

**Stanford's Contrasting Experience of Degree Conferral in Distance-Learning
and in Internet-Degree Offering; How does Stanford Shine with Global
Partnering?**

Paper for 2016 Humanistic Indigenous Innovation: Trans-disciplinary Dialogue

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Abstract

It is widely known that Stanford pioneered in providing degree-conferral and distance-learning technologies via Stanford Center of Professional Studies (SCPD) since decades ago. The courses offered via SCPD is boldly complete, covering almost all fundamental and emerging courses. The program had successfully assisted professionals at work receiving continued-education and career promotion needs. Due to the great educational mechanisms and accurate evaluation of academic performance, Stanford's SCPD immediately became a model for all other tier-one universities. However, Stanford had been extremely conservative in offering solely internet-based degree programs, but had just simply been recording, broadcasting, and using the course materials. It was as late as in 2012 when Stanford was still not interested in offering internet-based degree programs. However, when Stanford started to promote internet-based modules via an open platform, Stanford adopted cross-border and cross-culture approach, working with some best programs in each respective domestic alliance to create global impact without diluting the brand image of Stanford English-taught courses.

This paper studies Stanford's Internet Course-offering strategies, without degree conferral. The method of study includes data gathering, and studying the revealed preferences in such decisions. Since day one, Stanford had always possessed the technology capabilities, content, and teachers to become a first-rate Internet degree conferrer, yet only watched such opportunities to pass. We believe that the reasons may reside in grading and evaluation costs will have to be too high and couldn't be

assured with wanted fairness yet within the acceptable budget limits. Thinking retrospectively, we will ponder a question, if Stanford had chosen to offer degree-based internet program, would it necessarily had diluted the brand images of the traditional standard degree offerings, as well as the Stanford pioneered distance-learning-degree-offering programs?

Key Words: Example innovation, Cross-border innovation, distance-learning, internet degree offering, dilution of brand images.

STANFORD ONLINE EDUCATION: THE HENNESSY WAY

Stanford's John Hennessy actually played the key role of determining the internet course policy for the university and its constituents. He carefully made distinction between what others expect Stanford to do versus what Stanford should do.

Hennessy's approach is a typical engineering approach. Knowing what is capable with existing technology on enhancing traditional approach of offering a four-year undergraduate education first, Hennessy invited computer science professors to work on pilot projects with the internet technology in developing even better course materials. In such a process feedbacks are provided to the provost John Mitchell for setting university-wide policies.

Hennessy's approach tends to reduce the cost of traditional top-down, grand application alternative. And Stanford computer science professors actually developed the most successful entrepreneurial pursuits in the world, such as Coursera. The emphases are, however, still on the better developed course materials along the technology dimension of Internet space, and not on the technology platform itself.

Hennessy never promotes Internet Education as a delivering channel to dominate Stanford course-offering. His attitude is not discouraging and not encouraging. He believes that undergraduate education is gold standard and Stanford already knows how to deliver it well. He saw Stanford Computer Science Professors developing powerful platforms and portals as their own professional and entrepreneurial pursuits and considering such creation external and nice to know of existing.

To the educational masters, Online Education is probably a means of presenting or delivering the materials or content to education recipients, just like textbooks or video clips on YouTube.

In addition to conducting top-notch scientific research, developing course content in the form of the beta-version of a publishable textbook is a key activity of many computer science and engineering professors at Stanford. However, the most recent beta-version of the forthcoming textbooks were provided to attendants in printed form. The solutions of homework problems are also given in hard copy only. They were never posted onto course website to avoid a wide duplication and/or distribution. Developing suitable exam questions are considered another highly creative task of Stanford professors. Questions are well designed to test the key

points and applications that students should be aware of. This is particularly true for required undergraduate courses.

Stanford computer science professors actually had developed some best application platform for their personal entrepreneurial pursuits. However Stanford had never been the forefront users of such since Stanford had almost always video-taped lectures and made them available over internet for registered Stanford students only since some twenty years ago. It is mainly for students who had excusable reasons of missing a class. Attending to class is most essential and mandatory and no one would miss a class for no reason.

The truly successful internet course offered at Stanford is through Stanford Continuing Education (continuingstudies.stanford.edu). The only courses offered are liberal arts courses, plus some very basic computer science courses. There is almost no overlapping and dilution between continuing education courses and Stanford key residential courses.

Stanford Computer Science Courses Emphasize Tutoring

For computer science courses the tradition is to have adequate real-time tutorial provided by sector leaders in a well-equipped and spacious computer cluster or in a corner of the main library. The section leaders were usually the students who took the course last year and hence knowing the course material most thoroughly. In addition to obtaining the tutorial from the section leaders, students also gain tremendously from peer-learning experiences.

Internet had never played a fundamental role at Stanford, except for delivering course content to well qualified working professionals in one of the many engineering disciplines, who are working from nine to five as full-time engineers or managers. Stanford Center for Professional Development was established in the eighties for that purpose. However local SCPD participants are required to come to campus to take midterm and final exams. Remote SCPD participants on the other hand may choose to take the exams under the supervision of their immediate bosses on the work cite during the work hours. Exams are very carefully monitored and grading is done right after the exam. The graded exams are returned to the examinees via FedEx as soon as possible, and definitely by the next Monday.

Eye Catchers Internet Courses

The author hopes to mention a few successful examples of internet courses as

enhancer and eye-catcher of the fame or leadership of a particular science domain and/or the author's institution:

1. Marcus du Sautoy, the Simonyi Professorship Chair for the Public Understanding of Science (www.Simonyi.ox.ac.uk), the author of *The Number Mysteries: A Mathematical Odyssey through Everyday Life* (www.fifth.co.uk/numbermysteries), copyrighted 2010, a five-week long course has been offered through Department for Continuing Education (www.conted.ox.ac.uk).

2. Shelly Kagan, Professor of Philosophy at Yale (<http://oyc.yale.edu/>), *Life and Death*.

3. David Malan, Professor of Computer Science at Harvard, CS 50: Introduction to Computer Science. The course has been so successful that it is now also offered by Yale University.

4. Joe Blitzstein, Professor of Statistics at Harvard, *Introduction to Probability*. The teaching are on YouTube and notes are on teacher's website. A textbook by the author and his teaching assistant was published to facilitate teachers and learners.

5. Gregory Mankiw, Professor of Economics, Department of Economics at Harvard, *Principles of Economics*.

LITERATURE REVIEW

AS A DISRUPTIVE INNOVATION AND AN INFERIOR SUBSTITUTION

Radjou and Prabhu [Radjou, 5] consider Internet Course Offering as disruptive innovation of traditional residential-based education, as well as the textbook publishing industry. The Internet courses are usually offered by star faculty; and it is free. The number of students attracted to each course easily exceeds 20,000. A particular strength of such online course offering is the peer learning created via online forum and online discussion (p.110).

Stanford renowned Educational Economist Bill Massy advocated to keep higher education affordable and sustainable. Yet he had never counted Internet Education as either a low-cost alternative or even mentioned it as a potential remedy in his pioneering text or during his global consulting to educational institutions. [Massy, 4]

AS AN EMPIRICAL DATA INDICATES MOOCs HAVE ONLY LIMITED SUCCESSES

However, although large-scaled online education is seemingly promising, the participating condition is less-than-satisfactory, and the received knowledge is meager. A research conducted by university of Pennsylvania in 2013 suggested that only half of the registered students ever completed one class meeting among a total number of meetings of twenty. And there was only 4% completion rate among all participants. Another executive summary from the same research indicated that people attracted to online education are already educated, and the weak population who were lacking of means had not begun to benefit from online education yet.

THE STANFORD EXPERIENCE

Hennessy said in an interview from Gallagher [Gallagher, 2] at Stanford Daily: "Thinking about long-term directions of online education for the University, what do we want to do about online education? And what role does it have at Stanford? How do we think about doing what's right for us as a University in the online space as opposed to what everyone else thinks we should do?"

Hennessy said the biggest challenges for Stanford in terms of the online space are: (1) How do we use that technology to make the learning experience for our on-campus students better? Right now we're trying a bunch of different things: flipped classroom and things like that. We have an idea well worked out and go try to scientifically understand whether or not students are learning more in that environment, whether they're better engaged, how they feel about the experience."

Only after such evidences become clear can we actually answer the following question: "Is online better? Is it worse? Is it the same? We have yet to got data so that we possess the capability to do an assessment to verify if these students in the online class are learning as well [as compared to current methods]. It's early on. It's the Wild West out there and there's way too much anecdotal, situational [evidence].

Regarding "which role Stanford wants to have on online education?," Hennessy said: "The Moocs [massive open online classes] are more about self-made, motivated learners than they are having another 10,000 students at Stanford. They are more about sharing some of what the University does with rest of the world, particularly those who don't have access to education.

SOCIAL RESPONSIBILITY ROLE OF ONLINE EDUCATION OF STANFORD

Hennessy said: "At the place where education is hardest to achieve - in the Western world, 70 percent of the students of college age are enrolled in either a two-year or a four-year program and the average years of education you can expect if you were born today in the United States is 16 years. If you were born in sub-Saharan Africa, then less than 10 percent of the kids go to any kind of college [or] any kind of post-high school, and your average years of education are 8. So there is something Stanford may think to add to the rest of the world... And that's a good thing for Stanford to do for the rest of the world, and then we can do it with relatively little [marginal] cost associated with us at the end."

Hennessy said: "So we have Stanford on-campus students, and we have the aforementioned broad outreach sort of thing, in the middle I think we may think about how can we use online to enhance what we do today perhaps in professional and continuing education, perhaps with respect to master's degrees.

As of September 2016, professional and continuing education has prospered at Stanford, even absorbed a set of courses offered during the summer quarter as Stanford summer courses. The summer program has been downsized to be the preparation courses for high school AP courses, as witnessed by the author in summer 2016.

Hessessy said [Gallagher, 2]: "I don't see fundamentally changing the undergraduate, four-year, residential experience because that is, in some sense, the gold standard. It's the thing we do know how to do really well. Now will other institutions in the United States try to develop an online alternative to that? Yes, they will, because the gold standard is, by its nature, expensive."

"So it is, in my mind, the ideal educational opportunity for the really best students for the institutions that can afford to provide that together with families. But it can't be the entire solution given the cost of education in the U.S. So people are going to have to figure out how to use online in that other space and should we contribute content to it? What role could content coming from Stanford play in that? We don't know the answers to that, but there probably are opportunities there that would be good things." [Gallagher, 2]

Stanford Provost Emeritus and Educational Economist William Massy emphasized online education as a threat and disruptive innovation for the Gold Standard. [Massy, 4]

5. Entrepreneurial Pursuits Are Encouraged but External

Hennessy said: "Numerous Stanford students, professors and affiliates have founded online education startups, such as Coursera, Udacity, Class2Go and Venture Labs. All but Udacity have formal partnership with the University.

A critical question was raised by Stanford Newspaper reporter Billy Gallagher: "There are a lot of affiliated, Stanford-related groups in the online education space. How do you feel about that? Is that encouraged? Do you encourage faculty to experiment with this stuff and do their own thing or is it just sort of something you don't actively discourage?"

Hennessy replied: "Well we don't discourage it and I think in some cases we felt, to move the technology along, it would be nice to have something out there that had a similar kind of business model and similar approach to what we were thinking so we could develop a good working relationship with them. So I think it's a combination: We believe that getting some external entities out there will probably accelerate the rate at which this technology moves, which I think it has. And that's generally a good thing.

Stanford President John Hennessy established Vice Provost for Online Learning in 2012, and VPOL's responsibilities include [Sekhri, 6]:

"(1) coordinating experiments in online education with members of Stanford faculty, (2) liaising between schools to establish a set of best practices, and (3) allocating seed funding to faculty for projects relating to online teaching and education."

John Mitchell, the inaugural Vice President for Online Learning explained the impetus behind the formation of this office at this point in time: "One of the reasons this was to be an Office of the Vice Provost as opposed to [a position] within an individual school or department is because there are a lot of issues that cut across the University. All of [the schools] can, in varying ways, benefit from new teaching and learning schools. One of the idea is to collect and process expertise centrally to benefit the entire University, and if something exciting happens in one department or school, we provide a mechanism for sharing that information across the University to help everyone benefit." [Sekhri, 6]

Mitchell said: "[I want to] take advantage of the technology effort and the focus is on teaching and learning, and especially on how do we develop good teaching and learning materials." [Sekhri, 6]

Mitchell said: "One thing that really works for Stanford is to make it a faculty-driven process [the author added: a bottom-up process]. We're not trying to have a top-down, central planning process." [Sekhri, 6]

Mitchell explained the competitive position of Stanford on online education: "We got off to a very good start [via Stanford Center for Professional Studies (SCPD)], we've probably put out as many courses online as any other universities [although Stanford online courses are mainly for internal use only, that is, for registered Stanford students only]. [Sekhri, 6]

Mitchell said: "Stanford process of providing faculty with seed grants to move their courses online involves faculty writing a little proposal. Our criteria involve creativity: Does somebody have a new idea? Are they going to explore something in a different way? And are we going to learn something new about online teaching and learning from it? The funding really goes to support the process of building the course material [; and not just the result but also the process.] [Sekhri, 6]

According to Cummings [Cummings, 1], "Stanford's Andreas Paepcke, professor of computer science, works with user-generated data gathered from Stanford's MOOCs. He has access to all records of student interactions with online courses, down to actions such as pausing videos, submitting homework assignments, posting on forums and more."

Evidence from a 2014 Social Science Research Network (SSRN) paper by professors at Harvard and MIT also tempered the optimism of MOOCs creators. The paper examined 17 MOOCs from the two schools and found that only five percent of over 800,000 participants ever completed their courses. [Cummings, 1]

Paepcke suggested that, because engineers and computer scientists were the first to develop tools for online education, many MOOC templates are designed with engineering and computer science courses in mind. [Cummings, 1]

SUMMARY OF STANFORD EXPERIENCE

Stanford already had Internet Education since about three decades ago but it has always been for internal use only. In modern statistics or demographic norms, Stanford has always been on par with other internet-education-savvy universities, such as MIT. [Cummings, 1]

The reason is not that Stanford is shy in sharing education with the poverty-inflicted area, such as Africa. As Stanford past President John Hennessy said that Stanford needs to make the decision on what we should do instead of doing what others expect us to do on the online space.

Stanford's Hennessy considers undergraduate education the gold standard in U.S. universities, and is something Stanford knows how to do its best. Stanford's Vice Provost Emeritus William Massy considers Internet Education a disruptive innovation to the gold standard since the gold standard is expensive to maintain for some institutions, especially for not-for-profit organizations which are shy in endowments. The gold standard requires face-to-face interactions among students and instructor; and peer study among students in study groups, in discussion sessions, in recitations, and in help hours (especially for highly intensive computer science courses such as C++, CS106A and CS106B, and accelerated C++, CS106X). Stanford experiences indicate that previous-year's students are the best tutors for this year' students since they had just survived the most advanced and challenging programming courses with most excellent performance.

ROC'S NATIONAL CHENG-CHI UNIVERSITY

Here in Taiwan, president Edward Chow at NCCU has his views on perfecting undergraduate education. His idea is "upgrading teaching density in each course and reducing the required units of graduation." One of the operationalization of the objective is to study the duplication of the courses in a degree-conferring department so as to reduce the redundant overlapping among courses. Among the matching effort there is one key suggestion on making prudent use of the learning technology, encouraging suitable courses to adopt MOOCs (Massive Open Online Courses) or SPOCs (Small Private Online Courses) which has started to gain popularity in U.S. campuses since 2010. The SPOCs model makes a course lecture-driven as well as internet-driven. SPOCs emphasize self-study, autonomous learning; and incorporate the design of social-learning; so as to make the learning experiences more interesting, creating co-learning and co-creating; and to create "flipped classroom" teaching innovation. The delicate balance is made between gaining external resources; gradually developing MOOCs with NCCU features; and opening the developed

courses to outreach external audience and to enhance the online education leadership of NCCU via MOOCs. Regarding SPOCs, NCCU carefully picks Calculus, Computer Programming, followed by Accounting, Statistics and foreign languages courses in the development pipeline at the speed of two to three courses per academic year. The NCCU approach respects experts' evaluation on the suitability of course content; emphasize full participation from instructor and students for continuous improvements. The hybrid model adopts one-third of online education and two-thirds of face-to-face lecture to avoid the deficiencies from pure on-line approach.

However, comparing to traditional face-to-face lecture, online course may lack "temperature". Many teachers had shown their apprehension that online education may cause a decrease of teaching quality for the following reasons: teacher-student interaction is reduced; and immediate communication between teacher and students are not possible. Many students also worried that some courses are not suitable for online education.

The NCCU responded to students' apprehension with a reply that the university should stay open-minded: neither blindly embracing new technology nor rejecting all emerging technologies since there is a chance that we could miss the advantage of edging on them to gain possible innovation opportunities.

Examples of Suitable vs. Unsuitable Courses In the Era of Online Education

The author has checked a few sample material on representative courses and like to summarize with a few facts:

1. Corporate Finance. From Andrew Lo's Corporate Finance at MIT: Andrew has long had a great reputation of delivering high quality speeches; and his excellence is verified from the recorded archived courses at MIT Open Course. The material is five-year old but is useful for a course reserve for any corporate finance course. His lecture style is perfectly American, assuming adequate course preparation from the audience, due diligence lecture attending, and conducting review after classes. The course material adopted is Principles of Corporate Finance by Brealey, Myers, and Allen. Since the text is the most authoritative and popular, Andrew's course is most recommended as the concurrent learning material for any undergraduate or graduate-level corporate Finance courses. The soul of this Online Education is the text by Brealey, Myers, and Marcus; and the unique experience of Andrew Lo.

However, watching the video clips cannot replace reading the text material. It may add additional burden when time is constrained.

2. Econometrics. For Science-based course, such as Econometrics Course, the course material is highly text-based. Whether it is offered at Stanford or Ivy Leagues, or at NCCU, the text adopted is mostly Wooldridge's Introductory Econometrics: A Modern Approach, Sixth Edition. The course can be very dry but Stanford had an excellent Professor who is an Italian American who emphasize the learning spirits and atmosphere in classroom and he nicely supplement the lecture with his working papers or published papers. This blended approach makes his teaching unique and warm. The audience are mainly sophomores from Stanford Economics Department. The overwhelming majority of students are young ladies and that reflected an demographic trend that a highly quantitative curriculum are considered suitable for ladies who later on become economists, statisticians and consultants in governments or firms.

This course is not recorded since the instructor obviously like to have a classroom and face-to-face interaction with the audience. The material is by no means easy but there are breakup sessions led by experienced teaching assistants for the mathematics and statistics content.

The textbook has excellent material for teaching and learning, in particular the Scientific Word Slides which are actual lectures in pdf and TeX. However, there is no course website.

The author believes that the Internet Course on Econometrics is an excellent idea if the teacher has good working paper to help students to conduct learning by doing. The Wooldridge text is the prerequisite for an Internet Course.

3. Service Marketing. An inappropriate online course is one exemplified by the course titled Services Marketing, such a course has to be textbook-driven and cases-driven, by the nature of the materials. It is ideal to publish the reading material with an US publisher for full pricing advantages and strong copyright protection. The World Scientific Co. Inc., USA was established by Singaporeans quite a few years ago. The fledging company was quite small and mainly received science-based manuscripts which were not accepted by major publishers. However, the company survived well and released a text by Jochen Wirtz and Christopher Lovelock in 2016. For such a course, online education will not be offered without

the accompanying textbook and the accompanying Harvard cases. Yet, a truly great module should be field trips which cannot be offered with an online course. Taiwan may establish such a direct investment in United States on publishing houses, along with the effort of developing online education in US to establish pricing advantage and international prestige.

PROPERTY RIGHTS AND TEXTBOOKS: THE BARRIERS OF ONLINE EDUCATION IN ASIA

Intellectual Property Rights. The general issue of intellectual property rights is extremely sensitive and a high barrier for Online Education. Just remember: almost everything is copyrighted. Some authors are generous in allowing free use of his original material yet others may obtain copyright protection based on others' unprotected work. The trend in United States is paradoxical: opening lectures yet protect contents which are in the form of textbooks and/or other sellable formats. From my point of view, Internet Education is highly contingent upon the form of textbooks, working papers, and other derived materials. Authors of the textbook in the Online Education benefit scholars and the author herself the most. And Stanford John Hennessy had always emphasized that any Online Education project should end up with a publishable textbook or a series of papers for any application of a developing bonus or aide.

Textbooks. We understand that an excellent textbook of a subject is a soul of an Internet education. However, since 2015, the Macmillan Publishers had stopped producing affordable Asian editions of the textbooks, including an excellent text on International Economics by Taylor and Feenstra. In 2016, Pearson Education notified the author that the ninth edition of John Hull's Futures, Options, and Other Derivatives will not have a low-priced Asian edition due to a supreme court judgment on John Wiley affordable Asian editions being legally resold to US Markets by one Thailand student [KIRTSANG, 3]. The textbook price in Thailand is only 10% of that in the United States. When this case becomes a Supreme Court decision and the behavior is considered legitimate, author or the publisher may refuse to offer an Asian edition. We will see more problems of getting the textbooks, let alone developing competitive online education. However, the Chinese translation edition of the text may not to be able to be resold in the North American Markets and may become a substitute for domestic education. However, for NCCU to broaden the scope of English-Taught Courses and the International MBA, lacking of key ingredient may prove to be a hazard. One remedy is to learn from the software licensing contracts

and pay a lump sum of NCCU for all students to obtain the usage of eBook of the best title in a subject.

Yet another way is to develop a rental market like the one provided by Amazon, so that students in Taiwan may just pay for a semester's use at roughly the current price of the Asian editions, at the same price as students pay to Amazon in United States. When a market failure had started due to an abuse of a good policy, government or a key business will have to create a social business to provide the needed remedy.

CONCLUSION

Online education is deemed an inferior substitute for residential education. Education is not a mechanical process and it requires interactions and discussion among professors, tutors, and students. Online education is considered an aide for residential education on difficult materials, for supporting materials, etc. The author believes that Taiwan should have its own approach on promoting online education and he cited ROC's National Cheng-Chi University's Curriculum Reform as an example. Next, but not the last, the author explains the impending challenging of Taiwan's Online Education: new textbooks from United States are becoming ever more difficult to obtain due to a recent U.S. Supreme Court revolutionary act on June 16, 2016: parallel imports to United States are not limited to U.S. original editions but also to the Asian Editions. This decision reflects Obama administration's general point of taking care of poorer families, students in United States should also be able to obtain the affordable editions of the U.S. textbooks which are the soul of higher education, including and not limited to the online education. For the author, the point makes a lot of sense when the textbook price had jumped to \$300 per copy in recent years.

Stanford Professors always stay at their offices during the working hours (8-5) and they like students to stay in library studying if not in classes. You know online education is not liked as a substitute for residential education; and from my thirty-year experience on campus it is indeed the case.

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