
Section 8

Service to Local and World Communities

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Service to Local and World Communities

Founded with the mission of advancing knowledge to serve the nation and the world, MIT has been strongly committed to public service from its start. While MIT faculty, students, and staff regularly engage in conventional projects such as raising money for hurricane victims, renovating old housing, or restoring local nature reserves, MIT's scientific and technological orientation gives much of its public service outreach a particular emphasis. Many of its public service programs are specifically devoted to inventing new technologies and applying new knowledge that will advance social well-being.

Priscilla King Gray Public Service Center

The Priscilla King Gray Public Service Center (PSC) helps MIT achieve its mission of working wisely, creatively, and effectively for the betterment of humankind. Through its programs, they provide encouragement, advice, logistical support, and funding to help students engage in meaningful and effective public service projects, working with communities in the greater Boston area, throughout the United States, and around the world.

The PSC goal is to enrich the MIT education for students through hands-on, real-world opportunities that complement the innovative culture of MIT. PSC programs (described below) are designed to help students apply classroom learning, develop new skills, and understand the complexities of resolving community challenges.

<http://web.mit.edu/mitpsc/>

PSC Fellowships Program

MIT students tackle a great variety of human and environmental challenges in communities around the world through this program. Participating students build their skills and reflect on their experiences to enhance classroom learning. Students can work individually or as part of a team on projects during IAP, summer, and the academic year. This past year, 45 PSC fellows tackled some of the most pressing

issues in the United States and abroad, working in sectors such as agriculture, water and sanitation, climate change, community development, assistive technology, education, environmental sustainability, food and agriculture, health and health technology, technology dissemination, and urban planning.

IDEAS Global Challenge

Through this annual innovation and social entrepreneurship competition, students form teams to work with a community partner to design and implement innovative projects that improve the quality of life in communities around the world. In 2015, grants were awarded to 11 teams working in sectors such as energy, mobile technology, health and medical devices, water and sanitation, education, and agriculture. Winners of last year's awards continue to advance their ideas, including testing a malaria diagnostic device, altering cell behavior to fight diabetes, and creating simple-to-read maps for the placement of electrical microgrids in rural areas.

ReachOut

Through this semester-long program, MIT students help Cambridge children foster a love of reading and mathematics. This past winter, two ReachOut tutors helped with program development for East End House's growing middle school program. During the spring semester, 29 MIT student tutors helped children with math and reading in the local community at our two partner sites, East End House and Cambridge Community Center.

Community Service Work-Study

This program enables MIT students to give back to the community while earning a paycheck during the semester, summer, or winter break. Students who qualify for Federal work-study are able to add to their work experience while assisting nonprofit organizations with finding creative solutions to the problems they face. In spring 2015, work-study students staffed a local homeless shelter, created communication materials for a lead-poisoning prevention program, served as advocates for low-income clients, and tutored Boston high school athletes. Through a partnership between Community Service Work-Study and the Externship program, four students traveled to Los Angeles this past winter to design material for a STEM program with the i.am.angel Foundation.

CityDays

Since July 2014, CityDays events have engaged hundreds of MIT students, staff, and faculty with the local community. Many of the volunteers participated in multiple CityDays events, and PSC developed relationships with active student groups on campus. Sports teams, living communities, service groups, and fraternities and sororities have all participated.

Four Weeks for America

This program enables MIT students to spend IAP working with Teach for America teachers on science and math projects in classrooms in small rural areas or big inner cities while learning about educational change and policy. In 2015, 13 MIT undergraduate students worked as classroom assistants for new STEM teachers and provided all types of support from in-classroom help and after school tutoring to curriculum development and classroom data analysis. Several students worked on additional projects including a renewable energy science fair, a college exposure and admissions program, and innovative lab experiments.

Alternative Spring Break

Alternative Spring Break enables MIT students to spend spring break participating in service in various locations around the country. In March 2015, 23 MIT students participated in three projects. One group went to Crotched Mountain School in New Hampshire, where MIT students worked with children with severe disabilities. Another group went to the Center for Environmental Transformation in Camden, NJ, where MIT students worked with a variety of community organizations on sustainable agriculture and community development. The third group participated in PSC's CityWeek, in partnership with the local community center Margaret Fuller House. MIT students stayed on campus and spent their days tutoring children, cleaning the center, and learning about this multifaceted and exceptional community resource right outside MIT's campus.

LEAP Grants

Learn, Explore, Act, & Prepare (LEAP) Grants provide MIT students with funding to carry out a service project, volunteer day, or philanthropy event in the United States. LEAP grants allow students learn about service and social responsibility or build their skills to tackle a community challenge.

Freshman Urban Program

Through this week-long freshman pre-orientation program, incoming MIT students can help others while exploring their new neighborhood, learning about community challenges, and making friends. Last year, the program introduced 26 incoming students to MIT and the surrounding community through service activities and the discussion of social issues. The program also engaged 11 upperclassmen as counselors and coordinators. Freshman Urban Program participants volunteered with 16 agencies—such as the Charles River Conservancy and Bridge over Troubled Waters—and explored how issues like hunger and homelessness affect our community.

Office of Government and Community Relations

Since its founding, MIT has maintained a commitment to serving the local community as both a resource for education and technology and as a good neighbor. Through the Office of Government and Community Relations (OGCR), MIT works collaboratively with dozens of Cambridge nonprofits that address local challenges and opportunities such as meeting the needs of underserved populations, youth programs, and environmental sustainability. The Institute supports these organizations by providing direct financial support as well as in-kind resources including facility use, faculty and staff expertise, and volunteer engagement. In addition, OGCR collaborates with the MIT Public Service Center and MIT Community Giving to oversee the MIT Community Service Fund (CSF). The CSF provides support for nonprofits where MIT volunteers are at work and encourages the creation of new community service projects by providing grants to MIT affiliates.

Service to the community is not just centralized in one office at MIT—the Institute's various Departments, Labs and Centers have a diverse array of programs that support our host community.

Office of Digital Learning

The Office of Digital Learning (ODL) advances MIT's longstanding tradition of service to society with collaborations that bring technology-enabled pedagogical innovation to classroom education and online learning at home and abroad. Primarily through its Strategic Education Initiatives unit, ODL engages with institutions and governments at many levels to help strengthen teaching and learning in a variety of settings.

Massachusetts Community College Project

The Office of Digital Learning, through its Strategic Educational Initiatives unit, is taking the lead in developing collaborations with community colleges. These projects include curriculum development in areas such as advanced manufacturing and entrepreneurship, and online learning using edX and other MIT technologies. The design of these projects reflects the MIT *mens et manus* philosophy of blending online/virtual instruction with hands-on learning. With funding from the federal Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program, ODL is working with 15 Massachusetts community colleges to develop blended courses in advanced manufacturing. Other collaborations are in the proposal or design stages.

MIT-Woodrow Wilson Academy of Teaching and Learning

The MIT pre-K-through-12 ("PK12") Initiative in ODL, with collaborators across MIT, is designed to combine MIT's *mens et manus* approach to learning with recent breakthroughs in cognitive science and digital learning to help develop and support excellent STEM (Science, Technology, Engineering, Math) teachers and school leaders. The PK12 initiative was launched through the work of a faculty group, facilitated by ODL, which articulated the foundational principles for this effort: To change the world through learning with access to quality STEM education for all, and to change the world of learning through rigorous research. The PK12 Initiative has been bootstrapped by \$9.9 million in seed funding from the Woodrow Wilson National Fellowship Foundation for collaboration aimed at supporting

teachers in their efforts to use emerging digital learning tools and environments, especially in STEM areas. The effort will promote new ideas, technologies, and curricula along with research related to educator preparation with a focus on STEM subjects for students from pre-kindergarten through the senior year of high school.

Abdul Latif Jameel Poverty Action Lab

The Abdul Latif Jameel Poverty Action Lab (J-PAL) is a global network of over 120 researchers from leading universities who use randomized evaluations to answer critical questions in the fight against poverty. J-PAL was founded on the belief that development programs can be made more effective, creating positive change in the lives of the poor, if policymakers have access to rigorous scientific evidence of what works.

J-PAL's mission is to reduce poverty by ensuring that policy is informed by scientific evidence. We do this through three main activities: (1) increase scientific evidence on poverty reduction through randomized evaluations, (2) promote a culture of evaluations through training and facilitating the use of evidence in the policymaking process, and (3) encourage the use of rigorous research findings in the design and scale-up of poverty alleviation programs through outreach, promotion, and technical advising.

J-PAL was founded at MIT in 2003 as a research institute in the Department of Economics. In addition to its headquarters at MIT, J-PAL has expanded to six regional offices hosted by local universities in Africa (University of Cape Town), Europe (Paris School of Economics), Latin America (Pontificia Universidad Católica de Chile), North America (MIT), South Asia (Institute for Financial Management & Research), and Southeast Asia (University of Indonesia). Within each region, J-PAL works across eight sector areas, including Agriculture, Crime & Criminal Justice, Education, Environment & Energy, Finance & Microfinance, Health, Labor Markets, and Political Economy & Governance.

Research

J-PAL affiliates have conducted more than 600 randomized evaluations in over 60 countries. Recent research by J-PAL affiliates includes: an evaluation by Banerjee (MIT), Duflo (MIT), Glennerster (J-PAL), and Kinnan (Northwestern) on the impact of increased access to microcredit on the economic and social well-being of women and their families in India; a six-country study by Banerjee (MIT), Duflo (MIT), Goldberg (IPA), Karlan (Yale), Osei (University of Ghana), Pariente (Princeton), Shapiro (Princeton), Thuysbaert (Ghent University), and Udry (Yale) that found that a comprehensive livelihood program for the poor was a cost-effective and lasting way to boost livelihoods, income, and health; and an evaluation by Olken (MIT), Onishi (World Bank), and Wong (World Bank) that found that community block grants improved health and education in Indonesian villages, and adding performance incentives sped up improvements in health.

Capacity Building

J-PAL also aims to increase the capacity of governments, NGOs, and other organizations to produce their own evidence to inform effective development policy. J-PAL has equipped more than 6,000 practitioners with the expertise to conduct their own rigorous evaluations through training courses and joint research projects.

Policy Outreach

J-PAL affiliates and staff analyze and disseminate research results and build partnerships with policymakers to ensure that policy is informed by evidence and to scale up programs that are found to be highly effective. Such programs have included environmental audit reforms, school-based deworming, remedial education, free insecticidal bednets, chlorine dispensers for safe water, skills training for police officers, conditional community block grants, and improved distribution of subsidized rice. Programs that were found to be successful by J-PAL affiliates and then scaled up in different parts of the world have reached over 200 million people.

J-PAL North America

J-PAL North America (NA), one of J-PAL's six regional offices, is also based at MIT. J-PAL NA works to improve lives by ensuring that policy in the region is informed by scientific evidence. J-PAL NA collaborates with decision-makers at the city, state, and federal level, and with a variety of social organizations, to share policy lessons, conduct trainings, and encourage evaluation. J-PAL NA's work spans a wide variety of areas including: Crime Prevention, Education, Energy Conservation, Financial Literacy, Health Care Delivery, Housing Mobility, Labor Markets, and Political Participation. J-PAL affiliates are conducting or have completed over 110 randomized evaluations in the region. J-PAL NA is led by two Co-Scientific Directors: Amy Finkelstein (Ford Professor of Economics, MIT) and Lawrence Katz (Elisabeth Allison Professor of Economics, Harvard University).

Local Programs

Amphibious Achievement

Amphibious Achievement is an MIT student group that mentors high school students in the Boston-Cambridge area in both athletics and academics. Under the guidance of MIT student coaches/tutors, Amphibious Achievers train to row and swim competitively while also working on critical reading techniques, math problem solving, and grammar comprehension in an SAT-based curriculum.

<http://amphibious.mit.edu/>

Cambridge Science Festival

The annual Cambridge Science Festival, the first of its kind in the United States, is a celebration showcasing Cambridge as an internationally recognized leader in science, technology, engineering, and math. The festival is presented by the MIT Museum in collaboration with the City of Cambridge, community organizations, schools, universities, and businesses. A multifaceted, multicultural event held every spring, the festival makes science accessible, interactive, and fun, while highlighting the impact of science on all our lives.

<http://www.cambridgesciencefestival.org/>

Edgerton Center—K–12 Programs

The Edgerton Center continues the learning-by-doing legacy of “Doc” Edgerton. The Center’s K–12 programs educate, inspire, and motivate kindergarten through 12th grade students through hands-on science and engineering challenges with the aim of increasing students’ curiosity and desire to pursue these fields in their future. Concentrating in the Greater Boston area, with selected out-of-state and foreign endeavors, the Edgerton Center’s multi-faceted approach supports over 150 on-campus classroom workshops annually, intensive summer programs, innovative curriculum and professional development workshops for teachers. The Edgerton Center instructors mentor faculty and students in local public schools as well. In all aspects of these programs, MIT students are closely involved. All of the programs are provided at no or minimal cost.

Educational Studies Program

Founded by students in 1957, the MIT Educational Studies Program (ESP) shares knowledge and creativity with local high school students in the Boston, Cambridge, and MIT communities. Through an extensive offering of academic and non-academic classes, ESP is dedicated to providing a unique, affordable educational experience for motivated middle school and high school students. ESP courses are developed and taught by MIT students, alumni, faculty, and members of the community.

<http://esp.mit.edu/>

Giving Tree

The MIT Giving Tree allows students, alumni, faculty, staff, and friends to provide gifts to local children and families each holiday season. The MIT Public Service Center works with several campus groups, along with hundreds of individuals across campus to collect gifts for 12 local agencies serving low-income children. This program provides MIT a means to expand our ethic of caring to local children and families.

World Programs

Comprehensive Initiative on Technology Evaluation

The Comprehensive Initiative on Technology Evaluation (CITE) at MIT is the first-ever program dedicated to developing methods for product evaluation in global development. CITE evaluates products’ suitability, scalability, and sustainability, and seeks to integrate these criteria to develop a deep understanding of what makes products successful in emerging markets. CITE’s evaluations provide evidence for data-driven decision-making by development workers, donors, manufacturers, suppliers, and consumers themselves. CITE is a five-year program funded by USAID’s Global Development Lab and led by the Department of Urban Studies and Planning.

<http://cite.mit.edu/>

D-Lab

MIT D-Lab is building a global network of innovators to design and disseminate technologies that meaningfully improve the lives of people living in poverty. The program’s mission is pursued through interdisciplinary courses (2019 developed to date, about a dozen offered each year), technology development, and community initiatives, all of which emphasize experiential learning, real-world projects, community-led development, scalability, and impact assessment. Founded by Amy Smith, Senior Lecturer in Mechanical Engineering, D-Lab has developed a range of technologies and processes including community water testing and treatment systems, human powered agricultural processing machines, medical and assistive devices for global health, and clean-burning cooking fuels made from waste. All D-Lab classes and projects are connected to communities around the world in countries including Brazil, Nicaragua, Honduras, Guatemala, El Salvador, Haiti, Ghana, Lesotho, Nigeria, Tanzania, Uganda, Zambia, Cambodia, Nepal, India, and the Philippines. In addition to its course offerings and field-work, D-Lab is home to research groups including the Biomass Fuel and Cookstoves Group, the Mobile Technology Group, and the Off-Grid Energy Group. D-Lab has also spearheaded an initiative called Lean Research, promoting principles for human-centered research.

<http://d-lab.mit.edu/>

D-Lab Scale-Ups

D-Lab Scale-Ups was established in 2011 to identify and support technologies with potential for wide-scale poverty alleviation. The program includes an accelerator for MIT social entrepreneurs, a technical assistance program, research and development, and collaboration with industry. As of 2014, the Scale-Ups Fellowship program has supported 2316 social entrepreneurs working in sectors including health care, waste recycling, water sanitation, solar energy, and agriculture. The Scale-Ups fellows have launched ventures in less-industrialized markets in Africa, Central and South America, and Asia. Scale-Ups' technical assistance program for agricultural waste charcoal briquette enterprises in East Africa is facilitated by the Harvest Fuel Initiative, a collaborative effort by D-Lab and New York-based nonprofit The Charcoal Project. Research and development work focuses on solar lighting, biomass fuel and cookstoves, water transportation and storage, and agriculture. In the fall of 2014, D-Lab Scale-Ups launched the Practical Impact Alliance at MIT to promote collaborative action and shared learning among corporations, academic institutions, social ventures, and nongovernmental organizations in order to scale market-driven poverty solutions worldwide. Each year since 2012, Scale-Ups has led the organization of the MIT Scaling Development Ventures conference.

<http://d-lab.mit.edu/scale-ups/overview/>

International Development Innovation Network

The International Development Innovation Network (IDIN) is building a diverse, international, network of innovators to define development problems, prototype solutions to these challenges, perform comparative evaluations, move the most promising solutions forward, and incubate ventures to disseminate the solutions. At the core of IDIN is a network of nearly over 54,200 inventors, technologists, and social entrepreneurs from almost 530 countries around the world. IDIN is supporting and building this network through hands-on design summits, focused entrepreneurship training modules, micro-grants, and networking within and outside the network. IDIN also includes research, monitoring, and evaluation functions to document and assess its work to ensure that best practices are identified and supported. In addition to MIT, IDIN consortium institutions include Olin College of Engineering, Colorado State University, University of California-Davis, Kwame Nkrumah University of Science and Technology (Ghana), Singapore Polytechnic, the ECHO East Africa Impact Center (Tanzania), and the National Technology Business Center (Zambia), as well as three IDIN innovation centers in Brazil, Uganda, and Tanzania.

<http://d-lab.mit.edu/idin/>

Legatum Center for Development and Entrepreneurship

The Legatum Center for Development and Entrepreneurship at MIT was founded on the belief that economic progress and good governance in low-income countries emerge from entrepreneurship and innovations that empower ordinary citizens. The center administers a highly competitive fellowship program for MIT graduate students who intend to launch innovative and inclusive for-profit enterprises in developing countries. In addition to supporting the Legatum Fellows, the Legatum Center aims to catalyze entrepreneurship for broad-based prosperity by administering programs including case writing, research, articles, lectures, conferences, and seed grants.

<http://legatum.mit.edu/>

Selected Projects

Cleaning water without the grid

Amos Winter describes one of the most important aspects of his job as “detective work.” That’s what he, PhD candidate Natasha Wright, and fellow researchers did for two years before coming up with a potential solution to issues of clean-water access in India.

It paid off. Their research team, sponsored by the MIT Tata Center for Technology and Design and its partner, the Indian firm Jain Irrigation Systems, won the United States Agency for International Development (USAID)’s Desal Prize with their design of a solar-powered electro dialysis desalination system.

The detective work began when Jain Irrigation pointed out that small-scale farmers in India who use Jain’s irrigation systems often lack access to safe drinking water. Winter, Wright, and others on the Tata Center team spent two years meeting with farmers and village dwellers trying to understand the reason for drinking water shortages in rural Indian communities.

The team identified a generally overlooked contaminant in India’s water: salt. By removing salt from water sources, the team could more than double the groundwater available to villagers for drinking.

The announcement of the USAID Desal Prize competition hit shortly after the team published a paper on the importance of desalination to clean drinking water. The team took their prototype system to the competition and in a pool of almost 70 applicants, they won. In fact, they were the only entry to meet all of USAID’s specifications for flow rate and salinity.

The win was game-changing. According to Winter, the Desal Prize has seriously accelerated the typical development timeline for a project like this. Winning the prize has connected him and Wright with other major players in the clean water space, and international expertise provided by USAID has put more potential locations for the new desalination system on the team’s radar. One of them is Gaza. “It’s pretty exciting,” Winter says, “because the needs and requirements for off-grid desalination [in the Middle East] are very similar to those in India.”

<http://bit.ly/1qIsaRg>

Empowerment through mobile technology and co-design

“Far and away the best prize that life has to offer is the chance to work hard at work worth doing,” Theodore Roosevelt once said in a speech in 1903. MIT senior in computer science Beth Hadley takes these words to heart. She has been a pivotal force behind InstaAid, an iPad application that enables residents at The Boston Home (TBH) to access assistance from any area of the facility, thus increasing their safety and quality of life.

During the fall of 2014, in the course Principles and Practices in Assistive Technologies, or PPAT, Hadley and her classmates, senior Laura D’Aquila and junior Tanya Talkar, formed a team with Margaret Marie, a TBH resident, to design an application that transformed the nurse call system at the home. For many residents of the home, calling for help is not a simple task. Most residents have limited mobility due to conditions such as amyotrophic lateral sclerosis (ALS), making it difficult, and many times impossible, to reach the help button wired to the wall. Many residents, however, already use iPads attached to their wheelchairs.

While the first iteration of the application was developed during the PPAT class, Hadley turned it into her senior thesis project and continued to improve it. She tested and revised several prototypes and incorporated feedback from TBH residents and staff throughout, turning an experimental product into a robust and sustainable call system downloadable from the Apple App Store. The application transforms the process of providing help to residents. With two interfaces, one for the resident, and one for the nurse, users can request water, aid, or signal an absolute emergency at the touch of a button, whether they are in their room or even away from the home’s premises. The custom notification helps nurses identify real emergencies and dispatch the right personnel for each call.

InstaAid is one of the first mainstream mobile communication technology that meets the dynamic communications needs of differently-abled individuals—the interface is designed to accommodate for visual, motor, and cognitive challenges.

<http://bit.ly/1qIsf7s>