institute, the program offers professional development courses to early and mid-career professionals currently working in industry.

GEL is a selective and immersive co-curricular program for juniors and seniors primarily from MIT's School of Engineering (SoE) that supplements students' technical education by developing leadership skills that enable them to be effective and successful members and leaders of engineering project teams in industry. Each year, students develop their leadership skills in an engineering context through innovative experiential and theoretical coursework and practice and reflection exercises; approximately 200 students apply and 160 are accepted into the program. The program provides a challenging and supportive environment that includes substantial advising, coaching, and mentoring. Our approach is cohort-based, highly interactive, and continually shaped by input from students, educators, and industry.

Accomplishments and Awards

Academic year 2021 (AY2021) was the GEL Program's most challenging to date. We faced a unique balancing act of having to modify a highly experiential and hands-on Engineering Leadership Program for a virtual environment without compromising its integrity or rigor. We found that there were things that worked better in a virtual environment, and we were able to reflect and collect learnings that we can implement for future program enhancements.

Operating in a virtual environment reinforced that building and maintaining connections and community among students provides a critical foundation for learning. We were able to reach different subpopulations and in different ways. Building virtual connection and community alongside our traditional in-person programming offers the potential for deeper, broader, and increased connection.

As we made adjustments to the curriculum last summer, we took a critical look at the timing and pacing of our course modules. We discovered that by slimming some of the models down to their core essence while building others up and spreading them over two weeks, we were able to maximize student engagement and development.

Our virtual Engineering Leadership Labs (ELL) taught us that virtual engineers in the room can be just as effective as those who have traditionally visited and supported the lab activities in-person. We can source a broader, more diverse set of industry experts virtually than we can in-person, opening up more opportunities for role models who better represent our students and the world they will create in the future. In spring 2021, we also challenged ourselves and embarked on a pilot of making our ELL course a hybrid of virtual and in-person delivery; all other GEL spring course offerings were taught remotely. Perhaps our biggest takeaway from the experiment has been that developing engineering skills for a hybrid virtual and in-person world is not a temporary need but a core requirement for the future.

As we begin planning our return to campus, we reflect on the successes and challenges we encountered during the past year of program operations. While which of the lessons we carry forward and how we put them into practice is still to be worked out, what we do know is that we will continue to strive for excellence and honor our mission to deliver the best possible experiential and hands-on engineering leadership development for our emerging student leaders.

Undergraduate Program Teaching and Curriculum

- Adjusted curriculum for the entire academic year and developed both virtual and hybrid educational models

    - Conducted first hybrid ELL course, with some students participating in-person and others virtually during spring 2021

    - Introduced lessons learned from virtual fall semester and implemented new technologies to support seniors off campus to coach their GEL Year One teams; new technology allowed guests from engineering industry participate remotely

- Expanded list of course alternates for GEL Year One Design and Innovation Leadership Requirement

- Increased career development services and outreach efforts to connect students to alumni in industry

- Hosted Engineering Leaders Roundtable event featuring more than 12 GEL alumni in various engineering leadership roles in industry, including Apple, Asat, California Water Boards, Centrly, ClearCompany, Creative Renewable Solutions, ExxonMobil, Ginkgo Bioworks, Instabase, Ministry of Supply, NASA JPL, Sonos, SpaceX, U.S. Airforce, and Wise

- Jim Magarian, lecturer and program academic coordinator, selected as recipient of MIT's Teaching with Digital Technology Award

Student Program Growth and Retention

- Conducted completely virtual admissions campaign; sustained online engagement and outreach plan for students, departments, and organizations

  - MIT undergraduates applied to the GEL Year One Program: 185

  - Number of MIT departments represented in applications: 13 (including all departments in the School of Engineering)

  - Students projected to join GEL Year One in Fall 2021: 170

- Current GEL Year One students accepted to more selective GEL Year Two Program: 33

- Program completion certificates earned by GELs in May 2021: 143

- Alumni involved in GEL undergraduate alum network: more than 1,000

Diversity, Inclusion, and Belonging

- Student diversity, inclusion, and belonging officers have become embedded and sought-after GEL Year Two roles; their work is embraced by the student cohort and has had measurable impact.

- Co-hosted a well-attended and well received "Women in Power" seminar in the fall, featuring several program alumnae.

- Asked industry sponsors to send diverse engineers to support the ELL. Guest diversity consistently garners appreciation from students.

- Hosted a very successful Senior Engineering Leader Roundtable event during 6.911/6.913 Engineering Leadership Lab course featuring three women, three people of color, and one LGBT person.

Corporate Engagement and Sponsorship

- Amount raised from corporate sponsorship and matching gifts as result of GEL's industry engagement and sponsorship program initially launched in July 2016: $20,000

  - AY2021 company sponsors for include General Motors, Lockheed Martin, Naval Nuclear Laboratory, Northrop Grumman, and Proctor & Gamble

- Partnered with Gingko Bioworks, Northrop Grumman, and Proctor & Gamble to offer enhanced engineering internships (called Impactships) to rising GEL seniors

  - Four summer 2020 Impactship students received and accepted full-time return offers for engineering positions following graduation (two at Northrop Grumman and two at Proctor & Gamble)

  - Nine students hired and accepted for an Impactship in summer 2021 (one at Ginkgo Bioworks and eight at Northrop Grumman)

Strategic Aims for AY2022

1. Evolve marketing, communication, outreach, and recruiting processes to attract more, and a greater diversity of students in the program

2. Continue to participate in and support MIT School of Engineering's New Engineering Education Transformation (NEET) Program, Innovation and Entrepreneurship Initiative, and others

3. Collaborate with D-Lab to enhance 2.722 D-Lab for Scale and 2.729 D-Lab Design compatibility with GEL Program

Comparative Assessment of GEL Program Admissions 2015–2021

Academic year	2015	2016	2017	2018	2019	2020	2021
Applicants	175	164	221	204	172	201	183
UPOP-affiliated	117	94	153	105	88	79	80
NEET	-	-	-	-	19	6	14
Sophomores	164	151	207	187	164	191	166
Juniors	11	13	13	17	8	10	17
Female	93	97	122	112	88	106	109
Male	82	67	99	92	84	95	73
Gender-nonconforming	-	-	-	-	-	-	1
Wellesley College students	3	0	0	0	2	9	10

Comparative Assessment of GEL Year One Program Applicant Majors 2015–2021

Major	2015	2016	2017	2018	2019	2020	2021
Course 1	3	4	5	6	4	3	2
Course 2	48	38	65	47	56	48	46
Course 3	13	6	14	5	6	9	4
Course 6	59	60	76	88	53	79	76
Course 10	15	18	16	14	9	16	6
Course 16	17	16	14	21	17	18	20
Course 20	8	9	18	9	8	10	11
Course 22	5	3	3	3	1	0	1
Other majors	7	10	10	11	15	16	16

Graduate Program in Engineering Leadership

Over the last six years, the GEL Program has worked to meet an increasing demand from the MIT graduate community to create a similar program where students have the opportunity to learn and practice leadership skills that will accelerate their career progression and impact. In spring 2020, GradEL officially launched the Graduate Certificate Program in Technical Leadership. The GradEL Program worked closely with the Office of the Vice Chancellor and the Dean of Engineering in collaboration with the Dean's Graduate Student Advisory Group (GradSAGE). Our shared vision was that every MIT graduate student should have the opportunity and encouragement to build upon their technical leadership skills. Through this, students will further develop themselves as effective and impactful leaders who can be charged with solving the world's most challenging and complex problems. The certificate is recommended to all MIT graduate students pursuing careers in engineering and technology, as well as those interested in developing the leadership skills needed to maximize their impact in industry, public service, or academia. We awarded 37 certificates to this year's group of GradEL students who completed the interim requirements in May 2021; this is a significant increase from the inaugural 2020 cohort, which included 11 students.

Accomplishments and Awards

While our list of course and workshop offerings remained constant, we saw strong and growing enrollment numbers in addition to high engagement. We carefully curated our course and workshop offerings to cater to both new and current students working to earn the Graduate Certificate in Technical Leadership. We also worked to balance serving our diverse graduate student population's wide-ranging interests while preparing them for future success leading and working in hybrid teams.

GradEL Program Teaching and Curriculum

- GradSAGE, GradEL staff, and selected faculty continued to develop the program's curricular architecture and permanent certificate requirements under Professor Olivier de Weck's leadership.

- 6.927 Negotiation and Influence Skills for Technical Leaders was approved as a new and permanent class.

- David Niño serves as chair of LEAD and published an integrative paper for the division focusing on its past, current, and future, as well as a case study on the GEL and GradEL programs (to be published in a forthcoming academic book on engineering leadership education across North America); another one of his papers on engineering leadership development is the seventh most downloaded paper published by the LEAD division. Niño was nominated for a spring 2020 Excellence in Teaching award.

Student Program Growth and Retention

- Number of graduate students in our academic classes: 123

- Number of students in workshops: approximately 190

- Last spring's inaugural cohort included two PhDs and nine master's students, including seven men and four women. These students have taken on senior leadership roles at companies including Alchemr, XPDynamics, THK America, CarGurus, Google, Instagram, and the US Coast Guard.

Finances and Funding

- Carefully managed program finances to lengthen runway

- Fundraising effort led by Joel Schindall, Gordon Product Development Chair and professor of practice, emeritus; and Art Riedel, GEL Industry Advisory Board member

- Raised $500,000 from friends of the program, in addition to $350,000 seed funding from SoE

- Held December townhall with potential donors, GradEL staff, students, and alumni

GradEL Staffing Update

The GradEL Program led a comprehensive search for a new lecturer and hired Jin Wu, who has academic, engineering, and startup experience

Strategic Aims for AY2022

1. Achieve a permanent class number for our Multistakeholder Negotiations for Technical Experts academic class

2. Revitalize initial GradEL fundraising campaign with support from SoE's Development Team to identify potential donors and create supporting materials

3. Continue to develop the program's curricular architecture and permanent certificate requirements

4. Create a strategic plan with short and longer term goals for the program

GEL and GradEL Combined Accomplishments and Awards

- Impacted more than 700 students throughout the year through combined programs

- Successfully transitioned to offering both virtual and hybrid courses, workshops, and events

- Deepened connection between staff and students to build supportive and caring community

- Earned corporate funding for both programs in the form of grants, company sponsorships, and gifts from a pool of committed individual donors, including program alumni

- Participated in SoE's MIT's 24-Hour Challenge; GEL and GradEL combined received 33 gifts made with over $4,000 funds raised

- Sustained and integrated diversity, inclusion, and belonging efforts across all programming with increased student engagement

- Reconstituted Faculty Advisory Board to build advocacy among MIT Faculty, with first meeting held in May 2021

- Held two Industry Advisory Board meetings to receive input from engineering leaders

- Had 12 students complete the GEL Program's IAP Professional Education course on Mastering Innovation and Design Thinking in January 2021

- Registered 36 participants for the GEL Program's two MIT Professional Education courses that were offered in Summer 2021

- Served as significant "thought leader" and driving force in developing the new LEAD of the ASEE, the sixth largest division of the ASEE with over 800 members

- Published two papers, one on the evolution of the GEL and GradEL program and one on the evolution and future of the ASEE LEAD

- Launched longitudinal assessment system to measure program outcomes for GEL, GradEL, UPOP, and Communication Lab

GEL and GradEL Combined Strategic Aims for AY2022

1. Combine the best of inperson and the best of virtual to create a best-in-class program moving forward

2. Continue to strengthen our diversity, inclusion, and equity efforts in order to build an inclusive GEL community that is representative of all MIT students

3. Continue to help lead strategic planning along with partner universities, as part of ASEE's LEAD

Undergraduate Practice Opportunities Program

Established twenty years ago, the Undergraduate Practice Opportunities Program is a yearlong, cocurricular professional development program for sophomores. Participating students develop the skills and confidence necessary to thrive in an ever-changing workforce through UPOP's unique community of industry mentors, employer partners, program alumni and dedicated staff.

Each year, UPOP supports several hundred MIT sophomores. Applicants come from all Institute majors and represent more than one third of the sophomore class, providing a rich cross-section of the student body each year.

Of the 447 students who applied in AY2021, 229 students (51%) completed UPOP's Team Training Workshop (TTW) requirement, where under the guidance of UPOP's industry mentors and expert presenters, the students developed valuable skills in teamwork, communication, and problem-solving in preparation for their summer professional experience. Additionally, 81% of UPOP students completed all of the requirements of the yearlong program, including participation in and reflecting upon the summer internship or "practicum."

UPOP requirements include: participation in one of three intense Team Training Workshops, delivered during Independent Activities Period (IAP) or over Presidents' Day Weekend. These workshops feature experiential modules taught by MIT faculty and industry professionals, focusing on themes of communication, problem-solving, and teamwork, as well as topical seminars led by staff and MIT alumni. UPOP students must also work towards securing a career-relevant summer practical experience; submit written reflective reports during their summer experience; and complete follow-up meetings with staff in the fall semester of their junior year.

Accomplishments and Awards

- Class of 2022 students graduated from UPOP in September 2020: 186 (which is a 16% increase in graduating students)

- Class of 2023 MIT sophomores applied to UPOP in fall 2020: 447 (of which 351 were admitted; 217 are expected to graduate in September 2021, which is a 17% increase in student retention)

- UPOP's corporate sponsorship program raised more than $144,582 in AY2021 (a 58% increase since AY2020); there is a 9% increase in employer partners in AY2021 increasing partnerships to 98 employer partners from 89

- With a 53% increase in mentors, 89 unique mentors facilitated learning, and 51% of the program's mentors are now female (up from 33% in AY2020)

Summer 2021 Internships

As the "practicum" part of the program, UPOP students are required to participate in an approved summer experience within an organization to help develop and expand their

professional experience. After an unprecedented summer 2020, in which the program saw the lowest industry-employment rates on record for UPOP, and the highest for UROP and other research opportunities, summer 2021 reflects a return to nearly pre-COVID levels of summer employment. The majority of UPOP students participated in industry internships from large corporations to small startups, from corporate to research and finance.

- Total Industry Internships, domestic and international: 71% (125 UPOP students), of which 39% were through a direct UPOP connection with the employer

- Of the class, 22% (39 UPOP students) participated in a UROP or other summer research experience this summer and 7% participated in another relevant experience (independent project, their own startup, teaching or Priscilla King Gray Fellowship)

- UPOP staff are continuing to support the remaining 38 students who did not confirm an internship or research experience or who have remained unresponsive to staff in the virtual environment.

- UPOP's top summer 2021 intern employers: Amazon, John Deere, and Google, with more than four hires in each company

Student Program Retention

UPOP made student retention a key priority of the program and focused on increasing student engagement through the Milestone Pilot. Over the course of the fall and spring semesters, UPOP students explore different career concepts known as Milestones. The Milestones focus on fundamental skills to help students explore and acquire a summer internship in industry or academia or other public service experience. Student retention throughout the fall semester remained strong with 95% of students remaining enrolled. Familiar student drop patterns resurfaced leading into IAP. To date, our retention rate appears to be improving as seen in the figure below and we believe student retention should remain a program priority.

UPOP Student Retention Comparison AY16-AY21
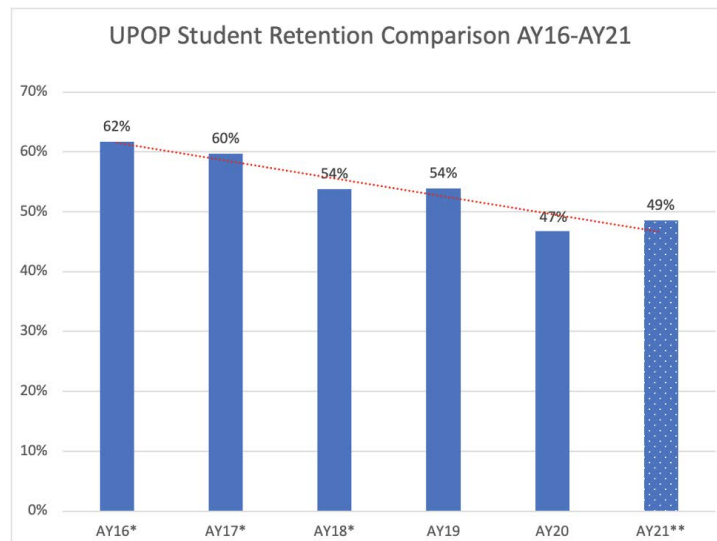
UPOP will continue to prioritize student retention by focusing on reducing the gap in applicants to graduated students. Beyond reimagining the curriculum, marketing efforts will better communicate the value of UPOP from application through graduation. In order to increase student engagement throughout the year, UPOP will strategically leverage the UPOP community (staff, alumni, employers, mentors, current UPOP students, mass communications, and social media) to create an intentional approach to student engagement that is measurable and addresses student development goals.

Historically, many students leave the program due to a conflict with the Team Training Workshop during IAP. AY2021 was no exception as 33% of UPOP students dropped just before or during a session of the TTW. However, the requirement to deliver a virtual curriculum allowed UPOP to experiment with a shorter time commitment during TTW. In AY2022, UPOP will continue to increase accessibility to students with scheduling conflicts by decreasing the days of TTW, and rearranging the curriculum throughout the year to increase student retention. UPOP will also continue to administer student assessments to measure the efficacy of UPOP as well as its impact on a students' long-term career path with the TLC Longitudinal Survey project.

Diversity, Inclusion, and Belonging

In AY2022, UPOP will continue to focus on creating a culture of belonging for Black, Indigenous, and People of Color (BIPOC) and other underrepresented populations. In order to do this, some of the priorities include sharing resources that help BIPOC and first generation students in order make more informed decisions about employment options. UPOP will continue partnerships with programs across campus that build awareness of UPOP among BIPOC at MIT, and will pilot an optional workshop about navigating the workplace as a member of the BIPOC and/or the LGBTQ+ community. UPOP will continue to offer resources for women navigating male dominated fields and improve accessibility while delivering workshops and preparing complimentary materials. Finally, it is crucial to continue assessing processes for engaging stakeholders to ensure opportunities in the broader UPOP community for BIPOC students and differently abled students.

Mentorship Model

In AY2021, UPOP's number of active, unique mentors grew by 53%. Milestone and TTW Mentors are MIT alumni and industry professionals who volunteer to reinforce the program's curriculum through small group discussions and team advising. The 47 new mentors were selected to help facilitate discussion groups and provide individual advising to UPOP students, guided in part by the Mentor the Mentors Advisory Board Committee. By expanding the number of mentors, UPOP has increased the diversity and accessibility of mentors to students. The virtual nature of UPOP during the pandemic allowed these young alumni mentors (primarily MIT graduates within the last decade) around the world to better engage students year-round, in continuity with more veteran mentors who returned to advising student groups during TTW.

UPOP will continue to offer a variety of mentoring opportunities, with a greater focus on individual student accessibility in the coming year. In addition to small group discussions and team work, students will also elect to practice building mentor

relationships one-to-one. Finally, UPOP staff will continue to meet with the UPOP Advisory Board annually to work actively on volunteer and partner engagement, as well as program and curriculum review and revision. The UPOP Advisory Board consists of approximately 20 MIT alumni and industry professionals engaged with the program.

Corporate Engagement and Sponsorship

AY2021 was an unprecedented period for our employer partners who struggled to maintain pre COVID-19 pandemic levels of staffing, recruitment, and campus budgets. Despite the major disruptions to their industry, UPOP still continued to attract a large pool of actively engaged volunteers, sponsors and intern employers. Eighty companies posted UPOP-specific job opportunities for sophomores, and 65 companies attended the January and February virtual Networking Luncheons, two fully virtual capstone events for the Team Training Workshops. UPOP hosted 10 employers for our new Milestone Workshop career-focused Question and Answer session and hosted nine fully virtual corporate-sponsored events.

In AY2021, UPOP gained three new sponsors—Amazon, John Deere, and Enphase Energy—and raised $62,400 in corporate sponsorship operational funding, exceeding our goal of $50,000 post COVID-19 pandemic. UPOP also received $9,900 as in-kind donation from our employer-partner, Bose, and a generous $65,000 donation toward our endowment from Pioneer Natural Resources.

In AY2022, UPOP aims to expand the corporate engagement and sponsorship program to attract a wider and more diverse set of STEM companies, particularly in mechanical engineering and biological sciences fields. With all sponsors, UPOP will encourage these organizations to send guests for on-campus events who can support our diversity and inclusion initiative to celebrate engineers of different ages, genders, and races. By expanding outreach efforts particularly to UPOP alumni and current employers, we hope to return to fully pre COVID-19 pandemic industry-employment levels of 75% or higher and corporate sponsorship levels of $70,000–$85,000.

Financial Support

In addition to their participation as mentors, and seminar and module presenters, MIT alumni and other friends of the program have been generous financial supporters. UPOP had 78 donors this year, many of which came from UPOP's participation in the 24-Hour Challenge. During the 24-Hour Challenge this year, UPOP raised $18,076 plus an additional match of $12,500 for a total of $30,576. Additional gifts to UPOP from individual donations in the MIT community totaled $18,146. In AY2022, UPOP will continue to pursue a multifaceted fundraising strategy (sponsorships, alumni, and mentor charitable gifts) to ensure UPOP has the resources to meet program needs.

Staffing Update

UPOP's full-time staff includes a senior program manager, a student program administrator, a student program coordinator, an employer relations program manager, a mentor liaison and outreach coordinator, and a communications and operations coordinator.

UPOP filled three full-time roles this year. Alexandra Desaulniers joined in August 2020 as the mentor liaison and outreach coordinator, bringing nine years in public affairs and event management in nonprofits and higher education. Kyra Tan-Tiongco joined in September 2020 as the student program coordinator, bringing with her valuable experience from various residence life and housing roles. Jonathan Hric joined in May 2021 as the communications and operations coordinator after working in various study abroad and experiential education roles. UPOP is currently conducting the search to fill the senior program manager role.

MIT School of Engineering Communication Lab

The MIT School of Engineering Communication Lab is a professional development resource that uses discipline-specific peer coaching to improve the technical and professional communication skills of graduate students, postdoctoral students, and undergraduates. Since its successful launch in the Department of Biological Engineering in 2012, the MIT Communication Lab has grown to include branches within seven organizations: Departments of Biological Engineering, Chemical Engineering, Civil and Environmental Engineering, Electrical Engineering and Computer Science, Mechanical Engineering, Nuclear Science and Engineering, and the Broad Institute. Each departmental Communication Lab comprises a team of communication fellows (4–16 trained graduate and postdoctoral students) and one half-time manager. This matrix organization is overseen by one central senior program manager.

The Communication Lab has been a member of the Gordon Engineering Leadership Program umbrella since 2016, synergizing with the other GEL member programs' emphasis on experiential professional development.

Key Metrics

Since opening for coaching in 2013, the Communication Lab has:

- Served 450 unique clients per year, with 1,600 hours of one-to-one coaching per year

- Partnered with more than 100 subjects and academic programs to offer customized support to undergraduate students, graduate students, and postdoctoral students

- Offered hundreds of workshops and events to audiences including academic subjects, undergraduate research programs, and interest groups for underrepresented minorities and women

- Trained 191 communication fellows, representing a think tank of exceptionally articulate and creative student leaders

- Offered online resources both to MIT members and audiences around the globe via the CommKit, a popular collection of discipline-specific guides and examples for technical and professional communication; the CommKit has supported over 105,000 unique users and receives 250 visits per day

## Strategic Aims for AY2022

1. Develop strategies for deploying both in-person and virtual programming to optimize student experience and participation

2. Develop training modules to better equip the communication fellows to respond to client concerns, embrace an empathetic approach to both coaching and communication, and approach coaching and teaching with awareness of diversity, equity, and inclusion

3. Create training opportunities that will help the communication fellows better support English language learners

4. Develop advanced training opportunities for communication fellows in the areas of visual design and public speaking

5. Continue diversifying revenue streams to strengthen the program's financial basis

6. Launch donor outreach aimed at alumni clients and communication fellows

7. Strengthen relationships with potential corporate and academic funders

8. Develop a strategy for expanding operations to the full School of Engineering; remaining departments without Communication Labs—Aeronautical and Astronautical Engineering and Materials Science and Engineering—would both like to launch Communication Labs, and we will evaluate strategic and organizational changes necessary to accomplish this scale-up

Accomplishments and Awards

Following pandemic shutdowns, the Communication Lab successfully pivoted to online coaching, workshops, and events. The new Civil and Environmental Engineering Communication Lab was successfully launched, attracting heavy usage despite the pandemic. Department Communication Lab teams refined existing communication initiatives and launched new ones, including approximately 30 workshops and events such as career bootcamps, grant-writing workshops, writing support groups, and an academic subject supporting the faculty application process. New online communication guides (CommKit articles) and blog posts were also created. The Communication Lab launched a new cross-Institute IAP course, Fundamentals of Communicating with the Public, and co-led the launch of the inaugural MIT Science Slam/Three-Minute Thesis Competition in collaboration with MIT Career Advising and Professional Development, the Graduate Student Council, Communicating Science at MIT, and the Writing and Communication Center; eight finalists explained their research in three minutes each, competing for prizes with a virtual audience of 253 attendees from 21 different countries. The Communication Lab Summer Institute 2021 trained representatives from 10 different institutions and programs in how to launch their own adaptation of the Communication Lab model.

Selected Usage and Demographics Metrics

- Despite the challenges of operating virtually, the Communication Lab continued to thrive in its core mission of providing one-to-one communication coaching, hosting a total of 1,329 appointments for 601 unique clients (average of 3.6 appointments per day). While some departments experienced a decrease in coaching appointments due to event cancellations and outreach challenges, others remained on-par with previous years' levels of service, or even increased.

- During this year, we conducted an analysis of historical usage data from 2018 to help us understand the demographics of our users and whether we might need to pursue any changes to improve inclusion and equity. Key findings of the analysis:

- Women are overrepresented among Communication Lab clients relative to the background of the SoE: 62% of undergraduate clients are women (vs 46% of the SoE); 52% of graduate clients are women (vs 30% of the SoE). Action item to address finding: We plan to investigate possibilities for encouraging male students to feel more comfortable using the Communication Lab.

- Among undergraduate clients, underrepresented minorities (URMs) and multiracial students are underrepresented relative to the background of the SoE: 12% of undergraduate clients are URMs (vs 20% of the SoE); 2% of undergraduate clients are multiracial (vs 4% of the SoE). Action item to address finding: While underrepresentation of URM and multiracial clients could be attributed to the greater availability of support available to undergraduates via the Office of Minority Education, we plan efforts to increase outreach and visibility among minority undergraduates.

- Among graduate clients, URMs and multiracial students are overrepresented relative to the background of the SoE: 11% of graduate clients are URMs (vs 4% of the SoE); 3% of graduate clients are multiracial (vs 1% of the SoE).

SoE Communication Lab Usage: 1:1 Coaching Appointments Per Year
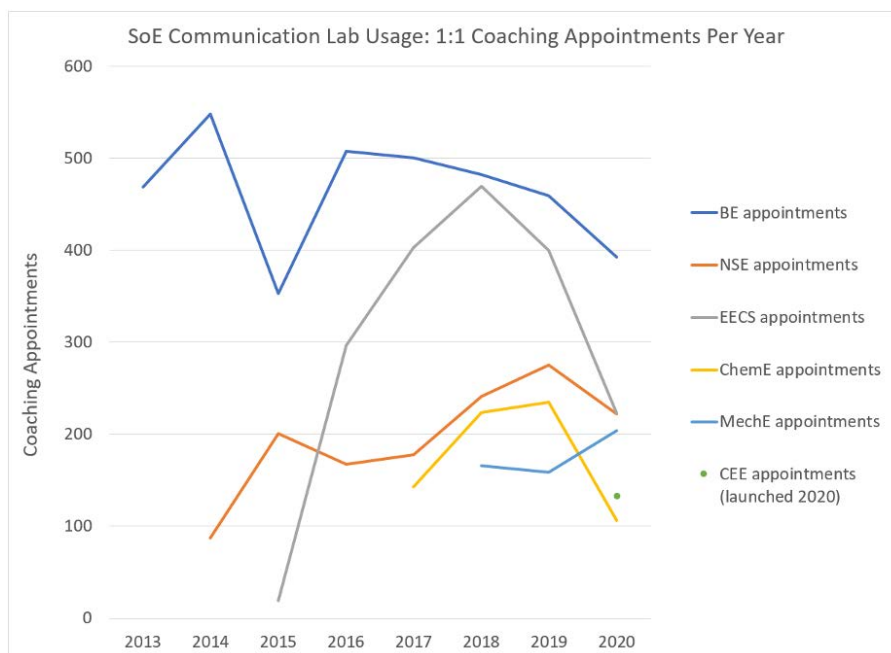
The four programs impacted the following number of students who either earned a certificate or actively participated in engineering leadership and communications education:

- UPOP: 220 sophomore

- GEL Year One: 112 juniors and seniors

- GEL Year Two: 31 seniors

- GradEL: 37 graduate certificates awarded

- Communication Lab: 601 students

This represents a total of approximately 1,001 students per year at MIT.

Reza Rahaman
Bernard M. Gordon Industry CoDirector and Senior Lecturer

Olivier de Weck
Faculty CoDirector
Apollo Professor of Aeronautics and Astronautics and Engineering Systems
GEL, UPOP, and MIT School of Engineering Communication Lab