

Packaged Online Courses (POCs)¹

online education and the role of universities in the 21st century

Yoav Shoham
Stanford University
June 13, 2012

There is general agreement that mass online courses will have great impact on higher education. It's also agreed that these are early days, that different experiments will take place, and that it's hard to predict how exactly things will settle down. Still, any player in this space must make some educated guesses that will guide its actions. Here are some guesses, hopefully educated.

There are many existing categories of player in this ecosystem, from publishers to software providers to social networks to device manufacturers and beyond, as well as new categories that are emerging. This document focuses primarily on the issues facing traditional universities and their professors, as well as some other related institutions.

The cornerstone of the online teaching revolution is what I'll call the *Packaged Online Course* (POC). I speak about it in more detail below, but briefly, a POC includes all the content needed to deliver the class before actually delivering it, indeed before any student is engaged. While the exact form of POCs is evolving, early examples have it include a syllabus, taped lectures, quizzes (both embedded in the lectures and standalone), homework, exams, and lab exercises. POCs can be used both locally, in a "flipped classroom" model, or in an online course. Like a textbook, a POC can be delivered by its author as well as by others.

I'll start with the bottom line – actionable recommendations to universities. I'll then back up and motivate the recommendations in two steps. First I'll paint a general picture of the higher education landscape that will emerge in the coming decade. Then I will look more deeply at changes that will take place at universities, based on the evolution from textbook to POC.

The bottom line: What universities should do right now

A key immediate question facing each higher-education institution – be it Stanford, University of Rochester, Foothill Community College, University of Phoenix, or Project Minerva – is this:

- Do I produce POCs (Packaged Online Courses)?

The answer should be based on two subsidiary questions:

- Will my business be harmed if I don't produce my own POCs?
- Can I produce world-class POCs?

¹ Original title: Higher Educated Guesses

The institution should produce POCs if – and only if – the answer to both questions is Yes. For some institutions the answer may be easy. Foothill Community College probably will not have the wherewithal to produce a POC with stellar content and high production value. The University of Phoenix may have the financial wherewithal, but perhaps not the expertise. And in both cases the brand will not be hurt by using POCs produced by (say) Stanford, MIT or Harvard. Harvard, MIT, and Stanford, on the other hand, must be in the POC business, producing and delivering the best POCs possible. If they aren't, their brand will lose ground to the others who do. These are the relatively easy cases. The real dilemma is the one faced by the big swath of “not Ivy, not community college” institutions. The key question for them is the degree to which they want to continue the grueling chase after the Ivies (what Christensen and Eyring call “climbing the Carnegie ladder”, after the classification of institutions of higher education defined first in 1973 by the Carnegie Foundation). Some will use this as an opportunity to revisit their audience and their value proposition, refocus their business, and get off the Carnegie treadmill. Others – perhaps most – will initially persist in the quest, and indeed perhaps view POCs as an opportunity to close the gap with the Ivies. And some may limit POC development to specific areas in which they believe they have an advantage.

Here are some recommendations for a university that decides to go into the POC-production business:

1. The university should make it easy for its faculty to produce the best possible POCs, by providing access to the best relevant technology and services. It will have to spend money on this.
2. The university should *not* be in the technology business. It should not create its own POC authoring tools. It should not host its own POCs, nor create the POC delivery infrastructure. There are plenty of eager technology providers out there with incentive to provide the best solutions in a cost-effective way. The university should however partner with these technology providers, to help shape the commercial offerings.
3. When the university delivers its own POCs online, it should have total control over brand and relationship with the students. It should not allow technology providers to dis-intermediate it from its students. It could have different relationships with different classes of students; for example, vetted students taking the class for accreditation (see below) versus unvetted auditors. But in all cases it should own the relationship.
4. The university should also distribute its POCs through other distribution channels, including through other universities. In these cases it will have no direct relationship with the students.
5. The university – even the most elite – should strive to reach the broadest possible audience for its POCs, the ones it delivers directly as well as indirectly. It should not be overly conservative and attempt to limit them to the elite. The level of the content, and the requirements placed in order for students to receive any certification, will preserve its stellar reputation. The POCs delivered by the university may well end up with different classes of students, for example vetted students taking the class for accreditation (see below) versus unvetted auditors. This will not tarnish the brand.
6. The university should distinguish itself in the quality of its POCs and the quality of their delivery, not in the technology or the distribution channels. It should strive to avoid commitment to proprietary technology or distribution channels. It should

- strive to be part of university consortia created around online education and embrace open standards.
7. The university should provide appropriate accreditation to the online students in a POC it delivers, regardless of who produced the POC. It may have to partner with testing organizations for this. It should provide no accreditation for a POC delivered by others, even if it produced that POC.
 8. The university should define the rights and obligations of faculty with respect to POCs around four areas: IP, brand, distribution and revenue. Broadly, the university should retain control over POC distribution, and share the IP, brand and revenue with the faculty. It should factor POC delivery into the workload of faculty, but usually not POC production.
 9. The university should view online education as a first-class citizen, on par with undergraduate and graduate education, and should appoint an appropriately senior administrator to oversee it.

Let me motivate these recommendations, starting with a general view of the emerging higher education landscape.

General predictions about higher education in the coming decades

Calling the following broad-brush assertions “predictions” is perhaps too bombastic, since they are mostly uncontroversial and even obvious, I think. The main goal is to highlight the issues that, in my view, have the most strategic implications.

Courses

1. **Ubiquitous content.** Quality college-level content will be massively available.
2. **Winners will emerge in each area.** As is the case with textbooks, a small number of courses will emerge in each area as the preferred choices. These winners will be determined based on traditional factors such as the quality of the material, its organization and clarity, prestige of the instruction and his/her institution. But as was the case in the transition from radio to television, or silent movies to the talkies, the new medium will give rise to new considerations: the value added around the lectures (quizzes, interactive games), production value, the looks and personality of the instructor (if I and Brad Pitt are each teaching an online game theory class, Brad wins).
3. **Content atomization and the academic remix.** The atomic units of teaching will be smaller than the traditional college class. And they will be mixed and remixed to create multiple learning pathways, optimized for the different needs of the diverse student body. (The average unit length in the online game theory class I taught with Matt Jackson was under 15 minutes long. Although we assembled the units into a “standard” course not unlike the ones we both teach at Stanford, going forward we fully expect our colleagues to pick up bits and pieces, and add more of their own, as required in their specialized offerings.)

Students

4. **Lifelong learning.** Students of college-level material will span much more than college-age young adults. You will see ambitious high- and even middle-schoolers; mid-career people wanting to brush up on their skills and open new career paths in today's world that offers little job security; as well as non-career and post-career people looking to enrich their lives. (Anecdote: The online game theory class had an 11 year old student, a 63 year old one, and a stay-at-home mom of four, who in a blog post prior to the course had written achingly about her husband not wanting her to study and how she considered her life not worth living. The e-mail this mom sent me after the course will stay with me for a long time.)
5. **Flat world.** The students will come from every corner of the world, and increasingly from the developing world. (The online game theory class had students from Mongolia, Nepal and Kazakhstan.)

Institutions and their business

6. **Accreditation models.** The standard accreditations of Associate, Bachelor, Masters, and Ph.D. will not disappear, but they will be augmented by other, more specialized accreditations. In principle, every teaching unit will be fair game for evaluation and accreditation.
7. **Revenue models.** As is the case with all online content, the courses will be mostly free. The revenue models that will survive will not charge for content per se, but will be based on some combination of advertising, job referrals, testing and accreditation. One exception to free content will be the "freemium" model, with specific features or special content requiring payment. We will also see Red Hat-type systems that wrap the free content with value-add customer services. Other creative models, specific to education, will emerge as well.
8. **Residential colleges and disaggregation of the academic value proposition.** Residential colleges will not lose their value proposition as a category, though some residential colleges will come under pressure. In general, the different values that are usually viewed as a package deal – general education, professional preparation, access to and participation in novel research, formal accreditation, informal cachet for having gone to this or that college, personal development as a young person, and formation of life-long social and professional ties – will start to be disaggregated. The institutions that will thrive are those that wisely choose and package their value proposition. The elite universities are best positioned. They will in the foreseeable future continue to offer the integrated value proposition, and their brand can be enhanced rather than diluted in the new ecosystem. This is especially true of those who are thoughtful and proactive about how they approach mass online education. Institutions with lesser brands will need to make harder choices.
9. **Rise of new types of institution.** The disaggregation of the various academic functions will give rise to new types of institution that offer specific packages. Some will provide distributed physical evaluation and testing services, which universities

will rightly view as natural partners. Others will serve as POC aggregators and distributors, and will pose a much more significant threat. Traditional publishers are at worst a nuisance when they extract revenue by controlling content rather than bringing real value. The new breed of publishers may both bring more value and control something much more important than content. In particular, when they start offering their own accreditation (as have both Coursera and Udacity), they will start to encroach on the very business of the traditional university. Long term these new institutions pose a significant threat to traditional institutions, especially ones with lesser brand. I'm not sure how to quantify "long term" here, but I believe it's less than ten years and may be less than five.

10. **Rise of the free-agent professor.** New types of institution are not the only threat to traditional universities. In a flat world, everyone can be a student and everyone can be a teacher. Some professors will become popular celebrities; a thousand Carl Sagens and Jim Collins's will bloom. There will be competition among universities for those stars, and in the longer term some of them will leave the university system altogether and act as independent teaching businesses, sometimes in partnership with the new emerging institutions.

There are many other things to say about online courses and their impact, including their rich content, the opportunity for analytics and data mining, crowd sourcing, and social interaction among the students. But the points above seem to me the most relevant strategically.

Content creation and delivery: Who does what, and who owns what?

The general trends I discuss above will lead to changes within universities, in particular to changes in the relationship between the university and its faculty. This part is probably not as obvious and uncontroversial as the first part. A good starting point is to think about similarities and differences between traditional textbooks and online courses.

1. **Textbooks and courses in the 20th century: product vs. customer service.** In the case of traditional textbooks, it's clear that the author produced the material, and others may include it as part of the course they deliver. No one confuses the book product and brand (for example, Russell and Norvig's Introduction to Artificial Intelligence) with the delivery product and brand (for example, Stanford's CS221 class). The book is judged by the content, organization, writing, and perhaps exercises and production value. The delivery is judged on how well students learn and how much they enjoy the experience. These learning and enjoyment require a variety of services by those delivering the course, beyond the value provided by the textbook. All these services might be lumped under "customer service."
2. **Packaged Online Courses (POCs) are the textbooks of the 21st century.** With the boundary between textbook and online course blurring, much of what was true about textbooks will be true of online courses, with some nuances. Like the textbook, the online course prepared by the instructor – including material such as videos, lecture notes, possibly an accompanying textbook, quizzes and lab exercises – is a packaged product. Hence the term Packaged Online Course (POC). This product can then be delivered by others. We've already seen it happen; several

professors used the online game theory course as part – or as the entirety – of their lectures, and the same is true of some of the other Stanford online courses. This will happen increasingly.

3. **If you deliver a POC you own the relationship with the student.** Whoever delivers a POC will incur both the rights and obligations of anyone in the customer-service business. When others teach your POC you have no contact with their students, do not see their online discussions, do not monitor their progress, and do not certify their accomplishments. With respect to those courses, your job is done when you've finished preparing the POC. You have no relationship with the students either during or after the course. This was very different from when Matt and I taught our online game theory class ourselves. That required constant attention by us and the teaching staff to the goings on in the class – lecture viewing statistics, activity in discussion forums, performance on problem sets, and attending to special needs that are bound to arise in a class of thousands. We had a direct relation with the students, and still do even though the course is over.
4. **A potential ambiguity about “delivery.”** There is however an ambiguity about who it is that is doing the POC delivery. Beside a teaching staff, delivering a POC requires dedicated software and infrastructure, which support registration and other logistics, all communication elements (between instructors and students, and among students), content storage and distribution, course reporting and analytics, and in general all functions of course management. (Side comment: Many offerings will bundle this with the POC authoring tools, though they are logically distinct.) So, when students sign up to the class, who owns their contact information, and more generally the relationship with them? Is it the infrastructure provider, or the instructor? For example, in the early Stanford experiments using (what became) the Coursera platform, this critical issue remained murky. There is no one right answer here, but the issue has major legal and business implications, and will require clear contractual clarity among the parties.
5. **Universities as distribution channels.** In addition to delivering their own POCs beyond the boundaries of their own campuses, universities and professors will use other institutions as distribution channels. This is true whether those other institutions are traditional campus-based colleges, existing distance learning institutions, or emerging new breeds. Stanford and its professors for example may distribute their POCs via Foothill Community College, Rochester University, MIT, the University of Phoenix, or Udacity. (Side point: This doesn't necessarily mean that the local professor will be demoted to the role of glorified teaching assistant, any more so than with textbooks. Sometimes the local professor is indeed less knowledgeable than the textbook author, and sometimes not. The same will be true with POCs.) Of course, institutions will deliver their own POCs online directly while simultaneously using the other distribution channels.
6. **A non-issue: aiding the competition.** POCs provide more of the overall value to the student than do traditional textbooks, so it's natural to worry that by distributing its POCs, a university might be ceding a significant portion of its value to a competing institution, and therefore also doubt the previous prediction. But this is a misplaced concern. To begin with, dispensing knowledge is only part of the value provided by an academic institution, alongside the others mentioned earlier (nurturing

environment, social networking, *etc.*). But even specifically with respect to knowledge dissemination, more potential students will be attracted to the opportunity to learn directly from a star in a given area than will be seduced away by the opportunity to acquire that knowledge more cheaply elsewhere (just because I've watched *Pretty Woman* it doesn't mean I don't want to personally meet Julia Roberts, or my wife Richard Gere). A university whose POCs are popular will become a mecca for students who want to experience the real thing. And perhaps even more simply, universities have no choice; if they don't create the best POCs possible and get them out there, their competitors will.

7. **Key issues: IP, brand, control, and \$.** This new ecosystem, with POCs developed by professors within universities, and delivered both there and through many other channels, raises four key issues:
 - a. Will the de facto (if not de jure) policy of universities to vest the IP of the textbook with the author carry over to POCs?
 - b. Will the brand of the POC be associated with the professor (as with textbooks) or with the institution?
 - c. Who will control the production of the POC and its distribution?
 - d. How will the revenue stream associated with the POC be shared, both among institutions and internally between the institution and the professor?
8. **IP and brand.** Here I think the asymmetry with textbooks will come into play. Both because POCs provide more relative value than textbooks, and because universities have a strategic interest in developing and promoting their own POCs much more so than with textbooks, the existing textbook model regarding IP and brand will not carry over to POCs. A more equitable arrangement will emerge, namely co-ownership and co-branding between the author and the institution. The basic unit of IP ownership and brand will be the (person, institution) pair. When you have multiple authors spanning different institutions, the IP and brand will be shared by several such pairs. (Some of my academic colleagues will object, feeling this model encroaches on their academic freedom, but I think that if you think about it long enough you realize the shared model is inevitable.)
9. **Control and \$.** These two related issues are where the rubber meets the road. The question of control is the trickiest. Who will decide who can distribute the POC, and the terms of the distribution (including the financial considerations)? Here again, much as I cherish my academic freedom, I believe university will retain at least a veto right on distribution channels, and in fact will be in the best position to pursue those channels and work out the terms of distribution. With this assumption, the revenue sharing part is less problematic, at least between the university and the individual; some reasonable split will be worked out (probably something in the 30:70 to 70:30 range). The arrangement among institutions is trickier. The issue is not who will decide on a split; the parties will, through negotiation. The real issue is that it's not always obvious what is being split. The revenues of the entity delivering the POC may be very indirect, and attribution of the right portion to the POC may be unclear. The only way I see for dealing with this is transparency and reasonableness among the parties. Without these, no agreement will be sustainable.

10. Incentive compatibility and free-agent professors. No matter what the formal agreement is, successful POCs will enhance the brand of the professors who develop them. Some professors will become popular celebrities, the new Carl Sagens and Jim Collins's. One impact that will be felt already in the near term will be to create competition among universities and other institutions for these stars, much like the competition that exists today for professors based on their research. But the satisfaction of impacting millions of people on an ongoing basis, and the economic value associated with it, will tempt some professors to leave the university system altogether and act as independent teaching businesses. In the 20th century the incentive for professors to cross the street was weak, but POCs elevate ego stroking and economic value to new levels. Although popular stardom and revenue maximization are not the reasons most professors join the university in the first place, over time universities will have to continually revisit the specific formulas of their POC economic model to ensure the right incentive structure for their faculty.