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Rewriting the Book on Education—Ivy League Style

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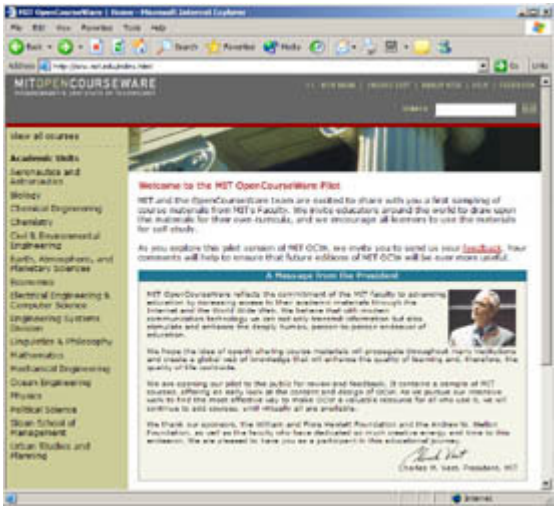


INTERACT! with this article!

The recent decision by the Massachusetts Institute of Technology (**MIT**) to make freely available on the Internet almost all course material (Massachusetts Institute of Technology, **2001**) is a break from tradition. It is true, of course, that different methods of distance education have been used by many schools for some time now. One is reminded immediately of institutions such as the **University of Phoenix**, which provides primarily off-campus education, and **Monash University**, which has various campuses in Australia as well as one in Malaysia. Likewise, the employment of new technologies for educational delivery is now widespread. Many instructors routinely establish course Web sites, with the process being more institutionalized in some and less so in others. For example, the University of California at Los Angeles (**UCLA**) creates a Web site for every undergraduate course. However, the level of access to materials varies according to instructor: for some, only the course syllabi are available to people not registered for the classes; for others, discussion questions, lecture notes, and detailed course outlines are freely available.

The unique disposition of MIT's departure lies in the scale and scope of its offering—OpenCourseWare (**OCW**) will make available all course materials for the 2,000 or so courses offered at MIT on a campus-wide basis. The unprecedented nature of this decision is therefore what makes MIT's choice all the more fascinating, if indeed the institution does follow its plans through to completion (the pilot offerings, involving 36 Web sites, were launched between October 2001 through March 2002; looking ahead, the university expects that the total cost of the project will amount to between $75-100 million over a period of 10 years). This short essay will examine the future impact of MIT's OpenCourseWare program through a critical analysis of the demand and supply implications, as well as highlight potential problems and the solutions involved.

Addressing the Needs of a Knowledge-Based Society

In a digital age characterized by intellectual boldness and a rejection of tradition, formal methods of education—as evidenced by a university degree or diploma—are increasingly being judged to be an insufficient reflection of an individual's ability, drive, or intelligence. Yet, for want of economical alternatives, formal education often remains the best available option used to capture these intangible aspects. However, the introduction of the Internet and the increasing importance of a knowledge-based society have

changed the fundamental paradigm for the delivery of education.

In this new environment, the development of human capital is crucial for the continued advancement of economies, and for countries to provide the competitive and comparative advantage needed to attract investment and economic capital in a world where both flow with scant regard to borders. Increased globalization has eroded the formerly central roles that economic capital, low-cost labor, and advanced technology play in the provision of these advantages, as economies begin to converge in their levels of capital stock, labor costs, and technological sophistication. As such, the focus has shifted towards differentiation through human capital—that is, the generation of these advantages through the expansion of human capabilities through education and training.

Concomitantly, equipping graduates with formal qualifications does not necessarily eliminate the need for innovation and entrepreneurial spirit. The learning model based on rote and regurgitation is being replaced by a learning model emphasizing creativity, lateral approaches, and critical thinking skills. This is the niche that OCW caters to, since the exposure to learning material from top-class faculty will undoubtedly expand the intellectual horizons of the students who access it. This can possibly be effected through two main channels. First, the extension of the domain of knowledge through using OCW can foster a richer sense of alternative viewpoints about a particular subject, which would then help expedite the process of constructive criticism. For example, OCW plans to use data metatagging (Long, **2002**), which would enable the cross-disciplinary fertilization that encourages lateral thinking. Second, if one is willing to assume that the courses include problem sets and other interactive exercises, a diligent student can utilize these tools to build his or her problem-solving ability.

OpenCourseWare: Demand and Supply Considerations

What OCW implies for higher education can be distilled into factors that influence high-quality education demand and supply. On the demand side, the economics of traditional, classroom-based education is premised on the need for capable individuals to signal their superior abilities in the job market. Typically, intelligent high school graduates choose to attend college instead of enter the workforce if they think that the time and money invested will pay off in a higher future income. This analysis, of course, simplifies the choice to essentially a monetary one; it hence disregards alternative, and undoubtedly important, factors that feature in the individual's decision-making—such as a sense of achievement, the pursuit of knowledge, or the absence of other compelling alternatives to attending college. While these are acknowledged, they do not detract from the crux of the argument. Such a choice still remains predominantly, if not exclusively, driven by the individual's need to offer a convincing signal to future employers.

The knowledge-based economy has modified the factors that influence this decision-making process, because employers no longer look narrowly at the degree certificate alone. Inventiveness and a propensity for risk are now considered as significant components in the equation, together with experience and non-formal training. The chances of success for a self-educated talent are therefore more promising than they were in the past. The provision of MIT's course material on the Internet acts as a catalyst that makes it possible for these self-educated individuals to enhance their intellectual capabilities through the institution's quality content, and therefore better prepare themselves for the job market. Furthermore, motivated, enterprising individuals can capitalize on the treasure trove of knowledge provided by this initiative, even if they choose not to enter the job market but instead engage in businesses of their own. The benefits of this access are especially significant for those living in remote or

underdeveloped regions, where access to libraries may be limited or nonexistent. In such cases, students, as well as faculty, will enjoy the richer learning environment made possible by access to OCW.

On the supply side, educational providers need to continue to adapt to a changing playing field. With the Internet as a medium, the marginal costs of providing an additional unit of education—absent the teacher-student interaction—are greatly reduced. Online course materials can either be downloaded for printing or perused electronically by interested individuals. Forums and discussion groups may emerge to provide student-instructor and student-student interaction using OCW material as a platform (such developments are best exemplified by the multiplicity of support groups that exist online for a range of subjects, from **astronomy** to **computers**). These online colloquia are often free of charge, and are also far less subject to time and distance constraints than traditional classroom-based interaction. Such developments mean that colleges and universities must provide customization and personalization of the learning experience for their students; otherwise, students may be better off studying on their own, using resources such as those provided by MIT's OCW.

Challenges and Concerns

OCW introduces other issues, primarily those involving intellectual property concerns. How will professors react when their colleagues use their materials in minimally modified form? Will OCW-type programs create disincentives for faculty members to post quality materials? Or is the satisfaction of reaching a worldwide audience sufficient reward in itself to compensate for a lack of remuneration or even attribution? The answer probably lies somewhere between these two poles. Universities, no doubt, will continue to obtain funding from public coffers, thus making pure market constraints less binding. Inevitably, educators will also write books that will be published and sold. The private sector will probably take up any slack that arises from the gaps that exist. Indeed, profiteering from course materials already exists, especially among online sites that provide notes and examination papers for a price. However, fears that the loss of a potentially large source of revenue from the possible sale of these materials are probably unfounded; any demand for lecture notes will probably collapse if price tags are affixed. Nonetheless, this is a bold step, given that faculty might wish to guard the fruits of their intellectual labor. A clearly defined copyright policy—as has been suggested by Gasaway (**2002**)—is therefore critical. In this regard, MIT has chosen to remain with its institutional policies governing scholarly material (MIT, **2002**).

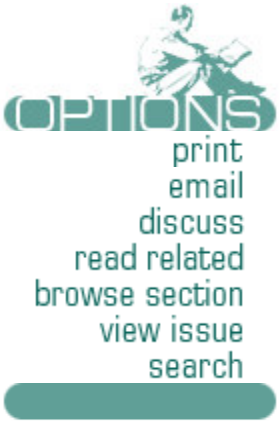
Another consideration, raised by certain members of the MIT faculty prior to the announcement, revolves around the possibility that professors' time and energies would be better directed towards other pursuits, rather than laboring over course Web sites (Goldberg, **2001**). However, this response seems to be more reactionary than rational. Many professors already maintain personal Web sites where course materials are made available to on-campus students. Furthermore, as the proposed offering is campus-wide, economies of scale have justified the establishment of a baseline professional support team that provides editorial and technical assistance. Indeed, this is one of the signatures of OCW—that it is supported by an underlying technological architecture, the Open Knowledge Initiative (**OKI**) (Gilbert and Long, **2002**). Through OKI, faculty members need not reinvent course material for OCW delivery; instead, the modular, flexible nature of OKI permits the incorporation of learning services with minimal fuss. As such, OKI allows professors to customize the level of interactive content within their OCW offerings, from simple discussion lists through to more complex functions.

Finally, there is a cogent argument that online course materials are but another facet of

educational delivery, and are not substitutes for face-to-face interaction or distance education *per se* (Heterick, **2001**). The Internet is a rich, nonlinear learning environment, as opposed to the more linear, physical medium of a textbook or the vibrant but time-limited structure of a lecture. To fully exploit the flexible and customizable nature of the Web as a medium of instruction, supplementation by either textbook or lecture, coupled with faculty guidance, is undoubtedly desirable.

Conclusion

What does the MIT initiative mean for smaller, local universities, or for other universities in general? In the near future, any impact is likely to be limited. Employers will continue to employ people who have formal degrees. Professors might benefit from the material provided by MIT for preparing their own courses, particularly in countries where the educational system is less developed. In the short run, the prestige associated with attending elite schools, as well as the quality of the instructional delivery, should continue to attract students to those institutions; any loss of potential students would be minimal. After all, as Gilbert and Long (**2002**) assert, course content does not, by itself, an MIT education make.



In the medium to long term, however, there may be increasing pressure on other universities to provide similar materials of their own for free, in order both to encourage the free exchange of knowledge and to fulfill their mandate as institutions of higher learning. In this sense, OCW could well be the catalyst that rewrites the book (or at least a chapter) on education in the knowledge-based economy. As a corollary, the complexion of the job market may also morph to reflect more closely the reality of the conditions created by this new focus on knowledge. Existing stigmas behind obtaining an education off-campus will gradually be eroded, and faculty, employers, and parents, as well as students themselves, will need to reconsider their perceptions of the viability of nontraditional forms of learning—including, but not limited to, self-education using freely available course material on the Internet. Of course, learning in this manner is not equivalent to online degree programs, where students benefit from faculty oversight and a more interactive learning experience. Yet if on-campus education is unlikely to lose its prominence or viability as the preferred mode of education, the alternatives that are being conceived by advances in technology will challenge the very definition of education. What is most important, though, is that all the players currently involved in this arena embrace the wave of change wrought by technological progress—instead of being engulfed by it.

References

Goldberg, C. (2001, April 4). Auditing classes at M.I.T., on the web and free. *The New York Times*, A1. Retrieved September 5, 2002, from **http://www.nytimes.com/2001/04/04/technology/04MIT.html**

Heterick, R. (2001, May 1). Is MIT giving away the store? *The Learning MarketSpace*. Retrieved September 5, 2002, from **http://www.center.rpi.edu/LForum/lm/May01.html**

Long, P. (2002, January). Open CourseWare: Simple idea, profound implications. *Syllabus*. Retrieved September 5, 2002, from **http://www.syllabus.com/article.asp?id=5913**

Long, P., & Gilbert, S. (2002, March/April). Open Knowledge and OpenCourseWare initiatives: An interview with MIT's Phil Long. *The Technology Source*. Retrieved September 5, 2002, from **http://ts.mivu.org/default.asp?show=article&id=979**

Massachusetts Institute of Technology (2001, April 4). MIT to make nearly all course materials available free on the world wide web [Press release]. Retrieved September 5, 2002, from **http://web.mit.edu/newsoffice/nr/2001/ocw.html**

Massachusetts Institute of Technology (2002). *MIT OpenCourseWare FAQ.* Retrieved October 15, 2002, from **http://ocw.mit.edu/global/faq.html**

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