Final Report of the Committee on
Global Educational Opportunities for MIT Undergraduate Education (GEOMIT)
September 2007
Re: GEOMIT report

To Whom It May Concern:

I am pleased to be able to commend this report of the Global Educational Opportunities at MIT Committee. The 2006 report of the Task Force on the Undergraduate Education Commons laid out the expectation that a majority of MIT undergraduates should have a significant global educational experience in their time here. This faculty and staff committee worked for over a year to answer the charge as to how MIT should go about making this recommendation real. They surveyed the existing programs at MIT, laid out an educationally sound structure for how we should think about all global experiences and suggested specific growth targets for MIT. They point out that we have several programs still in the pilot phase and that these programs should be appropriately resourced.

This is an excellent report that will lead to changes at MIT. The long term result of this report will be to provide for a more comprehensive and seamless set of global experiences for our students. These will be within the context of preparation and reflection. The office of the Dean for Undergraduate Education will work with the existing programs at MIT, the Provost’s office, the Academic Schools and the Resource Development Office to undertake the recommendations in this report.

Sincerely,

Daniel E. Hastings
Final Report of the Committee on

GLOBAL EDUCATIONAL OPPORTUNITIES FOR
MIT UNDERGRADUATE EDUCATION (GEOMIT)

submitted to

Daniel E. Hastings
Dean for Undergraduate Education
Massachusetts Institute of Technology

September 2007
Minor revisions and corrections October 2007

Linn W. Hobbs, co-chair
Hazel L. Sive, co-chair
Suzanne Berger
John S. Carroll
Diane E. Davis
Margaret S. Enders
Dennis M. Freeman
Patricia E. Gercik
Malgorzata Hedderick
Joshua S. Jacobs
Elizabeth A. Reed
Margery Resnick
Sally Susnowitz
J. Kim Vandiver
Bernd Widdig

Jennifer A. Cook, secretary to the Committee
Final Report of the Committee on

GLOBAL EDUCATIONAL OPPORTUNITIES FOR
MIT UNDERGRADUATE EDUCATION (GEOMIT)

Contents

0. Executive Summary
   0.1 Vision Statement
   0.2 Goals of this Report
   0.3 Summary of Conclusions
      0.3.1 Background
      0.3.2 Existing Global Education models
      0.3.3 A Global Education Program for MIT
      0.3.5 Increasing global opportunities
      0.3.5 Roles of Schools and departments
      0.3.6 Role of the Administration
      0.3.7 Financial resources
      0.3.8 Timeline and assessment
   0.4 Summary of Major Recommendations

1. Background................................................................. 1
   1.1 Globalism and MIT......................................................... 1
   1.2 Science and Technology in the National Interest........................ 1
   1.3 Opportunities, Participation and Impediments.......................... 2

2. Existing MIT Global Education Models................................................................. 4
   2.1 Present Levels of Participation..................................................... 4
   2.2 Internships Abroad.............................................................................. 4
   2.3 Study Abroad......................................................................................... 5
      2.3.1 Cambridge-MIT Exchange
      2.3.2 Other Institutional Exchanges
      2.3.3 MIT-Madrid
      2.3.4 MISTI-Interfaced Study Abroad
      2.3.5 IAP Programs
      2.3.6 Faculty-led class excursions
   2.4 Public Service Abroad........................................................................ 7
   2.5 Competitive Foreign Fellowships......................................................... 8
   2.6 Preparatory and Retrospective Academic Curricula............................ 9
   2.7 Current funding Models...................................................................... 9
   2.8 Conclusions about MIT models.......................................................... 10

3. A New MIT Global Education Opportunities Program............................... 10
   3.1 What is a Global Education Program?................................................. 11
   3.2 Unified goals for the Global Education Opportunities Program........ 11
3.3 Facilitating a Global Education Program .......................................................... 12
    3.3.1 Defining sufficient opportunities
    3.3.2 Development of appropriate subjects
    3.3.3 Encouraging participation
    3.3.4 Timing of participation
    3.3.5 Facilitating freshman participation
    3.3.6 Removal of financial obstacles
    3.3.7 Removal of academic obstacles
    3.3.8 Faculty oversight
    3.3.9 A Global Education Office
    3.3.10 Resources necessary

3.4 A Global Education Curriculum .................................................................... 16
    3.4.1 Credit-bearing Global Education
    3.4.2 A tripartite Global Education program
    3.4.3 Reflecting global education programs on the transcript

4. Increasing Global Opportunities ........................................................................ 20
    4.1 Expansion Targets ...................................................................................... 20
    4.2 Expansion of Existing Models ................................................................. 21
        4.2.1 MISTI
        4.2.2 Departmental internships
        4.2.3 Research abroad
        4.2.4 Study abroad and exchanges
        4.2.5 Public service abroad
        4.2.6 International development opportunities
        4.2.7 Foreign Languages & Literatures
        4.2.8 Combinatorial synergisms
    4.3 Alumni Connections ................................................................................... 25
    4.4 Relationship to Cross-cultural Opportunities ............................................. 26
    4.5 Conclusions about Global Program Expansions ........................................ 26

5. Role of Faculty, Schools and Departments in Global Education ..................... 29
    5.1 Faculty Incentives to Develop Global Education Initiatives ...................... 29
    5.2 Educational Value of GEOP ...................................................................... 29
    5.3 Advising and Mentoring .......................................................................... 30
    5.4 A Faculty Oversight Committee .............................................................. 30

6. Administrative Structure .................................................................................. 32

7. Financial Resources Needed ............................................................................ 34
    7.1 Total Program Costs ................................................................................. 34
    7.2 Cost to Students and Financial Aid ............................................................ 34
    7.3 Faculty and Staff Costs ............................................................................. 35

8. Timeline and Assessment ............................................................................... 37
    8.1 Timeline for Program Expansion and Development .................................... 37
    8.2 Assessment Strategies ............................................................................... 38
Appendices

Appendix 1. Charge to the GEOMIT Committee .............................................. 40
Appendix 2. Membership of the GEOMIT Committee ..................................... 41
Appendix 3. GEOMIT Committee Activities .................................................... 44
Appendix 4. MISTI Programs ........................................................................ 46
Appendix 5. Departmental Internships and Undergraduate Research Abroad ...... 49
Appendix 6. Study Abroad Programs ............................................................... 53
Appendix 7. Public Service Abroad .................................................................. 60
Appendix 8. Preparatory and Retrospective Subjects ....................................... 62
Appendix 9. Projections for Expansion of Opportunities for Global Experience .... 67
Appendix 10. Comment on the report on the Task Force on the Undergraduate Educational Commons ................................................................. 80
Appendix 11. The Value of an International Experience in the Students’ Own Words ................................................................................................. 83
Appendix 12. International Education at Two Other Institutions ..................... 90
Executive Summary

0.1 Vision Statement

An MIT education should prepare students to become productive members of a world where knowledge and commerce are no longer constrained by national borders. MIT programs should encourage students to seek global educational opportunities, to perform research, and to engage in solutions to problems addressable by science and engineering in other countries and cultures. As individuals who have been educated to understand and communicate within other cultures, MIT graduates will have the confidence and skills to become capable and responsible leaders in the global community.

0.2 Goals of this Report

The Global Education Opportunities Committee (GEOMIT) was convened by the Dean for Undergraduate Education, Prof. Daniel Hastings, and charged with defining how opportunities for global education can be expanded in the MIT undergraduate education. The goals of this report are to consider how to improve global education opportunities for MIT undergraduates. While the focus of the report is on undergraduate education, much of what will be discussed is relevant for both undergraduate and graduate student populations. In particular, the committee considered opportunities that are presently available at MIT and deficits that are present in the scope and mechanism by which these opportunities are offered to students. A specific goal was to identify the level of financial resources necessary to expand global opportunities. Another clear goal was to make pragmatic recommendations regarding expansion of global opportunities, such that many of these could be readily implemented.

0.3 Summary of Conclusions

Overall, the Committee has concluded that a sizeable expansion of global education at MIT is feasible, using a range of existing models whose effectiveness has been well demonstrated, such that at least an opportunity to participate in at least one significant experience abroad could be provided every undergraduate student during his or her degree period. The program could be styled as a Global Education Opportunities Program (GEOP). For a global education program of this size, the cost to the Institute is estimated to be between $4M and $10M annually, depending on decisions that are made about financial aid policies, faculty and staff remuneration, travel and subsistence grants to students, and extent to which current funding of global programs from non-Institute sources is hardened. The cost per student opportunity for each kind of model has proven very difficult—and not especially useful—to extract, because of the interlocking nature of many individual programs, their different current funding strategies, and the additional community contributions made by many programs in promoting international awareness on campus; an average figure is of order $5,000. The Committee is, however, confident
that the aggregate projected cost of the suggested global education program, as described, represents a reasonable estimate of the investment MIT must make.

Specific conclusions drawn from each section of this Report are summarized below, and a list of major recommendations follows in §ES.4.

0.3.1 Background
   a) The MIT student population is notable for its overwhelming focus on science, engineering and technology.
   b) There is an urgent need to educate future engineers and scientists to function in more than one culture, and across national borders.
   c) An MIT education for all students must newly emphasize conversancy with, and leadership in, the global community.

0.3.2 Existing Global Education models
   a) Innovative and unique international educational models have been developed and tested at MIT.
   b) These models have embraced the MIT tradition of applied experience.
   c) Development of international models has been facilitated by the extensive connections of faculty, and by student-led initiatives.
   d) Model programs have generally been funded through sources external to MIT, with fundraising driven by faculty and staff involved.
   e) An insufficient number of international opportunities presently exists.

0.3.3 A Global Education Program for MIT
   a) MIT is now ready to move its pilot international education opportunities to a new “integration and expansion” phase.
   b) A new “Global Education Opportunities Program” (GEOP) should mandate expansion of existing models and development of new international models.
   c) The unified goal of the GEOP is to allow students to develop for themselves a “toolkit” for global competency.
   d) All students should have the opportunity to participate at least once in the GEOP, and will be strongly encouraged to do so.
   e) GEOP should remove obstacles to international experience, at both academic and financial levels.
   f) A Global Education Office should coordinate and facilitate participation in, and development of, international programs.
   g) Faculty involvement in development of GEOP is crucial for its success, and a Faculty Advisory Committee to oversee global education should be established.
   h) The Global Education Opportunities Program is designed for undergraduates; however many graduate students will participate in and augment the Program and should be part of MIT’s global education mission.
   i) The structure of the freshman year should facilitate, and not impede, student participation in the global education program.
   j) Most global education opportunities will include a “for-credit” component.
   k) For-credit global education opportunities will generally be tripartite and include:
• preparatory experiences
• an international experience
• retrospective or reflective experiences

l) Credit for GEOP could be awarded through
• a major program
• a minor in some form of global competency
• certification of a program of global educational experience.

m) A new “Certificate in Global Education,” comprising about 24 units with flexible distribution of preparation/retrospective subjects, could provide an incentive with somewhat less investment than existing minor programs.

n) Global experiences may include
• study abroad
• research (in university, industry, or organizational settings)
• internships
• MIT subject with an international field-work component
• work experiences, including student-generated projects and public service.

o) Cross-cultural experiences can be obtained within the U.S. and are encouraged, but the GEOMIT Committee has focused (and MIT should focus) on global opportunities that involve on-site experiences in other nations.

p) Proposed global education opportunities should be reviewed by a new Faculty Advisory Committee on Global Educational Opportunities, and credit-bearing opportunities must be approved by CUP and CoC.

0.3.4 Increasing global opportunities

a) International educational opportunities for undergraduate students should eventually increase four-fold over present levels, to 1,200 per year.

b) This increase will primarily reflect expansion of existing models including:
• MISTI internships
• Departmental internships
• MIT subjects with an international field-work component
• Public service abroad, International Development Initiative programs
• Study abroad (including exchanges, fellowships and unilateral programs)

c) New global educational models should also be developed, through faculty-led initiatives.

d) New subjects, to be taught at MIT, should be developed that will prepare students for an international component and allow retrospective analysis of this component. Resources must be made available for this curricular development, particularly to Foreign Languages and Literatures Division which serves a critical preparatory role.

e) Alumni connections should be pursued to facilitate provision of existing and new opportunities.

f) The newly formed International Activities Committee should review international partnership opportunities for their educational value.
0.3.5 Roles of Schools and departments
a) Faculty members should be responsible for oversight of curricular and co-curricular global education programs through a standing faculty committee that oversees global education initiatives.
b) Faculty should consider the importance of global education in their departmental curricula.
c) Faculty should be encouraged to develop and organize global education initiatives. Incentives to do so should be provided, including funding for the program, salary support and teaching release.
d) Departments should be encouraged to consider whether, and how, to incorporate global education into the major curriculum. Study or research abroad during the semester or IAP could substitute for some subjects in some major programs.
e) Departments should also be encouraged to consider what MIT programs outside the major one would augment or strengthen a student’s education.
f) Students should be advised on the relevance of global education to their major program. Students should also be advised on how best to include global education into their major curriculum, or how best to use global education opportunities to augment the major program.

0.3.6 Role of the Administration
a) A Global Education Office (GEO) should be developed, most logically under oversight of the Dean for Undergraduate Education.
b) The GEO should act as a facilitator, to:
   • coordinate and catalogue global education opportunities
   • direct students and faculty to appropriate programs
   • distribute additional resources made available for new and existing programs
   • facilitate creation of new programs
   • assist with fundraising
   • assess student participation and report on program efficacy
   • provide a central repository of information for risk management and emergency response structures.
c) Present administrative structures of MIT international programs should be maintained, or expanded as necessary.
d) The GEO will maintain a close working relationship with all MIT International Programs and with MIT’s International Advisory Committee.
e) The GEO should work closely with the proposed standing Faculty Committee on Global Education Opportunities.

0.3.7 Financial resources
a) Students participating in summer international programs should be eligible for funding, including need-based financial aid if they receive academic credit for the summer international program. The summer savings expectation for financial aid recipients should be forgiven for participation in any summer international program, regardless of whether or not it is for credit.
b) Costs of student travel to sites abroad should be defrayed by the Institute for MIT-associated programs.

c) New funding should be provided to release faculty from teaching, to supplement salaries during program development, and to otherwise facilitate faculty participation in global education.

d) Salaries for instructors, as appropriate for each program, should be provided.

e) Additional resources will need to be committed to the important preparatory role of Foreign Languages and Literatures.

f) Salary support should be provided for new administrators, as necessary.

f) It is estimated that between $4M and $10M per year will be necessary to create and sustain an appropriate global education program.

0.3.8 Timeline and assessment

a) A first short-term goal for the program will be a doubling of global experience opportunities to 600 per year by 2009-10.

b) In the short term, expansion of global opportunities should initially focus on those occurring during IAP and the summer.

c) A second short-term goal is opening of a Global Education Office.

d) Longer-term expansion of educational opportunities abroad to 1,200 per year would occur by 2012-13.

f) Reports from Departments/Schools will be requested at two years and five years after the Global Education Office begins to assess participation.

g) Numbers of student participants will be monitored.

h) Surveys will assess the learning benefit provided by the overall global education program.
0.4 Summary of Major Recommendations

0.4.1 MIT should set up a Global Education Opportunities Program, which includes and expands existing global education opportunities, including study abroad, research, internships and work (including student-initiated projects).

0.4.2 Financial obstacles should be removed to allow all students access to equal opportunities for global education.

0.4.3 Sufficient financial resources should be made available to facilitate expansion of global education opportunities, for development of preparatory and retrospective courses taught at MIT, and to provide departmental and Institute incentives to faculty for encouraging student participation in them.

0.4.4 MIT should initially invest primarily in the expansion of the unique global models that already exist.

0.4.5 Global education opportunities should be offered primarily during IAP and over the summer. Initial expansion of educational opportunities abroad should be focused on those occurring during IAP and summer.

0.4.6 The number of available educational opportunities abroad should be expanded to allow every undergraduate an opportunity to participate at least once. This expansion should lead to 600 opportunities per year by 2009-10, and 1,200 opportunities per year by 2012-13.

0.4.7 The freshman year curriculum should serve to facilitate a student’s access to subjects preparatory to the global travel component of a global education program; the Subcommittee of the CUP considering the recommendations of the Task Force on the Undergraduate Commons should ensure that any curricular changes preserve and encourage that access.

0.4.8 MIT alumni living abroad should be encouraged to participate in expansion of global education programs for MIT students.

0.4.9 The decision of MIT to engage in new international alliances should include careful consideration of the educational value of the opportunities provided.

0.4.10 A Faculty Advisory Committee on Global Educational Opportunities should be appointed, to provide faculty oversight of global education initiatives and policies.

0.4.11 An administrative Global Education Office, which coordinates and facilitates global education programs and student participation and safety in them, should be established.
0.4.12  *The Global Education Opportunities Program should be tripartite, such that it includes preparatory academic subjects and retrospective subjects or equivalent reflective experiences, in addition to the experience abroad.*

0.4.13  *The Global Education Opportunities Program should include credit-bearing subjects, while a global travel experience itself may or may not confer credit.*

0.4.14  *Global experiences contributing to a student’s overall MIT education should be acknowledged on the transcript, through annotation of a major degree, award of a minor degree, or award of a new Certificate in Global Education.*

0.4.15  *Departments should consider the potential for more flexible curricula and for possibility of study abroad or work abroad opportunities that would fit into, or substitute for, part of the departmental major core and elective requirements.*

0.4.17  *Advising and advertising mechanisms should be devised that will encourage students to participate in global education programs.*

0.4.18  *Assessment of the success of the global education program should be monitored for level of both faculty and student participation, attainment of identified learning objectives, and analysis of the change in expectations regarding participation in international education at MIT.*
1. Background

1.1 Globalism and MIT

MIT is a global institution. By any measure—its faculty, its students, its curriculum and teaching, its research, its interface with industry and commerce, its entrepreneurship—the Institute sets an international standard that is globally admired and widely emulated.

Just as MIT is in the world, the world is also at MIT. The Institute attracts its faculty members from all over the globe: forty percent were born in another country and at least half were wholly or in part educated abroad. Most faculty members have active international research collaborations, advise governments, provide sought-after advice to foreign industry, launch international companies—mostly in disciplines that acknowledge few national borders. Last year almost 1700 international scholars worked at MIT, as postdoctoral fellows, academic visitors and visiting researchers. Eight percent of our undergraduate body is purposely drawn from non-American applicants; 36% of our 6,000 graduate students come from over 100 foreign countries. Thirteen percent of MIT alumni presently reside abroad, and the Alumni Association maintains active alumni chapters in 44 countries outside the U.S.

MIT graduates will be increasingly called upon to lead in international environments in a world where economy, culture and climate reflect an increasingly global character. Their jobs, or the jobs of those they direct, may be located abroad. They will have to deal with different cultures and languages and with values often far from those they grew up with. And the impact of their decisions will be increasingly global, especially because so much of their education and expertise is in areas of the science and technology that have rapidly altered the world, its environment, and our place in it. It is MIT’s obligation to provide our students with the requisite global competency.

The case for building MIT as a global institution often focuses on what we would gain from such a shift in priorities. But many of us would also emphasize a moral agenda: to contribute our knowledge and skills to helping poor countries to advance; to the building of capabilities in less-developed parts of the world; and to improving health and reducing poverty and inequality on a global level. Indeed, such a motivation comprises part of MIT’s published MIT mission “to develop in each member of the MIT community the ability and passion to work wisely, creatively and effectively for the betterment of humankind[1] and is very much in evidence in the many international public service projects and initiatives that have incubated at MIT.

1.2 Science & Technology in the National Interest

MIT is at the same time a national university, among the handful of this nation’s most prominently ranked educational institutions and its foremost in science and technology. We therefore ask “What are MIT’s commitments and opportunities as an institution

rooted in the United States? How do we integrate the national and global roles of the
Institute in the 21st century?” Most of the contributions to the infrastructure of education
at MIT still come from American alumni; more than 80% of our research budget comes
from the American government, and about 10% from US-headquartered corporations. We
must be mindful of our contributions to national welfare, and help to solve pressing
national problems by working with American industry and government in building our
economy and society. We believe that preparing our students to be able to create
knowledge in a global economy is a vital contribution to American society.

It is specialization in science and technology for which MIT is best known today. Fifty-
seven percent of our upperclassmen major in engineering and 29% in science; if one also
includes architecture, urban planning, management science, and economics as “technical”
subjects, enrollment in technically-oriented majors stands at 98.5%. This overwhelmingly
technical focus carries with it a national responsibility, as a principal educator of the most
talented American students in science and technology, as well as an international
responsibility, both because science and technology have long been regarded as
disciplines without national borders and because they are often implemented with
universal impact.

MIT has an obligation to provide leaders for the global community, which means
teaching students to work and produce and act on a wider and deeper stage than that of
the U.S. alone. “Mind and hand” in concert—learning by addressing significant
problems—should be very much the guiding principle in “globalizing” an MIT education
because it is what MIT does best on both national and global scales.

1.3 Opportunities, Participation and Impediments

Many highly appropriate and effective models flourish within this institution that
embrace the MIT tradition of applied experience. However, MIT currently provides too
few global educational opportunities, and with too little financial and curricular support.
Our students respond to these opportunities enthusiastically when they participate, but not
enough are so inclined or have acquainted themselves with the opportunities available.
Yet those who choose to engage in global education are highly enthusiastic about their
opportunities, as documented in Appendix §11. Our Committee’s best estimate from
data collected is that right now only about 20% of our undergraduate students ever
participate in global opportunities.²

Finances can be a significant disincentive for participation in the current MIT global
programs, including the direct cost of the program and the indirect cost of lost wages if

²Existing survey data are not entirely reliable in assessing student participation, because what is meant by
an “international experience” or “global experience” may not be well defined. The GEOMIT committee
compiled a great deal of primary-source information from nearly all existing international programs and
opportunities, much if which has been incorporated into the <http://global.mit.edu> website.
the student is unable to work abroad. MIT surveys\(^3\text{--}^6\) report that, “due to lack of money,” MIT undergraduates forego study abroad at rates of 21% (2002), 12% (2003), 10% (2004) and 17% (2006) and decline non-paying internships (domestic and foreign) at rates of 44% (2002), 39% (2004) and 38% (2006).

Some MIT students reflect their view (and often their parents’ views) that it makes little sense to spend time away from MIT, given the global pre-eminence of MIT in science and engineering education. Other students commented that they found it difficult to miss one or more semesters of a closely-packed major curriculum without extending their MIT degree period. Interestingly, although more than three-quarters of MIT students felt that reading and speaking a foreign language was an important part of their education,\(^3\text{--}^6\) less than 15% ranked this facility as “very important,” and up to 24% of MIT students actually feel that such facility is unimportant. A surprising number of MIT faculty are reluctant to recommend study abroad to our undergraduates, both because their own departmental major curriculum leaves little flexibility for accommodating curricular differences in courses of study abroad, and because they feel that the subjects are taught better at MIT than elsewhere. This attitude extends to graduate study abroad, and even to winners of prestigious graduate scholarships.\(^7\)

\(^3\)MIT 2002 Senior Survey, Institutional Research section, Office of the Provost.
\(^4\)MIT 2004 Senior Survey, Institutional Research section, Office of the Provost.
\(^6\)MIT 2006 Senior Survey, Institutional Research section, Office of the Provost.
\(^7\)Several MIT winners of prestigious Marshall and Gates scholarships have been actively discouraged by MIT faculty members from taking up their proposed graduate studies in the U.K.
2. Existing MIT Global Education Models

MIT has instituted over the last decade vigorous indigenous programs to promote international awareness and experience for our graduate and undergraduate students that embody MIT principles and have been highly successful on our campus. Many are already widely recognized as models of international education for engineers and scientists at other institutions. These models are described below and in more detail in Appendices 4-8.

2.1 Present Levels of Participation

Currently, approximately 20% of MIT undergraduates participate in some form of global education program at least once during their four-year undergraduate careers. A slightly smaller proportion of graduate students do so also during their 1-5 year-long graduate careers, though a much higher proportion of graduate students is already from countries outside the US (36%) than is the case for undergraduates (9%). A few students participate multiple times, and most do not participate at all.

Specifically, in three recent MIT surveys,[2-5] the following undergraduate classes report participation in “study abroad” programs at 7% (2002), 12% (2003) and 10% (2004) and in internships abroad at 11% (2002) and 12.9% (2004) sometime during their time at MIT. In another recent survey of MIT and peer institutions, quoted in the Task Force Report on the Undergraduate Commons,[8] 19% of MIT seniors reported studying or interning abroad sometime during four-years at the Institute. Overall student numbers reported by the various MIT experience-abroad programs for which the GEOMIT Committee collected data support these percentages, though many of the programs did not differentiate between undergraduate and graduate students, nor how many students participated multiple times in one or more than one program.

2.2 Internships Abroad

2.2.1 MISTI. MIT International Science and Technology Initiatives (MISTI) is the largest purveyor of international opportunities at MIT, sending about 300 MIT students abroad in 2006-7, about two-thirds of whom were undergraduates. The majority of these students (220 in 2006-7) participated in internships in eight countries, some in collaboration with departmental internship programs. Through arrangements with several academic institutions (principally in France), MISTI is also responsible for the second largest number of study abroad opportunities of current MIT programs.

MISTI was initiated in 1994 as part of the Center for International Studies to create a comprehensive international education program at MIT for undergraduate and graduate students from all courses of study. MISTI now comprises eight country programs (MIT-Japan, MIT-China, MIT-Germany, MIT-India, MIT-Italy, MIT-France, MIT-France, MIT-Mexico and

---

MIT-Spain); the MIT-Spain program is the most recent (2006), MIT-UK and MIT-Israel programs are being explored for 2007, and a MIT-South Africa program for 2008. MISTI is directed by Prof. Suzanne Berger with associate directors, Patricia Gercik and Bernd Widdig (now Director of International Programs at Boston College), and each country program has a faculty director and a staff program coordinator. The MISTI model is widely known and admired in international educational circles and for its scope and emphasis unique to MIT.

MISTI works with different departments across the campus to prepare students in the culture and language of a host country before placing them in the host country in industrial or research internships. The Program also hosts meetings at MIT and abroad, sponsors pertinent talks and cultural activities at MIT, organizes in-country workshops with MIT students and professionals from global companies during IAP and summer, supports cross-border research, and offers study abroad opportunities. MISTI sends about 300 students a year to various venues administered by the eight country programs and provides support for students to take part in the Africa and Singapore Forums. About two-thirds are undergraduate students. The distribution of these students in the country programs and activities is detailed in Appendix 4; current program costs are provided in Appendix §A9.1. MISTI expenditures run currently about $3M annually. Of this, only $90,000 (2007-8 amount) is contributed by the Institute; the rest is derived from external sources.

2.2.2 Departmental internships, field-work and undergraduate research abroad. Several departments, most notably the Departments of Materials Science & Engineering (Course 3) and Electrical and Computer Science (Course 6) arrange summer internships abroad for their majors as part of the academic curriculum. Examples of the venues are provided in Appendix §A5.1. More formalized, global internship programs are carried out in the Sloan School (G-Lab) and the Department of Urban Studies and Planning (Course 11) for graduate students. Several departments (DUSP among them) also include a significant field-work or problem-solving component abroad in some departmental subjects. Undergraduate research conducted under faculty supervision and mentorship has long been institutionalized in the form of UROP, but a global version, dubbed IROP (International Research Opportunities Program), has operated now for four summers and three academic years. The number of students participating in each of these four aggregate calendar years ranges from 13 to 26. Their geographical distribution and a breakdown of UROP office expenditures on IROP projects for 2006-7 are detailed in Appendix §A5.3.

2.3 Study Abroad

In 2006, the MIT Office of Study Abroad and Distinguished Fellowships was established by Senior Associate Dean Peggy Enders within the Office of the Dean for Undergraduate Education. Assistant Dean Malgorzata Hedderick was engaged to oversee the office. The goal of this office is to coordinate and administer a large number of existing MIT-sponsored study abroad programs scattered throughout the Institute, to assist in the
organization of new programs and agreements, and to provide students with a central access point for enquiries and logistics concerning MIT-sponsored and external programs. Study Abroad encompasses credit-bearing opportunities, both those offered during the academic semesters and those offered during IAP. The general categories of opportunity are outlined below; more details are provided in Appendix 6.

2.3.1 Cambridge-MIT Exchange. The most visible MIT-sponsored study abroad program is the Cambridge-MIT undergraduate exchange (CME), established in July 2000 as part of the Cambridge-MIT Institute (CMI), initially developed and managed by Senior Associate Dean Peggy Enders until November 2006, and now overseen by Dean Hedderick. This flagship program involves fourteen MIT and ten Cambridge University departments, which exchange third-year undergraduate students for a complete academic year. In the six years of the program, 196 MIT undergraduates have spent their junior year at Cambridge, averaging 34 students a year, while a slightly larger number of Cambridge students has enriched our students’ environment at MIT. The exchange is structured so that no tuition money changes hands: MIT students continue to pay their MIT tuition, but pay for their room and board in Cambridge instead of at MIT, with little cost differential emerging from participation. CMI funding of the exchange ceased in 2006, and MIT has made a major commitment to fund the exchange independently for at least 2007-8.

2.3.2 Other Institutional Exchanges. These include student and faculty exchanges at graduate and undergraduate levels. MIT and the Rheinisch-Westfälischen Technischen Hochschule (RWTH)-Aachen, the leading technological university in Germany, this year forged a research and exchange link in the broad area of materials studies (materials science, biomaterials, engineering materials). Another program being planned aims to develop links with Israel through Hibur, an MIT-Technion link now being explored, and further potential exchanges are being discussed with institutions in South Africa and Portugal. In addition to these MIT-managed opportunities, students take advantage of direct enrollment at foreign universities, and through study abroad providers.

Numerous other exchange programs permit smaller numbers of students to take advantage of opportunities for international study. These include MIT-managed undergraduate departmental exchanges (presently active in the Aeronautics-Astronautics (Course 16), Architecture (Course 4), and Materials Science & Engineering (Course 3) departments), and the Killam (Canada) exchange program, all of which are described in Appendix 6.

2.3.3 MIT-Madrid. A one-semester unilateral study-abroad program in Madrid allows students to take academic courses alongside Spanish students at the Universidad Politecnica de Madrid (for engineering and architecture subjects) and the Universidad Complutense de Madrid (for humanities, social science and science subjects). Academic oversight for this program is provided by Prof. Margery Resnick of FLL, and administration by the Study Abroad Office. In Spring semester 2006, five students participated, while in Spring 2007, nine participated. The MIT students are given “approved foreign study” status, pay no MIT tuition, and pay an inclusive fee (about
$8,000 for the semester) to a facilitator company. This fee includes full tuition costs at both universities, a private room with a Spanish family with two meals a day, orientation and trips to cultural sites around Madrid, and 24-hour emergency contact. Students are awarded MIT credit through departmental transfer credit. Students in the program have also used UROP funding and internship opportunities arranged by faculty members—often in conjunction with MIT alumni—to provide hands-on experience in their disciplines in Spain. Upon their return, students are engaged in a retrospective project, led by FL&L Spanish-language faculty members.

2.3.4 Direct enrollment and extramural study-abroad programs. Other unilateral study-abroad arrangements involve varying degrees of MIT involvement. MISTI’s MIT-France Program assists students in applying to academic programs in France, mostly at France’s premier academic institutions, the grands-écoles, sometimes for a fifth (and post-graduate) year following graduation. Other MIT students also choose to enroll directly for a semester (rarely a year) at other universities in the world, with guidance from the Study Abroad Office. Some choose programs run by other institutions (U.S. and foreign) or commercial companies that are sometimes part of genuine degree programs at the foreign university attended, but more often special programs only utilizing foreign university academic personnel. Participating MIT undergraduates are given “approved foreign study” status, pay no MIT tuition, and pay tuition and fees to the foreign institution or study-abroad provider.

2.3.5 IAP Programs. Programs designed for participation during the Independent Activities Period (IAP) offer the least interference with MIT curricula. Since the one-month IAP is part of its academic calendar, this period is therefore an opportunity to mount shorter global experiences that are credit-bearing (such as IAP-Spain and IAP-Germany) and are included in financial aid packages. Three IAP-long MIT programs are described in Appendix §A6.6. Shorter IAP experiences may also interest students in participating in longer sojourns abroad later in their academic careers.

2.3.6 Faculty-led class excursions. A number of faculty members take students abroad with them, as extensions of MIT subjects, during IAP and Spring Break week. Terrascope (12.000 and its affiliated Civil & Environmental Engineering Earth Systems Initiative subject 1.016) is one example, now institutionalized, that aims at freshmen and has offered fields trips to Brazil, Chile and Iceland during Spring Break.

2.4 Public Service Abroad

The MIT Public Service Center (PSC), founded in 1988 and now directed by Assistant Dean Sally Susnowitz, and the Edgerton Center (EC) co-sponsor a collaborative initiative called the International Development Initiative (IDI), as well as the Service Learning Initiative. These initiatives provide grant funding to help faculty incorporate international development projects into their coursework; provide student travel, project funds, and stipends to ensure equal access to international experience; and support development of engineered products that serve communities in developing regions. Ideas
for global development projects often come from the component programs of IDI: the IDEAS Competition, Public Service Fellowships, D-Lab, and International Development Grants. The IDEAS (innovation, development, enterprise, action, service) Competition, begun in 2001, has involved about 800 students, awarded $125,000 since its founding, and leveraged $1.25M of follow-on project funding; ninety percent of IDEAS projects serve communities in the developing world.

PSC and EC have also partnered with the Department of Urban Studies and Planning (DUSP), the Department of Mechanical Engineering, and the Poverty Action Lab to acquire funding for international student experiences and to integrate international opportunities into the curriculum through service learning. Department of Urban Studies and Planning (DUSP) practica provide international experiences for master’s degree graduate students, most of which involve a service learning dimension. A new collaboration with housemasters at New House and associated faculty members has led to the creation of a new “living-learning community” (iHouse: International House for Global Leadership), which engages its residents in international development work abroad.

The PSC and Edgerton Center each offer additional support for student international experience. The PSC spent $50,000 in AY 2006-2007 on grants for student service projects, most of which were international. The Edgerton Center’s Director, Prof. Kim Vandiver, is developing the International Research Opportunities Program (IROP) for undergraduates interested in research abroad.

More information about international public service opportunities abroad is provided in Appendix 7.

2.5 Competitive Foreign Fellowships

Competitive foreign fellowships provide a way for successful graduating seniors to be afforded 1-3 year post-graduate educational experiences abroad in high-quality venues. The major award programs are the Rhodes, Marshall, Gates, Churchill (all to the UK), Mitchell (Ireland), Fulbright and Fulbright-Hays (most countries), DAAD (Germany), Trudeau (Canada), Luce (Asia), Kawamura (Japan), and Chateaubriand and Pasteur (France) scholarships or fellowships. Other award programs (Beineke, Jack Kent Cooke) permit their scholars to enroll in graduate programs abroad, particularly in the UK. Most winners enroll in 1-2 year master’s degree programs or independent projects (Fulbright), though a few elect to pursue doctoral degrees in foreign universities. Responsibility for MIT’s applications is carried by the Presidential Committee on Foreign Scholarships, chaired by Prof. Linn Hobbs, and administered by the Distinguished Fellowships Office, directed by Kimberly Benard.

About 150 students now make serious enquiries about foreign fellowships each year; of these, 25-40 students apply and will typically win 9-18 scholarships each year. Although the number of MIT applicants is far lower than fielded by most of MIT’s peer
institutions, the overall success rate for MIT applicants (some years as high as 50%) is very high. MIT currently ranks fifth in cumulative number of scholarships for 2003-2006, behind only Harvard, Yale, Stanford and Princeton. More information is provided in Appendix §A6.7.

2.6 Preparatory and Retrospective Academic Curricula

Cultural and linguistic academic preparatory subjects are key components of a successful experience abroad. Retrospective academic opportunities at MIT upon return are also argued for later in this report. Current and proposed vehicles for both provided by MIT curricular offerings are listed in Appendix 8.

2.7 Current Funding Models

MIT has a long-standing policy of making undergraduate financial aid “portable” for study abroad as long as the education program is approved for academic credit. However, since financial aid is available only for credit-bearing international experiences, many MIT opportunities ordinarily do not qualify for financial aid.

For each study-abroad program, MIT determines a reasonable student expense budget against which the family’s ability to pay is measured. Where the cost of the study abroad program is greater than studying at MIT, the Institute has previously capped the student expense budget at that which would normally apply for study and residence at MIT, plus domestic travel to Cambridge, MA and international travel to the study-abroad destination. This practice was consistent with that of other educational institutions. From 2008-2009 onwards, MIT has decided to no longer cap the student expense budget for study abroad programs, but will instead set the budget based on reasonable expenditures.

MIT provides its undergraduates with enormous flexibility as regards the summer savings and self-help expectations, in several ways. First, any outside scholarships (including federal grants) that a student receives are used to reduce self-help and the summer earnings expectation. Second, students who are unable to work are able to borrow the full amount of their self-help and summer savings expectations upon request. Despite the portability of financial aid for study abroad programs, undergraduates continue to report that, “due to a lack of money,” they forego study abroad. Some students may be unaware that they can increase their student loans to offset absence of student employment earnings; others may be reluctant to do so. In 2006-2007, 52 undergraduates received a total of $1,296,215 to study abroad: 35 students studied at CMI, 8 at Madrid and 9 others in other programs, some of which were sponsored through other American universities. MIT provided $1,032,004, or 80 percent, of the financial aid disbursed for study abroad.
2.8 Conclusions about MIT Models

Our study of the global educational programs currently operating at MIT leads us to the following conclusions:

1) Effective models exist already at MIT that are unique to the Institute and to its global mission. These models lie in the areas of internships (MISTI, G-Lab, departmental, and others), study abroad (CME and other departmental exchanges, IAP language programs, MIT-Madrid and other unilateral programs, and distinguished fellowships), research (IROP, D-Lab, DUSP initiatives), and public service work (PSC, IDI). Like UROP and IAP established earlier by MIT, the models are well-known, widely admired and increasingly emulated in the international educational community.

2) Our models have evolved independently, with their own staff and objectives, though a number do collaborate in joint projects and programs. They have expanded to their “natural limits” as defined by availability of funding and staffing considerations, though not by student demand.

3) The funding for many of these models, with the exception of study-abroad programs for academic credit, has been found independent of Institute resources. The Institute directly invests little in most of the programs.

4) All the models can be said to represent highly successful, well-tested prototypes with a substantial base of student interest, but presently scaled to a participation level well below what would be necessary to provide global experiences to a majority of undergraduates.

5) Programs designed for participation during the Independent Activities Period (IAP) and the summer offer the least interference with MIT curricula. Since the one-month IAP is part of MIT’s academic calendar, this period presents an opportunity to mount shorter global experiences that are credit-bearing (such as IAP-Spain and IAP-Germany) and are included in financial aid packages. Summer programs can provide academic credit, but there is a summer tuition issue, unless the summer experiences are linked to an academic subject during the Fall and Spring academic semesters.

3. A New MIT Global Education Opportunities Program

How, then, should MIT structure its global educational opportunities? We propose that MIT develop a new Global Education Opportunities Program (GEOP). The goal of this Program is to encourage all MIT undergraduates to participate in a global educational experience and to provide an appropriate curriculum that frames this experience. This participation will add value to the degree program and to the education of a student in the
broadest context. In this section, we describe the components of such an MIT global education program and list the challenges to its implementation that will need to be met.

3.1 What is a Global Education Program?

The MIT Global Education Opportunities Program will include existing and new international opportunities, put into an expanded educational context. The program will have two purposes. First, it will serve as an umbrella that will organize global educational opportunities at MIT. Second, the Program embodies a new unified philosophy, with common educational goals for all constituent program opportunities. In particular, these goals emphasize the value of global education as an integral part of an academic degree program, operating either within the major curricular requirements or as a relevant augmentation of that curriculum.

As described in §2 of this report, MIT has already in place international programs that have been proven worthy as institutional pilot models and that are ready to expand significantly (as will be described in §4). We emphasize that the Global Education Opportunities Program would not simply comprise an international experience for students, nor a supplemental enrichment like UROP. Rather, the program is proposed as integral to an MIT education, either as part of major degree curricula or comprising opportunities that specifically complement the major. Thus, an important aspect of this program will be to integrate international experience into a student’s academic curriculum, so far as possible.

Much of the intellectual and practical framework for a Global Education Opportunities Program already exists, albeit at a smaller scale than necessary. However, significant aspects of this program will necessarily be new and must be developed.

3.2 Unified goals for the Global Education Opportunities Program

The overriding goal of the Global Education Opportunities Program is to educate every student at MIT to function intellectually, technically and socially in multiple cultures. The educational value of this acquired facility is first practical: a student learns how to organize an engineering project or perform research in a different culture; and second revelational: a student learns to appreciate that there are many different, but effective, learning and working styles around the world. A corollary goal of the program is to help students learn from one foreign experience, so that they can adapt lessons learned to the challenge of another new culture or context in their ensuing careers.

We propose that every MIT student acquire a “toolkit” to build global competency. What should be in this toolkit? First is the background information and attitudes necessary to function in a foreign culture; second is specific foreign language skills; third is the ability to assess the learning value of a global educational experience, and to synthesize general lessons about other cultures from the experience; and fourth is the ability to develop
approaches that are useful in meeting with confidence the next opportunity of interacting with and working in another culture.

How will a student acquire such a toolkit? We envision a triad of approaches that comprise its components. These include preparation for the global experience. Preparatory education may encompass learning a foreign language and mastering subjects addressing cultural differences that will be encountered. Subsequently, a student will need to study or work in a foreign culture outside the United States. Lastly, the student will participate in a retrospective exercise that will promote serious self-assessment of the foreign culture exposure, consolidate a student’s initial impressions and later reflections on the experience, and help the student to infer valuable strategies for meeting future global challenges.

Recommendation:

- MIT should establish a Global Education Opportunities Program, which includes and expands existing opportunities for experiencing a foreign culture.

3.3 Facilitating a Global Education Program

In considering how to establish a global education program for all students, MIT will need to meet multiple challenges. These challenges are listed below, with accompanying recommendations, and some are considered further in subsequent sections of this report.

3.3.1 Defining sufficient opportunities. MIT should develop sufficient global opportunities to allow any student to have an educational experience abroad, as part of a global education program, in a new country or culture at least once during the student’s degree period. Because there may be little room within the freshman year itself to schedule such an experience, in practice this means that only three years are available to each student for participation. At present, MIT provides approximately 350 opportunities each year for all undergraduates to work, do research or study abroad, in all programs discussed in §2.

Recommendation:

- MIT should expand the number of educational opportunities abroad to a level that would allow every undergraduate at least one opportunity to participate. This increase should occur over a five-year period, with expansion to 600 opportunities by 2009-10 and 1,200 opportunities by 2012-13.

3.3.2 Development of an appropriate academic curriculum taught at MIT. Subjects that prepare a student for internships, research, work or study in a different culture, and those that allow a student to assess the experience abroad, should both expand in concert with provision of global educational opportunities abroad for MIT students. In this way global experiences will be integrated into a student’s whole educational experience and understanding of the world and of his or her place in it. As discussed in §3.4, such
subjects may require development, with a concomitant requirement for subject and academic program development resources.

**Recommendation:**
- *Preparatory and retrospective subjects for specific global education opportunities should be developed, as needed.*

3.3.3 Encouraging participation. We feel strongly that a student should not be required to participate in GEOP. However, students should be educated to understand that that participation is a valuable part of an MIT education and may significantly influence the next career step. Indeed, lack of first-hand understanding of how to work in a different culture will likely prove a competitive disadvantage when searching for or carrying out work. Thus, students should be encouraged, and even expected, by their departments and faculty advisors to participate in the Program, in the same way that students generally expect to participate in UROP.

Participation in global education will be promoted by advertising opportunities to students. The new Global MIT website is an excellent first step in this advertisement, and the Global Education Office discussed below would further facilitate awareness and participation.

**Recommendation:**
- *Advising and advertising mechanisms should be devised that will encourage students to participate in the Global Education Opportunities Program.*

3.3.4 Timing of participation. At present, most global opportunities involving work or study abroad occur during IAP or the summer, with fewer study abroad opportunities during one or both semesters (see §2). Using IAP and summer for global experiences makes sense with regard to curricula that are already very full, and we suggest that additional global opportunities be first provided with a focus on these two periods. At present, preparatory subjects for global experiences are taken during the academic semesters or, less frequently, during IAP. We suggest that preparatory and retrospective subjects be completed primarily during the fall or spring semesters.

**Recommendation:**
- *Expansion of global opportunities abroad should first be targeted primarily during IAP and over the summer.*

3.3.5 Facilitating freshman preparation and participation. The key aspect to consider for freshman is preservation of early opportunities to study foreign language, in order to fulfill the several semesters of language preparation that are often necessary for the foreign experience portion of a global education program. As discussed in **Appendix 10**, recommendations of the Task Force on the Undergraduate Commons do not promote this access in the freshman year.
An additional consideration is creation of global opportunities for freshman students. Many MIT students have not traveled outside the US, and some shorter introductory experiences—during part or all of IAP, or the week of Spring Break, often in the company of a faculty member—may encourage students to seek out longer experiences abroad later in their careers and to elect subjects in a foreign language and culture in their curricula. Finding freshman global opportunities may involve special considerations (freshmen generally have less to offer in experience and education than upperclassmen), and this is one of several areas where we need to enhance the way we work with international alumni.

Recommendations:

• The Freshman year should serve to facilitate study of subjects preparatory to the international component of the Global Education Opportunities Program.

• The Committee on the Undergraduate Program (CUP) subcommittee charged with evaluating the recommendations of the Task Force on the Undergraduate Commons should take into account GEOMIT Committee conclusions about the importance of freshman access to preparatory opportunities.

3.3.6 Removal of financial obstacles. As indicated earlier, 10-20% of undergraduates indicate that they had to forego study abroad due to “lack of money.” The presumption is that needy students are more likely to report a financial obstacle. So far as possible, the Institute should remove financial barriers for student participation in global experiences. For example, it seems reasonable to forgive the summer savings expectation for one year per financial aid recipient to allow a global educational experience. Another recommendation is that student travel costs be subsidized or absorbed by the Institute, not least during IAP which is officially part of the academic year. Their removal will necessitate increases in the financial aid budget if the program is for credit, or new funding sources if the international experience during IAP is not for credit. Further discussion of financial considerations is given in §7.

Recommendation:

• MIT should remove financial obstacles, to allow all students equal access to global education opportunities.

3.3.7 Removal of academic obstacles. Many departments have a broad international perspective and award credit for courses of study completed abroad. In these cases, it is clear that the curricula at MIT and those of the international institution must be sufficiently similar that completion of required subjects through study abroad will not impede progress towards an MIT degree. However, many students feel they do not have time to be away from MIT during an academic semester, or that it is not in their best academic interests to do so. This “lack of time” assessment may reflect real time demands of current curricula. Departments should therefore be encouraged to examine their major curricula for potential flexibility that would allow study abroad to substitute for one or more required subjects, and should consider how to incorporate global
experiences into the curriculum. The second concern, that it is not in students’ best interests to spend time away from MIT during the semester, derives from the notion that no other institution offers the quality of MIT’s educational programs. In some cases, this supposition may be true, while in others, it is an incorrect perception made by faculty and/or students.

**Recommendations:**
- **Departments should consider the potential for more flexible curricula, and for possibility of study or work opportunities abroad that would fit into or substitute for part of those curricula.**

3.3.8 **Faculty oversight.** One of the key aspects to a global education program is that it is developed and approved by the faculty. As will be discussed in §3.4, much of the proposed Global Education Opportunities Program will comprise credit-bearing activities and thus come under faculty oversight through the Committee on Curricula (COC) and the Committee on the Undergraduate Program (CUP). However, it is anticipated that newly developed or expanded aspects of a global education program will need to be examined in a new way. Relevant institutional questions to answer might be, for example: Does setting up a new program with a particular country have educational value? What subjects would be needed to prepare a student for an internship or study opportunity in a new country? Does MIT have appropriate preparatory and retrospective subjects, or will these require development? We therefore recommend a faculty advisory committee that will oversee overall implementation and functioning of the Global Education Opportunities Program and so monitor the quality and diversity of global education. Such a committee could be a sub-committee of the CUP but is recommend to be established as a free-standing entity.

**Recommendation:**
- **A Faculty Advisory Committee should be established that is responsible for oversight of global education initiatives.**

3.3.9 **A Global Education Office.** International education initiatives at MIT originate from many quarters and offices. This multiplicity is desirable, because each type of program comes with its own methods of operation and need for its own administrative structures. However, the existence of many disparate offices that organize global programs does not offer easy access to these programs for students or faculty members. Currently, a student first needs to discover that global opportunities exist at MIT, then sort through these, and finally take the initiative to begin an application process that will allow eventual participation. Furthermore, a faculty member interested in devising a new global program has no clear central repository of advice and experience to turn to for guidance or precedent. The new Global MIT website (http://global.mit.edu) is an important mechanism through which to advertise current global opportunities, but because it is not an interactive forum, it cannot offer the guidance or advice needed.

We suggest that a Global Education Office (GEO) could serve as a central clearinghouse and administrative coordinator for all global opportunities at MIT. Personnel and
information maintained by this office would provide guidance to students and faculty regarding global programs at MIT and serve as a repository of the general principles and funding policies for global education at MIT. The GEO would also guide faculty to people and precedents that would facilitate development of new programs, would advertise and serve as conduit for requests for funding, and could possibly distribute appropriate funding. This office should additionally assess program efficacies, oversee risk management and promote safety for our students while abroad.

It is important to emphasize that the GEO would not displace existing offices for global programs, nor the administrations of the constituent programs themselves, but would rather assist in disseminating information centrally and in coordinating their efforts from an Institute perspective. An appropriate administrative mechanism to ensure this coordinating function would be to have the GEO Director meet frequently with coordinators of constituent programs to exchange information, to ensure that programmatic information maintained by the GEO is current, and to facilitate collaborations between global programs. The GEO would consult regularly with the Faculty Advisory Committee and liaise with other appropriate bodies, such as the Committee on the Undergraduate Program and, possibly, the International Advisory Committee.

Recommendation:
• An administrative Global Education Office that facilitates the activities of global education programs should be established.

3.3.10 Resources necessary. Expansion of existing global education programs, and development of new subjects and programs, will require new resources. Furthermore, locating funding to replace the summer savings expectation for financial aid recipients, and for global travel for students engaged in international experiences that are not for credit, will require additional financial resources. As discussed below in §4, we estimate that expansion of MIT global education programs, removal of financial penalties, and establishment of requisite attendant administrative allowances and faculty incentives could require as much as $7-10M per year, during both expansion and maintenance phases.

Recommendation:
• Sufficient financial resources should be made available to allow expansion of global opportunities for our students, to allow all students the opportunity to participate, to provide faculty incentives, and to facilitate all other aspects of a global education program.

3.4 A Global Education Curriculum

Implicit in the title Global Education Opportunities Program is the educational value of global endeavor, and with that recognition the desirability of incorporating global
education into a curriculum. In this section, we discuss how the Global Education Opportunities Program could be incorporated into MIT curricula.

3.4.1 *Credit-bearing global education.* As is the case for all educational programs at the Institute, GEOP will include credit-bearing components, though not all components of GEOP will necessarily offer academic credit. We nevertheless consider important that the program is seen primarily as an academic educational program that acknowledges the importance of global education as a student moves on to the next stage of his or her career.

**Recommendation:**

- *The Global Education Opportunities Program should encompass credit-bearing subjects, as well as learning experiences abroad that may not be credit-bearing.*

3.4.2 *A tripartite global education program.* In order for a student to build a “toolkit” for global competency, we propose that a global education program for each student participating should comprise three aspects: preparation, international experience, and retrospection. Many preparatory subjects in Foreign Languages & Literatures, or in other Humanities sections, presently exist, but fewer retrospective subjects. Those that exist are summarized in Appendix 8.

a) *Preparatory subjects.* First, one or more subjects will prepare the student for an upcoming educational opportunity abroad. This *preparation* component would include subjects in foreign language (especially), culture, economics and other subjects relevant to the region of the world that the student will visit. Part of this preparation will be an awareness of the cultural novelty that the student will encounter and the relevance of this cultural awareness to the specific global experience. For example, working on an engineering project in Japan requires an awareness of the different manners and customs of that country. The preparation phase leading up to working in Japan through the MISTI MIT-Japan presently program includes several semesters of Japanese language, as well as several subjects treating Japanese culture and history. All these subjects are credit-bearing and satisfy the HASS concentration requirement. Preparation is not only relevant to the particular international experience that a student will have, but will also help a student understand what types of information are useful before encountering a new culture in a subsequent experience. Technical preparatory subjects can also incorporate cultural information along with technical information.

b) *The experience abroad.* A second component of a global education is the *global experience* itself that involves travel to, living in, and working or studying in another country. As discussed in §2, there are several forms of global learning experience—study abroad, research, internships, and work involving public service. Some of these will confer credit, particularly study abroad, which is defined as study opportunity at an equivalent institution. Other types of foreign experience do not lend themselves easily to categorization in credit-bearing units. While it could be possible to make all experiences abroad credit-bearing—for example, as a “special topics” subject or given general Institute credit—we feel that such assignments are very difficult, given the variable
nature of the experiences. We also feel that the intrinsic value of an international experience ought to be sufficient incentive for students to participate and for faculty members to recognize the value of the experience, even without awarding credit for these experiences.

c) Retrospective opportunities. A crucial aspect of GEOP that will allow a student to develop a “toolkit” for global competency is a retrospective component. Through one or more retrospective subjects—or analogous subsequent reflective opportunities—a student will synthesize and assess the value of the global experience. “Next steps” in a work or research project could be formulated. A retrospective subject can also allow a student to formulate a strategy by which he or she could become conversant with a further culture, in addition to the one just encountered. There are many possible formats for a retrospective subject, from those that rely entirely on individual effort by the student to those that include working in teams. While some retrospective subjects exist (Appendix 8), such subjects will generally require development.

Recommendations:

• The MIT Global Education Opportunities Program should be tripartite, comprising preparatory and retrospective subjects, as well as an experience abroad.

3.4.3 Reflecting global education programs on the transcript. A desired outcome of a global education program is that a student will have obtained a new set of skills and competencies that derive from the global experience. Credit-bearing global education subjects will naturally be recorded on a student’s transcript, and in some cases, may fulfill HASS concentration requirements. However, this credit may not specifically acknowledge the global skills that the student has acquired. It therefore seems important to acknowledge this skill set, as part of a degree program or as a separate acknowledgment.

a) Major and minor programs. We envision three ways that participation in the Global Education Opportunities Program can be acknowledged and can contribute to degree requirements. The first is a major degree program that relates directly to global education, for example majors in foreign languages or the new Course 6-A MEng international program. The second is a minor, for example the current minor in Applied International Studies, that acknowledges that a student has achieved proficiency in global education. Other departments should be encouraged to consider development of major or minor programs appropriate to acknowledging global proficiency.

b) Certificate in Global Education. Additionally, we suggest introduction of a new “Certificate in Global Education” to formally recognize some intermediate level of global competency attained. The certificate would require a minimum of 24 units of formal subject work, together with a learning experience abroad that will likely not be credit-bearing. Coursework would encompass both preparation and retrospective subjects, with flexible distribution of units. For example, a student could fulfill Certificate coursework with 18 subject units of preparation and 6 subject units of retrospection, or 12 subject
units of each, and so on. While most students who participate in present global opportunities engage in preparatory subjects totaling far more than 24 units, we note that a majority of MIT students does not participate in global programs at all. The 24 units could be incorporated into the curriculum of many students, without requiring a significant detour from a student’s other curricular objectives. Both the acknowledgement and the ease of satisfying the requirements for the Certificate would make a global education program more attractive to many students.

Why introduce a Certificate? Why not simply let students participate in the global education program and receive whatever credit is assigned, without specific acknowledgement that they have participated in such a program? We suggest that a Certificate constitutes tangible proof of participation, including confirmation that an experience abroad has been completed. Importantly, a Certificate would indicate to the student, to the student’s parents, and most importantly to future employers, that MIT has taken this participation seriously and accords it significant educational value.

**Recommendation:**

- *Global education should be acknowledged on a student’s transcript, through a major or minor degree, or through a new Certificate in Global Education.*
4. Increasing Global Opportunities

4.1 Expansion Targets

It is the Committee’s conclusion that much of what MIT might wish to accomplish with an expanded program of global education can be accomplished using the successful models that MIT staff and faculty have already developed. To that end, each major existing program that provides or services educational opportunities was asked to develop a realistic expansion plan and to estimate the cost of that expansion.

In this section, we specifically highlight those programs that can readily expand—internships (largely through MISTI), Study Abroad, Public Service-Edgerton opportunities, Foreign Languages and Literatures programs. We provide estimates of resources necessary for their substantial growth. In the expansions outlined, potential expansion capacity exceeds our goal of 1,200 per year that would ensure each student at least one international educational experience during the degree period. Aggregate expansion projections total about 2,400 opportunities per year, confirming there is adequate capacity using existing models.

It is essential to emphasize that, with expansion of educational experience abroad, must come expansion and development of subjects at MIT that support experience abroad. These include preparatory and retrospective subjects as described in §3. Therefore (as discussed in §§3 and 7), in order for expansion to occur which ensures access to international educational opportunities for all students, the necessary financial resources must be provided. These include funding for alterations in financial aid structure, for remuneration of participating faculty and staff, and for development and maintenance of the individual global education programs, including appropriate curricula at MIT.

The expansion costs reported are specific to each program, because each program has different kinds of expenses, needs, and administrative structures. From a planning perspective, it would be useful to know the realistic cost to MIT of each added student opportunity for each kind of program, but that information is difficult to extract, for several reasons. First, the programs vary widely in time spent abroad. Second, for some programs students currently provide their own funding; in others the program itself provides resources to the student. Third, most opportunities provided rely on the cooperative efforts (and therefore shared costs) of several programs. Fourth, some programs contribute resources to raising funding and promoting general global awareness, while others do not assume these burdens. The best that can be done at this stage, without a detailed accounting, is to divide the overall program cost by the number of opportunities as a rough estimate of what an added global opportunity would cost. For most programs, that opportunity cost lies between $2,000 and $7,000. These estimates do not reflect program efficacies and are not intended to be used for program comparisons.
4.2 Expansion of Existing Models

Each model encounters different impediments to significant expansion, some financial, other logistical, which are explored here in summary and in Appendix 9 in detail.

4.2.1 MISTI. With its efficient country-specific office infrastructure already in place and expansion capacity in the form of projected new country programs (§2.1), MISTI is well positioned for substantial expansion in the number of MIT students going abroad, provided that corresponding Institute funds are made available for that expansion. MISTI opportunities range from one-month IAP programs abroad to summer-long internships and so are not directly comparable to other IAP-only or summer-only programs. Because MISTI contributes much else to global education and promoting global awareness in the MIT community, it is difficult to separate out the actual cost of sending students abroad from its many other contributions.

A MISTI expansion plan is outlined in Appendix §A9.1, which projects capacity to 630 opportunities in two years (by 2009-10) and 1,250 opportunities in five years (by 2012-13), at an annual cost (by 2012) of $8.2M. MISTI currently raises 97% of its $3M annual budget, and 15% of its staff time is devoted to the fund-raising effort. It is unrealistic to expect MISTI staff to raise by themselves a projected $8.2M for a program rapidly expanded by more than a factor of four, or even half that.

4.2.2 Departmental internships. As indicated in §2.2.2 and Appendix 5, a larger number of departmental opportunities exist for summer internship programs than for study-abroad or exchange programs arranged at the departmental level. The potential for expansion of summer internship programs is correspondingly greater (Appendix §A9.2.1), potentially 100 opportunities annually at a total cost of $430K.

Generally speaking, the cost of internships abroad is similar to that of domestic internships, since companies often contribute to an intern’s travel costs as well as providing a stipend. An estimate of the staff cost involved, including a summer-salary contribution to faculty members for supervision, is about $4,300, exclusive of any cost to other programs, such as MISTI and FL&L, which are often enlisted by departments to provide preparation, facilitation and even placement. The scheme also obviates any possible difficulty in meeting the summer savings expectation for financial aid recipients, since students earn reasonable salaries in their employment, even by domestic standards. Such an approach to expansion of opportunities abroad is therefore quite cost-efficient compared to other vehicles.

4.2.3 Research Abroad. IROP projects for 2006-7 are described in Appendix §A5.3. Costs for projected expansion are summarized in Appendix §A9.5. A five-year IROP target is 50 opportunities annually at a cost of $261K. A two-year IROP expansion target is offering 25 such opportunities. Most summer UROPs are done for pay, and IROP would follow the same model. The current summer stipend is $4,275, to which must be added another $2,000 in travel expenses, bringing the cost per student to $6,275. Over two years, IROP expansion would require increasing annual UROP funds by at least
$88K ($138K if modest travel subsidies are included), and over five years by $199K ($249K with travel subsidies). An increase in program size would likely require an additional staff member in the UROP office.

4.2.4 Study abroad and exchanges. By the end of the 2007 summer, about 110 MIT undergraduates will have participated in various study-abroad programs in 2006-7. Student numbers for the current year and for 2-year and 5-year projections are provided for each of the study-abroad categories in Appendix §A9.2.3, together with estimates of the MIT cost, exclusive of providing tuition, travel or stipend. A total of 227 opportunities annually is projected as a five-year target, at a cost of $428K.

MIT has already recognized the value of retaining the Cambridge-MIT Exchange (CME) through a largely unilateral ongoing investment. Exchange arrangements are attractive for their financial simplicity, in that no institutional money changes hands and MIT loses no tuition income. The current cost to MIT to maintain an MIT student on the CME for an entire academic year is approximately $4,850. Interestingly, the number of MIT students who want to participate in the year-long CME has been somewhat lower than the number of Cambridge University students who wish to come to MIT (though the opposite has been true of the longer-running one-semester Course 3 MIT-Oxford Exchange). Modest expansion to 50 MIT students per year will reduce the cost per student slightly, to an estimated $3,440.

Development of other Institute-wide exchanges on the scale of CME is likely to be difficult, for a number of reasons. First, CME has worked because the integration time is an entire academic year, which serves to even out differences between the semester and a trimester systems of the two institutions. Second, Cambridge and MIT, as well as being pre-eminent world institutions, share a common language and subscribe to similar academic traditions. These commonalities diminish as one proceeds to other European countries. Despite the historically strong presence of MIT in Japan—and to a growing extent in Korea and China—the different educational traditions and language barriers in these countries render student exchanges even more difficult. In the MIT-Singapore agreement, neither MIT undergraduates nor MIT graduate students attend Singapore universities, except to participate in summer internships. We recommend that, when negotiating future international partnerships, MIT takes into account the global educational opportunities that could be provided MIT students and to ensure that these opportunities are included in the terms of the agreements.

Small department-based undergraduate exchange or unilateral placement programs hold the potential for providing about 30 semester-long academic experiences annually if only each of the six School of Engineering departments and six School of Science departments that do not currently offer departmental exchanges were to institute programs that could accommodate two MIT students per year. An achievable expansion target in five years is 25 opportunities yearly. The cost of such programs is largely the time of a faculty coordinator willing to take on the responsibility for maintaining the exchanges or unilateral arrangement and some administrative assistance from the department undergraduate office and Study Abroad office. For a program expanded to 25 students,
the cost per MIT student is estimated to be about $2,400, based on recent experience with the few departmental exchange programs that operate, exclusive of added academic, advising and preparatory burdens.

It is likely that students participating in direct application and in extra-mural or commercial programs not administered or negotiated by MIT will increase as global experiences become more a part of MIT culture. Participation of our students in these non-MIT opportunities is not entirely cost-free to MIT, because the students must be counseled about the opportunities and their requirements beforehand, and MIT faculty/credit examiners must evaluate the students’ educational experiences for assignment of MIT equivalencies and transfer credit afterwards. Additional academic preparative costs to MIT are real but difficult to estimate, so are not included. Such experiences, while institutionally inexpensive for MIT, may not however provide the kind of unique educational experience the Institute seeks for its students. The estimated MIT cost per student derived from Table A9.4 ($2,000 for direct application, $815 for commercial providers) does not reflect the cost to the student (who pays tuition to the foreign institution or commercial provider), the cost to MIT of lost tuition, or the added administrative burden imposed on MIT.

4.2.5 Public service abroad. The extensive collaboration of the Public Service Center and the Edgerton Center in international public service projects is a model for the sort of combinatorial pairing advocated later in §5.2.8. Together they have jointly created a range of popular scalable opportunities that maximize available time, can match diverse departmental requirements, take advantage of relationships worldwide, attract students from every discipline, and offer modular approaches that permit students and departments to design activities that fit students’ schedules and departmental requirements. The five-year target is a four-fold expansion to 630 opportunities at an annual cost of $3.2M. The cost per opportunity varies between $2,000 and $6,000, depending on how much contribution is provided to the student participant. Much of the present funding is obtained independently by PSC and EC, but the significant expansion would certainly necessitate a substantial Institute contribution.

4.2.6 International development opportunities.
Energy, climate change, and development are three major global themes of the 21st century to which MIT is uniquely poised to contribute. MIT’s Center for Global Change Science (CGCS), together with the Joint Program on Science and Policy of Global Change, represent the first of the MIT institutional responses to these global challenges. MIT’s Energy Initiative (MITEI), is the latest. International development is certainly another such global challenge. Three pilot educational programs (IDI, IDG and iHouse) address this issue and are discussed further in Appendix §A9.5. Costs for these potential global learning initiatives have not been computed.

The International Development Initiative (IDI) and the Service Learning Program represent a suite of international opportunities that can be flexibly integrated with one another and with academic programs and other opportunities. Service learning enables integration of service projects directly into coursework and thus provides an existing
asset that departments can use to develop international opportunities. Likewise students who gain international experience within a class subject can potentially continue their work with a Public Service Fellowship or grant. We recommend encouraging departments to use these assets to initiate or supplement their development of international departmental offerings.

4.2.7. Foreign Languages and Literatures (FL&L). FL&L’s programmatic expansion capacity is limited by the current size of its faculty and teaching staff, who provide foundational language instruction; and by funding in four areas of current instructional innovation detailed in Appendix §A9.6: 1) curricular initiatives (like the Cultura and MIT/Valencia virtual exchanges, contemporary guest voices in the classroom, learning laboratories such as the Beijing Animation Project) supported by HyperStudio; 2) IAP programs abroad (like the current German and Madrid intensive immersion programs); 3) semester study-abroad programs (such as the MIT-Madrid program); and 4) possible three- or six-week summer programs that are currently constrained by MIT summer tuition policy. Current financial aid policy is to exclude the summer semester from any consideration of financial aid. Expansion of MIT programs into other countries would be enhanced by development of relevant preparatory language instruction at MIT. With additional funding and resources, MIT’s current curriculum in FL&L could enable a far greater number of students to engage in all global experience programs. The cost of expanding FL&L’s capacity in five (or six) languages to accommodate an anticipated need for 2,200 language classroom places, plus the cost of extending curricular initiative platforms to accommodate the resulting 2,200 language students, is estimated at $1.27M annually.

It is clear that there is currently insufficient foundational language capacity for any proposed expansion of global programs. While innovative preparative subjects are likely to emerge in other areas as programs expand, the exception is key instruction in languages and cultures, which is already substantially constrained—both in enrollment capacities and number of languages taught—because of insufficient resource allocation. Some 1400 students are taught languages at MIT yearly, but only French, German, Spanish, Chinese and Japanese are now formally offered during the regular semester, and additionally Italian during IAP. Because students require at least the four-semester language sequence to acquire any sort of command of a new language, a proposed global education expansion providing an opportunity for every student will require expansion by almost 60% in the number of classroom places for foundational language instruction. Languages classes, by necessity, need to be capped (presently at 22, 18 for Asian languages) to ensure effectiveness, so this means a substantial increase in number of classes and number of instructors; the expansion cannot be accomplished simply by increasing the number of students per class. The cost of foundational language expansion to accommodate 2,200 students per year is projected to be $656K annually.

Additional curricular initiatives at MIT involving the five languages taught are projected to impact these 2,200 students at an overall cost of $426K annually. The average cost per student (about $1,000) reflects the lesser cost and greater capacity of instructional
programs on the MIT campus, but this modest cost also underscores that the crucial preparative components for global experiences can be quite cost-effective.

Three- to four-week language intensive experiences abroad occurring over IAP or during the summer represent easy targets for global opportunity expansion. These language-intensive experiences abroad are relatively inexpensive (projected to $1,350 per student, exclusive of the cost of travel, housing and food that students presently pay themselves in FL&L programs), though it should be said that these experiences amount more to preparation and global exposure than to extended global learning experiences. IAP programs are particularly attractive because they have negligible impact on students’ major academic curricula, yet provide crucial acceleration of their language skills. Their cost is not significantly more than for language preparation at MIT, unless MIT elects to provide travel and subsistence costs, but the cultural impact is huge (see student comments in Appendix §A11). In addition, a student may apply for financial aid. International experiences occurring during IAP that result in academic credit qualify, but MIT currently awards no financial aid for summer study, whether at MIT or at any other domestic or international institution. The cost of providing 140 IAP or three-week summer experiences comes to $191K annually. A stipend to defray the costs of travel, housing and food would amount to about $2,000 per student for a three-week program, raising cost per student to about $3,350 and the cost of the IAP/summer programs to $471K.

4.2.8 Combinatorial Synergisms. An important component in expanding global opportunities is the synergistic combination of separate opportunities and programs. Some pairings include D-Lab and PSC, FL&L and study abroad, FL&L and MISTI, coursework and fieldwork, UROP and IROP, IROP and service learning. Combinations not only multiply the number of opportunities available but also significantly broaden the context in which each model can be applied. *A particularly powerful combination pairs study abroad with either an internship or a research experience abroad.*

4.3 Alumni Connections

MIT alumni residing and working abroad can be powerful allies in facilitating existing and establishing new models for student experiences abroad. As pointed out in §1, 13% of MIT’s graduates reside outside the United States, and the Alumni Office maintains alumni chapters in 44 countries. There is a huge reservoir of good will and willingness to help the Institute further its global mission amongst alumni abroad. Departments and Schools should be encouraged to involve these alumni in provision of internship and public service opportunities for their students. The Alumni Office, who are more accustomed to directing fund-raising activities, should be encouraged to help the Institute establish and coordinate academic study, internship and service opportunities abroad through the extensive network of alumni abroad. MIT administrators should make special efforts to involve these alumni in Institute educational programs whenever traveling abroad on other Institute business and missions, to ensure that this valuable
resource feels connected to MIT’s educational mission and is recognized for the unique role it can play in our global agenda.

4.4 Relationship to Cross-cultural Opportunities

A point of consideration for the Committee was whether “global” education should be restricted to international travel experiences, or whether cross-cultural experiences within the U.S. could be equally valuable or provide equivalent educational tools. For example, cross-cultural educational experiences could include working in a Los Angeles barrio, a New Mexican pueblo or a Cambodian ghetto in Lawrence. The Committee was divided on this point, but this report has focused specifically on expanding international educational opportunities alone.

Cross-cultural educational opportunities with global implications are potentially available on campus. The iHouse residential-learning initiative, described in §A9.5.3 and to begin in Fall 2007, is one example. Another is a proposal to capitalize on MIT’s large (35%) contingent of talented international graduate students to expose our largely (92%) domestic undergraduate body earlier to other cultural norms and practices.

4.5 Conclusions for Global Program Expansions

The Committee has come to two major conclusions about program expansions and their costs:

1) Existing MIT global programs—many of them unique and widely replicable—are highly effective for MIT students, and their expansion represents the most efficient approach to ensuring adequate global educational opportunities for all MIT students, with more than adequate capacity. The relevant administrative offices of the Institute must themselves decide on the proportions by which to expand each of these existing model programs, how to fund those expansions, and whether to introduce still other vehicles for expanding global education opportunities for its students.

2) The overall cost of all the expansion initiatives detailed in Appendix 9 projects to an annual expenditure in five years (2012-13) of $13.8M, providing an expansion capacity to some 2,421 opportunities for a significant global experience each year. The costs are summarized in Table 4.1. Our Committee has suggested as a target providing 1,200 opportunities per year, so not all the program expansion capacities need be utilized. Scaling proportionally leads to an estimated annual cost in five years of $6.9M. This estimate assumes hardening the funding of MISTI, PSC and several other programs that raise substantial fractions of their budgets, but is exclusive of changes in financial aid policies, of changes in policies for remunerating faculty members for additional burdens imposed, and of any additional travel assistance, grants or subsidies provided to students above what programs now provide. Providing travel subsidies alone could increase this estimate by $2M annually. It is likely that, with altered policies on financial aid and
faculty reimbursement, the annual cost to the Institute could approach $10M annually. Considerable Institute support, of order $7-10M annually, would therefore be necessary to ensure the sustainability and expansion of existing global programs into the fully-hardened global program targeted. Even if existing independent funding sources were not hardened and were maintained at current levels, with no additional financial aid changes, travel and subsistence subsidies to students, or faculty remuneration added, the minimum annual cost would amount to at least $4M. These figures represent a very large investment in educational infrastructure that will need to be sought through a major targeted funding campaign. The Institute may also need to consider educational priorities in addition to research opportunities in establishing future global links.

Table 4.1 Estimated Program Expansion Capacities (annual projection for 2012-13)*

<table>
<thead>
<tr>
<th>Program</th>
<th>Number of Global Opportunities Abroad Annually</th>
<th>Projected Annual Cost ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MISTI</td>
<td>1,250</td>
<td>8.16†</td>
</tr>
<tr>
<td>IROP</td>
<td>50</td>
<td>0.26</td>
</tr>
<tr>
<td>Departmental internships</td>
<td>100</td>
<td>0.43</td>
</tr>
<tr>
<td>Study Abroad</td>
<td>227</td>
<td>0.43</td>
</tr>
<tr>
<td>Departmental exchanges</td>
<td>25</td>
<td>0.06</td>
</tr>
<tr>
<td>Public Service Programs</td>
<td>630</td>
<td>3.16†</td>
</tr>
<tr>
<td>Foreign Languages &amp; Literatures</td>
<td>140</td>
<td>1.27†</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>2,421</strong></td>
<td><strong>$13.77 M</strong></td>
</tr>
</tbody>
</table>

†Assumes Institute hardening of program funding, most of which is now raised independently.
*Bases for these estimates are described in Appendix 9.

Additional, more specific, conclusions about program expansion are:

3) Academic programs can profitably work within existing resources and appropriately expanded models to develop departmentally-based opportunities for educational experiences abroad that can be integrated into departmental curricula.

4) MISTI is a widely recognized vehicle for providing global opportunities appropriate to MIT students and has the administrative structure necessary to support the sort of expansion that could rapidly satisfy a significant portion MIT’s needs for global opportunities. Expansion of MISTI will require significantly more Institute resources than are contributed at present. It is likely that MIT will need to adsorb 2/3 of the cost of MISTI programs if expanded by a factor of three.

5) Departmentally-arranged internships abroad can (and should) be expanded to more departments. MISTI can and does provide an effective preparative and support structure for facilitating these opportunities.

6) IROP opportunities advantageously recruit a well-accepted MIT vehicle (UROP) to the service of MIT’s global mission. Though arranged by individual faculty members
and departments, their expansion will require significant investment of Institute funds in the UROP office.

7) CME is a highly effective model for achieving a global education through study abroad and should continue to be supported. Additionally, educationally effective exchange partnerships at the department level should be encouraged.

8) Like MISTI, Public Service Programs abroad are highly effective for MIT students and efficiently organized but currently raise much of their own funding independent of Institute resources. Their expansion will (and should) require significant Institute investment.

9) Language instruction and cultural education are prerequisites of an effective global education program, and the resources of Foreign Languages & Literatures will require substantial augmentation. Language-intensive IAP study abroad programs are highly efficacious and could be expanded to more countries and languages.

Recommendations:

• **Expansion of proven MIT models (MISTI, CME and other study exchanges, Public Service abroad, IAP language programs abroad, departmental summer internships, etc.)** should be targeted and funded before substantial investment in other vehicles for global education is considered.

• **Alumni living abroad can be advantageously engaged in MIT global education programs, not only in fund raising but for identifying and facilitating opportunities as well, and the Alumni Office should be encouraged to make these connections.**

• **Decisions by MIT to engage in new international collaborations and agreements should include careful consideration of the educational value of these partnerships for MIT students.**
5. Role of Faculty, Departments and Schools in Global Education

Underlying the future of global education at MIT is oversight and ownership of relevant programs by MIT faculty members. The Faculty is the most influential force for devising new global experience programs, helping students understand the importance of global education, and judging the success of these endeavors. There are several aspects to this oversight, some of which are addressed already in §3 and reflect a major theme of this report.

5.1 Faculty Incentives to Develop Global Education Initiatives

Faculty participation is essential for success of a Global Education Opportunities Program at MIT. For a four-fold expansion of MIT’s global opportunities and development of a cohesive global education program, significant increases in faculty participation relative to present involvement will be necessary. Faculty participation will include development and teaching of preparatory and retrospective subjects, development of international educational opportunities, advising students with regard to global education opportunities, and accompanying and supervising MIT students abroad. This participation will add additional time commitments for MIT faculty, whose schedules are already packed, and who are continually being asked to “do more”.

We emphasize that this increased effort by faculty should be offset by appropriate compensation. Thus, faculty participation in global education initiatives must include significant incentives and compensation provided by the Institute, by Schools and by departments. These incentives should not only include funding for programs, but also salary support and teaching release during program development and maintenance. Such incentives are not optional, because without extensive faculty participation, there can be no Global Education Opportunities Program at MIT.

A key point is that any funding provided to faculty for development or organization of global education programs should not result from diversion of existing funds. Rather, additional funding should be provided to the Schools and departments for distribution to faculty involved in global education programs.

5.2 Educational Value of GEOP

The principal assertion of this report is that global education is important for our students, both for achieving a complete education and for success in subsequent careers. The usefulness extends to students pursuing all major courses of study. For some disciplines, “global competency” (§3) has even more directly utility, in that a student can learn how to conduct research or attack an engineering problem that specifically impacts a different culture from his or her own.
We therefore recommend that faculty members, their departments and Schools be encouraged to consider how to incorporate global education into the major academic curricula and within the broader overall educational program of a student. Departments should be consistently encouraged to make their curricula more flexible, so allowing students to participate in opportunities abroad. Study or research abroad during the semester or IAP could substitute for some subjects in most major disciplines. Summer opportunities could fulfill the global experience component of the tripartite global education program (§3.4), without the need to be credit-bearing.

In some cases, global education may not fit directly into the major curriculum but could still be considered a useful adjunct to the major program. Faculty members should then consider whether a specific minor program, or the proposed Certificate in Global Education is appropriate and could augment or strengthen a student’s education.

5.3 Advising and Mentoring

While the GEOMIT Committee recommends that students should not be required to participate in global education programs, it also recommends that students be strongly encouraged to do so. As discussed in §1, students are often interested in global education opportunities but reluctant to participate, because they feel that the educational component would not be useful in their major discipline or future career path, or that participation would extend their degree period and cost. Further, faculty may actively discourage students from experiences abroad, or may generally not promote or even discuss this important (but often neglected) aspect of education with an advisee.

We therefore recommend that faculty members consider how to at least discuss with a student the importance and relevance of global education to the student’s major program. Students should be advised on how best to include global education into the major curriculum, or how best to use global opportunities to augment the major program. Training should be provided to faculty with regard to advising students on aspects of global education. Such training could be given at the department or School level.

5.4 A Faculty Oversight

Much of the Global Education Opportunities Program will comprise credit-bearing activities and thus come under faculty oversight through the Committee on Curricula (COC) and the Committee on the Undergraduate Program (CUP). Nonetheless, as discussed in §3.3.8, we recommend that a Faculty Advisory Committee be appointed to work closely with the Global Education Office and to review global education opportunities as they are developed. The committee would need to be constituted to provide long-term monitoring of global education over the whole spectrum of possibilities. Such a faculty advisory committee should therefore include representation from the major individual global education programs and provide a liaison link to CUP.
For example, the committee chair could serve as an *ex-officio* member of both COC and CUP, or a CUP representative could be appointed to the committee.

**Recommendations:**

- *Schools and departments should be encouraged to consider how to include global education into their curricula. The possibility of more flexible curricular requirements and timing should be considered.*

- *Advising strategies should be developed to help students decide which global education opportunities best interface with a student’s major program.*

- *A Faculty Advisory Committee on Global Educational Opportunities should be formed to work closely with the Global Education Office, the CUP and the COC.*
6. Administrative Structure

The several successful global opportunity models reviewed in this report have developed largely independently of each other and of MIT central administration. They have expanded to limits mostly set by available (often non-Institute) resources and staff time. Synergies between them have developed where natural alliances have been apparent. Further expansion, as proposed, will require provision of substantial new (mostly Institute) resources and significant additional staffing. A larger Institute plan for global education will require coordination of efforts beyond the present capability of any individual model program initiative. For these reasons, it is apparent to the GEOMIT Committee that some form of administrative superstructure is necessary to coordinate services and distribute resources above that provided by each individual program. We therefore recommend that a Global Education Office (GEO) be established.

One reason for the notable success of the existing programs has been the direct connection between program administrators and the students participating. Another has been their freedom to innovate within their independent funding bases. Insulating student participants from the specific program personnel and limiting the innovative independence of program directions are not fruitful administrative directions. We therefore recommend that the Global Education Office does not take over any administration of existing programs but instead serves a facilitative role, putting in place only those administrative structures appropriate to coordinating a global education program. The roles of the Global Education Office should include the following:

- coordinating and collating opportunities (and maintaining the Global MIT website)
- directing students and faculty to appropriate programs
- distributing new resources for new and existing programs
- creating new connections and programs
- assisting with fundraising for global education programs
- establishing security standards, promoting awareness of risk, and monitoring student safety abroad.

This Office should work closely and collaboratively with all existing global educational programs (MISTI, PSC, Study Abroad, Foreign Fellowships, Edgerton Center, IROP, etc.) and with departments and Schools that offer internship and student exchange opportunities. In addition, the Office should be charged with primary responsibility for monitoring the safety and well-being of our students abroad and for implementing measures to enhance security abroad and promote awareness of risk.

The Global Education Office would find its most natural home in the Office of the Dean for Undergraduate Education. Indeed, DUE’s Global Theme Team is presently addressing some issues of global education and will contribute to implementing a subset of GEOMIT and Task Force recommendations. However, because global education extends also to graduate students—many of whom participate already in existing global
programs—and because solicitation of alumni assistance and coordination with inter-institutional research initiatives may be involved, a Global Education Office could alternatively reside in the Chancellor’s office or the office of Associate Provost responsible for international programs.

In common with all Institute educational matters, there should be maintained in the administrative structure of global education a strong voice of the MIT faculty through the faculty-based committee structures. As described in §§3 and 5, a Faculty Advisory Committee on Global Educational Opportunities should work closely with the Global Education Office, in the way the faculty Committee on Curricula (COC) relates to the Registrar’s Office or the faculty Committee on the Undergraduate Program (CUP) to the Office of the Dean for Undergraduate Education. Proposals for new global educational initiatives and synergies can originate from individual programs, within the Global Education Office, from the Faculty Advisory Committee, or indeed from any Institute source; but, as for any Institute educational initiative, such proposals should be thoroughly discussed in the Faculty Advisory Committee before implementation.

Recommendations:

- **A new Global Education Office should be developed to coordinate and facilitate international opportunities and ensure the well-being of students participating in them.**

- **The Office should work closely with the recommended Faculty Advisory Committee.**
7. Financial Resources Needed

7.1 Total Program Costs

As detailed in §4, the costs of providing global educational opportunities abroad for our students mostly run between about $2,000 and $6,500 per opportunity (with an average somewhere between $5,000 and $6,000), depending on the type and duration and how administrative costs are accounted. A Global Education Opportunities Program comprising the 1,200 opportunities that must be provided yearly, in order that every MIT student is able to participate at least once in a four-year undergraduate career, is therefore expected to require on average of order $7M annually for (hardened) program costs alone. This figure is supported by closer accounting of the approximately 2,400 opportunities comprising the overall estimated expansion capacity of existing programs, outlined in Appendix §9, which are estimated to cost $13.8M (approximately $10M above existing non-Institute resources, such as those provided by MISTI and PSC independent fund raising). Therefore, utilizing just half this potential expansion capacity, to arrive at the target 1,200 opportunities annually, yields the $6.9M estimate of annual support cost put forward in Table 4.1, and a minimum of $4M annually if the none of the current independent funding of programs is hardened.

This figure includes most anticipated staffing and administrative costs but does not include all direct support to students (tuition, travel, stipend, where needed), nor the cost of additional financial aid. Additionally, departments and schools will require increased Institute funding in order to pursue their individual contributions to the global educational endeavor (which may necessitate offering faculty summer salary support to recognize added responsibilities, or providing additional staff). A further consideration is the cost to departments of developing a curriculum necessary to prepare students for and to allow retrospective analysis of international educational experiences. This cost includes staffing such subjects, as well as time required for their development. Including these less direct costs would likely take a fully-loaded estimate closer to $10M annually.

7.2 Cost to Students and Financial Aid

The availability of need-based financial aid for study-abroad programs for which the student receives academic credit mitigates the financial obstacles, but some students may still be concerned about costs and increased debt. The costs to student participants come from three sources: 1) The direct costs of the international experience, such as travel and subsistence costs. These costs can easily reach $2,000 for even a short (a 3-4 week IAP or summer) program and twice that for a summer program. 2) Tuition, registration or related fees for academic programs for which the student does not receive academic credit and therefore is not eligible for financial aid; and extra-tuition costs for those that do provide credit, such as the immersion language programs in Germany or Spain during IAP, but require program fees above MIT tuition paid. 3) Foregone income from employment that would have satisfied MIT’s summer savings and self-help expectations.
MIT’s current summer savings expectation are $1,500 for freshmen, $2,200 for sophomores, $2,500 for juniors and $2,800 for seniors.

Because of visa restrictions, studying abroad usually means that a student cannot be employed during the period abroad. Students employed in summer internships abroad often receive lower wages than if they had stayed in the U.S., and must also pay airfare; students participating in public service programs abroad generally receive no compensation (though they may receive a grant to defray travel and living expenses).

Removal of these financial barriers will necessitate increased funding. Some institutions provide grants to any student participating in a program abroad. Several alternative options present themselves for MIT: 1) The Institute could pay for all student travel, regardless of whether the experience is for academic credit or the student demonstrates financial need, to take up a global educational opportunity. 2) MIT could provide bursaries, stipends or other payments to students to offset the additional cost of participation. 3) MIT could waive the summer savings and/or self-help expectations. 4) The Institute could provide vehicles to offset the cost of participation through others adjustments in financial aid packages.

MIT is committed to providing financial aid only based only on need and may therefore be reluctant to supply uniform assistance to all students to offset any global education penalty.

7.3 Faculty and Staff Costs

Many of the current global programs at MIT require substantial faculty involvement. MISTI is directed by Prof. Suzanne Berger and each of the eight (soon to be ten) MISTI country programs has a faculty director. Each department participating in the Cambridge-MIT Exchange and other exchanges has a coordinator who advises interested students and arranges credit transfer. Students participating in internships abroad have internship advisors, who in some cases also read and grade the students’ internship reports. Faculty members organize and lead many public service projects abroad, or may take groups of students abroad over IAP or Spring Break. Faculty members supervise IROP students. For the most part, faculty members do not receive additional compensation (MISTI country program directors and a few internship advisors are now provided some summer salary support). As discussed in §5, increased effort required by faculty to expand global educational programs must be offset by supplemental salaries or other forms of compensation.

Salaries for new instructors involved in global programs will also have to be found. Additional instructors required for foreign language instruction have already been cited in Table A9.5. Additional instructors may also be needed for retrospective subjects and possibly some public service projects abroad. Salaries will also have to be provided for additional program administrators and staff in a Global Education Office.
Recommendations:

- Resources should be provided to allow all students to participate in the Global Education Opportunities Program without financial penalty.

- Resources should be provided by MIT to support expansion and development of new global educational opportunities, at all levels, ranging from relevant curricula offered at MIT to educational experiences abroad.
8. Timeline and Assessment

8.1 Timeline for Program Expansion and Development

Since creation of a Global Education Opportunities Program at MIT is a multi-step process, we recommend setting a series of short- and long-term goals.

8.1.1 Short term goals (2008-10). As a summary, we recommend that a formal Global Education Opportunities Program be in place and advertised to students by 2009-10. Required for this is likely to be the following (all discussed in previous section of this report): a Global Education Office, a Faculty Advisory Committee on Global Education, significantly increased global opportunities, changes in advising by major departments, changes in funding for international travel, and appropriation of necessary financial resources. Many preparatory subjects exist, but development of retrospective courses will be essential. A “Certificate of Global Education” should also be in place by this time.

An effective first step would be creation of a Global Education Office. This could be in place by 2008-9. While the new Global MIT website is valuable, it does not substitute for a physical office that students can walk into, staffed by knowledgeable people. This office would centralize information describing present MIT global opportunities, and staff would be able to discuss with a student the various global opportunities and how these might fit into an academic curriculum, and would direct a student to the relevant programmatic office for further discussion and application. Such a Global Education Office would provide greater visibility to global education at MIT and would encourage students to participate in existing programs.

Over a slightly longer timeframe, we recommend doubling of existing global learning opportunities, to 600 per year, by 2009-10. However, we also recommend starting immediately, certainly by 2008-9, to expand IAP and summer global opportunities. Increased IAP and summer opportunities could account for much of the proposed doubling of global experiences over two years. We specifically recommend an initial expansion focus on IAP for several reasons. First, since IAP is part of the academic calendar, international opportunities can be credit-bearing and fulfill a required or elective subject. Second, financial aid is included over IAP, and there is no need to alter financial aid structures or terms for an IAP opportunity expansion. Third, since IAP global learning experiences will necessarily be short, the cost of this expansion is smaller than that of increasing the number of semester or summer abroad programs. However, there will be an immediate need to consider how to fund travel and other expenses for students, instructors and faculty.

Concurrently, initial academic changes should be effected. Departments should be encouraged to consider how to incorporate global education into their curricula, preparatory and retrospective subjects should be examined, and development of new subjects should begin as necessary. Advising strategies for students should be devised to
communicate the importance of a global education, and to discuss with students how to acquire such education. A new Faculty Advisory Committee on Global Education Programs should be convened, and a Certificate in Global Education should be instituted.

A concurrent short term goal is to change some financial aid policies as regards the summer savings or self-help expectations for students working or studying abroad. Even with extensive IAP expansion, these changes will need to be put into place as soon as possible, because not all international educational opportunities will take place over IAP, and many students are currently precluded from existing international opportunities owing to financial aid concerns. In particular, summer tuition policies should be revisited.

8.1.2 Longer term goals (2011-13). By 2012-13, we recommend that the total number of global learning opportunities at MIT be increased to 1,200 per year. This expansion will require the full spectrum of opportunities described in §4, including those during the semester and summer, as well as those scheduled during IAP. Changes in financial aid structures and policies will need to be effected by then, as will other changes discussed in §4.

By 2012-13, we recommend that departments and Schools should have implemented curricular changes to incorporate global education. Appropriate new preparatory and retrospective courses should be developed by this time, although further development of subjects will need to continue. By the time that international opportunities reach 1200 per year, we recommend that preparatory and retrospective subjects, in sufficient number and with sufficient capacity, be in place to accommodate the needs of all students.

8.2 Assessment Strategies

We recommend that a robust structure to monitor students involved in the Global Education Opportunities Program be devised. Presently, it is difficult to know how many students are participating in which opportunity. We suggest that the Global Education Office could keep track of all students, undergraduate and graduate, who are participating in all global education programs. The records should include, at a minimum, the department with which a student is affiliated, the student’s year and status, and the program in which the student participated.

Reports from departments and Schools will be requested at two and five years after the Global Education Office begins to assess participation of students in the Global Education Opportunities Program. The number of students pursuing a minor in a global education area and those receiving a Certificate of Global Education will be monitored. Further, departments and Schools will be asked to report on effected or anticipated changes in curricula to accommodate global education experience. Departments and Schools will be asked to also describe changes in advising strategies that take global education into account.
Additionally, students who have participated in the Global Education Opportunities Program will be surveyed for their satisfaction with the program, and those who have not participated for the reasons they did not participate. One important component of these assessments, undertaken during the five years following introduction of the Global Education Opportunities Program, will be to understand whether the “culture” of MIT has changed with the increased emphasis on international education. For example, has this program altered the spectrum of prospective students applying to MIT? Do entering freshmen now expect to participate in the GEOP? Do faculty expect their major students and advisees to participate?

All data accumulated should be reviewed by a Faculty Advisory Committee and an assessment provided to the Dean of Undergraduate Education or the Chancellor.

Recommendations:

• A new Global Education Opportunities Program should be in place by 2009-10. Initial aspects of the program should be creation of a Global Education Office by 2008-9 and increase in the number of IAP global experiences, with overall expansion of opportunities to 600 per year by 2009/10.

• The full Global Education Opportunities Program should be in place by 2012-13, including expansion to 1200 global experience opportunities per year and provision of a sufficient number of relevant preparatory and retrospective subjects.

• Evaluation of the success of, and satisfaction with, the Global Education Opportunities Program should be carried out annually to assess the levels of both faculty and student participation and the degree of expectation that students will participate in the GEOP.
Appendix 1

Charge to the GEOMIT Committee

The Global Opportunities Committee is charged with defining specifically how opportunities for global experiences can be provided in the MIT undergraduate education. The Task Force on the Undergraduate Educational Commons has recommended that the majority of MIT undergraduates have the opportunity for a global experience and has identified some high level objectives for such experiences. Based on these objectives, the Committee will identify principles for how we expect students’ knowledge, skills, and attitudes to be enhanced by global experiences, suggest new programs or the strengthening of existing programs, and lay out metrics by which MIT can judge progress towards the goals. The Committee should identify synergies between existing programs. The committee should build on the Task Force report and on existing efforts, including efforts in the departments and across the Institute. The Committee should consider how to use the considerable number of foreign graduate students and faculty at MIT as part of the charge. Finally the committee must consider long-term sustainability of any suggested programs. The Committee should report back to the Dean for Undergraduate Education.
Appendix 2

Committee on Global Education Opportunities (GEOMIT) Membership

Linn W. Hobbs, co-chair
Professor of Materials Science, Professor of Nuclear Engineering Materials Sci. & Eng., Nuclear Sci. & Eng., School of Engineering Chair, Committee on Foreign Scholarships
Former chair, CUP, CoC, IAP Policy
Room 13-4054, 617 253 6835, fax 617 252 1020, hobbs@mit.edu

Hazel L. Sive, co-chair
Professor of Biology
Department of Biology, School of Science
Associate Dean of Science
MIT-South Africa Program
Former chair, Committee on Student Life
Room W1-401C, 617 258 8242, sive@wi.mit.edu

Jennifer A. Cook, secretary to the Committee
Study Abroad and Distinguished Fellowships Office
Room 26-153, 617 253 0676, jacook@mit.edu

Suzanne Berger
Professor of Political Science
Political Science, School of HASS
Director, MISTI (Center for International Studies)
Room E53-451, 617 253 6640, szberger@mit.edu

John S. Carroll
Morris A. Adelman Professor of Management
Sloan School of Management
Room E52-536, 617 253 2617, jcarroll@mit.edu
Diane E. Davis  
Professor of Political Sociology  
Department of Urban Studies & Planning  
Associate Dean, School of Architecture and Planning  
MIT Program on Human Rights & Justice  
Rooms 7-331/9-637, 617 253 7335, 617 452 2804, fax 617 253 9417, dedavis@mit.edu

Margaret S. Enders  
Senior Associate Dean, Undergraduate Education  
Director, Office of Special Projects, DUE  
Room 10-183, 617 253 3561, fax 617 452 2101, peggy@mit.edu

Dennis M. Freeman  
Professor of Electrical Engineering & Computer Science, School of Engineering  
Chair, Committee on the Undergraduate Program  
Room 36-889, 617 253 8795, fax 617 258 5846, freeman@mit.edu

Patricia E. Gercik  
Associate Director, MISTI  
Managing Director, MIT-Japan Program, Center for International Studies  
Room E38-756, 617 253 3142, gercik@mit.edu

Malgorzata Hedderick  
Asst. Dean for Study Abroad, DUE  
Office of Study Abroad and Distinguished Fellowships  
Room 26-167, 617 253 9358, fax 617 452 2101, malrh@mit.edu

Joshua S. Jacobs  
Director of Education, MIT-Portugal Program  
Former Manager for Education, Cambridge-MIT Institute  
Room 8-403, 617 253 2959, fax 617 258 839, jsjacobs@mit.edu
Elizabeth A. Reed
Senior Associate Dean, Strategic Communications, DUE
Former Director, Careers Office
Room 12-170, 617 253 4733, sido@mit.edu

Margery Resnick
Associate Professor of Hispanic Studies
Foreign Languages & Literatures Section, School of HASS
Director, MIT-Madrid Program
Room 14N-333, 617 253 5277, resnick@mit.edu

Sally Susnowitz
Assistant Dean and Director, Public Service Center
Student Life Programs
Room 4-104, 617 258 7344, susnowit@mit.edu

J. Kim Vandiver
Professor of Mechanical Engineering, School of Engineering
Dean for Undergraduate Research (DUE)
Director, Edgerton Center (EECS)
Room 7-131, 617 253 4366, kimv@mit.edu

Bernd Widdig
Associate Director, MISTI
Director, MIT-Germany Program, MISTI, Center for International Studies
Room E38-762, 617 253 3925, bwiddig@mit.edu
[now Director of International Programs, Boston College]
Appendix 3

GEOMIT Committee Activities and Acknowledgements

An advisory committee to study and subsequently recommend what approaches MIT should take to providing opportunities for experiences abroad to MIT undergraduate students was convened by Dean of Undergraduate Education Daniel Hastings in May 2006, under the co-chairmanship of Hazel Sive, Professor of Biology and Member of the Whitehead Institute, and Linn Hobbs, Professor of Materials Science & Engineering and of Nuclear Science & Engineering and chair of the Presidential Committee on Foreign Scholarships. The charge to the Committee is reproduced in Appendix 1. The thirteen other members of the Committee, whose names are listed in Appendix 2, represented all the major international experience programs currently on offer at MIT— including study abroad, internships, public service projects, language and culture instruction, and research projects. The name “Global Educational Opportunities for MIT students” and acronym (GEOMIT) were chosen and interpreted as inclusive of all of the many forms that international educational experiences take. Although the primary concern was focused on opportunities for undergraduate students, the Committee quickly found that many programs did not differentiate between undergraduate and graduate students.

The Committee met weekly from the beginning of June through December 2006, with additional meetings in January, August and September 2007. The Committee first focused on assembling a comprehensive list of all global experiences offered through MIT (and some other purveyors used by MIT students). This effort was later coordinated with that of MIT webmaster Suzana Lisanti, who had been commissioned by Chancellor Philip Clay to construct a website for MIT’s international involvement. The Committee spent two meetings, supplemented by individual meetings between Ms. Lisanti and Profs. Hobbs and Sive, advising on the best format for the website and the organization of the data. The web site answers one of the strong recommendations of the Committee that information about global experiences be widely disseminated and readily available to MIT students.

The Committee met additionally with other members of the administration, faculty and staff and students. These include: Associate Provost Philip Khoury, Prof. Charles Stewart (a principal author of the Report of the Task Force on the Undergraduate Education Commons), Ms. Elizabeth Hicks (executive director of Student Financial Services), Dean Marilee Jones (former director of admissions), Shonool Malik (acting director of the Careers Office), April Julich-Perez (coordinator of the MISTI MIT-France program), Susan Curran and David Conlon (MIT’s homepage team) and a group of seven undergraduate and graduate students (Liz Gillenwater, Sharlina Hussain, Nicole Koulisis, Nicki Lehrer, Alice MacDonald, Nicholas Pearce, Sarah Stewart Johnson and Sherry Xie), most of whom had enjoyed various international experiences and some none. Profs. Sive and Hobbs reported on interim findings to Chancellor Clay and to the Committee on the Undergraduate Program (CUP) on 25 October 2006. They subsequently communicated with Dean Hastings periodically and made oral reports to a meeting of the
administrative heads of his office on 13 February 2007 and to the MIT faculty on 21 February 2007. Prof. Hobbs also met with Prof. Nigel Wilson, chair of the faculty Committee on Undergraduate Admissions and Financial Aid (CUAFA). In addition, Prof. Hobbs and Dean Malgorzata Hedderick, head of the Study Abroad Office, continued their series of visits to MIT departments begun independently in Spring term 2006.

Successive drafts of the Committee’s report were circulated to Committee members between February and July 2007. The Committee met again on 6 August 2007 to provide comments on a final draft version of what had become by that time an extensive report document, and again at the beginning of September 2007 to endorse the final version.

The Committee are most grateful to Jennifer Cook for her capable arrangement of committee meetings and careful recording of meeting minutes, and to all those who shared their expertise and enthusiasm for MIT’s global educational endeavor.
Appendix 4

MISTI Programs

In 2006-2007, MISTI placed a total of 272 students into internship positions, workshops and entry level programs, research positions, and study abroad opportunities.

A4.1 Internships

MISTI internships last from three months to a year, during which time the intern is integrated into a workgroup of the host institution or company. Internships are tailored to the background and course of study of the student. As a consequence, students emerge from those international experiences with a professional network in their field. In some cases, internships involve working with academics in indigenous educational institutions to implement iLab software or transfer MIT OpenCourseWare (OCW) material into locally taught courses. MISTI arranges for students’ stipends, lodging and travel. The important feature of the assignments is that MIT students are learning by doing, in a foreign environment with foreign peers, and in most cases in a foreign language. MISTI students are also carefully prepared for their stay abroad. They fulfill various foreign language requirements, participate in weekend retreats, and enroll in subjects that introduce them to the culture and history of their host countries. Some 149 undergraduate and 69 graduate students participated in MISTI internships in 2006-07.

Table A4.1. MISTI Internship, Research Abroad, and Study Abroad Participants

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan</th>
<th>China</th>
<th>Germany</th>
<th>India</th>
<th>Italy</th>
<th>France</th>
<th>Mexico</th>
<th>Spain</th>
<th>MISTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983-94</td>
<td>318</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>318</td>
</tr>
<tr>
<td>1995</td>
<td>36</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
</tr>
<tr>
<td>1996</td>
<td>42</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64</td>
</tr>
<tr>
<td>1997</td>
<td>37</td>
<td>28</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>87</td>
</tr>
<tr>
<td>1998</td>
<td>25</td>
<td>48</td>
<td>37</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>116</td>
</tr>
<tr>
<td>1999</td>
<td>32</td>
<td>35</td>
<td>33</td>
<td>15</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>120</td>
</tr>
<tr>
<td>2000</td>
<td>28</td>
<td>48</td>
<td>38</td>
<td>17</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>136</td>
</tr>
<tr>
<td>2001</td>
<td>17</td>
<td>57</td>
<td>36</td>
<td>14</td>
<td>8</td>
<td>28</td>
<td></td>
<td></td>
<td>160</td>
</tr>
<tr>
<td>2002</td>
<td>28</td>
<td>44</td>
<td>36</td>
<td>0*</td>
<td>8</td>
<td>31</td>
<td></td>
<td></td>
<td>147</td>
</tr>
<tr>
<td>2003</td>
<td>35</td>
<td>15**</td>
<td>40</td>
<td>6</td>
<td>13</td>
<td>49</td>
<td></td>
<td></td>
<td>158</td>
</tr>
<tr>
<td>2004</td>
<td>33</td>
<td>35</td>
<td>25</td>
<td>16</td>
<td>9</td>
<td>52</td>
<td>1</td>
<td></td>
<td>171</td>
</tr>
<tr>
<td>2005</td>
<td>32</td>
<td>42</td>
<td>45</td>
<td>26</td>
<td>9</td>
<td>33</td>
<td>9</td>
<td></td>
<td>195</td>
</tr>
<tr>
<td>2006</td>
<td>35</td>
<td>33</td>
<td>50</td>
<td>26</td>
<td>9</td>
<td>51</td>
<td>11</td>
<td>3</td>
<td>218</td>
</tr>
<tr>
<td>2006 UG/G</td>
<td>29/6</td>
<td>26/7</td>
<td>38/12</td>
<td>13/13</td>
<td>7/2</td>
<td>26/25</td>
<td>8/3</td>
<td>2/1</td>
<td>149/69</td>
</tr>
<tr>
<td>2007</td>
<td>32</td>
<td>40</td>
<td>64</td>
<td>26</td>
<td>25</td>
<td>40</td>
<td>20</td>
<td>25</td>
<td>272</td>
</tr>
<tr>
<td>TOTAL</td>
<td>730</td>
<td>449</td>
<td>426</td>
<td>154</td>
<td>91</td>
<td>282</td>
<td>41</td>
<td>28</td>
<td>2201</td>
</tr>
</tbody>
</table>

* India 2002: No students sent due to travel restrictions.
** China 2003: Travel restrictions due to SARS.
A4.2 Workshops and Entry-Level Programs

During the two years 2005-07, MISTI sent students to Italy, France, Germany and Japan to participate in intensive workshops on topics such as “Nanotechnology in the Chemical Industry,” “Technology for the Silver Generation,” or “Global Challenges to Transportation and Energy.” Each workshop comprised 10-20 MIT participants working with the same number of young professionals in sponsor companies. Again, the focus of the learning experience was active participation with other professionals in a technical discipline to which the students bring their own training and expertise. A total of 65 students participated in 2005-06 entry-level workshop programs and 43 in 2006-7.

Table A4.2. Participants in Workshops and Entry Level Programs 2005-2007

<table>
<thead>
<tr>
<th>Country</th>
<th>2005-6</th>
<th>2006-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>45</td>
<td>20</td>
</tr>
<tr>
<td>France</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Italy</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>65</td>
<td>43</td>
</tr>
</tbody>
</table>

A4.3 Research Placements

The MIT-Italy, MIT-France and MIT-Mexico programs have provided support for cross-border research collaborations between MIT and premier research institutions in host countries. These collaborations involve undergraduate students and graduate students who stay in host countries up to a year as research assistants.

Table A4.3. Research Assistant Positions with Faculty in International Research Collaborations 2005-2006

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>9</td>
</tr>
<tr>
<td>Italy</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11</td>
</tr>
</tbody>
</table>

A4.4 Study abroad arrangements

MISTI, mainly though its MIT-France office, has annually sent up to 16 students to study-abroad programs since 2001, some of them post-graduate degree programs. These are listed under Study Abroad Opportunities in Appendix §6.5.1. Several other MISTI
country programs have had internship students stay for, or return to take up, post-graduate degree programs in the country of their internship.

A4.5 Forums

MISTI created the Africa Forum and the Singapore Forum to provide students with possibilities for experiences outside the eight MISTI country programs.

A4.6 Meetings, Seminars, Talks and Cultural Events

MISTI sponsors annually more than 45 seminars, talks, cinema screenings and cultural events on campus. These draw hundreds of MIT students. In addition to student workshops held abroad during IAP, MISTI country programs sponsor annual workshops, conferences and symposia on pertinent topics, both at MIT and abroad, such as the MIT-Germany January 2007 workshop “Think Logistics! Solving German Rail (DB) Transportation Issues,” held at MIT and the January 2006 MIT-Japan Symposium on “Globalization and the National Economy,” held in Tokyo.
Appendix 5

Departmental Internships, Undergraduate Research and Field-Work Abroad

A5.1 Departmental Internships

In addition to MISTI internships, several departments (particularly in the Schools of Engineering and Architecture & Planning) maintain industrial internship programs, as part of Co-op or alternative degree requirements that include placements abroad. Additionally, the Department of Political Science administers a Washington, DC internship program. A larger number of departmental opportunities appears to exist for summer internship programs than for study-abroad or exchange programs at the departmental level, both at undergraduate and graduate levels. A few departments (for example, Materials Science & Engineering (Course 3) have regularly included foreign internships in their opportunities portfolios and have developed longstanding working relationships with prominent companies and research institutions abroad. Table A5.1 lists—as an example—summer internships arranged abroad for Course 3 students over the past decade, which represent about 14% of internships arranged. Such internships may satisfy a degree requirement (such as an alternative to a senior thesis) or simply comprise summer employment. In Course 3, the industrial internships are credit-bearing, and internship reports provide an alternative way to satisfy the bachelor’s thesis.

The Department of Electrical Engineering and Computer Science (Course 6) has mounted the newest, most aggressive departmental international campaign to date, appointing a high-level faculty committee under the chairmanship of Prof. Victor Zue to study international options and recommend a degree program—presently called the 6-A International Program—incorporating a major international experience. The Course 6-A program currently provides internship opportunities in Paris (Schlumberger) and Limerick, Ireland (Analog Devices) on which to base the 6-A MEng thesis. China has been chosen as the country of interest for future expansion of the program, building on the considerable experience of the MIT-China program in its CETI projects. An India internship program could eventually emerge as well.

A5.2 G-Lab

The Global Entrepreneurship Laboratory (G-Lab) is a more formalized graduate-level international internship program for MBA students in the Sloan School of Management, tied to a departmental curricular subject offerings (15.389 Global Entrepreneurship Lab). Launched 5 years ago by Profs. Richard Locke (also director of the MIT-Italy program) and Simon Johnson, the Laboratory has placed over 200 interns in intern teams with more than 100 host companies in 20 countries (including Australia, Argentina, Brazil, Chile, China, France, India, Japan, Kenya, Mexico, New Zealand, Russia, Singapore, South Africa, UAE, Uruguay and Vietnam). Students work during three week of IAP in the following or related business sectors: technology start-ups, consumer goods, professional
services, manufacturing firms, global social entrepreneurship enterprises, emerging market investment funds, and family firms in generational transition.

Table A5.1. *One example of Departmental Internships Abroad*  
(Course 3, Materials Science & Engineering, 1997-2006)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Company/Institution</th>
<th>City</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td></td>
<td>Samsung</td>
<td>Seoul</td>
<td>Korea</td>
</tr>
<tr>
<td></td>
<td>TDK Corporation</td>
<td>Tokyo</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Thompson</td>
<td>Paris</td>
<td>France</td>
</tr>
<tr>
<td>1998</td>
<td>Intel</td>
<td>Shanghai</td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>Johnson Electric</td>
<td>Hong Kong</td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td>1999</td>
<td>Daimler-Chrysler</td>
<td>Ulm</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Ecole Polytechnique Fédérale de Lausanne</td>
<td>Lausanne</td>
<td>Switzerland</td>
</tr>
<tr>
<td></td>
<td>Ford Motor Company</td>
<td>Taipei</td>
<td>Taiwan</td>
</tr>
<tr>
<td></td>
<td>Johnson Electric</td>
<td>Hong Kong</td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>Nanyang Technological University</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td>2000</td>
<td>Infineon Technology</td>
<td>München</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Nanyang Technological University</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td>2001</td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td>2002</td>
<td>BASF</td>
<td>Ludwigshafen</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Ecoles des Mines</td>
<td>Paris</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Hong Kong Univ. of Science and Technology</td>
<td>Hong Kong</td>
<td>China</td>
</tr>
<tr>
<td></td>
<td>Menicon Co. Ltd.</td>
<td>Nagoya</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td>2003</td>
<td>Air Liquide</td>
<td>Champigny</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>CEA-Saclay</td>
<td>Saclay</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Royal Institute of Technology (KTH)</td>
<td>Stockholm</td>
<td>Sweden</td>
</tr>
<tr>
<td></td>
<td>Toyota Motor Corporation</td>
<td>Shizuoka</td>
<td>Japan</td>
</tr>
<tr>
<td>2004</td>
<td>Inst. of Bioengineering and Nanotechnology Hitachi</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Chemical Company</td>
<td>Tsukuba</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Merck KGAA</td>
<td>Darmstadt</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Toyota Motor Corporation</td>
<td>Shizuoka</td>
<td>Japan</td>
</tr>
<tr>
<td>2005</td>
<td>AVL (Inst. for Internal Combustion Engines)</td>
<td>Graz</td>
<td>Austria</td>
</tr>
<tr>
<td></td>
<td>Daimler-Chrysler</td>
<td>Bangalore</td>
<td>India</td>
</tr>
<tr>
<td></td>
<td>Inst. of Bioengineering and Nanotechnology</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Inst. For Materials Science and Engineering</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Ranbaxy Pharmaceuticals</td>
<td>Gurgaon (Haryana)</td>
<td>India</td>
</tr>
<tr>
<td></td>
<td>Tokyo Motor Corporation</td>
<td>Shizuoka</td>
<td>Japan</td>
</tr>
<tr>
<td>2006</td>
<td>Sumitomo EM, Ltd.</td>
<td>Sagamihara</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Bayer Technology</td>
<td>Köln</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Institut Curie</td>
<td>Paris</td>
<td>France</td>
</tr>
<tr>
<td></td>
<td>Inst. of Bioengineering and Nanotechnology</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Ecole Polytechnique Fédérale de Lausanne</td>
<td>Lausanne</td>
<td>Switzerland</td>
</tr>
</tbody>
</table>

*about 14% of total internships arranged during the period.*
A5.3 International Research Opportunities Program (IROP)

IROP is an extension of the present UROP program established to accommodate and promote departmentally-based undergraduate research projects done abroad. The focus of IROP is on internationally collaborative research supervised by MIT faculty members that enables undergraduates to tap into faculty research partnerships worldwide and conduct research in a laboratory outside the U.S. Currently, of order 10–20 students annually secure “UROPs” involving international research projects carried out abroad (Table A5.2). So far, 76 students have performed research in 34 countries.

Table A5.2 IROP Participation 2004-7

<table>
<thead>
<tr>
<th>Year Category\Category</th>
<th>Students</th>
<th>Wages from UROP</th>
<th>Wages from Faculty</th>
<th>Travel/ M&amp;S from UROP</th>
<th>Students earning credit</th>
<th>Students as volunteer</th>
<th>Total MIT Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sum 2004</td>
<td>26</td>
<td>$39,105</td>
<td>$51,380</td>
<td>$3,350</td>
<td>0</td>
<td>0</td>
<td>26</td>
</tr>
<tr>
<td>AY 2004-5</td>
<td></td>
<td>$5,350</td>
<td>$1,800</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Sum 2005</td>
<td>14</td>
<td>$30,450</td>
<td>$11,000</td>
<td>$3,800</td>
<td>0</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>AY 2005-6</td>
<td></td>
<td>$2,300</td>
<td>$4,970</td>
<td>$0</td>
<td>1</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Sum 2006</td>
<td>6</td>
<td>$31,450</td>
<td>$12,700</td>
<td>$1,375</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>AY 2006-7</td>
<td></td>
<td>$1,850</td>
<td>$7,650</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Sum 2007</td>
<td>3</td>
<td>$32,298</td>
<td>$7,650</td>
<td>$5,000</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

IROP began as a formal extension of UROP only in 2006, but beginning with summer 2004, risk management procedures that were implemented resulted in a separate tracking of students who went overseas for UROP projects. As with other UROP projects, a large proportion of which are pursued for pay, the original expectation was that substantial funding for the undergraduate component of the research would be forthcoming from faculty research funds; but, in common with domestic UROPs, a steadily diminishing faculty contribution over the last several years has left UROP unable provide wage and materials support for many worthy IROP (and domestic UROP) projects. The respective
contributions from faculty (or their departments) and the UROP office for the 12 IROP projects in the period 2004-7 are noted in Table A5.2. Because IROP research abroad is largely carried out during the summer, when most students would otherwise seek employment to contribute to their education costs, IROP students are much more in need of wage support than are UROP students during the academic year. Departments and faculty supplied only 32% of the cost of the 12 IROPS in 2006-7. A few students appear willing to accept only credit for IROP experiences, and an occasional student simply volunteers.

A5.3 Subject-Derived Field-Work and Project Work Abroad

A few MIT undergraduate subjects and curricula involve a period of field-work, problem solving, or project work abroad. This can be the case for Course 12 (geology field camps, etc.) and archaeology (for example, the Course 3C Materials & Archaeology course option), and for subjects such as the freshman-oriented EAPS subject 12.000 Terrascope (and its affiliated Civil & Environmental Engineering Earth Systems Initiative subject 1.016 Solving Complex Problems), which has included field trips to Brazil, Chile and Iceland. It could also prove an effective model in some other departments with geographical leanings (besides Foreign Languages & Literatures, whose curricular initiatives abroad are discussed in Appendix 8). DUSP (Course 11), for example, offers a hands-on studio experience in Mexico City for undergraduates. Economics and Political Science (which, as mentioned, already mounts domestic internships in Washington, DC) also come to mind. These arrangements are doubly useful, because they provide not only an experience abroad but also integrate that experience into the student’s MIT education and satisfy curricular requirements at the same time.

Field-work and research abroad opportunities exist, of course, for graduate students but are less likely to be tied to taught subjects.
Appendix 6

Study Abroad Programs

Less than 7% of MIT undergraduates currently participate in study programs abroad in any one year. The statistics compiled for the most recent year completed (2005-6, 71 students) are provided in Table A6.1. In 2006-7 the number will be about 110 students. These programs, and the students who participate in them, are now ministered to by MIT’s Office of Study Abroad, directed by Dean Malgorzata Hedderick. The largest of these is currently the Cambridge-MIT Exchange (CME), followed by independent arrangements made by the students themselves. A dedicated Institute unilateral arrangement is the MIT-Madrid program. Other opportunities are facilitated by departmental exchanges and unilateral arrangements and through MISTI’s MIT-France.

Table A6.1 Undergraduate Study Abroad Statistics 2005-2006 *

<table>
<thead>
<tr>
<th>Statistics by Program</th>
<th>Statistics by Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambridge-MIT Exchange (CME) Program: 35</td>
<td>Australia: 1</td>
</tr>
<tr>
<td>MIT-Madrid Program: 5</td>
<td>Canada: 1</td>
</tr>
<tr>
<td>Killam Fellowship Program: 1</td>
<td>China: 2</td>
</tr>
<tr>
<td>Architecture: 1</td>
<td>Cyprus: 1</td>
</tr>
<tr>
<td>Aeronautics and Astronautics: 1</td>
<td>France: 4</td>
</tr>
<tr>
<td>MISTI-France: 3</td>
<td>Germany: 1</td>
</tr>
<tr>
<td>Independent Arrangements (including summer 2006): 25</td>
<td>Israel: 1</td>
</tr>
<tr>
<td></td>
<td>Netherlands: 1</td>
</tr>
<tr>
<td></td>
<td>South Africa: 1</td>
</tr>
<tr>
<td></td>
<td>Spain: 9</td>
</tr>
<tr>
<td></td>
<td>Switzerland: 1</td>
</tr>
<tr>
<td></td>
<td>Turkey: 1</td>
</tr>
<tr>
<td></td>
<td>Turks &amp; Caicos: 1</td>
</tr>
<tr>
<td></td>
<td>UK: 41</td>
</tr>
<tr>
<td></td>
<td>Multiple countries: 5</td>
</tr>
</tbody>
</table>

71 students 14 countries

*Annual reporting of small programs suffers from the statistics of small numbers. For example, in 2006-7 Materials Science & Engineering sent only one student on its Oxford program, in 2007-8 three students.

A6.1 Cambridge-MIT Exchange (CME)

The CME program is an undergraduate exchange between MIT and the University of Cambridge. Now beginning its eighth full year of operation, the CME Program provides an exciting opportunity for MIT students to spend their junior year at the University of Cambridge. Through 2006, 196 MIT students and 14 MIT departments had participated in the Exchange. MIT students matriculate fully at Cambridge for the year and have an opportunity to experience to the fullest the Cambridge way of learning and living. Among the most enduring values of the program to students is the opportunity to become a very independent learner. Unlike at MIT, at Cambridge students are not evaluated until the end of the year when they take final exams. This means that throughout the year students need to pace themselves and study independently to be ready for the final (and only)
assessment. MIT students participating in the exchange report that this process prepares them for graduate school and for life like nothing else they had experienced before.

Two features make CME unique: MIT students matriculate as *bona fide* Cambridge students accepted for admission by a Cambridge college; and the program is for a whole academic year, MIT students taking exactly the same prescribed Tripos syllabus as their Cambridge peers and sitting the same Tripos exams at the end of the year. The arrangement works because both MIT and Cambridge are four-year programs, with roughly comparable instructional levels the third year, because each Cambridge year is self-contained, and because hard work by the faculty who administer the exchange in their MIT departments has established the relevant curricular equivalencies, so that MIT students can receive the appropriate department and Institute credit for the MIT subjects they need to satisfy degree requirements. Instruction in English lowers many barriers that otherwise preclude many MIT students from other experiences abroad, though the significant differences in cultural assumptions still stretch our students sufficiently to increase their cultural appreciation. Funding for CME no longer comes from CMI and, in the long term, will require significant institutional investment by both universities if it is to survive. The current institutional subsidy cost attributable to administration and “pastoral care” of our students while at Cambridge is reckoned to amount to about $5,500 per student. The 2006-7 program cost to MIT, divided by the 35 MIT students participating, yields a per-MIT student cost of $4,851. Sufficient institutional support has been found to enable 25 MIT students to participate in CME in the 2007-8 academic year.

Data for the six-year experience of CME are presented in Table A6.2.

<table>
<thead>
<tr>
<th>MIT Department (Course)</th>
<th>MIT Students</th>
<th>CU Students</th>
<th>Cambridge Department/Sub-Department</th>
<th>CU Students</th>
<th>MIT Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil &amp; Env. Eng. (1)</td>
<td>7</td>
<td>12</td>
<td>Natural Sciences*</td>
<td>–</td>
<td>15</td>
</tr>
<tr>
<td>Mechanical Eng. (2)</td>
<td>28</td>
<td>25</td>
<td>Chemical Engineering</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Materials Science (3)</td>
<td>12</td>
<td>8</td>
<td>Chemistry</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry (5)</td>
<td>6</td>
<td>10</td>
<td>Economics</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>EECS (6)</td>
<td>42</td>
<td>56</td>
<td>Engineering: Aero/Astro</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Biology (7)</td>
<td>14</td>
<td>16</td>
<td>Engineering: Civil/Structural</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Physics (8)</td>
<td>17</td>
<td>22</td>
<td>Engineering: Electrical</td>
<td>30</td>
<td>26</td>
</tr>
<tr>
<td>Chemical Eng. (10)</td>
<td>21</td>
<td>19</td>
<td>Engineering: Mechanics</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>EAPS (12)</td>
<td>–</td>
<td>–</td>
<td>Engineering: Manufacturing</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Economics (14)</td>
<td>13</td>
<td>15</td>
<td>Materials Science</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Aero/Astro Eng. (16)</td>
<td>20</td>
<td>16</td>
<td>Mathematics</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Mathematics (18)</td>
<td>11</td>
<td>15</td>
<td>Medicine</td>
<td>6</td>
<td>–</td>
</tr>
<tr>
<td>History (21H)</td>
<td>1</td>
<td>–</td>
<td>Physics</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Engineering: General</td>
<td>36</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Earth Sciences</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>History</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Veterinary Medicine</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>MIT Totals</td>
<td>196</td>
<td>214</td>
<td>Cambridge Totals</td>
<td>171</td>
<td>143</td>
</tr>
</tbody>
</table>

*Natural Sciences at Cambridge University includes the following departments: Biology, Biochemistry, Brain & Cognitive Sciences, Experimental Psychology and Neuroscience. Cambridge department/sub-department numbers are for 2002-2006 only.
A6.2 MIT-Managed Department Exchanges

More specific departmental exchanges have existed for some time, in particular in three MIT departments.

A6.3.1 Architecture. The Architecture Department (Course 4) has an exchange program with Delft University of Technology (TUD) in the Netherlands. Typically 2 MIT undergraduate students spend the fall semester at TUD studying architectural design. Students enroll in the equivalent of a level two studio at TUD during the first term of their senior year.

A6.3.2 Aeronautics and Astronautics. The Department of Aeronautics and Astronautics (Course 16) has an exchange program with six European universities: Ecole Nationale Supérieure de l’Aéronautique et de l’Espace (ENSAE), Imperial College of Science and Technology, Escuela Tecnica Superior de Ingenieros Aeronauticos (ETSIA), Swiss Federal Institute of Technology (ETH), Royal Technical Institute of Sweden (KTH), and University of Stuttgart. Currently one MIT student per year studies at one of these universities through the exchange.

A6.3.3 Materials Science and Engineering. Since 1996, the Department of Materials Science & Engineering (Course 3) has sponsored an undergraduate exchange with their counterpart Materials department in Oxford in which 1-3 students from each institution exchange each year. The Oxford students spend 7 months (two Oxford terms) of their fourth year (a research year) at MIT, pursuing a research project supervised by an MIT faculty member, leading to their honours BA/MEng degree from Oxford. MIT students in turn attend Oxford as affiliated students, with a college place, for their Spring semester junior year (Oxford Hilary and Trinity terms) or Fall semester senior year (Oxford Michaelmas term) following that portion of the Oxford third-year curriculum. Calculation of subject equivalencies and MIT credit is analogous to (and in fact served as a model for) that exercise in the Cambridge-MIT exchange, since the Oxford and Cambridge curricula are similar. One MIT student and one Oxford student participated in 2006-7; two MIT students will spend Fall 2007 at Oxford and one or two MIT students in Spring 2008.

A6.3 Killam Exchange Program (Canada)

The Killam Exchange Program is an initiative sponsored by the Foundation for Educational Exchange for exchange of undergraduate and graduate students between Canada and the U.S. The Program affords successful MIT applicants an opportunity to spend either one semester or a full academic year as an exchange student at a Canadian university. The students may choose from among eleven Canadian institutions, including McGill, McMaster, Queen’s and the University of Toronto. The program supports either one student for the full academic year or two students, one each for a single semester. An MIT student attended McMaster in 2005-6.
A6.4 MIT-Madrid Program

The MIT-Madrid Program gives MIT students the opportunity to study in Madrid in Spanish for the spring semester in a unilateral program largely negotiated by Prof. Margery Resnick of the Foreign Languages and Literatures (FL&L) section of the Department of Humanities. Depending upon major and interests, students can choose courses of study at the leading Spanish universities: Universidad Politecnica de Madrid (for engineering courses) and/or the Universidade Complutense de Madrid (for science, humanities and social sciences courses). Studying with Spanish students and living with local families through home-stay arrangements, students are able not only to study in their chosen fields but also further hone their language skills and gain unique insights into Spanish educational system and Spanish culture. The program started in Spring 2006, with an initial participant group of five students. Nine MIT students studied in Madrid in Spring 2007.

A6.5 Direct Enrollment Options

MIT students may apply directly, independent of any standing MIT programs, for entry to universities abroad as visiting or affiliated students for non-degree programs lasting a semester or a year.

A6.5.1 Study Abroad through MISTI. MISTI’s MIT-France Program assists students in identifying and applying to academic programs in France, principally at France’s premier academic institutions, the grands-écoles; Ecole Polytechnique, Paris (EP, the most popular choice), as well as Ecole Normale Supérieure–Paris (ENSP), Ecole National des Ponts et Chaussées, Paris (ENPC); Ecole Normale Supérieure–Cachan (ENS-Cachan); Ecole Normale Supérieure de l’Aéronautique et de l’Espace, Toulouse (ENSAE); Institute de’Etudes Politiques, Paris (Sciences Po), Ecole des Mines, Paris (EMP); ParisTech European Science University (ParisTech, summer); and Collège des Ingénieurs, Paris (CDI). Most undergraduates choose to do a semester in France, a few a summer or the whole year. Some students choose to do a supplementary fifth undergraduate year in France, following MIT graduation, that leads to a certificate or to some form of Master’s-level qualification (e.g. MBA-equivalent). Table A6.3 indicates recent enrollment statistics in these programs.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EP</td>
<td>UG</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ENSAE</td>
<td>UG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENS-Cachan</td>
<td>UG</td>
<td></td>
<td></td>
<td>1 (sum)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ParisTech</td>
<td>UG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 (sum)</td>
<td></td>
</tr>
<tr>
<td>Sciences Po</td>
<td>MBA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDI</td>
<td>G</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENPC</td>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMP</td>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>4</td>
<td>6</td>
<td>16</td>
<td>15</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
A6.5.2 Other Options. MIT students also choose to enroll directly at other universities in the world. Typically 2-3 students choose this option each year. Recent destinations include the London School of Economics (their year-long General Course program), Hebrew University of Jerusalem, the Technion, University of Otago (New Zealand), and University of Edinburgh. MIT students registering for approved programs are given “approved foreign study” status and do not pay MIT tuition. Tuition costs vary with country and university and can range from trivial to $12,000 a semester or $20,000 for the full year.

A6.5.3 Extra-mural Study Abroad Programs. MIT students also select from a wide variety of programs offered through other U.S. universities, or through commercial study-abroad providers, either during academic semesters or the summer. Students are encouraged to start exploration of these programs by visiting the Study Abroad Office to receive in-depth advice in locating programs with the most appropriate fit, since not all providers offer programs of sufficient academic integrity to satisfy MIT credit transfer standards. About 25 students a year currently avail themselves of these extra-mural arrangements (including summer). Students in approved programs are given “approved foreign study” status by MIT and do not pay MIT tuition. Program costs are, again, variable, but can reach $17,000 a semester and $25,000 for the year, plus room and board, depending on provider and university. Popular recent examples have included programs in the UK, Australia, and New Zealand through the Institute for Study Abroad, Butler University; a multi-country program through the International Honors Program; the Semester at Sea Program; programs in Spain through Academic Programs International; and programs in Africa through School for International Training.

A6.6 IAP Programs

In 2006-7, MIT offered for the first time foundational language credit for the IAP-Germany (21F.400 Beginning German) and IAP-Madrid (21F.732 Spanish II) introductory IAP programs abroad. These programs are MIT intensive language subjects and are taught by MIT faculty with appointments in FL&L. The IAP-Madrid course is a Spanish II course, while the IAP-Germany course is a German I course. Both programs offer brief internship or research opportunities in addition to language instruction. Twenty students participated in each subject. These programs are attractive options for students who want to start or to continue learning a foreign language but find it difficult to add the language subjects to their packed study plans. The IAP-Madrid program is coordinated through the Study Abroad Office, while the IAP-Germany program is managed through MISTI.

FL&L also offer a January Scholars in France program, a cultural immersion program that brings MIT students to Paris for two weeks during IAP. They are accompanied by a faculty member who acts as a director and tutor during the visit to Paris. Expenses of the trip are paid through a fund established for that purpose. The program gives MIT
undergraduates tutored immersion in Paris, focusing on French arts, letters, theatre and history. When students return they work intensively for two weeks on a French and English web site to describe their experiences. Thirty-five students have participated in this program over the five years it has operated.

**A6.7 Competitive Foreign Fellowships**

Post-graduate competitive fellowships provide, for a few of our most able students, an opportunity to spend 1-3 years of study or research abroad following graduation. Unlike graduate school funding, these distinguished fellowships carry additional distinction, since only a fraction of students are accepted amongst a high achieving group of applicants. The recognition, experience abroad, and later opportunities conferred by these fellowships are life transforming. The major opportunities are listed in Table A6.4, together with the statistics for MIT applicants. While the numbers of MIT graduates participating will necessarily remain small, it is useful to remember that these are among our very best students and most likely to come to public notice both as accomplished MIT graduates and as recipients of the most competitive post-graduate awards in the U.S. MIT applicants have performed consistently well over the years, when they apply. The largest difficulty has been in convincing enough interested MIT students, for whom (unlike their Ivy League and Stanford competition) these awards seldom loom large in everyday MIT academic culture, that their applications will be viewed as competitive. MIT currently ranks fifth cumulatively among its competitor institutions in these awards, after Harvard, Yale, Princeton and Stanford. The cost to MIT is that of maintaining a Distinguished Fellowships Office and the considerable faculty time contributed through the Presidential Committee on Foreign Fellowships.

*Table A6.4 Recent Overall Statistics for Major Competitive Foreign Scholarships*

<table>
<thead>
<tr>
<th>Year Applied</th>
<th>Students Interested</th>
<th>Students Applying</th>
<th>Applications Submitted</th>
<th>Natl.Interviews or Shortlisted</th>
<th>Scholarships Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-3</td>
<td>43</td>
<td>33</td>
<td>46</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>2003-4</td>
<td>68</td>
<td>33</td>
<td>49</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>2004-5</td>
<td>101</td>
<td>40</td>
<td>62</td>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>2005-6</td>
<td>92</td>
<td>24</td>
<td>37</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>2006-7</td>
<td>86</td>
<td>38</td>
<td>55</td>
<td>21</td>
<td>9</td>
</tr>
</tbody>
</table>

*Selected Scholarship Data*

<table>
<thead>
<tr>
<th>Year Applied</th>
<th>Marshall (UK)</th>
<th>Rhodes (UK)</th>
<th>Gates (UK)</th>
<th>Churchill (UK)</th>
<th>Mitchell (Ireland)</th>
<th>Fulbright (140 coun.)</th>
<th>DAAD (Germ.)</th>
<th>Luce (Asia)</th>
<th>Ch'briand (France)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-3</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>9</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003-4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004-5</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2005-6</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006-7</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Though comparatively few students will ever win one of these nationally intensely competitive fellowship awards, a much larger number of our very best students (100 at the
first stage, 40 rendering one—or often multiple—applications) participate in the application process and so acquaint themselves with educational opportunities and institutions abroad. The process also affords them an opportunity for serious introspection, within an intensely mentored global context, that contributes significantly to formulating their career goals and life aspirations. An almost universally voiced comment amongst unsuccessful applicants is “Although I didn’t win, the application process was so valuable in setting my priorities and understanding what I have to contribute.”
Appendix 7

Public Service Abroad

The principal global opportunities coordinated by the Public Service Center and Edgerton Center are listed in Table A7.1.

Table A7.1. Edgerton Center (EC)-Public Service Center (PSC)
Student Participation and International Travel (estimates for 2006-7)

<table>
<thead>
<tr>
<th>Program</th>
<th>Total number of students participating</th>
<th>Number of students who worked outside US</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-Lab</td>
<td>83</td>
<td>36</td>
</tr>
<tr>
<td>IDEAS</td>
<td>~150</td>
<td>19</td>
</tr>
<tr>
<td>Public Service Fellowships</td>
<td>42</td>
<td>27</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>275</strong></td>
<td><strong>82</strong></td>
</tr>
</tbody>
</table>

A7.1 D-lab and IDI

D-Lab is a year-long series of lecture classes and field trips that educate students about technical, social and cultural aspects of development work in selected countries (currently seven countries including Brazil, Haiti, Honduras and India). D-Lab is part of the Edgerton Center and the Designs for Developing Countries Project coordinated by Edgerton Center instructors including Amy Smith, Prof. Bish Sanyal, Dr. Allen Armstrong, and their assistants. Amy Smith (SB 1994, SM 1995, senior lecturer in Course II) is a former Peace Corps volunteer in Botswana who won the National Inventor’s Hall of Fame Collegiate Inventors Competition in 1999, the Lemuelson-MIT $30,000 student prize in 2000, and a $500K MacArthur Foundation Fellowship in 2004, and must be considered an Institute treasure; her D-Lab vision exemplifies a engineering-oriented service learning approach to providing experiences abroad that so clearly capitalizes on MIT’s educational mission and our students’ strengths.

Ms. Smith also partners with the PSC through the International Development Initiative (IDI), of which D-Lab is a part; the other IDI programs are Public Service Fellowships, the IDEAS Competition, and International Development Grants. Recent project examples supported by IDI include a wheelchair project in Zambia, charcoal made from agricultural waste in Haiti, screenless hammermills for grinding flour in Senegal, automated flash-flood warning systems in Honduras, inexpensive field incubators for biological testing of water in Nepal, solar-powered water disinfection devices in Zambia, redesign of bicycle ambulances in Zambia, solar turbine village power plants in Lesotho, ceramic water filters in Nicaragua, sustainable computer labs for low-income girls in Ecuador, and internet access for squatter settlements in Lima, Peru, among other projects. The International Development Network, currently facilitated by the PSC, has run an extensive annual International Development Fair and maintained a comprehensive website of classes and programs since 2001 (information at <http://web.mit.edu/idn>).
iHouse and U2U are new collaborative IDI initiatives, still being developed, that provide significant preparatory experiences and recruitment vehicles for MIT students who will later participate in global programs abroad. iHouse is MIT’s first “living-learning community,” establishing a new model for residential life supporting educational goals, which is described in detail in Appendix §A9.5.3. U2U is an inter-university collaboration described in Appendix §A7.4.

A7.2 IDEAS Program

The IDEAS Competition promotes entrepreneurship, innovation, project management skills, and community collaboration. Advising and support systems help students to understand priorities, the planning process, team dynamics, resource acquisition strategies, and so forth. International opportunities exist to establish site-based relationships and a contextual understanding of issues and possible solutions. Development grants provide funds that can include travel, and awards enable initial implementation abroad. Student teams can be multi-level, multi-disciplinary, and even multi-institutional. Currently, 10-15 students annually travel internationally in IDEAS implementation.

A7.3 Public Service Fellowships Abroad

Current Public Service Fellowships require students to develop capacity-building projects and to commit substantial time and effort for planning and implementation. Many students want, however, simply to volunteer abroad or take advantage of internships with the UN or other multinational organizations or country-specific NGOs. Increased funding would be adding capacity to serve both the excess demand for existing fellowship types, applied to international service, and also to create access to additional opportunities abroad. At present, 40 students participate in international projects with PSC Fellowship support.

A7.4 University-to-University Program (U2U)

The U2U program, being developed by IDI, targets sustainable development through community participation, using interdisciplinary student teams to combine strengths of member universities. Starting in 2005, students and faculty from MIT D-Lab, University of Zambia and Harvard Medical School teamed together in Zambia to launch a set of multiphase projects aimed at improving agricultural practices, health care capacity, access and transportation, local water treatment, protein sources, and oil pressing technology in the village of Mwape.

A7.5 Summer Internships in International Public Service

Career Development Summer Internships in International Public Service are awarded to DUSP (graduate) students planning to do international public service in developing regions outside the US over a summer; three internships will be awarded for 2007.
Appendix 8

Preparatory and Retrospective Subjects

A8.1 Foreign Languages

FL&L currently offers language instruction in Chinese, French, German, Japanese, Spanish and Italian language, literature and culture. Language instruction is carried out by about 10 faculty members and 17 senior lecturers, language directors and lecturers and carries through four successive semester levels that stress communicative competence and cultural immersion. Levels I-IV emphasize oral-aural skills and introduce writing and reading in a sequenced manner. Post-IV intermediate subjects are thematic and designed to practice the skill acquired in the first two years and to add breadth and depth in reading and composition. Advanced subjects are content-based in literature and culture. Minors in foreign language begin with level III and require level IV plus two intermediate-level subjects in literature or culture and two advanced level subjects in area, cultural or literature studies.

Approximately 2,000 undergraduates per year currently study foreign languages and cultures, almost half of the undergraduate student body. Of these, approximately 1400 are in foundation language subjects (somewhere in the four-subject, two-year sequence typical of basic language instruction at MIT). The rest are in preparatory or retrospective literature and culture subjects, many taught in the relevant foreign language. Intensive elementary German, Spanish and (for the first time, in 2007) Japanese are additionally taught at MIT during IAP. These IAP subjects are heavily oversubscribed, with more than 100 applicants for classes limited to 25 students each. The single Italian language subject is taught (only) during IAP. The two IAP language-intensive programs taught abroad in Germany (offered through MISTI) and Spanish (offered through FL&L) have been found particularly useful in accelerating students with some knowledge of the language already through the foundation language sequence.

Many students express frustration in not being able to continue in the first semester of their freshman year with a language they struggled to acquire in high school, as a consequence of imposition of the current CI/HASS-D requirement. Others are prevented from starting a new language for the same reason. The recent freshman-year commons reorganization proposed by the Task Force on the Undergraduate Educational Commons would further restrict access to language acquisition for these freshmen in both semesters.

The standard language curricula in FL&L differs significantly from those found in traditional liberal arts programs, in that course design and execution draws heavily from hands-on models that characterize other aspects of MIT academic instruction. Innovative pedagogical tools draw on engagement with humanists, engineers and social scientists to enrich our students ability to understand cultural, linguistic, historical and even technological differences of cultures other than their own. Some of these tools promote virtual contact with student peers abroad or other contemporary voices in foreign countries; examples are Cultura in French, the MIT/Valencia Polytechnic Exchange in
Spanish, the *Berliner sehen* in German, and *A Glimpse of the Chinese Cultural Revolution* in Chinese. The technology is also used to provide international learning laboratories where expertise is shared across borders; these draw language students into cross-cultural projects, such as the Beijing Film Academy Animation Project, which are useful in preparing students for work environments abroad. The current platform is HyperStudio—jointly sponsored by FL&L and Comparative Media Studies—which provides the infrastructure and support for development of media applications generally within the humanities.

**A8.2 Cultural Context Preparation**

FL&L faculty work closely with their colleagues in other SHASS sections and departments (History, Political Science, Economics) and elsewhere in the Institute (Architecture, DUSP) to provide relevant cultural context studies for their language students. At least 2-3 such subjects are part of the FL&L minor. A particularly useful broad preparatory subject has been 21F.019 *Communicating Across Cultures*, widely utilized by MISTI.

HASS minors exist in the following foreign area studies: African and African Diaspora Studies, East Asian Studies, European Studies, Latin American Studies, Middle Eastern Studies and Russian studies, subjects from which can drawn upon for cultural preparation before engaging in experience abroad in specific geographical regions. In addition, an interdisciplinary *graduate* degree program, the Middle East Program at MIT, is a joint endeavor by the Departments of Political Science, Civil and Environmental Engineering, DUSP, Humanities (History section), the Sloan School of Management, the Program in Science, Technology and Society, and the Aga Khan Program in Islamic Architecture. The program draws on unique MIT expertise across disciplines to address the challenges of design and development in the reconstruction of the Middle East region following violent conflicts, from a pooled understanding of the processes of socio-economic change, technological development, political change, environmental management and sustainability, and international business and investment patterns.

IDI programs prepare students for successful public service work abroad through a combination of informal and formal instruction and a supervised implementation process that enables students to acclimate on-site with the help of in-country community partners.

A new subject in FL&L on Globalization, funded by a d’Arbeloff Grant, will allow Freshman to link language specific work to a core subject in English on globalization, entitled *Globalization: the Good, the Bad and the Ugly*, a 9-unit HASS-D CI subject. Students will examine the problems, as well as the opportunities, that globalization has engendered. Students will share a common syllabus, readings and assignments that give them the English writing and communication skills currently embedded in HASS-D CI subjects. A hands-on, team-developed and faculty-supervised capstone project will be integrated into the curriculum. The subject will draw heavily on guest lecturers from across the Institute. The design of the subject also calls for students’ study of a foreign
language and acquisition of cultural depth in one language area. Freshmen will simultaneously enroll in a 9-unit language course at any level in one of the five languages taught at MIT (Chinese, French, German, Japanese and Spanish) at the same time they enroll in the Globalization subject. Each language subject will incorporate one of the four modular themes on globalization into the work done in the class, appropriate to the level of the language subject. Students will acquire a basis for problem-solving in the global arena through specific hands-on opportunities that will link the language classrooms to the lecture/discussion (English) part of the subject. A two-way flow of ideas and communication will be encouraged for students who have acquired specific knowledge in their language subjects, taking the “big ideas” discussed in the English subject classroom back to their language classrooms. The d’Arbeloff grant additionally provides $5,000 to allow five students the opportunity to pursue into IAP the faculty-supervised team project begun during the fall.

A8.3 Country-Specific Preparation Subjects

The MIT-Germany Program, in cooperation with Foreign Languages & Literatures, has created a 12-unit MIT subject, meriting 21F.400 German I credit, on German culture and language held in Germany during IAP. Along with a German intensive language instruction, students are exposed to German industry and culture through travel within Germany and workshops held in four German cities. The FL&L IAP-Madrid program, awarding 21F.732 Spanish II credit, serves a similar function for Spanish language and culture.

Some country- or region-specific preparation subjects in FL&L are: 21F.030 East Asian Cultures from Zen to Pop, 21F.040 A Passage to India: Intro to Modern Indian Culture and Society, 21F.191 Smashing the Iron Rice Bowl: Chinese East Asia, and 21F.059 Paradigms of European Thought and Culture.

A8.4 Program-Specific Preparation

D-Lab. D-Lab I (SP.721J Development) is the first of the series of MIT subjects preparing students to respond to the basic needs of low-income households and communities in developing nations with inexpensive, sustainable and adaptable technological solutions. Sequel D-Lab II (SP.722 Design) is a design studio subject teaching design for development, hands-on fabrication, prototyping skills and community manufacture; while D-Lab III (SP.723 Dissemination, Implementation, Innovations for the Common Good) focuses on implementing and disseminating innovations designed for the common good in developing countries. D-Lab IV (SP.724 Prototypes to Products) further instructs in field implementation and project management in taking prototypes to working products.
The proposed *Course 6-A* international program has a well-integrated specialized curriculum for preparing Course 6 students for international internship experiences in China that are part of the requirement for this degree course.

*G-Lab* integrates entrepreneurship coursework with its MBA students’ internship experience, starting with 15.389 *Global Entrepreneurship Lab*.

### A8.5 Retrospectives

Although both D-Lab and G-Lab continue interaction with students returning from projects abroad, MIT has few subjects offerings at the moment specifically targeted at providing retrospective reflection on undergraduate experiences abroad, whether internships, public service projects, or study abroad. The PSC, however, integrates reflection opportunities during service and retrospection afterward into all of its international offerings. Working with Amy McCreath of the Technology and Culture Forum, and with financial support from Chancellor Clay, the PSC has also developed, tested, and refined a reflection program model that can be used by other programs (see <http://web.mit.edu/justdeserts>). This is an obvious area for expansion and is likely to require interdisciplinary collaborations across sections, departments and school. For students participating in the Minor in Applied International Studies [discussed below] or for students following their re-entry from an international experience, the retrospective subject 17.199J/21F.098 *Working in a Global Economy: Pathways to Innovation* is appropriate. FL&L also provides a general retrospective subject 21F.035 *Topics in Culture and Globalization*.

A country-specific new subject, 21F.739 *Globalization and its Discontents: Spanish-Speaking Nations*, will be offered by FL&L in Spring 2008. This subject is designed for students who have lived, worked, studied or completed internships in Spain or in Latin America. It will examine how globalization is rapidly changing the identity of peoples and cultures in Spanish-speaking nations. Emphasis will be placed on the emerging new paradigms of cultural exchange including an international youth culture, political and social movements shared across national boundaries, and the role of the media in articulating a common cultural language. The impact of globalization on employment, transnational movements of large segments of the population, and the resistance against homogeneity will be studied. This subject will be conducted as a seminar, each student choosing a research project early in the semester that allows for reflection and writing about a specific aspect of Hispanic culture that has been shaped by contemporary forces in the global economy. Subjects examined will be wide-ranging and will derive from student experience and interest: *e.g.* treating AIDS and tuberculosis in Peru, the Venezuelan/Cuban connection, Latin American immigration in Spain, “the wall” between U.S. and Mexico, *etc.* Experts in the fields students are examining will be invited as guest speakers.
A8.6 Minor in Applied International Studies

This six-subject-plus-experience-abroad minor, offered through the Center of International Studies to which MISTI belongs, combines fluency in the language of a foreign country and familiarity with its culture (area 1, two subjects, language proficiency at second-year level); awareness of international economic, political, cultural and historical patterns (area 2, two subjects); and hands-on on-the-ground international experience in the form of internship, study or research abroad combined with MIT subject learning (area 3, two subjects).
Appendix 9

Projections for Expansion of Opportunities for Global Experience

A9.1 MISTI Expansion

In 2006-07, MISTI sent 300 MIT students abroad. About one-third of MISTI participants are graduate students, the rest undergraduates. With the requisite funding, the numbers of MISTI students going abroad could increase by 50% within two years and triple within five years, with the addition of new country programs, IAP coursework delivered in host countries, an expanded workshop abroad program, and growth of faculty research involving students going abroad. An even more ambitious expansion plan is presented in Table A9.1 that would require still another level of resources.

A9.1.1 Internships. MISTI educates MIT students in the language and culture of any of eight host countries (China, France, Germany, India, Italy, Japan, Mexico and Spain) before placing them in research institutes, corporations and universities. The internships last from three months to one year, during which time the intern is incorporated into a work group of the host institution. In some cases, internships have involved working with academics at local institutions to implement iLab software or transfer MIT OpenCourseWare material into locally taught courses. Whenever possible, internship stipends and travel are paid for by the host institution. However, in many cases, MISTI ends up responsible for partial or total intern support, and financial constraints then limit the number of interns that can be placed by the individual country programs. In Japan, companies will not pay for travel and in many cases offer only partial intern stipend support. Each year, more than 100 students compete for 30 internship places in the MIT-China Program. With only modest increase in financial support from the Institute, MISTI could immediately increase the number of interns it sends to institutions abroad by 25% the first year and by 50% within three years. This expansion capacity translates to an increase from 145 to 182 undergraduates in one year and to 218 undergraduates in three years, without substantial change in the administrative structure or staffing of MISTI. Further expansion of MISTI’s capacity beyond this level is likely to require significant investment in expanded staff and direct support of existing country programs, which have exhausted sources of independent support, or establishing programs to new countries where there is likely considerably less potential for independent fund-raising.

A9.1.2 Entry-level programs. Over the last several years, MISTI has sent students to Italy, France and Germany to participate in intensive workshops, variously held in January, June and October and focused on various topical themes (future of the airport; auto technology for the “silver” generation; noise pollution; sustainable chemistry; global challenges for transportation and energy; future of the megacity; the Ferrari of 2020). Each workshop has had between ten and twenty MIT participants, working with the same number of young professionals in sponsor companies. Extensive knowledge of the host country language was not required. Many MIT students have been persuaded to participate subsequently in MISTI internship programs as a result of their entry-level
program experience. In addition to the workshops, in January 2007 the MIT-Germany Program, in collaboration with FL&L, created a 12-unit MIT subject on German culture and language (credited as 21F.400 German I), held in Germany during IAP 2007 with twenty MIT students participating. This IAP German subject has provided a model for other MISTI programs, and already the MIT-Italy, MIT-Japan and MIT-China Programs are designing similar IAP coursework for January 2008. (A similar Spanish II language acquisition abroad subject, credited as 21F.782 Spanish II, was organized by FL&L in Madrid in IAP 2007 for twenty students.) In 2005-6, MISTI sent 75 students to its workshops and anticipates a 50% increase for this year. MISTI expects the student demand for the IAP language-abroad subjects to quadruple, at an estimated cost of $3,500 per student.

A9.1.3 New country programs. MISTI established its latest country program, the MIT-Spain Program, in 2006 and that year sent 20 students to sites in Madrid, Barcelona and Zaragoza, with funds coming from corporate sponsors and the Barcelona Chamber of Commerce. It has under active consideration establishment of new country programs in the UK, Israel, Portugal, Korea, South Africa, and Greece, and anticipates creation of two or more new MISTI programs within the next two years. This prospect translates into a 25% increase in number of MISTI students that can be sent abroad within the next two years. A formal MISTI program requires as infrastructure a faculty director, ability to teach the language and culture of the host country, and $140,000 per annum to support salary and benefits for the country coordinator, travel to country sites, and support of interns at institutions that cannot provide students with stipend or travel. The ability of MIT to expand on MISTI’s present country roster is likely to be constrained by the extent to which MIT is willing to fund expansion of FL&L offerings in other than the languages it presently offers. MISTI has created what it called “Forums” in Africa and Singapore to provide students with experiences outside the eight current MISTI programs.

A9.1.4 Research opportunities. MIT-Italy, MIT-France and MIT-Mexico all provide support for collaborative research between MIT and premier institutions in host countries. This support can translate into IROP opportunities for undergraduates and short-term research stays (up to one year) for graduate students. The MIT-France Program runs a seed fund for collaborative research that provided $170,750 for 18 grants (average size about $9,500) in 2006-07 in a competition that was vastly oversubscribed. The Program hopes in future to arrange for longer research internships in France on projects of common interest to MIT and French collaborators. The MIT-Italy Program promotes an exchange with the Politecnico in Milan through a grant from the Progetto Rocca Foundation. Funds are available to support about two graduate or advanced undergraduate students for 3-6 month stays in Milan, and $15,000 in seed funds available encouraging MIT-Politecnico joint projects. Rocca funds support 6-18 month return visits to MIT for Politecnico doctoral students and post-doctoral fellows.

A9.1.5 MISTI Budget Projections. MISTI’s anticipated two- and five-year expansion capacities are summarized in Table 1. The 2005-06 budget of MISTI was $2.7M and in 2006-7 about $3M. Based on an anticipated expansion that would roughly double the number of students participating, the estimated 2008-09 budget would be need to be
$5.0M, of which $2.7M could come from existing sources, leaving a shortfall of $2.3M (all in 2006 dollars). A 2012-13 budget, servicing a roughly quadrupled student population, would come to $8.2M, of which $2.7M could again still come from existing sources, leaving a shortfall of $5.5M. As a conservative estimate, it appears then that an Institute investment of approximately $5 million per year would be required to achieve a yearly target of 1,250 MISTI opportunities abroad, corresponding to an endowment investment of $110 million. Of course, it is not recommended that all 1200 opportunities being proposed for a Global Education Opportunities Program be supplied by MISTI; a more realistic number for MISTI is probably half that, which still represents more than doubling current MISTI capacity.

Table A9.1. Anticipated MISTI expansion capacity and cost

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>2005-06 UG &amp; G participants†</th>
<th>Projected student number in 2009-10</th>
<th>Projected student number in 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internships in existing programs</td>
<td>200</td>
<td>350</td>
<td>600</td>
</tr>
<tr>
<td>Entry-level programs</td>
<td>48</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>New MIT-Country internships</td>
<td>20</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td>Research collaborations</td>
<td>11</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Total number of students</td>
<td>279</td>
<td>630</td>
<td>1,250</td>
</tr>
<tr>
<td>Cost above existing resources</td>
<td>$0.04M</td>
<td>$2.30 M</td>
<td>$5.46 M</td>
</tr>
<tr>
<td>Total cost‡</td>
<td>$2.7M</td>
<td>$5.00M§</td>
<td>$8.16M§</td>
</tr>
<tr>
<td>Avg cost per student opportunity</td>
<td>$9,677‡*</td>
<td>$7,937‡*</td>
<td>$6,528‡*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
†about 80% undergraduate
‡Includes the $2.7M that MISTI raises annually by its own fund-raising efforts and does not presume that MISTI will be able to proportionally increase its own independent funds.
§Most MISTI programs contribute some travel and subsistence subsidies to students. MISTI figures also include full administrative costs for these programs.
*MISTI provides many other services to the MIT community, besides sending students on experiences abroad. Program expenses include cinema screenings, lecture series and MISTI week, catering to hundreds of participants beyond those students who actually do overseas internships or study. At least 15% of staff time is spent on fund-raising, since MIT contributes less than 3% of MISTI’s budget. These pro bono contributions increase the student opportunity cost, as calculated here, compared to other programs which do not make these contributions.

The MISTI estimates in Table A9.1 include the full cost of program administration, which MISTI supplies, and for most programs some contribution of travel and subsistence subsidy for students. The average cost per student also reflects MISTI’s fund raising efforts in self-supporting most MISTI programs and the extensive community contributions MISTI makes to promoting global experiences. In common with nearly all programs reviewed, the program cost is not linear with the expansion, given expected economies of scale, and the cost per student consequently diminishes significantly with the expansion. The projections contain an uncertain component of staff expansion.

A9.2 Departmental Internship, Research and Curricular Initiatives

A9.2.1 Departmental internship programs. Summer internship opportunities are presently organized by a number of departments (Appendix §A5.1). Most MIT
departments could locate at least several summer internships abroad for their students, providing a potential of at least 100 opportunities annually. Given that the administrative cost of providing internship opportunities is already absorbed by many departments, the additional effort and cost of providing internship opportunities abroad can be incremental and well worth the small added investment. In Course 3, for example, a half-time administrator administers the internship program, and about six faculty members supervise the 35 or so summer interns in return for two weeks summer salary, about 15% of which (about 5 each year) are abroad. The total administrative and supervisory cost per student is about $4,300. For countries for which a MISTI office exists, it would not be unreasonable to expect that the relevant MISTI office could assist with logistics (this is, in most instances done already, MISTI providing advice and preparation beforehand, and sometimes visits during the internship). Locating the internship partner and arranging the placement may still need to be done by the department. In fact, the structures of both MISTI and PSC can readily supply appropriate proven vehicles for departmentally-encouraged international experiences and could easily engage in future collaborative planning with departments. The department remains the most effective agent for arranging placements, because faculty and administrative staff know the industries best in their discipline and usually maintain personal contacts with professional colleagues abroad and with foreign departmental alumni. MIT alumni employed abroad could be usefully engaged in identifying and facilitating appropriate internship opportunities.

A9.2.2 IROP. A two-year IROP expansion target is a doubling of the current number of opportunities (from the current 12, though 26 students were accommodated in Summer 2004 and 22 in calendar year 2004-5) to 25 opportunities; a five-year target is 50. Costs for both are estimated in Table A9.2. There are few economies of scale for expansion of IROP, since most of the expenditure is on student wages (the current wages in 2007 are set at $4,245) and travel (typically $2,000). UROP staff costs are not included in Table A9.2, because the number of UROP students going abroad presently represents a small fraction (<2%) of the total number of UROP students. The projected costs indicated are therefore the current costs expanded by the target student participation. IROP expansion will be controlled by the number of faculty-generated opportunities abroad; whether this can be doubled in two years and trebled in five, as projected, remains to be seen. It is unlikely that faculty-contributed funding can be doubled in two years and trebled in five; consequently, the Institute must funnel more money into funding these opportunities through UROP than projected in Table A9.2. A portion of the $5,227 (or $6,350 with added staff) projected average cost per student for IROP could be allocated to Institute funds provided already for UROP student support.

A9.2.3 Curricular initiatives. Foreign language and culture curricular initiatives have been discussed already. Further curricular innovations can occur at the level of departmental majors by integrating a degree of global awareness into technical subject matter. It is important for our students to understand that, despite local indications to the contrary, significant invention and ingenuity in science, engineering and technology are practiced outside MIT and the U.S. Subjects that are taught jointly with global partners,
Table A9.2 *Current IROP Expenditures and Expansion Projections*

<table>
<thead>
<tr>
<th>Category</th>
<th>AY 2006-7</th>
<th>Summer 2007</th>
<th>Cal year 2009-10</th>
<th>Cal year 2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>3</td>
<td>9</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Countries</td>
<td>Chile, Costa Rica, Spain</td>
<td>Switzerland 5, Niger, Bangladesh, Chile, Indian Ocean</td>
<td>12 countries</td>
<td>20 countries</td>
</tr>
<tr>
<td>Wages from UROP</td>
<td>$1,850</td>
<td>$32,298</td>
<td>$76,947</td>
<td>$173,110</td>
</tr>
<tr>
<td>Wages from Faculty</td>
<td>$4,760</td>
<td>$7,650</td>
<td>$27,964</td>
<td>$62,913</td>
</tr>
<tr>
<td>Travel/M&amp;S from UROP</td>
<td>$5,000</td>
<td>$11,267</td>
<td>$25,347</td>
<td></td>
</tr>
<tr>
<td>Total MIT Students</td>
<td>12</td>
<td>25</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Total cost</td>
<td>$51,558</td>
<td>$116,178</td>
<td>$261,370</td>
<td>$261,370</td>
</tr>
<tr>
<td>Average cost per student</td>
<td>$4,297</td>
<td>$4,647</td>
<td>$5,227</td>
<td></td>
</tr>
</tbody>
</table>

*Does not include added UROP office staff. Increasing the UROP office by 50% of one additional staff member raises the cost per student to about $6,350.*

Using distance-learning technologies, can assist this goal. Such pedagogical collaborations occur more frequently at the graduate level; for example, the biomaterials subject HST.535 *Principles and Practice of Tissue Engineering* is taught jointly with Tsinghua University, Beijing by two-way live video link, the MIT class held at 8 am MIT time and the Tsinghua class at the corresponding 7 pm Beijing time.

While most departments naturally strive to increase the internal coherency of their undergraduate subject offerings, for the global objectives of MIT it will be useful to explore more outward-looking curricular initiatives in the undergraduate curriculum. Such a mandate will necessarily require faculty to adapt some MIT subjects—to more closely correlate with curricula at other institutions involved in exchanges or MIT student study abroad, to incorporate a more global perspective into the subject matter, to reach out to other collaborating institutions and constituencies—in order to better equip our students from within for wider experiences without.

**A9.3 Study Abroad and Exchanges**

Table A9.3 summarizes cost estimates for a wide range of study-abroad programs.

A9.3.1 *CME and Institute-wide exchanges.* With the ramp-down of the Cambridge-MIT Institute in 2006, CMI no longer provides funding for the Cambridge-MIT exchange. In
2007-8, MIT has undertaken to fund 25 (instead of the usual 35) MIT students on the exchange, with an equivalent number of Cambridge University students coming to MIT. There are certainly enough qualified and interested students now to double that number to 50, with sufficient funding provided, but a larger program strains the logistical capacities of both institutions and will begin to bump against the lower threshold of academic ability that MIT is comfortable with for those students spending a whole year at Cambridge.

Table A9.3 Anticipated Study Abroad expansion and costs

<table>
<thead>
<tr>
<th>Program type</th>
<th>2006-7</th>
<th>2009-10</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambridge-MIT Exchange</td>
<td>35†</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Cost</td>
<td>$169.8K</td>
<td>$163.7K</td>
<td>$172.0K</td>
</tr>
<tr>
<td>MIT-Madrid Semester</td>
<td>9</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Cost</td>
<td>$27.0K</td>
<td>$28.4K</td>
<td>$29.4K</td>
</tr>
<tr>
<td>Killam Exchange</td>
<td>0-1†</td>
<td>1-2</td>
<td>1-2</td>
</tr>
<tr>
<td>Cost</td>
<td>$2.5K</td>
<td>$2.5K</td>
<td>$2.5K</td>
</tr>
<tr>
<td>Departmental Exchanges</td>
<td>5‡</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Cost§</td>
<td>$4.4K</td>
<td>$14.7K</td>
<td>$35.1K</td>
</tr>
<tr>
<td>Direct Enrollment</td>
<td>5</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Cost</td>
<td>$3.1K</td>
<td>$12.1K</td>
<td>$20.2K</td>
</tr>
<tr>
<td>Outside Providers</td>
<td>25</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Cost</td>
<td>$33.2K</td>
<td>$55.2K</td>
<td>$81.5K</td>
</tr>
<tr>
<td>Cost</td>
<td>$57.2K</td>
<td>$65.8K</td>
<td>$87.7K</td>
</tr>
<tr>
<td>Total number of students</td>
<td>89</td>
<td>143</td>
<td>227</td>
</tr>
<tr>
<td>Overall total cost</td>
<td>$297.2K</td>
<td>$342.4K</td>
<td>$428.4K</td>
</tr>
<tr>
<td>Average cost per student</td>
<td>$3,339</td>
<td>$2,394</td>
<td>$1,887</td>
</tr>
</tbody>
</table>

* Does not include language or culture programs (FL&L and MISTI) occurring during IAP or summer, though administrative costs accrue to Study Abroad Office for FL&L IAP programs abroad.

† Cost to MIT exclusive of tuition fee, stipend, travel, subsidy paid to a student, or foregone tuition to MIT.

§ Numbers of MIT students participating (in exchanges, an equivalent number of counterpart foreign students at MIT incur ongoing costs while at MIT that are included in cost estimates).

‡ Includes Study Abroad Office administrative costs only (not departmental coordinator costs).

§ Expansion cost includes substantial faculty/staff travel component.

# Number of applications (all students applying require extensive counsel and advice throughout the process, even if not ultimately successful); current or projected number of awards (successful applicants) in brackets [ ].

A9.3.2 Departmental exchanges and unilateral placements. MIT has several department-based undergraduate exchange programs (Appendix §A6.2) that net only 1-3 students each, each way, per year. However, if each of the six School of Engineering departments and six School of Science departments that do not currently offer departmental exchanges were to institute exchange or unilateral programs that could accommodate two MIT students per year, 24 additional students would experience a semester abroad at an institution of comparable quality to MIT. The cost of such programs is modest, largely the time of a faculty coordinator willing to take on the responsibility for maintaining the
exchanges or unilateral arrangement and some administrative assistance from the department undergraduate office and Study Abroad office (current estimated administrative cost: $875 per MIT student for 5 MIT students). Substantially increasing the number of MIT students, by adding more departments, will additionally involve faculty or staff travel to target institutions abroad and is estimated to further increase the cost per MIT student to $2,335. These estimates do not, of course, reflect the additional academic and advising burdens that MIT faculty inherit from the exchange students coming to MIT, nor the added burdens on MISTI (which most often gets involved) or FL&L.

A9.3.3 IAP programs. IAP programs have the advantage of falling under the credit-earning and financial aid umbrellas (unlike the summer) and are therefore both academically and financially advantageous. In the current programs (Germany, Spain), run through MISTI and FL&L, students pay much of the travel and subsistence costs themselves, one reason why the programs are comparatively inexpensive. IAP language-intensive programs abroad (removed to Table A9.5 in Appendix §A9.6 to avoid double counting) are particularly effective for jump-starting or leap-frogging language training, as well as for providing (brief) exposures to another culture, but they can be readily expanded only by providing more country venues, with a limit of about 40 students each. Providing travel and subsistence funds would more than treble the cost of these useful opportunities to the Institute. It is possible to provide mini-internships abroad during IAP for students with significant fluency in the country language, but most indications are that semester-long or summer-long programs are preferable for work experiences. While IAP opportunities can certainly comprise a (brief) form of more general study abroad, only language-intensive subjects (run through MISTI and FL&L) are included in the IAP opportunity projection enumerations; these are listed in the FL&L estimates instead (Appendix §A9.6), as indicated.

A9.3.4 Competitive foreign fellowships. Owing to the intensely competitive nature of the major distinguished fellowship programs abroad, the ability of the Institute to expand this opportunity to many MIT students is limited. As indicated in §2.5, MIT’s success in these competitions is primarily limited by the small number of students applying, not by their competitiveness. The numbers of students indicated in Table A9.3 represent the projected numbers of students engaging in any stage of the application and selection process, which can be increased with additional recruitment and increased global awareness amongst our students. The costs are principally staff costs (the Distinguished Scholarships Office administrator and her associated staff). MIT has not in the past offered travel funds to students invited to interview (unlike many other institutions), but probably should; the cost is small, probably < $5K annually).

A9.3.5 Direct enrollment and extramural/commercial-provider programs. These programs are inexpensive (for MIT) because the student is often paying for organizational and orientational services that MIT would otherwise provide. The cost of maintaining an office providing advice about opportunities and selection of programs is included in the cost estimate, but not the cost to MIT of providing language and cultural instruction that are usually pre-requisite to taking up these opportunities, nor (notably)
the loss of tuition money to MIT. Because they involve little MIT administrative involvement, other than providing advice, these sorts of opportunities offer high expansion potential at little cost, which is why they have been embraced so extensively by most U.S. universities (who often offset the loss of tuition income by increasing their overall student enrollments). Programs administered by commercial providers often may not provide the particular kind of experience (learning by doing what the country natives do) that the Institute is aiming at for its students, however. Too frequently, these programs are not part of mainstream university degree curricula, but instead assembled by the organizers, employing local academic instructors outside their university appointments. Certainly the demand for such programs from MIT students will increase as the level of their global awareness rises, but the Committee does not envisage them as a favored avenue for global program expansion at MIT.

A9.4 Expansion of Public Service Programs

Table A9.4 estimates the potential for expansion of public service international opportunities. It seems important to note that student demand is high—currently 2-3 times what the current offerings can accommodate because of funding and staff constraints. We discuss the opportunity categories in turn.

Table A9.4. Estimates for Opportunities Expansion in Service Abroad Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Number 2006-7</th>
<th>Number 2009-10</th>
<th>Number 2012-13</th>
<th>Cost per student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service learning</td>
<td>Class projects</td>
<td>35</td>
<td>60</td>
<td>100</td>
<td>$2,500†</td>
</tr>
<tr>
<td>Fellowships</td>
<td>Capacity-building projects, International volunteering</td>
<td>40</td>
<td>90</td>
<td>200</td>
<td>$6,000</td>
</tr>
<tr>
<td>PSC, IDI Grants</td>
<td>Independent projects</td>
<td>20</td>
<td>40</td>
<td>80</td>
<td>$2,000</td>
</tr>
<tr>
<td>D-Lab</td>
<td>Cultural and technical education with fieldwork</td>
<td>30</td>
<td>65</td>
<td>200</td>
<td>$6,000</td>
</tr>
<tr>
<td>IDEAS</td>
<td>Entrepreneurship and innovation</td>
<td>15</td>
<td>35</td>
<td>50</td>
<td>$6,000†</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td><strong>160</strong></td>
<td><strong>340</strong></td>
<td><strong>630</strong></td>
<td><strong>$3.16M</strong>*</td>
</tr>
</tbody>
</table>

Average cost per student opportunity (in five years) $5,016

†Average travel augmentation award plus development grant.
*Total cost for 630 student opportunities in 5 years.

§D-Lab, Development Entrepreneurship, G-Lab and similar subjects not included because they currently raise their own funds separately from PSC for international service learning.

A9.4.1 Service learning initiative. The focus of this initiative is on subject-based community projects for contextual and applied learning. Some current subjects involve work on projects for international communities using locally available representatives as resources, with some student travel provided (e.g. 2.009 Product Engineering Processes); other faculty members take their whole classes abroad during the semester or over semester breaks (e.g. DUSP’s IDP water and sanitation practicum, SIGUS). Current participating students are mainly upperclassmen and graduate students; however, “Solving Real Problems” is a pilot freshman engineering subject that could easily
incorporate an added international component. At present, 2-3 subjects accommodate ~30 students, and an additional six individual students annually travel internationally funded by $30,000 available in Service Learning Grants. A two-year expansion target is 6-8 subjects accommodating ~60 students; a five-year target 10 subjects accommodating ~100 students.

A9.4.2 Public Service Fellowships. A two-year expansion target is 80-100 students; in five years, 200 students. One full-time equivalent employee is required for 40-50 students annually, for example 25 IAP fellows and 25 summer fellows. Each summer fellow receives $5,000 in stipends and materials, each IAP fellow up to $2,000 in stipend or expenses. An additional $10,000 is required for operating costs, events, preparatory and reflection dinners.

A9.4.3 Public Service and IDI Grants. PSC and IDI grants fund independent student projects. Current offerings include Expedition Grants (up to $1,000), for which students must demonstrate financial need and intention for on-going involvement; PSC Grants (up to $5,000) providing funds for materials as well as some conference or travel expenses; and IDI Grants (up to $2,000) for projects in developing regions. Currently, about $30,000 specifically earmarked for international projects is distributed to 15-20 students annually. A two-year expansion target is 40 students; a five-year target 80 students. These estimates assume that other projected programs are in place as well: if, for example, the added Public Service internships and IROPs were not also available, the student estimates for this category would be higher. Approximately $2,000 would be needed for each student, assuming the current IDI Grant model.

A9.4.4 D-Lab. D-Lab combines subject-based cultural and technical education with on-site field work for community benefit. The program typically focuses on IAP trips to one of 7 or 8 developing regions. Currently, there are 30 students enrolled in D-Lab 1 who choose to travel over IAP. A two-year expansion target is 60-70, implying two sections of D-Lab; a five-year target is 200 students, accommodated either through D-Lab-like classes adopted by departments (e.g. international health seminar, water and sanitation, energy, etc.) or through multiple D-Lab sections with combined lecture and laboratory. D-Lab IAP projects cost about $2,500 per student, mostly for travel. There are no IAP fellowship stipend available for these students. D-Lab experiences for 8-10 weeks in the summer cost about $6,000 per student for summer stipend and travel. These experiences would be mostly summer research projects, most of which would qualify for UROP funding, which could be raised as part of an IROP fund-raising initiative in a major campaign. D-Lab currently has no permanent staff support. If the program expands, it will need an executive director to oversee administration. Access to centralized Institute administrative resources providing risk management services and travel document support is also presumed.

A9.4.5 IDEAS Competition. A two-year expansion target is 30-40 students; a five-year target is 50 students (more would outstrip competition resources and logistics). Resources ultimately required are 1) development grant funds of $30,000 (about $1,000
per project), and 2) award funds of $50,000, for augmentation of existing awards to enable international travel. Current award levels are $2,500, $5,000 and $7,500.

**A9.5 International Development Opportunities**

A9.5.1 *MIT International Development Initiative (IDI).* IDI is a joint program of the Edgerton Center and the Public Service Center, created to expand opportunities at MIT for work in international development, particularly for undergraduate students. The program works to expand existing programs and to create new programs that will enable MIT to provide tangible assistance to developing regions in key areas of defining community needs and implementing appropriate designs for the requisite technologies. The MIT International Development Network (IDN) and International Development Forum (IDF) are allied platforms for coordinating, sharing and empowering existing international development activities at MIT. They provide venues for sharing information about activities, events, lecture series, and formal academic offerings.

A9.5.2 *International Development Group (IDG).* IDG, in the Department of Urban Studies and Planning, conducts research and assists in the planning practice in countries around the world striving for social, political, and economic development. IDG faculty examine the urban, regional, and national socioeconomic impacts of major public and private investments, and address problems of squatter housing, municipal finance, metropolitan sprawl, and social disparities at a variety of scales. The philosophy governing IDG is that effective planners operating in today's world must acquire an integrated institutional and historical view of economic, physical, political, and social factors.

A9.5.3 *iHouse.* A intriguing campus-based student-centered implementation of an Institute-wide initiative in development opportunity is MIT’s first living-learning community, called iHouse, focused on MIT’s mission of applied learning and global leadership development. Two recent Task-Force focuses on experiential education, energy issues, global contexts, and the integration of living and learning have been combined to highlight an opportunity for an innovative residential environment that offers students the chance to work with their housemates on international projects, to interact with leaders from around the world, to discuss issues with peers who share common interests, and to live in an environment that cultivates life balance, diversity, and multicultural understanding. The proposal emanates from a team of advocates, including Prof. Wesley Harris and his wife Sandra Harris, housemasters of New House, Prof. Bish Sanyal of DUSP, Sally Susnowitz, Director of PSC, and resident advisor Jed Wartman.

Starting in Fall 2007, New House 1 will become iHouse, with 21 residents recently selected by lottery from 55 incoming freshmen and numerous upperclassmen applying. The residents will subscribe to a set of assets and expectations that will create a more integrated living-learning environment. Amy Smith, of D-Lab, will act as the House Fellow, sharing her extensive knowledge of international development, connections with her many colleagues worldwide, and her great sense of fun, which will involve the
residents in enjoying local entertainment options as well as international opportunities. PSC has raised $150,000 for the first year to support iHouse events and residents’ international development projects, and they will also have access to other PSC funds and resources. PSC, Edgerton Center and Residential Life staff, as well as associated faculty, will all be involved in design and implementation of the globally-focused residential experience. Residents will also enjoy the opportunity to interact with special visiting speakers, SPURS Fellows, and interesting guests from around the world. The home life of the residents will include opportunities to enjoy multicultural dinners and entertainment, discussions on topics of development interest, and the chance to interact with distinguished visitors and involved faculty. In future years, academic and co-curricular programming could enable iHouse residents to more formally prepare for global leadership positions. The ultimate aim is to educate students, while on-campus, in areas of leadership; global current events; contextual understanding of cultural, social, economic, political and other factors that affect technology, business and education; and diplomacy, communications and international relations.

**A9.6 FL&L Expansion**

Presuming that all MIT students who avail themselves of global opportunities will require language training, and that every MIT student participates in one global experience in four years, FL&L will have to increase the number of language classroom places from 1,400 annually to 2,200 annually, an increase of 800 students. Such an expansion is estimated to require, at a minimum, three new faculty members and five lecturers, at a cost of $656K, exclusive of new office or classroom space.

Design of accompanying curricular initiatives, which would also need to be expanded, could take place during summers but would require support of lecturers and of students (who have been key players in the development of these projects). These initiatives would be tightly integrated into the FL&L curricula and have been already shown to accelerate our students’ linguistic competence and cultural depth. The cost estimate provided is for expansion of the HyperStudio infrastructure, which creates platforms for virtual learning for connecting MIT language students to peers abroad and supports cross-cultural projects.

IAP programs have been very effective for stimulating interest in further educational experiences abroad and have been popular with students. Forty students competed for the 20 spaces in the 21F.732 Spanish II IAP Madrid offering in Spain in IAP 2007. Students in the IAP Spain program pay their own way and have put together PSC-project, UROP or Kelly-Douglas grant funding in some cases. Students in the MISTI-sponsored IAP 21F.400 German I experience in Germany received a stipend for travel and subsistence. In both cases, students were matched with peers at one of the top technical universities in Madrid (Spain) or in industry (Germany). Madrid alumni participated in the IAP Spain program. Expansion to Japan and China is quite practicable. The cost to the student for Spain, Japan or China would be about $2K; if partial student funding (even at the $500
level) were made available to underscore MIT’s commitment to foreign study, all these programs would be even more heavily oversubscribed.

Credit-bearing summer language/culture programs are not a possibility at this time, because of the highly-punitive constraint of required MIT summer tuition. Projected costs for such programs vary enormously by country and length of stay; estimates for a modest three-week program are listed in Table A9.5. A more ambitious summer program involving 20 students—with at least intermediate competence in the foreign language—spending six weeks in a target country would require a change in MIT’s summer tuition policy. An MIT instructor would accompany the group and teach one credit-bearing MIT

<table>
<thead>
<tr>
<th>Programs at MIT</th>
<th>Language/Country †</th>
<th>Student numbers</th>
<th>Cost components</th>
<th>Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Curricular Initiatives</td>
<td>French, Spanish, German, Japanese, Chinese</td>
<td>2,200 ‡</td>
<td>HyperStudio: manager, research associates, software developers, hardware &amp; software</td>
<td>$425.8K</td>
</tr>
<tr>
<td>(b) Foundation Language Expansion</td>
<td></td>
<td>800</td>
<td>3 junior faculty members, 5 lecturers [salaries+EB]</td>
<td>$656.3K</td>
</tr>
<tr>
<td>TOTALS</td>
<td>5 languages</td>
<td>2,200 (a) &lt;br&gt; 800 (b)</td>
<td></td>
<td>$1.08M</td>
</tr>
<tr>
<td>Avg. cost per student at MIT</td>
<td></td>
<td></td>
<td></td>
<td>$1,013</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Programs Abroad</th>
<th>Country</th>
<th>Student numbers</th>
<th>Cost Components</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAP Language &amp; Culture Study Abroad</td>
<td>Spain, Germany, France (Japan), (China)</td>
<td>40 [2]&lt;br&gt; 20&lt;br&gt; 20&lt;br&gt; (20)&lt;br&gt; (20)</td>
<td>1 lecturer [salary+EB, travel, housing, development stipend = $16.5K], plus $11.7K admin‡; $28.3K for each program</td>
<td>$169.2K</td>
</tr>
<tr>
<td>Summer Programs §</td>
<td>Spain</td>
<td>20</td>
<td>1 lecturer [1 mo. salary+EB, travel, housing, development stipend] plus $11.7K admin#</td>
<td>$28.3K</td>
</tr>
<tr>
<td>TOTALS Going Abroad</td>
<td>5 countries&lt;br&gt;(7 programs)</td>
<td>140</td>
<td></td>
<td>$ 197.5K</td>
</tr>
<tr>
<td>Average cost per student going abroad</td>
<td></td>
<td></td>
<td></td>
<td>$1,411</td>
</tr>
</tbody>
</table>

*Assumes no overhead (base only), nor support for student tuition, travel, housing or stipend and omits any costs for added administrative, office space and classroom space.

‡ Number of students currently enrolled annually (1,400) in foundational language courses on campus plus expansion by 800 students.

† Current country programs. Expansion countries in ( ).

§ Three-week programs. Alternative six-week program, including intensive MIT-taught language subject, would cost about $33K per program, exclusive of foregone summer tuition.

# Administrative costs for Germany borne by MISTI, for others by Study Abroad Office.
intensive language and culture subject to the students while abroad. The faculty member would also run a project lab and seminar, also credit-bearing, in which each student is required to be involved in a hands-on project with a citizen of the country in the student’s major field. These projects could involve MIT alumni or comprise UROP projects supervised by MIT faculty members at MIT. Students would share their project information in the weekly seminar. This kind of program would cost MIT roughly 50% more than the 3-week programs, perhaps $33K for instructor salary, travel and housing, plus administration, exclusive of any foregone MIT summer tuition.
Appendix 10

Comment on the Report of the Task Force on the Undergraduate Educational Commons

The Task Force on the Undergraduate Education Commons produced the report of its two-year deliberations midway through the GEOMIT Committee’s deliberations. Notably, the Task Force dedicated one of the five chapters of its October 2006 report to recommending the addition of significant international experiences to an MIT education. Its rationales are well argued in that chapter, and we find no need to duplicate the Task Force’s eloquent expression of them. The summary of its recommendations is reproduced below together with a brief commentary on each recommendation, some of which are expanded elsewhere in this report.

A10.1. The Institute should undertake immediate actions to undergird the efforts of existing programs at MIT that have proven especially effective in creating meaningful encounters between undergraduates and foreign countries. These actions include assessing the optimal sustainable scale of these programs, the resources necessary to reach this scale, and feasible strategies for expanding the reach of these programs.

GEOMIT response: Global educational programs have grown up at MIT and comprise multiple models that were described previously in §2. The programs are inventive and highly effective but presently provide opportunities for only about 15-20% of MIT undergraduates (and, sometimes indistinguishably, for graduate students as well). MIT has invested little in these initiatives from central funds; much like MIT’s research enterprise, the programs have sought their own funding bases from foundation, government and industrial sources.

A10.2. The Dean for Undergraduate Education should convene a committee to develop a comprehensive strategy to ensure that, within five years, any MIT student who wishes to undertake meaningful study, work, or internships abroad may be able to do so without financial aid or academic penalty. In particular, students who undertake meaningful study abroad should be able to graduate in four years and will be assisted in financing foreign study, especially for summer experiences, where financial aid is generally unavailable.

GEOMIT response: Dean Hastings has already convened the GEOMIT Committee as an ad hoc study body to provide strategic assessments and recommendations for a global education program. To provide ongoing advice and carry out implementation, the GEOMIT Committee recommends that a permanent body be established, as a separate Faculty Advisory Committee (perhaps on the model of the Committee on Curricula or Committee or Graduate School Policy, which include both faculty and administrative members), or as a sub-committee of the Committee on the Undergraduate Program.

A10.3. The Dean for Undergraduate Education should provide intellectual guidance for the expansion of MIT’s engagement with international education at the
undergraduate level. The Dean should have the necessary resources to encourage faculty members to explore formal arrangements with comparable universities in other countries, in order to promote undergraduate study and research exchanges.

GEOMIT response: It is clear from our study of the existing global educational programs at MIT that only with substantial resources can these models (or any prototype models) be expanded by the factors of 3-5 needed to approach anything like universal provision of opportunities.

A10.4. The Committee on the Undergraduate Program will issue a call to all academic departments, requesting that they provide formal guidance to all majors who may wish to pursue international study. Departments also should be encouraged to explore developing educational partnerships with universities in other countries and develop avenues for undergraduates to gain international experience during the IAP and the summer. The Dean for Undergraduate Education should ensure that information about each department’s international education opportunities is updated annually and widely disseminated to current and prospective students.

GEOMIT response: The committee agrees that Schools and Departments should be encouraged, rather than required to advise and direct students towards global educational experiences. The Global MIT website provides at least one vehicle for widespread dissemination of information about viable departmental initiatives and models. But a website cannot offer individually-tailored advice, and the GEOMIT Committee recommends establishing a Global Education Office to most effectively inform and promote available global programs.

A10.5. The Dean of Humanities, Arts and Social Sciences should commission a study of current and future demand for foreign language instruction at MIT, with the goal of devising a plan for meeting the demand that may exist. The Dean for Student Life, working with the deans of the schools, should bolster the internationalizing missions of the Institute’s international theme houses and, where necessary, work to strengthen ties between these residences and academic units.

GEOMIT response: While the GEOMIT Committee for the most part concurs with these recommendations of the Task Force on global education, certain other of the Task Force recommendations regarding the first year experience with respect to General Institute Requirements (GIRs) we feel are at odds with the realities of the enfolding global education process. In particular, the structure proposed for the first year requirements substantially precludes a freshman from beginning (new or ongoing) language instruction in a foreign language in the first year. Given that the Committee expects that significant opportunities for experiences abroad will be provided as early as the summer following the freshman year, and certainly during IAP of and the summer following sophomore year, and that most students arrange any study abroad experiences in the junior year, then beginning language instruction only in the sophomore year provides too little time to acquire any significant facility before those major second or third-year experiences, nor even to complete the recommended four-semester sequences of language instruction
established by the Foreign Languages and Literatures (FL&L) section of the School of Humanities, Arts and Social Sciences (SHASS).
Appendix 11
The Value of an International Experience in the Students’ Own Words

A11.1 MISTI

MIT-China Program
“MIT-China has helped me attempt new things. I was studying mechanical engineering at MIT when I learned about MIT-China's pioneering efforts to introduce and implement MIT OpenCourseWare content in China. I took a spring semester Chinese language course and then participated in the pilot OCW project at Qinghai University in Xining on the Qinghai-Tibetan Plateau. Upon returning to MIT that fall, CNN interviewed and filmed me on my Qinghai OCW teaching experiences for its television documentary, ‘Global Challenges.’ My interest in China had just begun. I then studied second year Chinese at MIT and went on a second MIT-China internship. Today I am the general manager of an American engineering design company based in Shenzhen, Guangdong Province.” Peter Jeziorek, SM, PhD ’06, Course 2

MIT-Japan Program
“I wanted to find an internship at a company where I would have a chance to work on cutting-edge research and encounter new ideas, so I was excited when the MIT-Japan program arranged an internship for me at NTT DoCoMo’s Network Research Labs. Since my research interest is in wireless and mobile networks, this was a perfect match for me. My first day of work, they gave me my own keitai (that's Japanese for mobile phone). I spent hours playing with different functions, games, and other applications installed on it like the millions of Japanese who spend hours on the train every day completely immersed in their keitai... It's so exciting knowing the research going on at my company has such a big impact on people's lives!” George Lee G, Course 6

“Surprisingly, working as a team proved to be a challenge. MIT encourages students to collaborate, but it's no substitute for hands-on experience in the corporate world. For example, Toyota has a policy that goes something like ‘everyone knows everything.’ When my partner and I ran into a speed bump, our supervisor had us introduce our project to our entire 12 person group in order to make our problem everyone's problem and get suggestions and feedback. Learning how to use other people to maximize your efficiency takes time, but with practice it's an invaluable tool.” Bryan Gortikov ’08, Course 3

MIT Germany Program
“The MIT-Germany experience has brought me to an amazing job opportunity at Siemens Management Consulting, where both my engineering and business skills are put to use in reshaping one of Siemens’ largest divisions. In my very first week I did everything from dining out with top Siemens executives to calculating a dynamic cost gap between Siemens and their competitors. This opportunity has allowed me access to experiencing a career in management consulting, while at the same time using my German language skills and putting my MIT Sloan School courses to good use. The support I have gotten from the MIT-Germany program has been incredible. It was truly a first class, full service experience.” Carlos Enrique Gorbea Diaz MBA’06, Course 15
MIT-India Program
“I think it was around junior year that it occurred to me that although MIT is one of the best places in the world to learn how to solve problems, many of the world's most pressing problems were not at MIT. MIT-India found an opportunity to work with the Kushal Foundation, a non-profit providing free primary health care for children and prenatal women living in the slums of Bangalore and surrounding villages. At Kushal I was involved in several projects, through which I experienced personal growth and learned from individuals from diverse cultures a greater sensitivity to the different ways people view health and medicine. It was wonderful to experience globalization in full force in Bangalore, from dosas (a local food) wrapped in a newspaper advertising jobs in Google, to the Kushal Foundation itself that was founded by pioneers of Bangalore's IT industry. This experience was a tremendously satisfying and meaningful experience—a chance to do good.” Gilad Evrony '07, Course 9

MIT-Italy Program
“Over the summer I had the good fortune to spend two months working for one of the most exciting companies on the planet—Ferrari—in Maranello, a small town in the hills near Modena, through MIT-Italy. Ferrari believes in excellence, and I was surrounded by it. I learned about the company's vision, leadership, attitude toward employees, how they operate, and how they make decisions. It was important to participate at Ferrari and to experience the soul of the company. Cars can be beautiful, but they also can smell bad and pollute the environment. My goal is to design cars that are good for the city.” Patrick Kunzler G, MAS

A11.2 Study Abroad
Cambridge-MIT Undergraduate Student Exchange (CME)
“At Cambridge, I learned how to approach a topic as an independent scholar, including how to search through books and other resources on my own. Also, because homework was not graded, I decided how much work was needed to learn the material to what I considered a satisfactory level. Even the essays I wrote were solely for my own benefit. I found this self-directed approach to work an interesting experience. By the end of the year, I felt that I was able to step back and say, ‘What do I want to get out of this assignment?’ This experience gave me a new appreciation of the purpose behind homework and the learning process as a whole, which I was not able to realize at MIT where I felt I needed to focus more on grades than the learning process. Besides helping me grow as a student, every experience during my year in the UK helped me grow as an individual. I learned how to navigate a new banking system, acquire visas, and plan trips around the entire continent of Europe. By the time I completed my year in Cambridge, I felt that I could backpack anywhere with little fear of getting lost or being taken advantage of, despite my inability to speak a language or read street signs. But what I will remember most from my time at the University of Cambridge is the friends I made and the experiences we had. My time abroad was not only a great time on its own, but it also has enhanced my overall MIT experience through my new enthusiasm for learning and my new way of looking at MIT. Since my return from Cambridge, I have come to one conclusion: deciding to participate in the Cambridge-MIT Exchange was the single best choice I made since attending MIT.” Sam Kesner, Course 2 (CME 2004-05)

“The entire year in Cambridge was amazing, definitely one of the best decisions I've made.” Mirat Shah ’08, Course 3 (CME 2006-7)
MIT-Madrid Program

“I am extremely thankful for the opportunity to study abroad in Madrid through the MIT Madrid Spring 2006 Program. While living in Spain I not only had the opportunity to learn about the Spanish language and culture, but also to grow as an individual. Instead of studying Spanish in a classroom environment, I lived Spanish 24 hours a day—an immensely different experience that allowed me to place what I already knew of the language and culture into context, and to enrich my understanding of both tremendously. I also overcame my fear of speaking Spanish to native speakers by studying abroad, as well as faced many new challenges I never would have encountered at MIT or in the US. Living in Spain for the semester allowed me to see the world from a perspective I had never been able to experience while in my home country. Spain, its people, and its culture not only taught me several things I never could have learned without studying abroad, they also captured my heart. I have many fond and wonderful memories of my time abroad that I will cherish forever.” Heather Coffin, Course 21S (MIT-Madrid 2005-06)

“The MIT-Madrid semester was the most transformative thing that I have done at MIT. It not only opened new cultural and intellectual perspectives, but the internships I completed in two Spanish hospital settings gave me the opportunity to see how medicine worked in a socialized system. I became fluent in Spanish, lived Spanish culture on a daily basis with my host family, and made friendships that will last a lifetime. Appreciating the pedagogical, social and intellectual differences between the Spanish university and MIT, making connections that will endure forever in a culture that is not my own, and viewing the U.S. from a very different perspective will shape my future perspective as a physician and as a scientist.” Nicole Kouliisis ’09, Course 7

“IAP in Madrid changed my outlook on travel and gave me confidence I did not acquire through any other experience at MIT. My Spanish improved quickly because I was forced to speak it on the streets and with my host family 24/7 to get by. That made me push past my internal fear of trying things that I feel I'm not good at, and it has helped me today even in Korea. Although I'm considered fluent in Korean, the fear of speaking and messing up my pronunciation has always made me silent. But after going to Madrid and pushing past that comfort zone, I've been a lot less scared to speak and much happier with my relatives in Korea. I enjoyed the sheer joy of travel alone with friends on weekends all over Spain and realized that I could make it on my own. I learned a new respect and love for a culture I had not known. I feel ready to be a citizen of the world!” Jean Choi ’07 Comparative Media Studies

Killam Exchange Program

“My time at McMaster has truly been unforgettable. Even from the first day, any anxiousness from starting the semester disappeared with the help of McMaster’s welcoming community. I loved all my classes and felt that there was a unique medical perspective on the material. In an orientation in Ottawa, the Killam Fellows were given an incredible opportunity to meet and interact with one another. I have formed personal relationships with the people I have met through the Killam Fellowship Program and keep in touch with many of them. Each Killam Fellow was unique and offered something I could learn from them. The Killam Fellowship Program helped me develop academically as well as socially while working towards better mutual understanding between the United States and Canada.” Lara Hershcovitch, Course 9 (Killam Fellow 2005-06)
Course 4 Architecture Exchange Program with TU Delft

“This program mostly enrolled exchange students from other schools and countries. Very few were American, however, which gave me the opportunity to befriend people from all different countries and learn about many different cultures and customs…. Such a diverse student body provided a fresh perspective on architecture in the classroom. My classmates came from a variety of backgrounds—some had served in mandatory military service out of high school, one had been the apprentice to a carpenter before entering architecture school, etc. Our classroom became a symposium where different schools of thoughts came together. Opinions and beliefs that were otherwise taken for granted back at our home schools were questioned and challenged in Delft. Moreover, such a diverse student body meant that people brought in a wide variety of expertise to the group. One person was an expert at computer rendering, while another person was experienced with construction methods. Some people were knowledgeable about residential design, while others knew a lot about designing high-rises. In the end, everyone learned just as much from our instructors as we did from each other. Living and studying in Delft was one of the most fun and inspiring things I have ever done. It helped enrich my life on a personal and professional level, allowing me to learn about different cultures and see some of the most innovative architectural works of today. I could not have asked for more.” Stephanie Hsu, Course 4 (Fall 2005 Exchange)

Course 3 Materials Exchange with Oxford

“I decided to study abroad during my senior year with the intention to better understand the subject I am interested in. The exposure to different approaches in teaching and research at Oxford has helped me to better understand the fundamental concepts in materials science, and it has opened my mind to see the endless possibilities and methods that can be applied to one problem. The diverse and outspoken members of the university community have also exposed me to different viewpoints on world affairs from different people around the globe. The experience has not only enriched my academic career, but more importantly, has broadened my vision of the world.” Tania Chan ’07, Course 3 (Fall 2006 Exchange)

Study at Bogazici University, Turkey through an Outside Study Abroad Provider

“That was June 22, 2005. I remember that I was scared and yet very excited and determined to make this an unforgettable amazing experience. I spent both a summer and fall semester at Bogazici University through a SUNY Binghamton program, which I surprisingly found to be completely different experiences in each semester. … Being in Istanbul, the only city that spans two continents, was breathtaking. Sitting by the water and looking over at Asia from the European side, I was able to think about all the things that are important to me. … Being abroad was a roller coaster, but most definitely worth it. With my sense of self now solidified, I feel stronger and much better prepared to deal with the next stage of my life. I fell in love with the world so much that I am planning a career abroad after graduating from MIT.” Sharlina Hussain, Course 17 (Summer and Fall 2005)

Study in Cyprus through Global Learning Semesters, an Outside Study Abroad Provider

“My semester abroad opened my eyes to the world, no mean feat after the self-imposed exile that an MIT engineering education seems to require. One might think that I set myself back a semester by not completing any classes required for my major, but this semester gave me a breath of fresh air and a new perspective that I think will help me enter into the fall semester revitalized and invigorated. Studying abroad is, I think, one of the best and most influential experiences a student can have. It isn’t easy. It is all about learning to live outside your comfort zone. Studying abroad will teach you to grow in ways that you never can by forever living in the familiar. In an ideal world, I think that all students should study abroad, and I definitely think that more MIT students need to. So good luck, and GET OUT THERE!” Holly Laird, Course 2 (Spring 2006)
January Scholars in France program

“I found the cultural and language immersion of this January Scholars in France trip very valuable. Once in a while, I find myself saying something in French instead of in English when talking to my friends or people on the streets of Boston. In addition, with our knowledgeable guides (Gilberte, Sophie, Emilie, Vincent, etc.), we visited hidden sections (quartiers, courtyards, churches) of Paris I never would have gone to on my own or noticed interesting details I would have skipped otherwise. Finally, this trip gave me the opportunity to meet many people living in Paris and experience la vie quotidienne. The best way to truly understand a place is to get to know the people that live there and I feel that this trip helped me accomplish this. Thank you very much to everyone that helped make this experience so rich and full of memories.” Natalie Rubinstein ’07, Course 7 (January 2007)

A11.3 Major Foreign Scholarships

Marshall Scholarship

“I had the benefit of a wonderful college experience at Clare College, where I sang and played music and got a chance to really know really deep and high-quality individuals from a variety of backgrounds within and beyond Britain. My thesis supervisor was also a member of Clare and I really appreciated the chance to live and work within such a fantastic community. The coursework and research I completed within my research degree are providing a wealth of information from which I continue to draw upon in my writing and design work. As part of the Marshall program I was a visiting lecturer in the American Studies lecture series program at Nottingham University, where a colleague and I presented (in 2004) the planning and policy challenges related to the former World Trade Center site in lower Manhattan. Many of my Marshall colleagues and friends from Cambridge and Oxford and London all live nearby in Boston and we enjoy spending time together as we all continue our research and professional development. I gained so much from learning to communicate about my field within the context of other humanities and sciences, and had a very intense period of international travel and research - since I study cities this was an essential component of expanding the breadth and depth of what I understood from in-depth firsthand experience and observation.” David Foxe ’03, Courses 4 and 21M (Marshall Scholar, Clare College Cambridge, 2003-5)

“At Oxford, I had the opportunity to study neuroscience with a great supervisor and lab group in the department where Nobel laureates Charles Sherrington first described the synapse and his student John Eccles discovered chemical transmission at the synapse forming the foundation for modern neuroscience. My background in neuroscience from MIT was great preparation for jumping right into my thesis research in Oxford. I was able to both publish my work and present it at a half dozen conferences in Europe and the U.S. during my doctoral training. In addition to a great scientific atmosphere, one of the main advantages of training in Oxford (vs. in the U.S.) is the collegiate system. I lived, ate, and socialized at my college (Balliol) where I met many of my friends who are mathematicians, physicists, religious philosophers, musicians, historians, and political scientists. Through informal conversations at dinner to traveling with friends internationally, I not only gained a wider world view but have formed lifelong friendships that continue to enrich and challenge me.” Susannah Mierau ’00, Course 9 (Marshall Scholar, Balliol College Oxford, 2000-2003)
Rhodes Scholarship

“I greatly enjoyed the Master's in Neuroscience I did at Oxford: the course was well organized, structured and I got exposed to a broad range of areas. I'm still in touch with my research supervisors from one of my rotation projects there, and I ended up continuing to collaborate with them after the course ended to finish up some research results. For me, Oxford was a time to explore a world outside of my career path so far. I was given the liberty to explore a subject outside of my undergraduate background and the time to travel extensively. But it was the people I met there that have become the most important legacy of my Oxford experience. It's nearly been 4 years since I left England and it is rare that a day goes by without me talking to at least one of the friends I made there. I continue to be inspired by these friends who come from a variety of backgrounds and study a wide range of subjects, and feel lucky that I had the opportunity to meet them.” Emma Brunskill G ’08, Course 6 (Rhodes Scholar, Oxford 2001-3)

A11.4 Public Service Projects

Public Service Fellows

“I recognize the impact a Fellowship can have, both socially and technologically, on the lives of the student and the community partner. The students' appreciation of challenges in the developing world will grow far beyond what it could at MIT. Furthermore, these Fellowships ensure that the technology co-created by our students and partner workshops will go from inception to implementation in Africa in the span of only six months... I love diving into the nitty-gritty of engineering problems, and my project this summer provided many opportunities to do so. I was in my element scouring the streets for bicycle components that could be used in wheelchairs, coming home and crunching the numbers” Amos Winter G (Public Service Fellow, Tanzania)

“The PSC Fellowship provided an ideal opportunity for me to make a lasting contribution to an established NGO in Sri Lanka, while helping with the immediate tsunami relief effort. I only hope that I will come across more such opportunities in the future to make a real difference, while learning during the process.” Sumudu Watugala ’05 (Public Service Fellow, Sri Lanka)

IDEAS Competition

“I knew that Malians read by candlelight, but it never really hit me that doing so meant sacrificing their eyesight. I knew the Kinkajou was a really fun experiment for an MIT student to build, but I couldn't imagine that this project could help so many people.” Stacy Figueredo, ’03 Courses 2 and 4 (Kinkajou team, IDEAS Competition winners)

“Without seed money and support from the IDEAS Competition it wouldn't have been possible for this to happen. I was just working in my little lab, not thinking how to use my research to make a difference in the world. IDEAS made the project get out of the lab and into the field.” Tommy Ngai ’02 (Kanchan Filter team, IDEAS Competition winners)

“It was really interesting to try and figure out how our MIT-based technological knowledge could work with the Centro Technico's efforts in a useful and productive and sustainable way.” Emily VanArk G ’07 Course 12 (Floodsafe Honduras team, IDEAS Competition winners; quoted in Science Daily, May 4 2005)
A11.5 Departmental Internships and Curricular Initiatives

Course 22 Summer Internship in French Nuclear Industry
My three month summer stage (internship) with Framatome ANP in Lyon, France was truly invaluable to my nuclear engineering education because not only did I gain a significant amount of technical and managerial knowledge, I also gained a deeper cultural understanding. I knew right off of the hat that this was going to be an exceptionally rewarding internship because instead of receiving the plug-and-chug kind of work that interns are typically given, my advisor assigned me the high-level responsibility of drafting plant design requirements for an advanced nuclear reactor concept. The importance of this project allowed me to attend design meetings in Paris where I had the opportunity to meet and work with top-notch engineers from all over the world. Besides the expansion of my technical knowledgebase, this project also allowed me to learn about a project management approach—systems engineering design—that I've frequently heard about but had never actually seen implemented. This approach provides an effective mechanism by which to tackle the problems of managing a large, international, multi-disciplinary project. In all of my research projects at MIT, the groups tended to be small enough such that communication was as rapid as it was lucid. However when working with a large international team, the systems engineering design approach provided an effective organizational scheme to keep each of the project groups on the same page. This experience equipped me with both the language and the tools by which to overcome such barriers as differing definitions of technical terminology and varied regulatory requirements. I also gained a lot culturally; the complete immersion in the French culture allowed me to learn far more than can ever be taught in a classroom or book. For example, one can easily read all about the Arc de Triomphe in a historical text but I don't think it can ever be truly experienced until one actually stands at its base and gazes up at hundreds of years of French history. In addition to learning about a new culture, the total immersion moreover allowed me to gain a better appreciation for my own vis à vis recognition of different American cultural nuances that I previously hadn't given a second thought to. I'm convinced that the technologies and techniques I learned working alongside Framatome engineers this summer will serve me well in my future career with the nuclear power industry. I am deeply indebted to both CANES as well as everyone at AREVA for making this incredibly valuable experience possible. Tyler Ellis '06 Course 22 (Summer 2006 intern, facilitated by MIT’s Center for Advanced Nuclear Energy Systems and MIT-France)
Appendix 12

International Education at two other Institutions

Almost all institutions of higher learning of any repute have developed vigorous study abroad programs within the last decade. Most have done so in an attempt to provide a competitive edge in attracting high quality students, and a few have found it to be a useful revenue stream. Smaller prestige colleges, which send a large fraction of their junior classes on study abroad programs, are able admit more students because of the dormitory capacity freed-up. Many better-endowed institutions have developed a significant physical presence abroad, such as the Tufts-en-Tailloires program in France and an NYU-Paris campus on an island in the Seine. Stanford notably maintains an extensive network of study-abroad centers.

One reason that U.S. institutions are driven to establish these outposts—and often bring in their own faculty to teach in them—is that it is the only way to service the large numbers of U.S. undergraduates demanding an educational experience overseas. The complications of having to make individual arrangements with a large number of very different institutions, vetting curricula, adjudging and awarding transfer credit (not to mention trying to assess grade equivalents) are just too daunting when 50% of a class heads for foreign shores. Though frequently arranging for instruction by indigenous university academics, non-indigenous facilitator organizations, catering to the U.S. academic community at large, invariably fall short of providing genuine educational experiences at a foreign institution, because the U.S. students are usually not following the same degree program curriculum as their foreign national peers, nor being assessed by the same instruments (such as the annual comprehensive Tripos exams at Cambridge or the Oxford finals at the end of three years) at the same standard. To single out just one of these many facilitators, the Butler University (Indianapolis, IN) Institute for Study Abroad (IFSA) program, operates in 13 countries and arranges one- or two-semester “visiting student” status for U.S. undergraduates at foreign universities. Students attend the same lectures and tutorials as their foreign peers, live in the same residences (even, in Oxford and Cambridge, as visiting members of a college), but still do not pursue degree programs and are not assessed by the same examination procedures, though they may nevertheless receive credit from their US institution.

MIT has been insistent on direct educational experiences in the arrangements it has made in partnering with foreign institutions, and the Committee supports this principle strongly. Several examples were cited earlier that involve direct collaborative arrangements between MIT and the host university. The problem of how to expand such bona fide programs to accommodate larger numbers of MIT students remains, however. It instructive to examine two current institutional strategies for expanding international experiences: that of Georgia Institute of Technology, like MIT an institution with a largely technological focus (11,000 undergraduates, 60% majoring in engineering disciplines); and that of Yale, a peer competitor with whom we compete for the most talented students but with little or no engineering presence. The first embraces a comprehensive plan for ramping up to 50% student participation, the second offers an institutional mechanism for alleviating financial disincentives for student participation.

-90-
A12.1 Georgia Institute of Technology. Georgia Tech has established and prominently funded an Office of International Education (15 professionals under a dynamic faculty director, Prof. Howard Rollins and overseen by an equally dynamic Vice Provost for International Development, Jack Lohmann) with the ambitious goal of providing significant international experiences for half of Georgia Tech undergraduates by 2010. Their flagship “International Plan” incorporates experiential programs integrated into major degree-requirement curricula; so far, half of GT degree programs participate, and the expectation is to accommodate 300 undergraduates per year by the end of the decade. In the plan, three preparatory subjects are required (global economics, international relations, country/region specific subject) and a capstone subject on return, tying the international experience to the student’s discipline. Language competency is required, but assessed by examination, not based on coursework. Two semesters (26 weeks) of international experience are required, comprising any two of: study abroad; internship; or research. The designation “International Plan” is appended to the degree program name on the student’s diploma to acknowledge participation. The internships are administered by the Division of Professional Practice (formerly Co-op Office) and may be configured as an international co-op program.

Georgia Tech maintains academic semester programs in 21 countries, viz: with Argentina, Australia (Sydney), Brazil, Chile, China (Hong Kong, Shanghai), Denmark, Egypt (Cairo), England (Leeds, Sheffield, LSE, UCL), France (Lyon, Grenoble, Compiègne, Sciences-Po, CERAM, Paris-Dauphine), Germany (Koblenz, Tübingen, TU München, Duisburg, Leipzig, Stuttgart), Japan (Waseda, Fukuoka, Tokyo Tech), Korea (Yonsei, SNU, KAIST, KUBS), Mexico, Netherlands (Delft), New Zealand, Scotland, Singapore (NUS, Nanyang, SNU), Spain (Alicante, Valencia, Barcelona), Sweden (Chalmers, Lund), Switzerland (ETH Zürich) and Turkey. Eight of the 48 semester programs are graduate level (servicing some dual MS degrees), and summer programs are also offered at a number of these sites and additionally at other sites in Belgium (Brussels), UK (Oxford) and Italy. Georgia Tech also maintains a permanent graduate program (Georgia Tech Lorraine) in France. Significantly, students do not focus exclusively on technical subjects during a study semester abroad, but instead typically choose, in addition to two engineering electives, several area-focus, international economics and international relations subjects that satisfy the International Plan requirements.

A12.2 Yale University. Yale has only 19% of its students enrolled in the biological or physical sciences and essentially no engineering. In recent years, its students have studied abroad in 35 countries, with a large recent presence in Asia. It maintains only two of its own international programs, Yale-in-London and the Peking-Yale University Joint Undergraduate Program in Beijing, but supports its students’ participation in eight international “affiliated” programs administered by other entities: Council on International Education Exchange (CIEE), Denmark International Study Program (Copenhagen), Institute for International Education of Students (IES, Chicago), Inter-University Program for Chinese Language Studies at Tsinghua University (Beijing), Inter-University Program for Japanese Language Studies (Yokohama), Kyoto
Consortium for Japanese Studies (administered by Columbia for 14 U.S. universities), London Academy of Music and Dramatic Art (LAMDA), and University College London. Yale academic credit is transferable from these programs (and also from other numerous “approved” but financially-unsupported programs abroad in many countries, such as those administered by Butler University IFSA). The costs of these affiliated programs are typically about $15,000 for one semester, or $25,000 for the academic year for tuition, plus room, board and transportation.

Yale’s collaborative arrangement with Peking University (PKU, or Beida, founded 1898) began last Fall 2006 and provides up to 24 Yale students with English language instruction in a variety of disciplines and beginning Chinese language instruction at PKU each semester. Yale financial aid packages can be applied. Yale-in-London is the academic arm of the Paul Mellon Center for Studies in British Art in London (directed by Yale professor Brian Allen) and provides a Spring semester of seminars and field trips to cultural attractions and performances. Yale students pay normal Yale tuition, and Yale’s financial aid packages are applicable.

Yale provides financial support for international study experiences through two vehicles: 1) the Richard Light Fellowships (begun in 1996, and in 2006 awarded to 106 Yale undergraduates, non-PhD graduates students and professional students) for study of Chinese, Japanese or Korean in China, Taiwan, Japan or South Korea; and 2) the Yale College International Term or Year Abroad Program. The Light Fellowships provide tuition, room and board for a semester at an approved language program in East Asia for students who have had at least a year’s intensive study of the language at Yale. The International Term or Year Abroad Program extends award of full Yale academic credit, and notably transfer of Yale financial aid, for participation in any of the eight “affiliated” programs (in addition to its own programs at PKU and in London), even though Yale students do not pay Yale tuition to Yale during their participation. Financial aid is applied for a maximum of two semesters, starting Spring semester sophomore year; students must have attained at least a B average at Yale and must demonstrate proficiency in the foreign language in which they intend receive subject instruction. This magnanimous gesture, which will be called the “Yale solution,” removes a huge disincentive to participating in study-abroad programs for students on financial aid.

At the graduate level, in addition to making the Light Fellowships available to non-PhD graduate and professional students, Yale’s MBA students are since last Fall required to study abroad, traveling to one of eight destinations (Argentina, China, Costa Rica, India, Japan, Singapore, and combined trips to England and Poland, and to South Africa and Tanzania) in the care of Yale MBA instructors.