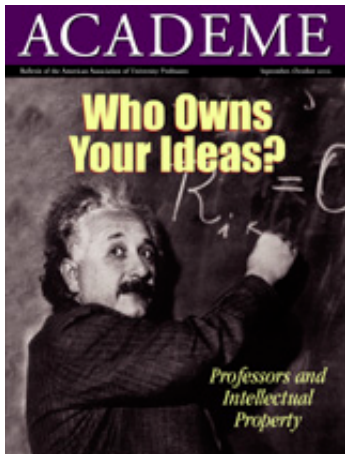


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Cover: Detail from Einstein Writing Equation on Blackboard, 1931. Theoretical physicist Albert Einstein writes on a blackboard at the California Institute of Technology..

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Open Course Ware A Case Study in Institutional Decision Making

Bucking the rush to commercialize learning, the Massachusetts Institute of Technology chose to make its entire curriculum free and open to the public. Faculty governance and strong institutional values made that choice possible.

By Steven R. Lerman and Shigeru Miyagawa

On April 4, 2001, the Massachusetts Institute of Technology announced a major new initiative called MIT OpenCourseWare. In addition to generating widespread publicity, including a front-page article in the *New York Times*, the announcement led to MIT's receiving more than a thousand e-mail messages, most of which reflected the enormous excitement engendered by this first-of-a-kind program. The concept behind OpenCourseWare, known as OCW, is deceptively simple: MIT will create Web sites for all of the courses it teaches, which will be open and freely accessible to the world. The university has committed itself to making OCW a permanent element of its activity by providing financial support for the program in its regularly budgeted operations. [1](#)

As with all seemingly simple ideas, the difficult and complex parts lie in the details. OCW is very much a work in progress. The specifics of how we will reach our goals are to some degree unknown, and much remains to be discussed and decided by the faculty and staff who will implement OCW. Nevertheless, MIT's experience in planning and testing OCW has provided insight into how the program is likely to develop.

OpenCourseWare

Individual professors at many universities (including the authors of this article) have publicly accessible Web sites on which they make their teaching materials freely available. The natural question to ask is, "What distinguishes OCW from what is already happening?" The ways in which OCW differs from these scattered initiatives are in (a) the intent of MIT to systematically build Web sites for all of the courses it offers; (b) the plan for a central support organization that will help to produce the Web sites without requiring extraordinary efforts by individual professors; (c) the creation of a single, searchable organizing structure spanning all the courses; (d) MIT's commitment to the OCW Web site as an enduring feature of the university's operations; (e) a plan to provide a consistent, but not overly constraining, "look" for the sites of the courses represented; and (f) the decision to allow free and open reuse of OCW materials for all nonprofit educational and research purposes.

MIT does not envision OCW as a distance education initiative. We do not intend for students to enroll in OCW courses or degree programs, nor will we offer MIT credit through the OCW program. We will not arrange for interactions with the MIT faculty through the OCW Web site, although some professors may voluntarily choose to correspond with users. The OCW site will simply be a collection of our teaching materials. Users themselves will decide how to profit from the electronic materials we post.

OCW is best thought of as a twenty-first century adaptation of a publishing initiative. Faculty members' participation in the program will be much more akin to writing and publishing textbooks than to teaching courses. We certainly hope that the materials we make available through the Web site will influence how others teach and learn, in the same way

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that many textbooks have influenced pedagogy around the world. We see OCW as a way to express our faculty's views on the structure and organization of teaching.

Discovery Process

The initiative that led to OCW began with MIT's Council on Educational Technology (MITCET). MITCET's Web site <Web.mit.edu/cet> explains that the council "provides strategic guidance and oversight of MIT efforts to develop an infrastructure and initiatives for the application of technology to education." In spring 2000, MITCET launched a new program for lifelong learning and appointed a core team composed of different members of the MIT community to implement it: faculty, administrators, and graduate students, including Shigeru Miyagawa, one of the authors of this article. The team, led by Dick Yue, associate dean of the School of Engineering, and assisted by a team of consultants from the firm Booz, Allen, and Hamilton, Inc., was "to develop a recommendation to address how MIT can generate and offer [online educational] modules that provide the target market with a working understanding of current hot issues and emerging fields." An earlier MITCET study had identified the "hot issues and emerging fields" and determined that the modules needed to meet three conditions: they had to fulfill the objectives of the program and be financially viable and sustainable.

At that time, "e-learning" was a powerful buzzword among universities and companies worldwide (both well-established and newly minted ones), but especially in the United States. Organizations were launching start-up ventures and competing for market leadership and financing. Befitting the excitement of the times, MIT's core team began with the idea of making its program generate revenue, that is, ensuring that it would be "financially viable and sustainable"-although the question whether it would be a for-profit endeavor was left open.

How did the lifelong learning team start with a revenue-generating strategy but, in the end, recommend OCW? Hindsight makes it easier to see how all the pieces came together, but for the core team members investigating ideas, nothing was certain, even as late as fall 2000. Of all the ideas considered, that of offering content free of charge was never discussed until close to the launch of OCW. Before deciding on OCW, the core team conducted three major studies: team members interviewed organizations, both educational institutions and companies, engaged in e-learning; they pursued market research and created a business model; and they assessed current e-learning projects at MIT.

The external interviews targeted large companies that offered extensive in-house training programs and institutions of higher learning that had e-learning programs. The roughly forty interviews conducted over four months revealed that a great deal of e-learning was already going on in various forms. The team members concluded that MIT should launch an initiative of its own to stake a position in what appeared to be the most dynamic area of higher education.

But what could MIT do? More research made this question more difficult to answer. E-learning companies, many of them recently established, were signing up universities and, in some cases, prominent scholars in order to license content with "brand" value. It would have been inappropriate for MIT to follow a similar path. It could not "sign up" other institutions that were already engaged in e-learning of their own, and it certainly could not make an initial public offering, because it is a nonprofit organization. Briefly, the team considered launching a for-profit arm of MIT, as some other institutions of higher learning had done (for example, Columbia University established Fathom.com), but this strategy was not pursued.

In developing a business model for a lifelong learning initiative, the core team's market research involved collecting data from MIT alumni with assistance from the university's alumni association. The team saw the alumni as representative of the target audience: college graduates, many of whom are professionals. This market research resulted in several surprising findings. For example, some respondents said they would prefer module-based courses of twenty to thirty minutes each, a time span much too brief to treat any subject

matter in depth. The team documented that finding and others—such as the desired level of interactivity (younger respondents wanted more) and the maximum cost individuals and sponsoring companies were willing to pay. The team members then studied different combinations for generating the maximum revenue relative to the cost of production and administration.

In one of the most plausible models developed through this research, an online program would become financially independent in five years. That conclusion contrasted sharply with daily news reports about the enormous amounts of money being made from similar initiatives.

The external interviews, market research, and business scenarios cast doubt on the initial idea of a lifelong learning program that would generate net revenue. It was not clear what MIT could do to define a unique strategy. But the third study—the one assessing existing e-learning projects at MIT—ultimately led the core team to consider an alternative to a revenue-generating initiative. The team interviewed about sixty MIT faculty members who responded to an e-mail query asking about e-learning initiatives in which they were already involved. Their projects ranged from text-based Web sites to online videos of lectures with accompanying study questions. All of the projects related to MIT courses the faculty members were teaching.

Two important lessons came out of these interviews. First, the team learned that, without exception, the faculty respondents created online materials to improve the quality of their teaching. Second, with few exceptions, the faculty members received no monetary compensation for their work. These interviews revealed a core commitment among the respondents to continuously improve their teaching as part of their responsibility as faculty members.

Implementation Phase

At a meeting in October 2000, the core team considered all of its findings, focusing especially on what kind of e-learning project would best reflect the faculty's commitment to teaching. It was then that several members came up with the same idea: why not make MIT course materials publicly accessible online at no charge? It seemed plausible—in fact, likely—that faculty members would value the opportunity to make their teaching materials available to learners from around the world. OCW is a surprisingly simple idea, but its significance would not have been apparent without the extensive research carried out to understand the e-learning landscape and its business realities.

Posting course materials online would not, of course, be equivalent to offering the experience of an MIT education; that can be had only by enrolling in MIT, interacting with the professors, and living and studying with fellow students. But making MIT course materials available online would send a strong message about the university's vision: in the era of the Internet economy, MIT values learning, including e-learning, over financial gain.

OCW had the added advantage of circumventing problems identified in the background studies, most notably, generation of sufficient revenue; OCW would not require a money-making scheme. But implementing OCW would not be free. The final task of the core team was to create a business model for the program defining the cost of its production and administration. The team estimated that it would take \$85 million over ten years to produce online materials from all of the courses MIT offered in 2000.

The core team prepared a report recommending OCW to the provost in November, and the idea was accepted enthusiastically. It was then reported to MIT's president, Charles Vest, who embraced it with equal enthusiasm. Members of MITCET gave separate briefings to every academic department and program at MIT, after which OCW was discussed at a university-wide faculty meeting. Faculty asked questions about implementation, cost, and the potential for giving away an MIT education at no cost, all of which MITCET members addressed. The support among faculty was strong, opening the way for the public announcement of OCW on April 4, 2001.

The Faculty

Participation of individual MIT professors in OCW is entirely voluntary. Each professor will choose whether to contribute his or her respective course materials. This approach is entirely consistent with MIT's overall culture, which places high value on the independence of the faculty. As already noted, most faculty members strongly support OCW, although many have made it clear that their involvement will depend on whether the time needed to participate is within reasonable bounds. This requirement means that the OCW Web site must be produced as efficiently as possible, with the support organization shouldering the bulk of the work.

Faculty expressed several concerns about the intellectual property rules that would govern content published on the Web site. One question focused on who would own the content created by the faculty that will be made available on OCW. MIT, like most universities, cedes the ownership of textbooks written by faculty members to the faculty authors. Most professors have assumed that this same policy applies to their regular lecture notes and similar materials. The MIT administration resolved the question by confirming that the faculty would continue to own the electronic versions of the materials they create for their courses, even when those notes were transformed into Web-compatible formats by the OCW staff.

A second area of faculty concern related to the use on the OCW site of intellectual property owned by third parties. It is permissible under U.S. copyright law to make some types of copyrighted materials available for educational purposes on a Web site that is restricted to students enrolled in a specific course. But no reasonable interpretation of copyright law would allow those same materials to be publicly accessible. MIT will therefore have to omit such materials from the OCW site (replacing them with references to the materials, including information about where they might be legally obtained), or secure permission for public distribution from the copyright owners.

Faculty members also asked about how OCW would provide services to them. Like almost all faculties, MIT's professors are distinctly skeptical about the quality and cost of services offered by central organizations. We found through surveying them that they prefer what we call a "hybrid organization" in which they interact on a daily basis with OCW staff residing locally in academic departments, rather than with someone housed in a central organization. That means that OCW will have to place a substantial portion of its staff in the departments. The centralized OCW organization will provide services such as specialized media conversion, administration, and training. These services will be coordinated among the departmentally based OCW staff.

As we have already suggested, the key caveat to the general faculty support for OCW is that it cannot impose an additional time burden on them. It is difficult to overstate the importance of this issue. As a faculty, we operate essentially at capacity, and doing any new task inevitably means not doing something else. The faculty wants the OCW organization to make it as easy as possible for them to participate in the initiative, and many will not do so unless they believe that the level of organizational support will be substantial.

Future Decisions

As with any ambitious project, OCW faces challenges in meeting its goals, including creation of an efficient production organization. Until last spring, OCW was being implemented by a small group of individuals, most of whom will not continue with OCW. In May, MIT recruited a full-time executive director to oversee the program. She will have to build an organization that can produce course Web sites at costs that MIT can eventually cover with its own resources.

In addition, it is by no means certain that MIT staff will carry out all the elements of OCW's production processes. Many services can probably be more efficiently outsourced. Decisions will need to be made about which services are central to MIT's mission and should therefore be done by university staff, and which can be performed by outside

organizations.

Choices about technology also must be made. OCW is much closer in spirit to a large-scale publishing initiative than to the traditional educational and research mission that occupies most of MIT's energy. It remains to be seen what mix of commercial and "home grown" technologies might prove useful in developing a publishing workflow that is not only efficient but also responsive to faculty members' needs.

It will be several years before we know whether the enormous promise of OCW will be realized. The major issues of academic policy, intellectual property rights, organizational structure, and funding that OCW has raised within MIT have only been partly resolved. We hope that as we continue to explore these matters, OCW can serve as a model for similar initiatives at other universities around the world.

End Note

1. When OCW was first announced, one of the unresolved issues was how MIT would pay for the introduction of the project. In July 2002, MIT received grants totaling \$11 million, contributed in equal amounts by the Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation. In addition, MIT committed \$1 million of its own funds to OCW during the initial two-year funding period. [Back to text](#)

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