Final Report of the CUP Subcommittee on the Communication Requirement

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CUP Subcommittee on the Communication Requirement

Gene Brown, Co-chair

Langley Keyes, Jr., Co-chair

Tarek El Aguizy '99, student member

Steven Hall, member

Ole Madsen, member

James Paradis, member

Ruth Perry, member

Steven Pinker, member

Erick Tseng, '01 student member

George Verghese, member

Madeline Brown, staff

Leslie Perelman, staff

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Executive Summary

The development of good writing and speaking abilities is fundamental to the goals of a university education. Clarity, organization, and eloquence in the marshaling of facts and ideas into persuasive arguments have universal value, regardless of a student's choice of career. Today, MIT departments and faculty recognize that these abilities are critical to their educational mission. The professional world is changing. Engineers, humanists, consultants, and scientists all are increasingly called upon to inform and persuade a wide variety of audiences. Consequently, departments are integrating instruction and practice in writing and speaking into their undergraduate major programs.

The current undergraduate Writing Requirement does not adequately support this major curricular change. Because the Writing Requirement is, at best, an inefficient and not very effective mechanism for ensuring minimum competency in writing, it does not adequately instruct undergraduates in the specific conventions of professional writing in their field, nor does it instruct them in the crucial abilities to communicate effectively through oral and visual media.

To provide MIT undergraduates with the skills and abilities necessary for both professional and personal success, we propose that the Faculty fulfill its intention, articulated in April 1997, to replace this competency-based requirement housed in the central administration with an instructionally-based Communication Requirement housed in academic units. The pilot programs and experiments mandated by the Faculty and undertaken by departments during the past two years demonstrate that, with relatively modest additional institutional support, integrating instruction in writing and, eventually, speaking throughout the undergraduate curriculum is feasible. These experiments indicate that, rather than diminishing academic content, this instruction and practice may often enhance it. In addition, these pilot programs offer several models for how to provide such instruction without significantly increasing the workload of regular faculty.

Specifically, we propose that, beginning with first-year students entering the Fall 2001 term, the current Writing Requirement be replaced with a new General Institute Requirement: the Communication Requirement. Just as UROP made ***doing research*** a regular part of undergraduate experience at the Institute, the Communication Requirement will make ***communicating information*** a regular part of undergraduate education at MIT.

The **Communication Requirement** will mandate that students must complete at least one Communication-intensive (CI) subject by the end of their first year, two CI subjects by the end of their second year, three CI subjects by the end of their third year, and four CI subjects before they receive the SB degree.

- CI subjects will require practice in writing and will usually include instruction and practice in both writing and speaking.
- The Communication Requirement should not add additional subjects into an already overly burdened undergraduate curriculum. Consequently, most Communication-

intensive subjects will be developed from existing subjects in major programs and within the HASS Curriculum.

- In their freshman year, students must take a designated expository writing subject as their first CI class unless they display basic competency in expository writing by passing the Freshman Essay Evaluation or its equivalent. Students who do demonstrate competency will have the option of substituting another HASS CI subject for the expository writing class.

- In the sophomore year, all students will take at least one CI subject in HASS.

- In subsequent years, students will normally take two CI subjects in their major program. They may, however, with departmental approval, substitute a CI subject in HASS or another department for one of the two CI subjects in their major.

- Beginning with the Class of 2005, each department will usually offer at least two or more CI subjects as part of its undergraduate major.

- All CI subjects in major programs must provide substantial instruction and practice in writing. Beginning with the Class of 2007, at least one CI subject in each major program must provide substantial instruction and practice in oral presentation.

- A student's failure to complete the required number of CI subjects by the end of each academic year shall be considered lack of normal progress toward the SB degree.

Governance. Departments and other academic units will have wide latitude in defining the writing and speaking activities appropriate for their particular academic and professional cultures. The Communication Requirement will be governed by the Subcommittee on the Communication Requirement, a standing Subcommittee of the Committee on the Undergraduate Program. This body shall act with power in establishing educational policies for the Communication Requirement and will administer and manage the transition from the Writing Requirement.

Institutional Support. Academic units are encouraged to develop their own resources and staff for instruction in writing and speaking. However, because this new curriculum must not significantly increase the workload of an already overworked faculty, additional Institute support will be necessary for its successful implementation.

1. Introduction

In March 1997, the Committee on the Writing Requirement (CWR) and the Committee on the Undergraduate Program (CUP) brought to the Faculty a proposal for the development of a new requirement that would ensure instruction and practice in writing and speaking become a regular and substantial part of undergraduate education at MIT. On April 17, 1997, the Faculty responded affirmatively by stating its belief that:

> the ability to communicate clearly is fundamental; that students should receive instruction and feedback in writing and speaking during each undergraduate year; and that responsibility for teaching these abilities should be distributed across the entire MIT undergraduate curriculum.

In addition, the Faculty directed the Committee on the Undergraduate Program (CUP):

> to conduct a series of experiments and pilot programs to help in the design of a new Communication Requirement. These experiments should test different models for incorporating communication-intensive experiences into the first-year curriculum, the General Institute Requirements, and Departmental degree programs. These experiments should be evaluated by a subcommittee of the CUP appointed by the Chair of the CUP, in consultation with the Chair of the Faculty and the Chair of the Committee on the Writing Requirement. The CUP should report back to the Faculty with its recommendation for a new Communication Requirement not later than Spring of 2000.

This action by the Faculty was the culmination of a three-year preliminary assessment process by the CUP and the CWR, and the beginning of a two-year pilot phase to inform the final design and implementation of a new undergraduate communication-intensive curriculum. (The full text of the motion is contained in Appendix A.) In September 1997, the CUP charged a subcommittee, co-chaired by Professors Gene Brown and Langley Keyes, to: 1) develop and publish guidelines for curricular experiments by academic units; 2) solicit and review these experiments and pilot programs; 3) report to the CUP by January 2000 on the conclusions it has reached about the efficacy of the activities it has sanctioned; and 4) recommend one or more possible designs of a new Communication Requirement. (The full text of the charge appears in Appendix B.)

2. Subcommittee Activities

The Subcommittee began meeting in the Fall of 1997. It adopted the following general design principles articulated in the original 1997 report to the Faculty by the Committee on the Writing Requirement proposing a new Communication Requirement:

- Instruction in writing and speaking should develop abilities in both general and technical exposition and should be integrated across all schools of the Institute, in both a student's major and in the General Institute Requirements.

- Experience and instruction in both writing and speaking should occur in each of the four years of the undergraduate program and should be accompanied with frequent and timely feedback from qualified instructors.

- The responsibility of integrating writing and speaking into the undergraduate program should be shared by all schools and departments.

- Oversight of this new curriculum should consist of flexible collaborations between an Institute-wide committee and individual schools and departments.

- The Institute should provide adequate financial and human resources to ensure the effectiveness of the Requirement.

The Co-chairs met with each of the school deans and began meeting with heads of academic departments. Following these discussions, the Subcommittee decided to delegate the responsibility for defining, developing, and supervising communication-intensive pilot programs to academic departments and schools. Moreover, the Subcommittee decided that these academic units were better suited than the Subcommittee to evaluate the efficacy of these programs. Consequently, in early 1998, the Subcommittee published "Guidelines for Departmental Development and Assessment of Communication-intensive Curricular Activities" (Appendix C). This document asked departments to submit proposals for expanding existing communication-intensive activities within their current undergraduate programs or for developing new ones. In addition, the Subcommittee delegated to the HASS Overview Committee (HOC) the primary responsibility for identifying existing communication-intensive subjects in the humanities, arts, and social sciences and for developing new ones.

Professor Rosalind H. Williams, Dean of Students and Undergraduate Education and Principal Investigator for National Science Foundation Grant DUE 9653732, "Developing a Communication-Intensive Undergraduate Curriculum in Science, Mathematics, Engineering, and Technology," delegated substantial authority to the Subcommittee Co-chairs to disperse funds from this award. The grant was specifically solicited to support the Faculty initiative to develop a communication-intensive curriculum. This support, along with other financial support from the School of Humanities and Social Sciences, the Office of the Dean of Students and Undergraduate Education, and the Barker Foundation, was crucial in developing and maintaining the pilot programs.

2.1 Summary of Communication-Intensive Experiments

2.1.1 HASS Pilot Programs

Beginning in Fall 1998, the HASS Overview Committee (HOC) initiated experimental CI subjects within the HASS curriculum. Over the past three terms, over 300 students have taken these HASS CI subjects. In October 1999, the HASS Overview Committee concluded in

its review of the HASS curriculum that there is "hard and convincing evidence for the success of the HASS CI experiment." Excerpts from the HOC Review, including student survey data and summaries of discussions by HASS Faculty teaching CI HASS subjects, are included in Appendix F of this report.

2.1.2 Departmental Pilot Projects and Experiments: Descriptions of Representative Projects

The diversity, ingenuity, and effectiveness of departmental initiatives confirmed the wisdom of decentralizing the development of a communication-intensive curriculum. Of the 16 pilot projects in 11 departments, 10 were evaluated by the faculty involved as significantly improving student communication skills. Some of these projects are already serving as models for instruction at other universities. The following are brief descriptions of some representative projects. (A complete list of these projects with summary evaluations appears in Appendix D.)

- **Laboratory tutorials in mechanical engineering**. Working with Professor John Heywood, the Undergraduate Writing Cooperative has begun intensive group tutorials for students writing laboratory reports in 2.672, the mechanical engineering project laboratory. In addition, instruction in speaking and teamwork skills is a regular part of the Course 2 undergraduate curriculum.

- **Tutorials in oral presentation and writing in Architecture design subjects**. Students in all senior design seminars participate in tutorials conducted by the Undergraduate Writing Cooperative staff from the Program in Writing and Humanistic Studies. In these tutorials, students practice their design presentations, review videotapes of the presentation with the tutor, and revise their written design reports.

- **Writing clinics in 6.021J**. In *Quantitative Physiology: Cells and Tissues*, Professor Dennis Freeman has established writing clinics connected to the two large required laboratory reports. These two clinics are staffed by Professor Freeman and his TA's, with additional support from an instructor from the Undergraduate Writing Cooperative. In addition, Professor Freeman has integrated short writing assignments into the subject's weekly problem sets.

- **The *Biology Undergraduate Journal* and intensive instruction in writing and speaking in *Project Laboratory* subjects**. The Biology Department's initiative, led by Professor Paul Matsudaira and assisted by staff from the Program in Writing and Humanistic Studies, has developed several highly successful and innovative programs. Instruction, practice, and substantial feedback in both writing and speaking are now fully integrated within the junior year project laboratory. Project lab faculty report a dramatic improvement from prior years in both student written reports and oral presentations. Plans are underway to develop a similar but more modest instructional model for the first Biology laboratory subject, 7.02, taken by over 20% of undergraduates at MIT.

The Biology department's most successful and visible initiative has been the *Biology Undergraduate Journal*, created and edited by Professor Matsudaira. By making writing a normal and regular outcome of undergraduate research, the Biology department has extended the basic approach and philosophy of the UROP program to the teaching of writing. Students no longer view scientific writing as a chore to be completed for graduation but rather as an opportunity for them to display their research efforts in an authentic and highly motivating context.

o **Tutorials and papers in subjects in advanced quantum physics**. In Spring 1998, Professor Robert Jaffe began requiring all undergraduate students to write a theoretical paper in the advanced undergraduate Quantum Physics subject, 8.059. Physics graduate students were trained as tutors to help students revise their drafts, and students were also trained to peer-review each other's papers. The practice was repeated in Spring 1999, and now has become a regular feature of the class. The physics faculty reports that the overall quality of the student papers has been excellent.

2.1.3 Findings

In reviewing departmental reports on these experiments, the Subcommittee has come to the following conclusions:

o In some departments, particularly in the School of Engineering, instruction and practice in written and oral communication is already a central and vital part of the major program. (A list of existing communication activities appears in Appendix E.)

o Integrating writing and speaking into undergraduate scientific and technical majors is feasible, and can be done without substantially increasing faculty workload. Indeed, in some cases, having students review and revise drafts before submitting reports to staff teaching scientific and technical subjects may slightly reduce the workload of some faculty.

o In many cases, instructional staff in CI science and engineering subjects require additional help from staff trained to teach writing and speaking.

o Because graduate students are often involved in providing instruction and feedback in CI subjects, their training and supervision is crucial. Several effective models for training Graduate Teaching Assistants have been developed. These models, however, need to be further refined and expanded to provide thorough training and supervision for all graduate students and non-regular teaching staff involved in CI subjects.

o The content and pedagogical approaches of some technical and scientific subjects in each major make them easily transformable into CI classes. However, certain subjects in each major are probably not suited to such a redesign.

- There is no single model for integrating writing and speaking into courses. Rather, the most effective designs are defined through a subject's content, assignments, and overall educational goals.

- Faculty need access to an ongoing source of funding and other resources for the continual development and refinement of CI subjects.

2.2 Required Expository Writing in the First Year and Changes in the Freshman Essay Evaluation

Initiatives by departments to integrate writing into their subjects has drawn attention to the need for the proper sequencing of writing instruction within the undergraduate program. If faculty are going to require their students to write more, they need assurance that all of these students possess basic competency in writing. However, each year approximately 20% of the students in an entering class are identified by the Freshman Essay Evaluation as severely deficient in expository writing skills. Previously, these students received only a strong recommendation to enroll in a writing subject during their first year – a recommendation that most of them ignored. Instead, the majority of students in this group unsuccessfully tried to complete Phase One of the Writing Requirement by other means and finally took an expository writing class as juniors or seniors.

This group of students has long been a major impediment to making writing an integral component of the undergraduate curriculum. There have been consistent anecdotal reports from faculty in HASS, engineering, and science subjects that, although these students usually constitute only about one-fifth of a class, responding to their written assignments demands an excessive amount of faculty time. Furthermore, permitting these students to delay receiving instruction and practice in expository writing until near the end of their undergraduate careers is inefficient. Students end up taking a writing subject only when it will have the least effect on their undergraduate performance.

The Subcommittee concluded that requiring these students to take an expository writing subject during their first year at MIT is a critical first step in developing a communication-intensive curriculum. This policy not only presents a logical sequence of writing instruction, but it also encourages faculty to include more writing in their classes by ensuring that all of their students will possess a minimum level of competency. Furthermore, these benefits are achieved with almost no long-term increase in net cost. Because most of these students eventually take an expository writing subject, such a requirement will produce no long-term increase in overall enrollments, although there will be a transitional increase in enrollments for two to three years.

The Subcommittee and the Committee on the Writing Requirement then requested that the CUP sanction a two-year experiment that would require students displaying significant deficiencies in writing skills on the Freshman Essay Evaluation (previously receiving the designation "Not Acceptable-Subject Recommended") take an entry-level expository

writing subject during their first year at the Institute. The CUP approved the request, and the experiment began in Fall 1999.

2.2.1 Changes in the Freshman Essay Evaluation

This experiment changed the function of the Freshman Essay Evaluation (FEE) from that of a diagnostic instrument making recommendations to a placement test requiring some students to take specific subjects. Consequently, the test needs to be both a reliable and valid measure of student writing. In 1998, acting on a suggestion from the Chair of the Committee on Undergraduate Admissions and Financial Aid (CUAFA), the Committee on the Writing Requirement experimented with giving the test online to students during the summer before they arrived at MIT. Because the online essay questions are now based on readings and students have the opportunity to revise their work, this format provides a closer approximation to undergraduate writing contexts at MIT. By its second year, the pilot had become the default, with 70% of the class taking the online evaluation.

2.2.2 Findings

The following conclusions can already be made from enrollment data and from a recent review of the FEE by the Committee on the Writing Requirement.

- Based on their performance on the FEE, students with significant deficiencies in writing are complying with the requirement to take an expository writing class during their first year at MIT. Of the 208 entering students receiving the score of **Subject Required** on the Freshman Essay Evaluation, 200 have either already taken one of the expository writing subjects in the Fall 1999 term or have preregistered for one for Spring 2000.

- Information about the revised requirement can be communicated clearly and concisely to advisors and students.

- The Online Freshman Essay Evaluation represents a significant improvement over the paper-and-pencil test of past years, and the procedures and administration of the test are essentially sound. (A summary of the recent review of the Online Freshman Essay Evaluation by the Committee on the Writing Requirement is contained in Appendix G.)

Although it is too early to assess the overall educational benefits of requiring weak writers to take an expository writing subject during their first year at MIT, these findings provide positive and encouraging preliminary data.

3. Proposal for a New Communication Requirement

3.1 General Principles:

- **Instructionally-based programs in both writing and speaking housed in academic departments will replace the current competency-based Writing Requirement housed in the central administration**. The major defect of the current requirement is that, like the swim test, it only asks students to demonstrate minimum competency and gives departments few, if any, incentives to integrate writing into their undergraduate programs. In contrast, the focus of the new Communication Requirement will be to provide students with frequent opportunities for instruction and practice in writing and speaking within the context of existing General Institute Requirements and subjects in their major through designated Communication-intensive (CI) subjects.

- **Communication-intensive subjects will usually include practice in both writing and speaking**. Speaking opportunities in CI subjects will range from informal class discussions to formal presentations in a variety of media. Departments and schools will have considerable discretion in defining the specific forms of written and oral communication appropriate to their subjects and curriculum, and the appropriate methods of instruction. However, beginning with the Class of 2007, at least one CI subject in each major program must provide substantial instruction and practice in oral presentation.

- **The Communication Requirement should not add additional subjects into an already overly burdened undergraduate curriculum**. Consequently, most Communication-intensive subjects will be developed from existing subjects in major programs and within the HASS Curriculum. A department may develop one or more new required CI subjects as part of its undergraduate major only within the general guidelines governing departmental degree requirements.

- **Students will normally take one Communication-intensive subject in each of their undergraduate years**. Students will be required to complete at least one CI subject by the end of their first year, two CI subjects by the end of their second year, three CI subjects by the end of their third year, and four CI subjects before they receive the SB degree.

- **All entering students will be required to demonstrate competency in expository writing upon entrance through the Online Freshman Essay Evaluation or an equivalent test**. Students who fail to show competency will be required to take an expository writing class as their first CI subject.

- **The Institute will provide additional resources to support the new requirement**. The current Writing Requirement has been limited by being an unfunded mandate from the Institute to academic units. It is important that the new

Communication Requirement not significantly increase the load of an already overworked faculty. Additional Institute support will therefore be necessary for its successful implementation. In particular, the Institute must 1) fund supplementary instruction in writing and speaking in all parts of the undergraduate program; 2) maintain the momentum of the initiative by providing a permanent source of funding dedicated to faculty development of new Communication-intensive subjects; and 3) ensure the quality of instruction in writing and speaking by developing effective programs to train and supervise graduate Teaching Assistants and other ancillary teaching staff involved in CI subjects.

3.2 Report of the School of Humanities and Social Science and the HASS Overview Committee on the Design of the HASS Component of the Communication Requirement

The Subcommittee requested that the School of Humanities and Social Sciences and the HASS Overview Committee (HOC) develop a Communication-intensive curriculum in HASS that would provide students with instruction and practice in general expository writing skills. In December 1999, the Subcommittee received the following report and has incorporated it into its overall design of the new requirement:

Introduction. As part of the new Communication Requirement at MIT, the School of Humanities and Social Science and the School of Architecture and Planning, which together offer the undergraduate HASS curriculum, are proposing to offer a series of Communication-intensive (CI) subjects. Students will take these subjects to fulfill the first half of the four-year CI requirement, as designed by a subcommittee of the CUP. Although many HASS CI subjects will also be HASS-D subjects, many will be drawn from HASS undergraduate electives. Undergraduates will usually be required to take a minimum of two such CI subjects in their freshman and sophomore years. The new communication requirement, which will be based on sustained opportunities for repeated practice and improvement in writing and speaking, will replace the existing writing requirement, which is based on student demonstration of competency.

The proposed communication requirement will reinforce undergraduate student writing at MIT in the following new ways: (1) All students who do not perform satisfactorily on the Freshman Essay Evaluation will be required to take in their first year an expository writing subject with heavy emphasis on the fundamentals of writing; (2) In each of their first two years, MIT students will be required to take a HASS subject that has serious writing, revising and speaking components; (3) In meeting the CI subject guidelines, many HASS faculty will revise existing subjects in HASS to strengthen their writing, revising and speaking components; (4) HASS faculty will receive additional financial resources from the Institute to support their teaching of CI subjects; and (5) A HASS-wide committee will monitor the teaching of communication in CI subjects and support various efforts to improve the effectiveness of the Communication Requirement.

Criteria for HASS CI Subjects. Communication intensive subjects in the humanities, arts, and social sciences should require at least 20 pages of writing divided among 3-5 assignments. Of these 3-5 assignments, at least one should be revised and resubmitted. HASS CI subjects should further offer students substantial opportunity for oral expression, through presentations, student-led discussion, or class participation. In order to guarantee sufficient attention to student writing and substantial opportunity for oral expression, the maximum number of students per section in a HASS CI subject is 18, except in the case of a subject taught without sections (where the faculty member in charge is the only instructor). In that case, enrollments can rise to 25, if a writing fellow is attached to the subject.

Such writing fellows should be funded by resources provided by the central administration, which should also subsidize additional sections in subjects where the cap of 18 students per section will produce a reduction in available places.

These requirements represent an attempt to balance respect for faculty autonomy in designing their classes with recognition that any requirement--especially one of this kind--that is not enforced will not end up contributing much more than another layer of bureaucracy for faculty and students to complain about. Therefore it is extremely important that the body charged with overseeing this requirement approach their responsibilities with seriousness and vigor.

Overview. A committee composed of 4 or 5 members from the HASS faculty who have demonstrated a commitment to improving undergraduate writing will enforce CI guidelines. In the period during which HOC continues with the tasks it presently has, one faculty member will serve on both HOC and CI committees. One member should be the head of Writing and Humanistic Studies or a designated alternative.

The CI committee will review proposals for new CI subjects and periodically review already existing CI subjects in a manner similar to HOC's current procedures for HASS-Ds (see appendix). For subjects with sections taught by TA's, the inquiry will include:

- Review of web-based student evaluations of TA's with respect to those parts of the questionnaire having to do with writing.
- Review of the quality of TA's written comments on an entire set of papers.
- Review of the evaluations of TA's performance by faculty in the TA's department.

If the findings of this review indicate, the CI committee will be authorized to revoke the CI status of a multi-section CI subject, even though its syllabus complies with CI guidelines.

3.3 Description of the New Requirement

The basic structure of the new curriculum is displayed in Figure 1.
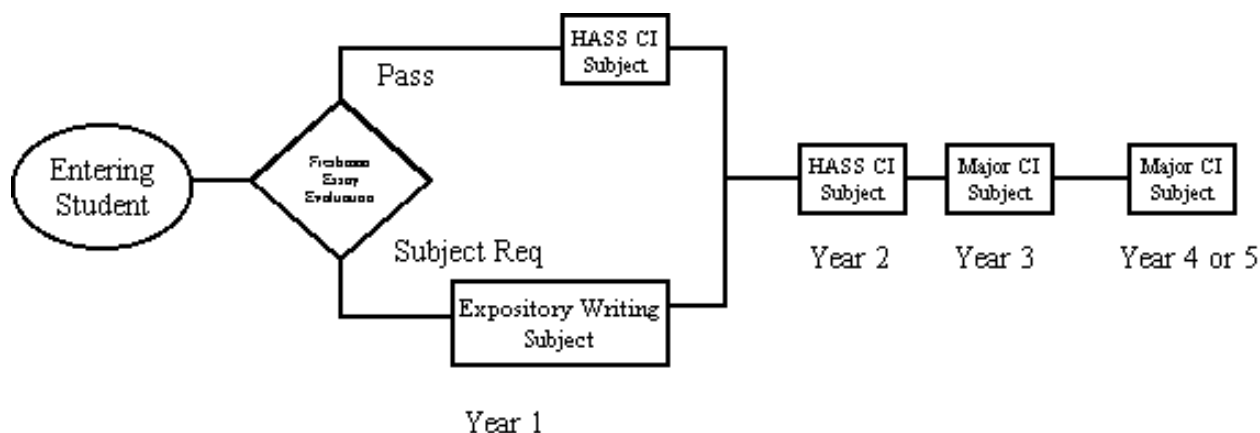
Figure 1. General Outline of Student Progress through the Communication Requirement. Some students, however, may take two CI subjects in their second year and then have the option of skipping one year. Moreover, students in some majors will have the option of substituting a CI subject in HASS or another department for a CI subject in their major.

3.3.1 Freshman year

Approximately 20% of each entering class will be required to take an expository writing subject, and an estimated additional 10 to 15% of entering students will voluntarily choose to take one of them. Of the 15% to 20% of the entering class participating in Special Freshman Programs, some may take a HASS CI subject associated with the program. The remaining students will take a CI subject as part of their HASS requirement.

3.3.2 Sophomore year

Students will take one additional HASS CI subject. In some undergraduate programs, students may also take an additional CI subject in their sophomore year as part of their major.

3.3.3 Junior and Senior years

Students will normally take one CI subject in their major during their junior year and one CI major subject in their senior year. However, students who take both a HASS CI subject and a CI subject in their major during their sophomore year may be required to take only one additional CI subject during their junior and senior years. Students in five-year programs must complete their third CI subject by the end of their third year, but

will have the option, if they elect to receive the SB and M. Eng. degrees simultaneously, of completing the fourth CI subject in their fifth year.

Departments will design their undergraduate programs so that students will be required to take at least two CI subjects within their major program. Students may, however, with departmental approval, substitute a third CI subject in another department for one of the two CI departmental subjects.

3.4 Phase-in of Requirement

o   The new Communication Requirement will begin with the Class of 2005 (entering 2001).
o   A substantial oral component in undergraduate major programs will be required beginning with the Class of 2007 (entering 2003).
o   During the transitional period, from now until Fall 2001, departments will be encouraged to develop and use communication-intensive subjects as the primary means for students' completing Phase Two of the Writing Requirement.

3.5 Administrative and Instructional Support

Departments are encouraged to develop their own resources and staff for instruction in writing and speaking. However, substantial Institute resources will be provided primarily through a new interdepartmental Communication Resource Center, housed in and administered by the Program in Writing and Humanistic Studies. The Subcommittee on the Communication Requirement and the Office of Academic Services will jointly develop procedures for tracking student progress through the Requirement.

3.6 Governance

The Subcommittee on the Communication Requirement, a standing Subcommittee of the Committee on the Undergraduate Program, will oversee and establish policy for the Communication Requirement and, in collaboration with the Program in Writing and Humanistic Studies, set policy for the Interdepartmental Communication Resource Center. The Subcommittee on the Communication Requirement shall consist of five Faculty members, representative of all Schools of the Institute, two undergraduate student members, and the following ex officiis, voting members: the Dean of Students and Undergraduate Education or a designated representative, the Head of the Program in Writing and Humanistic Studies or a designated representative, and the Coordinator of the ESL (English as a Second Language) Program. The Chair of the Subcommittee and its members shall be appointed by the Chair of the CUP in consultation with the Dean of Students and Undergraduate Education.

The Subcommittee shall act with power in

a)   setting general guidelines for department CI classes and designating specific

subjects in each undergraduate major program as communication intensive;

b) collaborating with the HASS Overview Committee in establishing guidelines for HASS CI subjects;

c) overseeing the evaluation of the writing ability of entering undergraduates and exempting those students who display competency in expository writing from being required to enroll in designated writing subjects during their first year at the Institute;

d) defining priorities for instructional support of CI subjects throughout the Institute and collaborating with the Program in Writing and Humanistic Studies to set policy for the Communication Resource Center;

e) performing all of the functions of the Committee on the Writing Requirement in overseeing the administration of the Writing Requirement for students entering the Institute prior to the summer of 2001;

f) administering and managing the transition from the Writing Requirement to the Communication Requirement;

g) periodically reviewing and evaluating the effectiveness of specific CI subjects as well the overall efficacy of the Communication Requirement.

The Subcommittee shall report to the CUP and shall report to the Faculty on the progress of the new curriculum in Spring 2001, Spring 2003, and Spring 2005.

3.7 Implementation Issues

In implementing the Communication Requirement, the Subcommittee of the Communication Requirement shall, in consultation with the CUP, the HASS Overview Committee, and departments, develop specific policies to address the following issues:

3.7.1 Minimum Grade for Completion of CI Subject

Should a minimum grade in a CI subject be required to count for completion of part of the Communication Requirement? If so, what should that minimum grade be? Additionally, should the minimum grade be uniform for all parts of the new Requirement?

3.7.2 Maintaining Flexibility within the HASS Curriculum

How can the HASS component of the Communication Requirement be structured to minimize any reduction of student choice and to ensure that students in the first two years will still have access to programs in HASS such as Music and Foreign Languages?

3.8 Enforcement

A student's failure to complete the required number of CI subjects by the end of each academic year shall be considered lack of normal progress toward the SB degree.

Appendix A

Motion Approved by Unanimous Voice
Vote of the Faculty on April 17, 1997:

The Faculty believes that the ability to communicate clearly is fundamental; that students should receive instruction and feedback in writing and speaking during each undergraduate year; and that responsibility for teaching these abilities should be distributed across the entire MIT undergraduate curriculum.

The Faculty directs the Committee on the Undergraduate Program (CUP) to conduct a series of experiments and pilot programs to help in the design of a new Communication Requirement. These experiments should test different models for incorporating communication intensive experiences into the first year curriculum, the General Institute Requirements, and Departmental degree programs. These experiments should be evaluated by a subcommittee of the CUP appointed by the Chair of the CUP in consultation with the Chair of the Faculty and the Chair of the Committee on the Writing Requirement. The CUP should report back to the Faculty with its recommendation for a new Communication Requirement not later than Spring of 2000.

Appendix B

Committee on the Undergraduate Program

Charge to the Subcommittee on the Communication Requirement

Membership:

Gene Brown, Co-Chair
Langley Keyes, Co-Chair
Steven Hall
Ole Madsen
James Paradis
Ruth Perry
Steven Pinker
George Verghese

At the April 1997 Faculty Meeting, a resolution was passed to initiate a three-year process aimed at eventually replacing MIT's undergraduate Writing Requirement with a broader-based Communication Requirement. The resolution directed the Committee on the Undergraduate Program (CUP) to "conduct a series of experiments and pilot programs to help in the design of a new Communication Requirement." In addition, the resolution indicated that these experiments "should be evaluated by a subcommittee of the CUP appointed by the Chair of the CUP in consultation with the Chair of the Faculty and the Chair of the Committee on the Writing Requirement." The CUP is to report back to the Faculty with its recommendation for a new Communication Requirement no later than the Spring of 2000.

The CUP subcommittee is part of a complex network of individuals, committees, and academic units, each of which has responsibilities for moving along the Communication Requirement initiative. Among these entities are the following:

- The Committee on the Undergraduate Program, with general responsibility for the undergraduate academic program, including the initiation of reforms such as the Communication Requirement initiative;

- The office of the Dean of Students and Undergraduate Education, which has general administrative responsibility for undergraduate education at MIT;

- The Program in Writing and Humanistic Studies, which is the academic unit that sponsors the majority of writing subjects at MIT;

- The HASS committee, which is responsible for overseeing the writing component that is imbedded in the HASS-D requirement;

- The Committee on the Writing Requirement, which is responsible for overseeing MIT's current writing requirement;

- The academic departments, each of which has responsibilities under the current Writing Requirement, and would presumably continue to have important responsibilities under any new Communication Requirement;

- The team of investigators associated with the NSF-funded project to develop an integrated communication-intensive curriculum at MIT. (Associated with this project is a panel of external reviewers. They will examine the progress of the NSF project, for the purpose of assessing the general applicability of MIT's experience to other universities as they attempt to integrate communication with science and engineering.)

Within such a complex web of entities and interest groups, it is important that the role of the CUP subcommittee on the Communication Requirement be clearly delineated. As the resolution of the faculty indicates, it is the responsibility of the CUP subcommittee to guide the evaluation of the experiments and pilot programs that will inform the design of the new Communication Requirement. It is not the responsibility of the subcommittee itself to undertake experiments directly. To that end, the subcommittee is authorized to undertake the following responsibilities:

1. Approval and publication of experimental criteria. The first task of the subcommittee will be to develop a series of criteria to inform the design and assessment of these experiments and pilot programs. In formulating these guidelines, the subcommittee should keep in mind that the faculty will need information to help it understand the answers to these three questions:

- To what extent do particular instructional strategies improve the abilities of our undergraduates to write and speak effectively in a variety of academic and professional settings?

- To what extent do particular instructional methods in writing and speaking improve student learning of academic content?

- Keeping in mind the Institute's distinctive educational mission and often-noted financial, time, and curricular constraints, which methods and strategies of communication instruction are best suited for inclusion in a Communication Requirement at MIT?

2. Solicitation of proposals for inclusion in the Communication Requirement experiment. The subcommittee should solicit from the MIT community proposals for inclusion within the overall Communication Requirement initiative. The committee should encourage for

inclusion in the initiative two general categories of activities: (1) existing elements of the MIT curriculum which would seem to be likely candidates for consideration as part of the new Communication Requirement and (2) new offerings which appear to be promising initiatives in curriculum reform.

In reviewing proposals, the subcommittee should direct its efforts at ensuring that (1) the activities that are included within the Communication Requirement initiative are clearly described and justified and (2) the data gathered in the evaluation of these activities will be useful to the subcommittee in the later phases of its work.

3. <u>Ongoing review of proposals and pilot programs</u>. Throughout the next three years, the subcommittee should meet periodically to review the progress of the experiments and pilot programs that it has sanctioned. The subcommittee will collaborate closely with faculty to assess the experiments' successes in relation to their stated goals and alterations in teaching strategies that faculty find necessary as the class unfolds.

4. <u>Report and Recommendation to the CUP and to the Faculty</u>.

The Spring 1997 resolution of the Faculty directs the CUP to make its report no later than the Spring of 2000. In order to meet this time line, the subcommittee will need to present its final report to CUP on or about January 2000. As is the case with all CUP-authorized experiments, the subcommittee will be asked to provide regular reports to the CUP (orally or in writing) on the progress of the Communication Requirement experiment. In addition, if the successful implementation of any proposed activities within the Communication Requirement initiative requires the waiving of faculty or administrative regulations, the subcommittee should bring this item to the immediate attention of the CUP for consideration.

In its final report, the subcommittee should attend to two general topics. First, it should report on the conclusions it has reached about the efficacy of the activities it has sanctioned. Second, it should recommend one or more possible designs of a new Communication Requirement.

September 22, 1997

Appendix C

Guidelines for Departmental Development
and Assessment of
Communication-Intensive Curricular Activities

G. Brown
L. Keyes

2 March 1998

BACKGROUND

In April 1997, the MIT Faculty voted that "students should receive instruction and feedback in writing and speaking during each undergraduate year," and that the responsibility for teaching these abilities should be distributed across the entire MIT undergraduate curriculum. The Faculty instructed the Committee on the Undergraduate Program (CUP) to conduct a series of experiments and pilot programs to inform the development of a new undergraduate Communication Requirement. The CUP is to make specific recommendations to the Faculty on the design of this new curriculum not later than Spring of 2000.

The aim of this two-year period of curricular experiments is to explore different ways to integrate instruction and practice in writing and speaking into the first-year curriculum, the General Institute Requirements, and Departmental degree programs. These experiences can be situated either within both regular academic subjects or and outside the traditional classroom. In September 1997, the CUP appointed a Subcommittee on the Communication Requirement to guide the evaluation of these curricular experiments and pilot programs. Specifically, the CUP charged the Subcommittee to develop a series of criteria and procedures to inform the design and assessment of projects undertaken by academic units.

Two years of discussion among the Faculty have produced a consensus that, rather than being externally imposed, communication-intensive activities should emanate from departments and schools as natural and complementary extensions of their current instructional practices and curriculum. Individual departments, with considerable Institute support and assistance, should be given the opportunity to shape the overall design of the new requirement. While academic and professional writing and speaking should always be concise, coherent, precise, and grammatically correct, disciplines vary significantly in specific conventions governing organization and style. Moreover, professional communities differ in their preferences for specific forms of written and oral discourse.

GENERAL APPROACH AND ROLE OF THE SUBCOMMITTEE

Consequently, the elements of effective writing and speaking that are general across disciplines should be emphasized early in a student's career and, quite possibly, often within the context of General Institute Requirements. The aspects of effective communication that are discipline-specific should be integrated into undergraduate major programs. Individual departments should possess primary authority for defining the communication abilities that are most important in their discipline, including discipline, including the capacity to write and speak clearly and persuasively to a wide range of audiences. Furthermore, departments should have considerable autonomy in designing and evaluating activities within their undergraduate program to develop these skills. These efforts by individual departments, however, to expand existing communication-intensive activities and to develop new ones, will require substantial support from Institute-wide programs and resources.

The primary role of the Subcommittee on the Communication Requirement will be to guide, coordinate, and help evaluate these efforts to produce an overall design for a new Undergraduate Communication Requirement that is consistent with MIT's distinctive educational mission and that is feasible within the Institute's financial and curricular constraints.

SPECIFIC PROCEDURES

The Subcommittee on the Communication Requirement has entrusted the HASS Overview Committee with much of the responsibility to identify (and, possibly, modify and expand) existing communication-intensive subjects in the humanities, arts, and social sciences and to develop new ones. Consequently, the following procedures are intended primarily as guidelines for departments in the Schools of Architecture, Engineering, Management, and Science to use in developing and assessing junior and senior year activities within their undergraduate degree programs. These activities may already exist, may be modifications of current parts of the curriculum, or may be entirely new projects. The goal of the Subcommittee is to have these activities underway in most, if not all, departments during the 1998-99 academic year.

1. Each department should designate a member of its faculty to coordinate its communication-intensive projects and to serve as liaison between the department and the Subcommittee on the Communication Requirement. This individual may be the current faculty departmental writing coordinator, the undergraduate officer, or any other interested faculty member.

2. By September 15, 1998, each department should send the Subcommittee on the Communication Requirement a proposal for expanding existing communication-intensive activities or for developing new ones. The proposal should include the following elements:

   a) a statement of objectives, including the specific communication abilities students will develop.

b) a description of instructional practices that will be used to achieve these objectives (which may include including activities already in place).

c) a description of the evaluation protocol that the department will use to assess the success of these activities; the protocol may include a combination of formal and informal metrics focused on both direct and indirect indicators of success.

d) a listing of the financial and staffing requirements of each activity.

3. The Subcommittee on the Communication Requirement will consider proposals from each department separately. The Subcommittee may accept a proposal or may request modifications, clarifications, or additions prior to further consideration. The Subcommittee's acceptance of a proposal will be separate from any recommendation by the Subcommittee to the Dean of Students and Undergraduate Education for supplementary funds.

4. By December 1, 1999, each department should send the Subcommittee on the Communication Requirement a brief status report on its continuing activities, communication-intensive pilot projects, or both. The report should include a restatement of the overall educational goals of the departmental initiatives and a narrative describing each experimental project or ongoing activity. It should also describe all formal and informal assessment procedures and the results of these evaluations. Finally, the report should outline the department's overall plan for integrating instruction and practice in specific communication abilities into its undergraduate degree programs along with an estimate of the ongoing staffing and financial resources needed.

Class syllabi, writing assignments, and other relevant instructional materials from all department activities should be appended to the report along with a listing of all staffing and financial resources used. Departments should also include a representative sample of student writing or other appropriate materials from one or more communication-intensive activities.

Working groups of the Subcommittee on the Communication Requirement, each composed of faculty from different Schools of the Institute, will review these final reports and accompanying materials. In reviewing each report, the working groups will consider both the general elements/characteristics of effective writing and speaking/communication and the specific stylistic conventions specific to each professional field. The groups will also consider the feasibility of each activity as part of a General Institute Communication Requirement. The evaluation of each program or activity will also consider its feasibility as part of a General Institute Communication Requirement.

Appendix D

Summary Of Non-HASS Communication-Intensive Pilot Programs

Course	Subjects	Terms	Faculty	Approx.# Students per term	Description	Evaluation
2	2.672	Fa 99	J. Heywood	30	Program in Writing and Humanistic Studies (PWHS) lecturer worked with groups of students on drafts of a laboratory report	Student questionnaires extremely positive. Instructor assessment also positive.
3	3.931 Work Internship or Thesis	Sp 99	D. Roylance, entire faculty	15	Students met with dedicated PWHS tutor for help in revising reports.	Both tutor and departmental writing coordinator report uneven effect. Student procrastination in seeing tutor reduced instructional benefit.
4	4.131, 4.132	Fa 98 Sp 99 Fa 99	Rotating faculty	30	Students in all senior design seminars participated in tutorials conducted by the PWHS. In these tutorials, students practiced their design presentations, reviewed videotapes of the presentations with the tutor, and revised their written design reports.	Department head and faculty teaching design studios enthusiastically support the oral presentation tutorials. They have repeatedly requested that similar tutorials be attached to graduate design subjects.
5	5.21	Sp 99	R. Danheiser B. Tidor	12	Second-term seniors jointly prepare a 30-page original research proposal by the end of the term. Each student is required to prepare several oral literature and progress reports. The climax of the course is a site visit by a panel of distinguished external scientists who evaluate the proposed project after reading the proposal and listening to a 2 1/2 hour team oral presentation.	Although enrollment was low, both faculty and students reported that the class of an extremely valuable experience.
6	6.012	Sp99	J. del Alamo	100	Three writing assignments were added to the class: 1) Week 3: One-page letter associated with Problem 4 in Homework 3. Students were asked to write a letter to fictitious CEO on fictitious consulting job. Assignment worth 25% of homework grade. 2) Week 8: One-page design review abstract associated with Design Problem 1. Worth 20% of design problem grade. 3) Week 12: One-page design review abstract associated with Design Problem 2. Worth 20% of design problem grade. All writing assignments were graded by writing tutor. In first two, students were given chance to improve grade by resubmitting assignment. Tutoring sessions were offered. Many students took advantage of them. A Graduate Writing Fellow evaluated drafts of design assignments and helped students revise them.	Students reported that they did not like the writing assignment Lecturer observed significant hidden costs: -For the instructor, there is a need to conceive writing assignments that are attractive, are well connected with the technical material, and further the educational goals of the subject. Since we have no material developed and the pace of the subject is already rather frantic, this is a relatively high cost. Additionally, there is a very real cost of managing a whole new series of assignments. The writing exercises require scheduling of grading, tutoring sessions, and special deadlines. This extra cost of management of the writing exercises is significant. Finally, for each exercise, some time is required to review and correct sample write-ups prepared by TAs. -For the TAs, there is also a cost of management of deadlines, tutoring sessions, and extra material in need of proper routing -For the students, these are three new assignments that did not exist before.
.	6.021J	Fa 99	D. Freeman	40	Optional writing clinics for the two large required laboratory reports. Aided by Professor Freeman and his TAs and a lecturer from the PWHS Undergraduate Writing Cooperative, students reviewed and revised their own team papers and reviewed papers by other students. In addition, Professor Freeman has integrated short writing assignments into each of the subject's weekly problem sets.	Although optional, almost all students participated in the clinics. 6.021J staff reported significant improvement from past years in the quality of writing in student reports.

.	6.033	Sp 99	F. Kaashoek	300	Students wrote weekly one-page papers, one individually authored design report, and one group-authored design report. Approximately 60 students enrolled in an optional Writing Practicum attached to 6.033. In addition, writing tutors dedicated to 6.033 were available during extended hours for the week before the first design report was due.	Student evaluations indicate that the writing practicum sections are effective and helpful. Students made little use of dedicated writing tutors until 48 hours before the assignment was due.
7	7.13, 7.15, 7.16, 7.17	Sp 98 Fa 98 Sp 99 Fa 99	D. Housman P. Matsudaira M.-L. Pardue T. Sinskey	30	PWHS lecturers gave presentations on various elements of scientific report writing and oral presentation. The same staff also regularly tutored students to help them revise project proposals and the final report. Biology Project Lab staff and PWHS staff jointly evaluated student oral presentations and written reports.	In several of the Project Labs, there was close and extremely effective collaboration between Project Lab and PWHS staff. A comparison of project lab papers written in conjunction with these tutorials with papers written in previous years demonstrates a dramatic improvement in the quality of student writing. Instructors have also reported dramatic improvement in the quality of student oral presentations.
.	Biology Undergrad. Journal Tutoring	Sp 98 Fa 98 Sp 99 Fa 99	P. Matsudaira & entire department	30	Students now normally complete Phase Two in Biology by submitting and an article to The MIT Biology Undergraduate (BUG) Journal. The article is reviewed by a Biology faculty member and students then revise the paper for publication with the assistance of tutors from the PWHS. There were 24 student articles accepted for publication for the first issue of the journal in 1998 and 37 articles published in 1999.	Biology undergraduates, biology faculty, and the MIT administration are all enthusiastic about the journal. There is a general consensus that this publication is a valuable addition to undergraduate education at MIT and has provided a new and significant motivation for students to improve their writing. There have been two presentations at national conferences that focused on the *The BUG Journal*, and there is considerable interest at other institutions in adapting the model.
8	8.059	Sp 98 Sp 99	R. Jaffe J. Goldstone	60	In Spring 1998, Professor Robert Jaffe began requiring all undergraduate students to write a theoretical paper in the advanced undergraduate Quantum Physics subject, 8.059. Physics graduate students were trained as tutors to help students revise their drafts and students were also trained to peer-review each other's papers. The practice was repeated in Spring 1999, and now has become a regular feature of the class. Twenty-two Spring 98 student papers were published in a volume, Studies in Modern Quantum Physics: Student Papers in Physics 8.059.	Teaching staff involved in the class report that the overall quality of the student papers has been excellent.
9	9.63	FA 99	B. Anderson	20	PWHS lecturer gave presentations on writing research proposals and laboratory reports.	
10	10.200	Fa 99	C. Colton	8	Instruction in technical and expository writing, oral presentation, and team building skills was integrated into a pilot section of the Course 10 Sophomore advising seminar, 10.200. A Graduate Writing Fellow evaluated student writing and helped them prepare and revise argumentative and expository assignments.	Professor Colton reports significant improvement in student writing skills.
16	16.684	Fa 99 Sp 99	D. Miller D. Newman	12	Communication component attached to 16.684, three-term capstone Conceive, Design, Implement, & Operate (CDIO) subject. PWHS and the Sloan Communication staff provided instruction in oral presentation, report writing, and teamwork skills through a new practicum and the Undergraduate Writing Cooperative.	Students indicated in questionnaires that they wanted more instruction in technical communication basics and less instruction in teamwork and negotiation skills. The students, however, did appreciate the instruction in oral presentation and help in designing overheads.
18	18.100A 18.701	Fa 99	A. Mattuck M. Artin	13	Communication-intensive "sidecar seminars" were attached to Analysis I and Algebra I. Students gave presentations and worked on a formal paper with faculty member.	Only 10 math majors participated in the seminars. Faculty assessment is mixed.
.	Phase Two paper Seminars	Fa 98 Fa 99	S. Kleiman	14	Professor Kleiman and one or two TAs worked one-on-one with students revising their Math Phase Two papers.	These tutorials are extremely rigorous and have been highly successful.
.	Undergraduate Math Journal	Fa 99	S. Kleiman	22	Students published their Phase Two papers in an annual journal.	.

Appendix E

Summary Of Departmental Reports On Preexisting, Pilot, And Planned Communication-Intensive Activities

The following table lists all Communication-Intensive Activities in major programs identified by departments and the CUP Subcommittee. Activities in each department are broken down into pre-existing activities (activities that were already in place prior to the start of the Communication Initiative in Fall 1998), pilot projects (activities developed during the Communication Initiative), and planned projects (activities that have not yet occurred but that are already planned and staffed). Clearly, these data are incomplete, probably omitting some effective subjects in department programs. They do, however, display the rich infrastructure of developed and planned activities that will support the new requirement.

Course	Subject or Activity	% of Majors	Writing Assignments	Presentation Assignments	Nature of Instruction & Feedback
1					
Pre-Existing Activities					
.	1.107	55%	12 short lab reports; 1 group Poster presentation by team of final project. In the future, some of the short lab reports will be replaced by a major project report.	Team presentation of final project.	Lecture by instructor on format of reports, poster, and oral presentation. Instructor grades reports for both content and effectiveness of communication. There is also oral feedback from instructor.
.	1.170	100%	Letter of intent; Proposal; Progress report; Final report.	Brainstorming; Oral Progress report; Oral final project presentation.	ACS film on speaking techniques. Grading and one-on-one meeting with instructor.
.	1.108	88%	Lab notebook; group project report.	Final project presentation.	Written feedback by instructor.
.	1.160	95%	Evaluation of one large case study.	.	Written feedback by instructor.
.	1.30	93%	3 Team design reports.	.	Lecture on technical report writing by instructor. Written feedback to team on the quality of presentation techniques and technical content. Grading by instructor.
.	1.51	93%	2 Team projects.	2 individual presentations.	Instruction and grading in studio.
.	1.160	64%	Submit report, revise, and then submit again.	Team presentation of final results.	Lecture on presentation by instructor. Optional communication practicum taught by PWHS lecturer, who also provides feedback on reports of students not in the practicum.
.	1.040	51%	Weekly reading summaries; 2 Team reports.	2 Team oral reports.	Written feedback by instructor.
.	1.204	71%	Team project report.	Team project presentation.	Oral feedback.

.	1.32	92%	Term paper.	.	Lecture and handout by instructor. Feedback from PWHS staff. Instructor bases 30% of grade on clarity of technical presentation.
.	1.042, 1.0441, 1.44, 1.043	83%	Weekly journal; Case studies.	Regular oral presentations throughout term.	Weekly instruction in writing and speaking by instructor. Weekly grading of written materials.
.	1.011	88%	7 one-paragraph assignments; Team project; one-page status report; Term paper.	3 Team oral presentation (all students present).	Extensive instruction in lectures and handouts. Instructor feedback on each activity and on end-of-term portfolio.
.	1.103	88%	10 written lab reports.	.	Lecture on technical report writing by instructor. Written feedback by instructor to teams on quality of presentation and technical content.
.	1.041	75%	Several individual assignments. One major 150 page team project.	Occasional short presentations. Major final presentation by entire class team.	Instructor critiques dress rehearsal of oral presentation and provides extensive feedback on oral and written presentations.
Planned projects	1.032	.	Written group design report.	Team presentation.	Instruction and grading by instructor.
.	1.106	.	Lab reports.	.	Written feedback.
2					
Pre-existing activities					
.	2.671	100%	Written lab team reports.	Oral representations.	Lecture on communication by PWHS staff. Tutorials with PWHS staff on drafts of 2.671 papers. Feedback on quality of writing from PWHS.
.	2.008	100%	Paragraph-long answers on weekly problem sets.	.	Feedback on problem sets by TAs.
.	2.009	100%	Team product design specifications; individually written peer design review.	Weekly in-class presentations; Team oral presentations of product ideas; Team oral presentation of mockup; Team final design presentation.	Peer feedback on oral assignments. Feedback on written assignments from instructional staff and industry sponsors.
.	2.96	20%	Team business plan proposal. Several short individual weekly assignments.	Weekly team discussions and presentations.	Peer review. Feedback from instructional staff.
Pilot projects	2.672	45%	2 Written team lab reports.	Oral presentation of lab projects.	Extensive discussion of written report format and oral presentation techniques in Course Manual. Group tutorials with PWHS staff on draft on lab report. Feedback from instructional staff on oral and written reports.

3					
Pre-existing activities					
.	3.081	100%	Individual long research reports, short industrial memoranda.	.	Lectures on report format by instructional staff and staff from PWHS. Writing evaluated by MS&E and PWHS staff.
.	3.082	100%	Two group design proposals and final reports.	Weekly progress reports; two formal design presentations.	MS&E staff provide instruction in preparation of visual aids and real-time critique of both content and style of oral reports; written reports are marked-up and returned for revision as necessary.
.	3Thu 3.931	100%	Thesis or final internship report.	Formal presentation to audience of faculty and students.	One-on-one instruction by faculty supervisor or advisor.
Pilot projects	3.931	.	.	.	Adding tutorials by PWHS staff.
4					
Pre-existing activities					
.	4.605	100%	Several papers on architectural history.	.	Instructor provides writing instruction and feedback.
.	4.250J, 4.264, 4.641, or 4.651	75%	Several long papers.	.	Instructor provides writing instruction and feedback.
Pilot projects	4.131, 4.132	90%	Short summary of design project.	Several studio presentations of design.	Students in all senior design seminars participate in tutorials conducted by the PWHS. In these tutorials, students practice their design presentations, review videotapes of the presentation with the tutor, and revise their written design reports.
5					
Pre-existing activities					
.	5.32	100%	Students write a 9-12 "Literature Report" that reviews a subject of current interest selected by the instructor.	Each student participates in a 15-20 minute "pre-oral" exam with the TA prior to the beginning of each experiment and students also deliver a 20-minute final report after completion of each assignment.	PWHS staff gives one-hour lecture and detailed handout describing how to write a literature review. Each literature report is reviewed by two different graduate TA's who focus their evaluation on content and scientific accuracy. The report is then reviewed by writing program staff who give feedback on the quality of writing.

.	5.33	100%	Each student prepares a written report (12-15 pages pf text) on one experiment. The report's format is that of a technical report for a research supervisor rather than that of a journal article.	For three experiments, students present a 15-minute oral report to a pair of TAs after completing each experiment. In addition, teams of three students each prepare a scientific poster describing their work on one experiment and use it in a joint 15-minute presentation to a pair of Teaching Assistants.	.
Pilot projects	5.21	18%	Second-term seniors jointly prepare a 30-page original research proposal by the end of the term.	Each student is required to prepare several oral literature and progress reports. The climax of the course is a site visit by a panel of distinguished external scientists who evaluate the proposed project after reading the proposal and listening to a 2 1/2 hour team oral presentation.	Chemistry faculty and PWHS staff jointly instruct students in writing, oral communication, teamwork, creative-thinking, and literature search through four 90-minute "Skills Workshops."
.	5.Thu	5%	Students now have an option of preparing an undergraduate thesis.	.	Work with advisor. Only 2-3 students per year have selected this option.
.	Undergraduate Chemistry Research Symposium	16%	.	Ten students presented posters and several undergraduates delivered talks on their research.	Feedback from audience.
Planned projects	5.32 & 5.33	.	.	.	Additional lectures and instructional material on oral presentations.

6

Pre-existing activities

.	6.033	85%	Weekly one-page reading reports; one individually authored design report; one team authored design report.	Brief group presentation and review in recitation sections of team design report.	Two lectures on writing from PWHS. About 20% of 6.033 students also enroll in optional associated Communication Practicum offered by PWHS. PWHS staff evaluated first set of one-page reading reports and then return them students. All of the reading reports are also evaluated by TA's in the class. The design reports are evaluated by faculty members teaching recitation sections. In addition, students can have their first design report evaluated by PWHS faculty for Phase Two. Students now have the option to meet with PWHS staff members grading their assignments in dedicated tutorials before the assignment is handed in.

Pilot projects	6.021J	15%	Two team laboratory proposals and two team laboratory reports. Short weekly writing assignments.	Students give oral reports on laboratory projects.	Optional writing clinics for to the two large required laboratory reports. Aided by Professor Freeman and his TA's and a lecturer from the PWHS Undergraduate Writing Cooperative, students reviewed and revised their own team papers and reviewed papers by other students.
Planned projects	6.163	10%	Students write lab reports on experiments.	Students give oral presentations on experimental design and results.	PWHS staff will lecture on oral presentations and provide supplementary handouts. In addition, PWHS will videotape practice student presentations and review them with students.
.	Communication Seminars attached to M. Eng Thesis and AUP	100%	Students will write long thesis proposal or proposal for Advanced Undergraduate Project.	Seminar will require several practice and one final oral presentation of project proposal.	Evaluation of technical content of thesis / AUP supervisor. All other instruction and evaluation by PWHS staff.
7					
Pre-existing activities					
.	7.02	100% + 100 other students	Students write four 5-7 page laboratory report.	.	Minimal instruction in writing by staff.
.	7.13, 7.14, 7.15	40-50%	Students write final 10-page report end of term.	Students present oral progress reports at group meeting.	Minimal instruction and feedback.
.	7.28	50%	Most students write optional 10-page report.	.	Feedback from instructional staff.
.	UROP	70-90%	Students write short proposal and report.	In some labs, students give oral presentations.	Instruction and feedback highly variable among different research laboratories.
Pilot projects	7.13, 7.14, 7.15	40-50%	Students write proposals, group meeting reports, final reports, and in some cases, 2-page article reviews and reviews of other students' papers.	Students give formal proposal presentation, oral progress reports at group meeting, and a final presentation of their research.	Materials developed by project lab staff and PWHS writing tutors on scientific report writing. Presentations by writing tutors on specific topics on scientific report writing and oral presentations. One-on-one tutorials between students and tutors at various stages of the course and of the writing process.
.	Biology Undergraduate Journal	50%	Students submit research article, proposal, or literature review with technical and non-technical abstract	.	Article reviewed by writing tutors, editor, and faculty reviewers. Students meet with PWHS tutors before submitting their papers for faculty review.
Planned projects	7.02	100% + 100 other students	Students write four 5-7 page laboratory report.	.	PWHS Staff will review a laboratory report and an abstract. They may also hold group tutorials.

.	UROP Seminars	50%	Students who fulfil department laboratory requirement through UROP will take seminar. Students will write and revise proposals, progress reports, and laboratory reports.	Students will give oral presentations on their UROP work.	Instruction by PWHS Staff will be similar to that integrated into 7.13, 7.15. 7.16, and 7.17.
8					
Pre-existing activities					
.	8.13, 8.14	100%	Students perform classic experiments and then write formal reports.	Students give oral reports on experiments.	Instruction in writing and speaking by 8.13-8.14 staff, who also provide feedback.
.	8Th	100%	Students write thesis.	.	Instruction and feedback from Thesis advisor.
Pilot projects	8.059	100%	Students write a professional paper on a topic in theoretical quantum physics, which is published at the end-of-term.	.	Students are given materials on how to write a theoretical physics paper, including example papers. Trained Physics TAs review drafts of papers. Students also peer review each other's papers. Students revise papers based on feedback of reviews.
9					
Pre-existing activities					
.	7.02	75%	See above.	.	.
Pilot projects	9.63	75%	Students write laboratory reports.	.	PWHS lecturer give presentations on writing research proposals and laboratory reports. Feedback provided by 9.63 staff.
Planned projects	7.02	75%	.	.	See above.
.	Laboratory Subjects	100%	Students write laboratory reports.	Students give reports on laboratory projects.	PWHS will give presentations and provide feedback.
10					
Pre-existing activities					
.	7.02	50%	See above.	.	.
.	10.26, 10.27	100%	Proposals, final technical reports.	Oral presentations on projects.	Most students enroll in attached Communication Practicum offered by PWHS. In addition, PWHS lecturer gives presentations on technical report writing and oral presentation. Feedback from PWHS staff and from 10.26 or 10.27 staff.

.	10.490 /10.491	100%	Three written project reports.	.	Feedback from 10.490 / 10.491 staff.
Pilot projects	10.200	10-20	Persuasive communication covered two case studies The students picked one of the topics and individually prepared memos arguing for one or another specified position.	Students gave team oral presentations.	See above.
Planned projects	7.02	.	.	.	See above.
11					
Pre-existing activities					
.	11.007J	80%	Four 7-10 page written case studies	.	Instructor provides feedback on each paper.
.	11.123	80%	Week one-page written assignments. Final long paper.	Student oral presentations.	Instruction and feedback by instructor.
.	11.188	80%	Web-based presentation. Two-page evaluation of process.	Group oral presentation.	.
.	11Th	80%	Thesis.	Oral presentation of thesis.	Four class /lab periods are devoted to preparing and evaluating assignments. =46eedback in final presentation is given immediately afterwards,
14					
Pre-existing activities					
.	14.32	100%	Econometrics report.	.	Feedback on quality of writing from PWHS.
Pilot projects	.	.	.	.	.
Planned projects	14.33	100%	Students write 5-7 page "model and results" section; 1-2 page final project proposal; 12 page draft report of final project; revision of final project.	Formal presentation by each student of final project	Instruction by 14.33 staff in communicating effectively using different media. Extensive feedback by staff to papers and oral presentation.
15					
Pre-existing activities					
.	15.279	100%	Group report. Short managerial memoranda.	Individual and group oral presentations.	Extensive feedback and instruction from Sloan Communications Faculty and Staff.
.	Various Sloan subjects.	.	Case studies. Reports	.	Feedback from instructor.
Planned projects	15.281	?	Individual and group reports.	Group and individual presentations in a variety of formats.	Extensive feedback and instruction from Sloan Communications Faculty and Staff.

16					
Pre-existing activities					
.	16.00	25%	Problem sets require written answers. Students are required to turn in a design portfolio in electronic form at the end of the term.	Students deliver a formal multimedia Preliminary Design Review (PDR) and a Critical Design Review.	Extensive feedback and instruction by staff.
.	16.010-16.040	100%	Students write 12 short individual and team reports in addition to a long team conceive-design-implement-and-operate (CDIO) report.	Students give team oral presentation of CDIO report.	Extensive feedback by staff.
.	16.621/16.622	100%	Students write one short proposal and then four long proposals and reports.	Five formal oral presentations.	Most students take the PWHS Practicum attached to 16.621. There is also extensive instruction and feedback from 16.621 / 16.622 staff and other department faculty.
.	16.82	50%	Final written report.	Concept review presentation; PDR Presentation; CDR Presentation; Final Design Presentation.	Substantial instruction and feedback from subject staff.
.	16.83	50%	Group written Requirements Document and full Design Report	Two 20 minute formal viewgraph presentations per student. Contribution to four annotated viewgraph packages.	Substantial instruction and feedback from subject staff.
Pilot projects	16.684	25%	Three-term CDIO subjects. Teams of students write various reports each term including drafts of Requirements Document and Design Document.	Teams develop viewgraph packages. One 30 minute for viewgraph presentation per term.	Most students enroll in attached PWHS Communications Practicum. Substantial instruction and feedback from subject staff.

Appendix F

Excerpts from the Report of the HASS Overview Committee, October 1999, and its Appendices

The Communication Requirement Initiative in HASS

Background

In academic year 1997 (AY97) the faculty voted in favor of a two-year period of experimental communication-intensive (CI) instruction in preparation for a possible new communication requirement. The CUP was charged with overseeing this experimental period and with developing a proposal for an Institute-wide communication requirement in time for a faculty vote in AY00. A special CUP Subcommittee on the Communication Requirement Initiative, co-chaired by Professors Gene Brown and Langley Keyes, was appointed for this purpose.

Dean Philip Khoury charged the HOC with the responsibility for overseeing CI experiments in the HASS curriculum and with developing a policy for the school. During AY98 the committee, in consultation with School Council and other faculty, developed a white paper concerning how a communication requirement ought to be administered in SHSS and proposing a set of guidelines for CI instruction in HASS. We proposed that the communication requirement initiative (and an eventual requirement, if it is voted into place) be administered autonomously within SHSS, and the CUP subcommittee endorsed that proposal. We also proposed a set of guidelines for HASS-CI instruction: Relatively small class size, continuous writing exercises (including at least one major revision), and oral communication exercises, such as student presentations or student-led discussion. [The full text of the HOC white paper is given below.]

Pilot HASS CI Subjects

Using the HOC guidelines the Dean solicited proposals for pilot HASS-CI classes for AY99, which constituted the contribution of the HASS curriculum to the Institute-wide experiment The Committee on the Writing Requirement granted these classes experimental status as approved Phase One Writing Subjects: Students who passed their HASS CI with the grade equivalent of B- or higher automatically passed Phase 1 of MIT's current writing requirement. This was important, because it meant that the pilot HASS CI's had a student-motivating feature comparable to what they would have in a fully-realized new communication requirement. SHSS supplied funding to support the pilot HASS CI program. Instructors who took advantage of the available funds used them to hire writing tutors to assist with the increased personal attention and writing instruction that the CI classes required

Evaluation

At the time of writing, the HOC is engaged in an ongoing evaluation of the HASS CI experiment. We have taken two main approaches to this evaluation: Student self-assessment, using questionnaires administered at the end of each semester, and faculty feedback during informal roundtable discussions. In the first student survey, most (about 80%) reported that the writing helped their understanding of subject content and that instructor comments were useful. Over half reported significant general improvement in their expository prose, their ability to generate ideas, their ability to revise their own prose, and their organizational ability.

In the Spring term of AY99 we administered the questionnaire to students taking all HASS-D's (except the two arts practica subjects) as well as to all students taking HASS CI's. The mechanical criteria for HASS-D's emphasize communication skills through the writing and discussion requirements. Therefore we felt that comparing these two groups gave us a foundation for determining with greater confidence the effectiveness of HASS-CI classes.

For each of the 13 questions, the average for the aggregate of the CI subjects was higher than the aggregate average for non-CI HASS-D's. Moreover, with one exception, all of the differences were statistically significant (and the one that was not almost was). Although some of the higher scores for the CI subjects may be attributable to the "Hawthorne effect" (telling people you are doing something special makes them rate it higher), the consistency of the results offers some hard and convincing evidence for the success of the HASS CI experiment.

Faculty feedback, though less formal, has been rich and suggestive in terms of developing pedagogical strategies and identifying strengths and pitfalls associated with HASS CI instruction. Faculty testimony supports student opinion about the greater effectiveness of CI classes when it comes to teaching writing. We also learned from roundtable discussions among HASS CI faculty that, in general, CI instruction places considerably greater burdens upon faculty, because of the increased continuous individual feedback that it demands. The amount of increased pressure upon faculty is directly proportional to class size, except in the case of subjects with generous TA support. To the extent that, in a fully realized communication requirement, large numbers of students will have to be taught in HASS CI classes, some, if not many, of these will have to be large classes. Therefore, faculty will need additional teaching support, along the lines of the writing tutors that were assigned to some of the pilot CI classes, and this in turn will demand the allocation of considerable resources to our school.

Many faculty also reported that they experience tension between curricular content and writing instruction in their CI classes. The extent to which content is compromised varies greatly, and most faculty report a compensating improvement in depth of coverage that offsets some of the loss of breadth. Nonetheless, this tension is sure to aggravate the implementation of a full blown requirement in HASS.

In the area of oral communication skills, faculty reported that it is difficult for students to give oral presentations or to engage in meaningful discussion in introductory level classes: Students' breadth of knowledge and conceptual grasp is insufficiently developed to engage in meaningful discussion. These factors in turn undermine students' confidence, which in turn limits student's willingness to participate in discussion. For these reasons, faculty felt that the oral component of a Communication Requirement is more appropriate for relatively more advanced classes.

The Preliminary Phase

One initiative regarding communication instruction in HASS that developed independently of the HOC is the so-called "Preliminary Phase." This will require students who do poorly on their Freshman Essay Evaluations to take expository writing during their first year at MIT. A recent memo from the Committee on the Writing Requirement gave the background to this initiative:

> Currently between 15-20% of each entering class receive, based on their performance on the Freshman Essay Evaluation, a strong recommendation to enroll in an expository writing subject during their freshman year. While most of these students scoring Subject Recommended on the Freshman Essay Evaluation eventually do complete a writing subject, unfortunately only about one-third of them do so during their first year, the remainder enrolling in their sophomore, junior, or senior years.

These students, in particular, and the Institute, as a whole, will benefit substantially from their taking these classes at the beginning of their undergraduate career rather than at its end. The present system makes little educational sense, with the majority of these students receiving focused instruction in writing later in their academic careers and often only after repeated attempts to complete the current Writing Requirement. Currently, this cohort of students going through the undergraduate program makes it difficult, if not impossible, for instructors in all parts of the institute to pay proper attention to student writing. Informal reports from HASS, Engineering, and Science faculty consistently identify a bottom 20% of students whose writing problems require at least as much instructional effort as the remaining 80%.

The CUP has approved the Preliminary Phase on a 2-year experimental basis. Assuming that it becomes a permanent component of the writing requirement at MIT, the Preliminary Phase will be an important component of the Communication Requirement Initiative in HASS.

The Communication Initiative in the School of Humanities and Social Science:

Preliminary Report

HASS Overview Committee
November 19, 1997

1. Overview

The Communication Initiative at MIT began a two year experimental phase this year, mandated by a vote of the faculty in April 1997. Dean Philip Khoury has charged the HASS Overview Committee (formerly the HASS-D Overview Committee) to oversee the contributions of the HASS Curriculum to the Communication Initiative during this period. The committee's first two meetings of this academic year were devoted to this subject. We discussed the ways in which contributions of the HASS Curriculum to the Communication Initiative can be solicited and, once in place, how they ought to be vetted.

Most of the general principles underlying the Communication Initiative were accepted by our committee, and those principles framed our discussion: Communication intensive experiences ought to be sustained experiences for the student. Students should take communication intensive classes at regular intervals during their four years, and each communication intensive class should provide sustained writing and speaking, with ample feedback, over the course of the semester. Students should have at least one opportunity to revise a major writing assignment in the light of professors' comments, suggestions and critiques. Oral communication skills should be developed in conjunction with written communication skills.

Many classes in the HASS Curriculum are already writing intensive. This is especially true of classes in the humanities, but it includes classes in the arts and social sciences that approach their subjects from humanistic perspectives. In the humanities, writing is central to the disciplines. For many scholars in the humanities, writing is not merely a means to express ideas and summarize activities of an essentially different nature (such as is the case when, say, a scientist writes an experimental report). Rather, the activity is the writing; subject and expression are indivisible. This inevitably affects the way in which humanistic disciplines are taught. In the humanities, writing, and the development of ideas through writing, are central to learning. Oral communication receives less consistent emphasis in the current teaching of humanities. Some faculty regard oral presentations by their students, with feedback, as part of the learning process and thus require it. Others regard writing and speaking as separate skills and emphasize writing over speaking. However, most humanities classes stress the importance of discussion, and supervised, student-led discussion, with professors' guidance and feedback, are a very effective means of developing students' oral communication skills.

While writing is central to scholarship and learning in all the humanities, disciplines (and teachers) differ with respect to details. Long, expository essays might be appropriate for a literature or history subject, for example, while shorter, closely argued papers are normally

more appropriate in a philosophy class. There is a strong consensus among members of the Humanities Overview Committee -- echoed by our discussion with department heads and other interested faculty -- that specific criteria regarding the nature, length, and style of the writing that is required by the Communication Requirement ought not to be developed externally to the subjects taught in the HASS Curriculum and then applied uniformly across disciplines. Rather, the nature of the writing that satisfies a Communication Requirement should flow naturally from the proclivities of the specific subject being taught and the professor who is teaching it.

Having said this, however, MIT does already have in place a General Institute Requirement that demands sustained writing and speaking according to criteria that *are* applied across disciplines in the HASS Curriculum, namely the HASS-D requirement. With some adjustments, many of those classes, as well as many HASS-E's that similarly demand sustained writing and speaking, can easily be designated 'Communication Intensive' (CI). The contributions of the HASS Curriculum to the new Communication Requirement will consist primarily of such classes, thus leveraging the kinds of learning that is already in place. New, additional communication intensive classes in the HASS Curriculum will of course be encouraged, but they will not be our main contribution.

The discussion here concerns the moderate sized classes that are typical of the humanities. Large lecture classes in the social sciences will no doubt require creative solutions of a different nature, perhaps along the lines of the writing practica that are already in place in some large science and engineering classes. Similarly, small seminars and tutorials, most of which are certainly communication intensive, are not addressed here.

2. CI HASS-D

The mechanical criteria for HASS-D's determine that they each require a minimum of 20 pages of writing. This work must be distributed among a minimum of three separate paper assignments, thus ensuring that the writing is sustained. Furthermore, there is a component to all HASS-D's that affects the students' oral skills: Every HASS-D must include a minimum of 1 hour of discussion per week. Because of these criteria, many, perhaps most, HASS-D's already constitute communication intensive experiences.

A communication intensive HASS distribution subject (CI HASS-D) would include an opportunity for each student to revise at least one major writing assignment in the light of the professor's critique. Moreover, in place of discussion of a general nature, which we presume is normally led by the professor, a CI HASS-D will have student led discussion: Each student will have an opportunity to lead a discussion at least once over the course of the semester, with the professor's guidance and substantial feedback. Alternatively, the oral component of the Communication Requirement might be met by student presentations, at the professor's discretion, again with substantial feedback. Other models are possible. In order to allow an increased amount of individual attention, CI HASS-D's will have an enrollment cap (e.g. 15) that is set lower than that of regular HASS-D's (28). The additional work that is demanded of students in a CI HASS-D will replace the final exam that is required in normal HASS-D's. Finally, in order to acquire CI credit for a CI HASS-D,

students will be required to earn a minimum grade of 'B;' grades less than a B will continue to earn HASS-D and general institute credit, but a grade of less than B will not satisfy the Communication Requirement. (This grade requirement is at odds with Institute policy regarding Freshmen, whose grades are internal and not part of their permanent academic record. However, we understand that a separate CI classes will be provided for Freshman in the new Requirement.)

3. CI HASS-E

The shape and structure of most humanities electives that fulfill the communication requirement (CI HASS-E) will be the same as those that affect CI HASS-D's with regard to sustained writing (with revision) and speaking (with feedback), the enrollment cap, and the minimum grade requirement. They may differ with regard to the specific nature and style of the writing and speaking that takes place, according to the proclivities of the discipline and the instructor. Instructors of HASS-E classes who wish to be granted CI licenses will have to argue each case, and the HASS Overview Committee will decide each one on an individual basis.

4. Vetting

As with any General Institute Requirement, a mechanism must be set into place that allows the CUP to interrogate the ways in which the Communication Requirement is being met. Since we envision variety and nuance from subject to subject with regard to how the Communication Initiative is accomplished in the HASS Curriculum, the vetting of communication intensive subjects will need to be handled with sensitivity to the disciplinary conditions that drive those variations. Moreover, many CI HASS classes will be subjects that are central to the curricula of our departments rather than newly minted subjects that are designed from scratch to meet the new requirement. The most effective ways to teach proficiency in any discipline entails expert judgment by the faculty in that discipline about classes' content and design. Thus, the vetting of such classes by individuals outside the department or section is a very sensitive matter.

For these reasons, the primary agency that oversees the Communication Requirement in HASS Curriculum should be within the School of Humanities and Social Sciences. We propose that the HASS Overview Committee (HOC) be assigned that responsibility. The HOC will judge how effectively the principles outlined here have been interpreted from subject to subject. The HOC will be empowered to grant or deny CI licenses to HASS subjects based upon those judgments. The licensing process will be developed along lines that are similar to that presently in place for HASS-D's, except that we propose the criteria for the Communication Requirement as guidelines rather than rules, allowing for greater flexibility and nuance. Classes that are recommended to the HOC for CI licenses will undergo careful initial scrutiny by the committee and possibly some negotiation with the instructors. CI licenses, like HASS-D licenses, will be periodically reviewed. Department and section chairs will be called upon to mediate between the HOC and individual faculty much more actively than they are in the present HASS-D system. We hope that this decentralization will establish the Communication Requirement as a cooperative effort

throughout the HASS Curriculum rather than a requirement that is imposed and administered from above. The agency responsible for oversight of the Communication Requirement throughout MIT will of course be the CUP. Just as department and section chairs will be responsible to the HOC, so the HOC will be responsible to the CUP.

5. Reservations

Most members of the HASS Overview Committee have concerns about the proposed new Communication Requirement. Some of these stem from a sense of doubt that the basis for new requirement has been thought through with sufficient clarity. What is the nature of the problem that this Requirement aims to address? Is it that MIT students, even after four or more years here, display the kind of inability to communicate effectively that bespeaks a failure to have received the broad-based education that a premier institution should be giving its graduates? Or is it that, even upon graduating, they find themselves lacking the specific communication skills needed for success in their chosen careers?

We also feel that the contribution of the idiosyncrasies of the culture of MIT to the writing problem, whatever it is defined to be, has not been adequately addressed. MIT students are bombarded by the message that certain of their courses are much more important than others. Among the ones typically deemed less important are those which, if taken seriously, would give the students the kind of practice in writing and speaking that they need, especially humanities subjects. Moreover, science and engineering courses are typically cumulative in a way that humanities courses are not. Students will routinely ask for an extension on the HASS-D paper because they have a problem set coming due, but they rarely ask for an extension on the problem set because they have a paper coming due. (No surprise, either, that so many of the HASS syllabuses include explicit requirements on attendance and participation that would, at any other school in MIT's league, seem excessively patronizing and punitive.) Students often have a clearer sense than faculty of the effects of MIT's culture. The problem should continue to be closely studied during the "experimental' period by instituting regular discussions with small groups of undergraduates.

If this characterization of the existing state of affairs is accurate, it would seem to be far better, on the face of it, to address the 'writing problem' by playing to our existing strengths rather than by instituting a new requirement. We think it might be possible to improve writing skills among MIT undergraduates in a much simpler way by requiring that every undergraduate once a year take a writing intensive class of a type that already exists. Every student would have to take at least one of the following per year: a writing intensive HASS-D or writing intensive HASS-E, an expository writing class offered by Writing and Humanistic Studies, or a science, engineering or social science class that has a writing practicum attached to it. In this way it might be possible to provide each student a sustained experience with writing over her four years as an undergraduate in the context of existing departmental and Institute requirements. An informal model of this sort, and no doubt there are many others, might well garner more support than the proposed new Communication Requirement among faculty across the Institute. Our students already feel overburdened by requirements. We hope that the experimental period will afford ample

opportunity to consider alternative ways to improve our students' writing and speaking skills without necessarily imposing another complicated, costly new requirement upon them.

<u>HASS Overview Committee:</u>
Peter Child (Chair)
Bette Davis (ex officio)
Peter Donaldson
Ned Hall
Frank Levy
Megan Hepler (student representative)
Elizabeth Wood

Pilot HASS CI Subjects

AY1999

Fall

11.018 Solving the Infrastructure Crisis (HASS Elective
11.020 Poverty, Public Policy, and Controversy (HASS-D)
21H.521 Ancient Japan and the Courtly Society (HASS Elective)
21L.010J/21W.734J Introduction to Textual Analysis (HASS Elective)
21M.252 Song (HASS Elective)
21M.500 Senior Seminar in Music (HASS Elective)
21M.621 Theater and Cultural Diversity in the US (HASS-D)
21M.655 Script Analysis (HASS Elective)
21W.739J/21L.448J Darwin & Design (HASS-D)
24.04J/17.115J Justice (HASS-D)
24.260 Topics in Philosophy (HASS Elective)
SP.353 Technologies and Cultures [Integrated Studies Program] (HASS-D)
STS.002 Toward the Scientific Revolution (HASS-D)

Spring

21F.018 Bilingualism: Language, Culture, and Experience (HASS-D)
21H.315 Writing the History of Modern Europe (HASS Elective)
21L.005 Introduction to Dramatic Art (HASS-D)
21L.010J/21W.734J Introduction to Textual Analysis (HASS Elective)
21M.011 Introduction to Western Music (HASS-D)
21W.747 Rhetoric (HASS Elective)
24.221 Metaphysics (HASS Elective)
SP.354 Technologies in Historical Perspective [Integrated Studies Program] (HASS-D)
STS.023J/SP.706J Historic Experimentation (HASS Elective)
STS.034 The Prehistory of Computers (HASS Elective)
STS.066 Brains and Culture (HASS Elective)

AY 2000

Fall

11.020 Poverty, Public Policy and Controversy (HASS-D)
24.04/17.115 Justice (HASS-D)
17.241 Introduction to the American Political Process (HASS-D)
21F.??? Women's Memoirs: Lives and Words (HASS-E)
21F.028J Sex Roles in Fiction: Europe and Latin America [SP.432J] (HASS Elective)
21H.522 Japan in the Age of the Samurai (HASS Elective)
21L.001 Foundations of Western Culture I: Homer to Dante (HASS-D)

21L010/21W.734 Writing About Literature (HASS Elective)
21L.448J Darwin and Design (HASS-D)
21L.485 Twentieth Century Fiction (HASS Elective)
21M.011 Introduction to Western Music (HASS-D)
21M.655 Script Analysis (HASS Elective)
24.02 What is the best way to live? (HASS-D)
21W.747 Rhetoric (HASS Elective)

Spring

21A231/SP455 Gender, Sexuality and Society (HASS Elective)
21F.018 Bilingualism (HASS-D)
21H.105 American Classics (HASS-D)
21L.005 Introduction to Drama (HASS-D)
21L010/21W.734 Writing About Literature (HASS Elective)
24.202 Modern philosophy (HASS Elective)
STS.034 The Prehistory of Computers (HASS Elective)
21M.785 Playwrights Workshop (HASS Elective)
21W.747 Rhetoric (HASS Elective)

Student Questionnaires

1. HASS CI Classes, Fall '98

Table 1: Questions Ranked in Descending Order of Percentage of Positive Responses (4's and 5's combined)

	1: Not at all	2	3	4	5: Very Much	4 & 5 Combined
Instructor comments on papers were useful	2.4%	6.5%	10.7%	32.7%	47.6%	80.4%
The writing assignments helped me understand the course content	2.4%	3.0%	16.8%	26.9%	50.9%	77.8%
Improved my expository and argumentative prose.	1.8%	15.0%	24.6%	40.1%	18.6%	58.7%
I learned to generate interesting and relevant ideas for my papers	3.6%	13.2%	25.1%	38.9%	19.2%	58.1%
Improved my ability to revise and edit my own prose	4.8%	16.2%	22.2%	33.5%	23.4%	56.9%
I improved my ability to organize my papers effectively.	4.8%	9.6%	31.1%	31.7%	22.8%	54.5%
The class improved my ability to participate in discussions.	10.2%	19.2%	18.6%	27.5%	24.6%	52.1%
The class improved my ability to write longer papers with extended arguments.	7.1%	16.1%	26.8%	29.2%	20.8%	50.0%
Improved my ability to write concise and stylistically effective sentences.	8.4%	15.0%	31.7%	29.3%	15.6%	44.9%
The class improved my ability to make my prose fit the specific audience for which it was written.	7.8%	20.4%	29.9%	29.3%	12.6%	41.9%
Comments from classmates were useful.	15.3%	17.3%	27.3%	22.0%	18.0%	40.0%
The class improved my ability to give oral presentations.	30.0%	11.2%	22.5%	21.2%	15.0%	36.2%
The class made me less afraid of writing.	25.8%	18.2%	25.2%	18.2%	12.6%	30.8%
The class made writing a less painful process.	24.7%	21.6%	28.4%	16.7%	8.6%	25.3%

2. HASS CI & HASS-D Subjects, Spring '99

Table 1: Comparisons of Means and Variance

1 = "Not at all" 5 = "Very Much"

	CI Subjects			Non-CI Subjects			
	Mean	Variance	N	Mean	Variance	N	T
1. The class improved my ability to write expository and argumentative prose.	3.43	1.01	148	3.19	1.14	536	2.44 **
2. The class improved my ability to generate interesting and relevant ideas for my papers.	3.72	0.99	148	3.49	1.20	537	2.29 *
3. The class improved my ability to organize my papers effectively.	3.50	0.98	149	3.21	1.13	537	2.44 **
4. The class improved my ability to make my prose fit a specific audience.	3.33	1.04	148	2.99	1.18	531	3.43 ***
5. The class improved my ability to revise and edit my own prose.	3.36	0.97	148	2.98	1.44	536	3.59 ***
6. The class improved my ability to provide helpful comments on the writing of others.	2.61	1.47	145	1.85	1.36	486	7.34 ***
7. The class improved my ability to write concise and stylistically appropriate sentences.	3.30	0.90	149	2.89	1.27	532	4.54 ***
8. Instructor comments on papers were useful.	4.10	0.91	148	3.76	1.32	539	3.14 ***
9. Comments from classmates were useful.	3.34	1.17	149	3.16	1.45	536	1.73 *
10. The class improved my ability to participate in discussions.	3.47	1.30	148	3.13	1.61	536	2.90 **
11. The class improved my ability to write longer papers with extended arguments.	3.34	1.17	149	3.16	1.45	526	1.61
12. The class improved my ability to give oral presentations.	2.76	1.70	141	1.77	1.30	459	8.57 ***
13. The writing assignments helped me understand the course content.	4.01	0.95	147	3.72	1.33	540	2.05 *

* P <= 0.05 **P <= 0.01 ***P <= 0.001 LCP 6/22/99

HASS CI Faculty Roundtable Discussion:

Fall 1998

On November 12, 1998, HASS faculty who are teaching pilot HASS CI subjects during AY 1999 participated in the roundtable discussion of Communication Intensive (CI) teaching in the HASS Curriculum. The meeting was very well attended. There was a pleasantly collegial, animated tone to the discussion. Faculty from diverse disciplines within the HASS curriculum shared stories and strategies from their classroom experiences, debated ideas, and articulated concerns.

The discussion revolved around certain themes:

1. The record of HASS-CI subjects so far.

Across the board faculty reported that the introduction of CI instruction into their subjects has been a success. Faculty shared strategies that they have used to revise their classes to be more communication intensive. These different strategies mostly concerned the number, size, and grading of papers, the ways that revision has been incorporated into the writing assignments, the distribution of paper assignments throughout the term, and different ways to develop students' oral communication skills. All faculty reported that there has been improvement, in some cases remarkable improvement, as a result of their focus upon writing and speaking. Some of the benefits of incorporating a focus upon communication skills were unexpected. For example, because their work is assessed on a more continuous basis, students' attendance and intellectual engagement with the subject is consistently higher in some classes than it has been in the past.

One serious concern persists: The CI component has caused a reduction in the amount covered in some classes. Although reduction in "breadth" has been partly compensated by improved "depth," the issue of content continues to be a concern.

2. Resources.

Teaching HASS classes communication-intensively was generally reported to place a much heavier burden upon faculty. One-on-one instruction is the most helpful, with a line-by-line response to student's papers. This burden is ameliorated in the large lecture classes where the onus of writing instruction falls mainly upon T.A.'s and recitation instructors. If T.A.'s are used more widely in HASS there is concern about what the effect would be upon the overall quality of teaching in the HASS curriculum.

Some smaller pilot CI classes presently have writing tutors assigned to them, and this is working well. The Writing Center has tutors, including subject-specific tutors, who can be helpful to HASS faculty. At the same time, some HASS faculty feel that helping students with their writing is the essence of what their teaching is about, partly because the writing is not separable from the content of students papers. Those faculty are reluctant to share the responsibility for grading papers. Enrollment in such classes must be kept small. There is

concern that a Communication Requirement will overtax many of our faculty by excessively increasing their teaching obligations.

If the HASS curriculum is to introduce a Communication Requirement, we need to develop a clear conception of what additional resources we will need to do this effectively and without unhappy, unintended consequences to the quality of teaching in HASS. The MIT administration also needs to make a clear commitment to provide those additional resources.

3. The importance of reforms in the first year curriculum.

Our ability to fulfill all aspects of the educational mission of the HASS curriculum, including teaching communication skills, is severely limited by conditions that are peculiar to the MIT culture. The science and engineering subjects that students take either through the GIR's or their major departments place heavy demands upon students' time and energy, and HASS subjects generally have a low priority. The first year suffers in this regard in a particular way. Because all subjects that students take in their first year are pass-fail, many try to cram difficult science core subjects, for which they are not really ready, into their first year. Reforms of the curriculum are presently being considered that would free up the first year and allow students to distribute their energy among more diverse interests. These reforms have to do, in part, with grades: Students will be allowed to take their science core subjects pass-fail no matter when they take them. The hoped-for effect is that many students will distribute their science core subjects in a more manageable way. A further reform under consideration that would impact HASS is that first-year students will take HASS-D's for grade. This reform would make a clear statement about the value that MIT places upon the HASS-D requirement. Taken together, these reforms of the first year curriculum will bring into effect a small but significant change in MIT culture encouraging students to devote more time and energy to HASS subjects.

A second important reform concerning the first year that is presently under consideration has to do with expository writing subjects. Approximately one third of MIT undergraduates presently take an entry-level writing subject. Many of these were advised to take such a subject on the basis of their performance on the Freshman Essay Evaluation. Most, however, take expository writing late in their undergraduate careers, after they have already taken HASS (and other) subjects that require writing. Pedagogically this makes little sense. A new approach is presently being considered that would require all students who are diagnosed to be deficient in their writing skills to take expository writing in their first year.

HASS CI Faculty Roundtable Discussion:

Spring 1999

Discussion focused on two main topics: 1) Pedagogical conflicts: the difficulty of reconciling 'content' and 'writing instruction' in HASS-CI classes; 2) Oral communication. Faculty also reported on pedagogical strategies that they had used in CI classes and evaluated their effectiveness, discussed other relevant experiences, and addressed a few additional miscellaneous topics.

1. Content versus Writing

CI emphasis displaces some content in some classes: Some faculty estimate that 20% to 33% of content is displaced; one testified that the additional writing and oral reports were added at the expense of enrichment activities and explorations that had formerly embellished the main focus of her class. Loss of content, however, is outweighed by the gain to students, both in terms of the development of their communication skills and in terms of the greater depth of coverage that the CI exercises encouraged.

On the other hand, CI classes are not writing classes as such; they are writing-intensive classes. Classes that implemented less extreme reforms than others suffered proportionately less compromise of content. It is likely that many of the faculty who volunteered to participate in the pilot phase of the Communication Requirement Initiative in HASS approached the teaching of writing and speaking with more zeal and introduced more radical reforms in their classes than the general faculty would. Moreover, if the Communication Requirement goes into effect along lines that are currently being envisaged, each class will be only one element in a four-year CI sequence. The ambition and scope of the CI component of each HASS class should be calibrated with that in mind.

The discussion of how extensive the writing component of a CI class ought to be is important because it affects how easily CI reforms might be implemented across the HASS curriculum. For example, if CI requires only a moderate change of emphasis in HASS-D's (e.g. replacing a final exam with a revision exercise and reducing enrollment caps from 25 to 18 per section), CI reform of HASS-D's could be widespread without inflicting damage to our curriculum. If, on the other hand, CI reforms need to be more radical and exact a greater toll on subject content, they will have to be implemented selectively and with great care.

2. The Oral Component

Gene Brown, co-chair of the CUP Subcommittee on the Communication Requirement Initiative, indicated that the subcommittee is beginning to focus on the issue of oral communication. While he feels the subcommittee will have a well-formed proposal as regards the writing component of the Communication Requirement in time for the faculty vote in the Spring of 2000, he feels less sanguine about the oral component.

It is hard to get students to respond to student presentations in our classes. In part this reflects the MIT culture and students general lack of engagement with HASS issues. In part it reflects the difficulty of sustaining an inclusive, animated discussion in classes that have 15-18 students: They are simply too large. In a fifty minute class with 18 students, allowing say 5 minutes for the instructor to introduce a topic, each student would have 2.5 minutes in which to talk: Obviously you cannot teach oral communication skills under such circumstances.

Moreover, student presentations and informed discussion are very difficult to do effectively in introductory classes. Students have insufficient knowledge of important materials and grasp of important concepts. There was widespread agreement that the oral component of the Communication Requirement should be postponed to the second two (junior and senior) years, and the focus in the freshman and sophomore years should be upon writing.

3. Miscellaneous

- CI instruction increases pressure and burdens upon faculty. Tutors or other forms of support can relieve that pressure.

- Part of the Communication Requirement should focus upon reading. Students have difficulty extracting an argument from what they read, or even recognizing that there is an argument. This reading deficiency is symmetrical with students' writing deficiency, the difficulty they have making a coherent argument in their own prose.

- A contradiction was identified regarding the 'preliminary phase' writing requirement. Beginning next year, a student who fails the Freshman Essay Evaluation will be required to take a writing class during freshman year. If the student takes that writing class in the second semester of the first year, the student might take a CI HASS-D or HASS-E in the first semester. If the student passes that CI class with the equivalent of B- or higher the student will automatically pass the Phase 1 writing requirement. This would give rise to the apparently contradictory situation that students may pass Phase 1 but still be required to take the Preliminary Phase.

Appendix G

Summary of Review of the Online Freshman Essay Evaluation

Memorandum

DATE: 10 December, 1999

TO: Committee on the Writing Requirement (CWR)

FROM: Winston R. Markey

RE: Evaluation of the Online FEE

At the CWR meeting on September 21, an evaluation committee was formed, chaired by me, to review the online Freshman Essay Evaluation as it was administered this past summer.

The evaluation group was provided with seventeen randomly selected Essay Evaluations, with graders' comments; the essay topics; the scoring rubrics used to determine students' point scores; the instructions given to grader for providing feedback; and samples of Writing Requirement status reports provided to freshman advisors.

While the evaluation group was reviewing these materials, the Writing Requirement office also sent an email survey to all freshman advisors, soliciting their feedback on the online FEE. A summary of the results of that survey is attached.

Based on the responses I have received from members of the evaluation group, as well as the advisor survey results, I draw the following conclusions:

(1) The online FEE represents a significant improvement over the paper-and-pencil test of past years. Members of the evaluation group as well as a number of advisors cited the reduction in stress for students in taking the test over the summer, and cited as well the more detailed information students and advisors get now. It makes sense to keep the online FEE as the default method of evaluating entering students' writing, and to work to improve the process to address the most common criticisms of it.

(2) The Writing Requirements administration of the test was conducted in an essentially sound, well-organized manner. There were, however, a number of suggestions for improvement, expressed both by members of the evaluation group and by advisors. In general, the flaws in the details of the process can be attributed to a shortage of time, staff, and resources. With adequate staffing and planning time, the online FEE can be improved to address most criticisms. Specific areas for improvement are: (a) consistency in grading. Although a majority of those who looked at the essays felt the grades were fair and

consistent, there were one or two obvious glitches; and (b) consistency of quality in the feedback students are given. See attached memo from Les Perelman describing and addressing the specific concerns in more detail.

(3) There were one or two questions raised about the online FEE that addressed the pedagogical rationale behind giving this kind of a test, and these questions will not, obviously, be addressed merely by improving the current process. Does writing outside a classroom context allow students to do their best work? Does administering the test online provide too much room for cheating? While I find these important questions, I feel that the current system, which most agree is essentially sound, workable, and a distinct improvement over past years, should not be set aside without substantial evidence that a new system would be an improvement.