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[Home](#) > The University Unbound: Transforming Higher Education

The University Unbound: Transforming Higher Education

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“With the move from an agrarian to an industrial economy, the small rural schoolhouse was supplanted by the big brick schoolhouse. Four decades ago we began to move to another economy but we have yet to develop a new educational paradigm, let alone create the ‘schoolhouse’ of the future, which may be neither school nor house.”
Stan Davis and Jim Botkin, *The Monster Under the Bed*

Our evolving system of higher education has been undergoing a paradigm shift since the 1980s. Some universities have moved away from unidirectional, instructor-focused teaching to a more distributed, student experience. Likewise, most medical schools in the United States began using problem-based curricula decades ago and improved results in student performance followed.¹ Business schools are slowly beginning a similar shift.

This shift towards more interactive, problem-based courses is crucial when combined with the possibilities that the Internet has begun to make available internationally. Full or partially online courses are becoming routine, especially at the master’s level. Some universities are even providing entire degrees online, many of which are also at the master’s level. In the United States, over 5.6 million students were taking at least one online course in the fall semester of 2009, an increase of over one million students from the previous year.²

What if this trend were to be taken further by envisioning an international collaboration of universities—a “MetaUniversity”—that shares online courses, expands problem-based courses, and is truly global?

The recent and quite explosive trend towards online courses stems from a variety of factors within society. These include technological shifts such as significant improvements in global access to the Internet and development of more sophisticated online tools, but also societal shifts such as globalization and an economic downturn creating increased competition between universities.³

Outside the university structure, massively open online courses (MOOCs) have become very popular over the past few years as part of the open educational resource movement. MOOCs are courses structured similarly to a traditional university course; they often do not offer credit, are free, and have no prerequisites, but may offer some form of a certificate of completion. The first such course was offered in 2011 on the topic of artificial intelligence (AI) and had 160,000 registered students, 23,000 completed the 10-week course.⁴ Since then, MOOCs have been offered on numerous topics all over the world.

And yet, while the amount of information is increasing, universities are struggling financially. Tuition is increasing steadily, reaching around \$200,000 for four years at some U.S. private institutions, while state funding is being drastically cut to most public universities around the world. This is forcing faculty members to teach more courses, with more students, and less help from teaching assistants. This trend is eroding the overall student experience and the degree of interaction with professors. Professors also have less time to do research and service within the community as more of their time is taken up by teaching and grading.

The expectation of many universities is that online education can provide a solution to their financial problems. They anticipate that more students will bring in more funding while requiring less faculty time. However, this has proved more difficult than many have anticipated. The creation of high-quality online courses has a large, up-front cost, both

financially and in terms of instructor time. This cost often exceeds the benefits that the university receives from the courses. In 2008 around 50 percent of universities in the United States reported that online courses were an overall financial loss, while only 25 percent said that they made money for the university.⁵

The advantage of building a high-quality online course is that once it's built, it's very inexpensive to distribute, share, and use. This is a main reason that MOOCs can be offered freely and are often very successful. However, many universities continue to think about basic information as they have for hundreds of years, as proprietary and inaccessible to those who don't pay. But the Internet has changed that mentality in the public. Most people are unwilling to pay for information since they can usually find what they need freely available.

Such a mindset regarding information has a large impact on higher education in developing countries. Much of the credible, peer-reviewed content these educators seek is inaccessible due to large fees. With no other options, they resort to potentially less credible information that is passed down to the students.

Although many of the pieces of a new education paradigm have been attempted, these concepts have not all been brought together in a practical model. It is time to consider a redesign of the university system in a way that takes advantage of recent Internet technology developments and addresses some of the social and economic problems surrounding higher education.

The Next Phase in Higher Education

Historically, universities have retained much of their autonomy, providing courses in isolation from other universities. This has changed to a certain degree over the past decade as collaborations have begun to form. Many of these collaborations are around specific degrees or programs that the universities are all interested in, or perhaps certain areas of research. There are a few universities that have begun sharing online course content or sharing platforms to offer their courses.

Creating an international consortia of universities, sharing not only course content but also the teaching of courses, could potentially move higher education to a new phase of development. Such a collaboration could be managed by an independent third party, most likely a nonprofit organization, that would help with communication and organization—think of it as a MetaUniversity—connecting the partner universities.

The MetaUniversity would help facilitate two types of courses: (1) online courses that are analytical and tool-based and (2) synthesis courses that are face-to-face, on-the-ground, and focused on solving real world problems. Although the Internet has advanced to the point that the majority of what we know can be imparted via the Web, learning the higher-order skills of problem solving and critical thinking must be done in person. The combination of these two types of courses will provide students with the opportunity to not only understand how to use analytical tools, but also how to apply and communicate them in appropriate ways depending on the situation and audience to solve problems.

Analysis Courses

Analysis courses provide a fundamental base of a quality education through content that focuses on existing knowledge and teaching the tools and skills required to solve problems. Today, they are often prescriptive and usually convey information in one direction, from the professor to the student. This feature allows analysis courses to be packaged online in a way that imparts the crucial information to students in a potentially more dynamic way than traditional classroom teaching. Through the use of recorded lectures, interactive animation, models, hands-on exercises, discussion boards, video chats, and other web-based tools, students can learn at their own pace while still having access to lectures and student-to-student interaction in a similar fashion to a face-to-face course.

University professors, or the experts in a field best qualified and having the most dynamic content would produce the online courses. These courses could be produced by one or a group of professors and updated regularly, since their production would be peer-reviewed community efforts. The content would be credible and up-to-date with the most recent information, and freely available on the web.

The MetaUniversity would facilitate the production and maintenance of these courses. This would ensure that the best possible courses are available online. All the course content would be peer reviewed and accredited before being made available. Once approved, courses would be freely available to the public for anyone to use on his own. They could also be taken for credit with faculty involvement. The online courses, and the professors teaching them, would be pre-approved by the individual universities prior to use. Professors from one university, or experts in a field, would be able to teach students at a variety of universities internationally, simultaneously. This approach would

showcase the strengths of each university, while allowing other universities to teach those subjects they were strongest in. This would allow a reduction in duplication of effort and resources. It would also give the students a more holistic education, with a more international perspective on the subject. Such a shift would also leave faculty more time to do research and participate in on-the-ground, problem-based, synthesis courses, described below.

Today's college generation has grown up with the Internet, with the idea that information is available, for free, at their fingertips. Many are unwilling to pay for information, as alternative free sources usually are available. Hence, when universities charge tuition, they do not charge for the information or knowledge provided, but for the faculty interaction and the certificate of accreditation that they provide at the end of the program. The analysis courses, or online courses, would take advantage of this situation and would be available on three distinct levels, depending on the requirements and interests of the students taking the courses. The three levels include:

1. **Independent Learning (Level I):** This level will be available to everyone who would like to obtain the knowledge within the course, but does not need university credits, faculty interaction, or a certificate of completion. It will allow individuals to complete the course asynchronously and for free, with all of the content available online. This level will not provide any faculty interaction but will facilitate interaction with others taking the course. One of the biggest benefits of this level will be the availability of the content to people in developing countries. It will provide them peer-reviewed information to teach with and utilize free of charge.
2. **Certificate of Completion (Level II):** This level will be for professionals, or anyone in the public, who would like to receive a certificate of completion but do not require university credits. The certificate of completion would be granted by the MetaUniversity, with the backing of the universities within the collaboration, for a small fee. Such professional certifications are in high demand as employers are requiring additional knowledge and skills from their employees as markets and situations shift. Unlike Level I, this level will provide some faculty interaction and can be taken asynchronously or on a semester schedule.
3. **University Credit (Level III):** The third level would be for those students who would like to receive university credits for a course. Course credits would be required for anyone who wishes to receive an accredited university degree. These degrees would come directly from the university that the student is enrolled in. The courses they would be required to take would also be determined through the requirements set by the university they were enrolled in. The courses could be offered by one or more faculty members, but students from any university within the collaborative would be able to take the course. This level would provide full faculty interaction and give students an experience that would match or exceed that of a traditional face-to-face course.

Synthesis Courses

Synthesis courses will allow students to apply the tools and skills that they gain through the analysis courses. These synthesis courses will be dynamic, on-the-ground, solution-oriented courses that send students and faculty into the community to address urgent, real-world problems and help identify and implement solutions with broad policy implications. They will address real-world problems at multiple temporal and spatial scales. They will do this by involving students and faculty from a broad range of disciplines and universities that are part of the MetaUniversity consortia as well as community stakeholders and decision makers to collaboratively find whole-system solutions. Because these courses require creativity and interactive communication between the professor, students, and community members, they cannot be taught online, but require in-person interaction.

Being involved in such an exercise will provide students the guidance they need to use the knowledge they have obtained through the analysis courses in the real world, but with faculty oversight and guidance. These courses will provide both the faculty and students with an unforgettable educational experience, the opportunity to do on-the-ground practical research, a potential publication, and help for a community with a problem. They will also provide students with the opportunity to learn and practice their communication skills. Students will have to learn to communicate and interact not only with a broad range of community stakeholders throughout the project, but will have to communicate their results to the appropriate audience. This may take the form of a peer-reviewed publication, pamphlets, a press release, a website, or any other media appropriate to the project. Students will receive university credit from the universities they are enrolled in. An example of such a course can be found in the box below.

Robert Costanza and Joshua Farley developed an atelier on the topic of Payment for Ecosystem Services that included an intensive two-week component held in Costa Rica in spring 2007 involving an interdisciplinary team of faculty, scientists, graduate students, nongovernmental organizations (NGOs), and various local and international policy makers. This two-week workshop was organized by Universidad Nacional de Costa Rica, the Gund Institute for Ecological Economics at the University of Vermont, and the International Centre of Economic Policy for Sustainable Development (CINPE). This atelier, with its

international and cross-discipline participants, was able to produce multiple outputs, including a special issue of *Ecological Economics*, on payment for ecosystem services.⁹ Many of these papers were coauthored by students, local policy makers, and international scholars.

The main elements of these courses include: (1) transdisciplinary, problem-based learning; (2) community-client sponsorship; (3) stakeholder participation; (4) blurring of the distinction between faculty and student, research and education; (5) adaptive management and flexible working groups; and (6) appropriate and practical communication of results.^{6,7}

Potential Obstacles

Although many aspects of such a system have been tested on smaller scales, potential difficulties may arise on a larger, international scale. Managing time zones and overcoming language barriers are just two of the obstacles that need to be addressed.

Certain fundamental aspects of higher education will also need to be addressed. One deals with the property rights assigned to content created by professors. Currently, all course content produced by faculty is owned by the university. For this consortia to work, course content will need to be shared among the universities and may require more flexible copyrights, such as a creative commons license.⁸ This license allows the creator to retain credit for the production of the content but with more allowances for certain types of usage. This content can be produced by faculty members of the collaborative universities, academic societies, or independent scholars. All courses will require approval before being accessible to students and the public.

The teaching of courses may also need to be rethought. Currently, it is inefficient for students to transfer credits. Simplifying the exchange of credits between universities may be the first step in enabling the sharing of faculty among the collaborative in a way that benefits both the students and the universities. One potential way to make this happen is to have the collaborative, or the universities themselves, approve courses that their students would take at other universities to gain credits toward their degrees.

There are many other challenges that will be encountered within such a new system. However, through cooperation, such obstacles can be overcome.

Conclusion

Our higher education system needs to adjust to a quickly changing world. The traditional role of universities as storehouses of knowledge and the source of delivery of that content is being overshadowed by the massive availability of information on the Internet. Technical skills become quickly obsolete as technology changes. The university of the future will need to teach students the tools they need and how to think critically and creatively regardless of what job they have or what problem they are asked to solve. Education is the key to solving our global problems. As Albert Einstein once said: "We can't solve problems by using the same kind of thinking we used when we created them." This will require an educational structure that changes our way of thinking to one that allows us to focus our global intellectual capital on solving the multitude of problems we now face.

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