The Global Virtual University - a Way to a Less Elitist, Elite Education

Lena Adamson, Stockholm University, Stockholm, Sweden and Anders Flodström, Royal Institute of Technology, Stockholm, Sweden

The year 1810, when the Humboldt University in Berlin commenced operations is seen as the year when the modern university and the basis of an emerging knowledge based society. Today the knowledge society can be found everywhere where there are people, possibilities to communicate, questions to be answered and needs to be satisfied. The great challenge for our educational systems is to adapt to this new world.

A number of questions arise here; are there simply enough traditional universities to provide for all who need a college or university education? Is the campus model the only university model we can envisage or has the time come for Humboldt 2.0? How can we embed the educational role of universities into a larger societal context where we also offer more active, strategic and accessible models and measures for matching individuals with the competencies needed for the new jobs created by the new innovations? How can we scale up university education without loss of quality, to fill the need of competent individuals to fill the new job opportunities?

How do we confront these challenges? One hypothesis is that Humboldt 2.0 must build on education and training which is open and accessible to all. The new role for universities may be to provide MOOC with high quality content as centres for virtual universities in the parts of the world where campus studies are not possible, geographically, time or life style wise.

The numbers of students attending MOOC courses show that there is a great societal need for a high quality virtual university as an alternative and complement to campus education. The number of universities already putting time and resources into MOOC also show that this is a development on its way to boom. Today MOOC struggle with retention rates. Once legitimate quality assurance mechanisms are developed and secure assessment of student work is solved, retention rates will most probably raise substantially. This will also open up for new business models and new actors on the higher education market.

The promises for this development will differ in US and Europe. In the US it will mean easier access to high quality and less expensive college and university education for the many. In Europe (without tuition fees) the opportunities may be more related to student or graduate matchmaking of gained new competencies with job vacancies. Academy Cube is one such example.

Recommendations

- *Identify key show stoppers*
- *Solve issues to do with assessment in order to give full MOOC degrees*
- *Invest in pilots and test beds over the full faculty breadth*
- *Invest in computer science research on AI including pattern recognition and visualisation*
- *Invest in psychology, sociology and pedagogical research on human-human and*

human-media interactions

Introduction

The year 1810, when the Humboldt University in Berlin commenced operations is seen as the year when the modern university was born. Universities' and students' freedom to choose what would be taught and learned was the foundation. Everything taught should build on peer reviewed research and proven know-how. Universities' teaching and research became the basis of a new knowledge based society instead of as previously on superstition and faith. At first an embryo, now after 200 years it has become a precondition for the innovations that account for 75 percent of the global economic growth.

The knowledge society has by now become truly global. Wherever people live, a knowledge society can be created and can be made to grow, eradicate poverty and increase the quality of life of people. Globalization with its expansion and intensification of social relations and consciousness across world-time and world-space is the vehicle for this. We often talk about Silicon Valley and Route 124 as hotspots for creativity, innovation and entrepreneurship, where stakeholders such as universities with their academics and students meet venture capitalists and where culture, lifestyle and the society is open and multicultural and designed for social interaction. But examples of the knowledge society are not always found among the very best; it can also be found where the need are the greatest like Monkey Hill in the slum of Rio. Today the knowledge society can be found everywhere where there are people, possibilities to communicate, questions to be answered and needs to be satisfied[1]. The great challenge for our educational systems is to adapt to this new world, with regards to content but maybe more so with regards to forms of teaching and distribution.

A number of questions arise here; are there simply enough traditional universities to provide for all who need a college or university education? Is the campus model the only university model we can envisage or has the time come for Humboldt 2.0? How can we embed the educational role of universities into a larger societal context where we also offer more active, strategic and accessible models and measures for matching individuals with the competencies needed for the new jobs created by the new innovations? How can we scale up university education without loss of quality, to fill the need of competent individuals to fill the new job opportunities?

Education and Training Open and Accessible to All – Humboldt 2.0

Most of us are aware of and understand that the Internet easily can deliver content and services to millions of people. In fact, the young generation live their social lives as much in the digital space as IRL. Without the Internet, major political changes in the world would not have happened and will not happen. Internet has caused major social innovations and has changed the way we entertain ourselves with music and games, the way we shop and the way we socialize and express our

---

[1] Adamson, L & Flodström, A. (in press, April 2013). *EU and Bologna - A New Educational Agenda for the Knowledge Society and its Global Students.* In The Global Student Experience: An International and Comparative Analysis. Eds. Camille B. K., and Meyers, M. International Higher Education Series, Routledge Taylor Francis.

opinions. However, for many it may be more difficult to imagine that the Internet also can deliver high quality education on college and university level. Not just singular courses for the interested, but full degree programmes and complementary added value education for the continuing professional development (CPD) needed in a society where jobs are quickly changing content and character. Many are still committed to the idea that this must be learned in a campus environment, in small groups of students and in personal interactions with individual teachers. Classroom time is a sacred principle and guide university life, from students through teachers to university leaders. This is a non-scalable business and despite the last decades of massification in higher education it still must be considered an elitist model. Many countries will not afford or even wish to build brick universities to provide their citizens with the high quality education necessary for the development of both their democracy and prosperity. However, through Internet virtual universities and advanced eLearning is available to scale up the knowledge society. Social media, high power computation and big data, visualization and artificial intelligence can and will change this in more radical ways than we can imagine. According to Cisco more than 90 % of web data will be videos within less than four years. A moving image often illustrates things better than a text document and the human brain is excellently constructed to decode this type of data. We are just now at the beginning of using this on a large scale for educational purposes. Maybe the year 2012 in the future will be seen as the year when the postmodern university (Humboldt 2.0) was born.

MOOC (Massive Online Open Courses) delivered by the companies' edX, Coursera and Udacity, today host nearly one million students worldwide. Major U.S. universities such as MIT, Duke, Stanford and Harvard, deliver their best courses with their best teachers on the Internet. A new Swedish service, Codeness, now works with the MOOC by collecting online courses and present them based on individuals' specific interests. MOOC also utilize the latest social media such as Facebook and LinkedIn for enhancing the student-student and student-labour market interactions. What is the potential for MOOC as an instructional tool? The key for MOOC to deliver scalable knowledge and skills to so many can partly is found in new research on pattern recognition and how to extract information from large and complex databases. One hundred thousand questions are not, conceptually one hundred thousand different ones and do not need a hundred thousand answers. This is well known to all teachers that have to address classroom questions and that know beforehand which concepts that will difficult to grasp by the students. We know from our own learning that the issues and concepts of learning are few but vital. And the secret to understand lies in asking you, your teacher or classmates the right question. Here is perhaps one hundred thousand questions a better base to define the right question rather than a few. Filtered by artificial intelligence this will become obvious. Just ask the IBM computer that won the US Jeopardy competition!

For an individual student who is already used to living on the Internet, access to thousands of classmates is of course also a gold mine for his or her learning. And in spite of a common belief that competition is the prime way of bettering things, collaborative learning actually enhances student learning more.

MOOC is free, no degrees or academic credits given and the number of students in the courses counted in tens of thousands. Udacity courses in artificial intelligence, for example, gather 46,000 students. Anyone can sign up and studies can be done anywhere at any time! Certainly many students quit fast, but there are also many who pursue. And some also continues to a university to get a degree based on their MOOC studies.

MOOC also utilizes development in social media such as Facebook and LinkedIn. Bernard et al.

2009 performed a meta-analysis of 600 papers reporting attempts to improve student performance in distance learning courses by increasing one of three types of interactions: student with teacher (ST); student with student (SS); and student with content (SC). They found that increased SS, ST, and SC interactions all contribute positively to student learning. However increased ST interaction contributed comparatively less to student learning than increased SS and SC interaction. This finding suggests that resources and efforts should be directed at the development of SS and SC interactions, but especially in SC interactions. This may be bad news for teachers but good news for the development of MOOC. The findings suggest that the traditional teaching situation and the traditional universities may be models that will be outdated.

Let us make an analogy. Earlier the library was the place where the books or in ICT language, the analogue databases were stored and made accessible to researchers and students. ICT changed this by making the books available on the university intranet and soon new algorithms did the data searches much more effective than hunting down authors by their alphabetic names. Later the open access to scientific articles through Internet publication has shaken a century old paradigm how science is produced, published and its quality judged. The brick libraries have kept one function that is being the university living room. Where the bookshelves with its books fill the same task as the bookshelves do in a family living room. They provide a context and an atmosphere for the people who are there without necessarily having a dedicated use. Just like university libraries have turned into something completely different the last two decades the role of the universities will also change radically, and the ones who see this will be the winners.

Maybe the role of Humboldt 2.0 universities will instead be to provide MOOC with high quality content and be the centers for virtual universities in the parts of the world where campus studies are not possible, geographically, time or life style wise. The growth of the global knowledge society holds a promise to be as exploratory as the era of geographical exploration. The vehicles for the exploration now are not sailing ships but Internet and the opportunities for people to travel and communicate unseen before.

Humboldt 2.0 will be revised more often than the analogue Humboldt University. Many revised versions will exist in parallel. The new virtual universities will become parts of a cyber physical value chain involving other stakeholders in the the new knowledge society. What is certain is that we are facing a major social change of equal magnitude as when machines replaced farmers. The development of all societies is dependent on the educational level of its population. The move we now see, from mechanization to digitization, can provide many more individuals with the opportunities to develop their full (creativity and) potential into viable competencies and this will benefit all. We are on the verge to a social revolution of immense magnitude. Still the importance of the knowledgeable, skilled and competent individual will not only remain but will dramatically increase. Education that starts from challenges, questions, problems and projects, not from knowledge and curriculum, is strongly promoted by using the learning outcomes paradigm. Maybe the next step on this road is the transformation of learning outcomes to "learning enquires" or "learning challenges", stimulating students' curiosity and their abilities to think beyond boundaries and systematically explore and generate new ideas. The really new ideas about how to educate will still stem from how we function.

Two Main Challenges in the Development of Educational Systems Based on MOOC – Assessment and Quality Assurance

Much delivery of education and training is in fact disengaged from the psychology of learning and still based on the view of the student as a passive recipient rather than an active, cognitively complicated, competent and motivated learner. MOOC is in fact especially well fit for moving from these passive teacher driven methods to models of more active and student centered teaching and learning.

However, in order to give MOOC education complete equal value to prospective students and their coming employers compared to traditional campus education, the issue of secure assessment/examination and hence possibilities to issue full degrees needs to be solved. This may be one of the biggest challenges but without reliable assessment of students MOOC education will not be able to stand fully on its own feet but rather stay as a complementary system. However, this is probably also where the greatest business opportunities lie. As of now, the problem to be solved is similar to the problems for creating electronic voting systems; the issue of identification, here combined with guarantees that the person with the degree really was the one who produced the material that was assessed. At the moment we see no electronic solutions for this but rather logistic solutions with networks of locations where assessment can take place in "safe" environments. Considering plagiarism, ghost writing and in many countries also corruption in the sense of academic degrees being bought rather than based on the students' performances, is a growing problem in Academia. In that sense this is an area that needs development and new solutions also for traditional campus education.

The second area, which needs attention, is quality assurance. Modern quality assurance systems for higher education must, just as quality assurance systems in business and industry have done for a long time, include a stakeholder component. The opinions of students, alumni and employers (if the questions are formulated right) give important information about what needs development and improvement and what does not. This can probably be solved in more efficient ways in a MOOC context than for campus education. When it comes to student opinions this will also include ways of working with both formative and summative feedback. However, when it comes to quality assurance models in traditional manners (with peer review of content/learning outcomes, assessment and teaching methods, learning resources etc.) the way forward here lies in that courses should clearly inform the students of when and by whom the course was reviewed. This will of course be in the interest of the universities that are responsible for courses, but just as we see that the market for delivering courses rapidly spreading to a number of other actors, we can also foresee that the market for quality assurance agencies specialized on MOOC and eLearning systems will expand. After all, if a course receives a "high quality stamp" by a well-reputed higher education quality assurance agency why be concerned if it is not a university that delivered the course? Or, is this a too frightening thought?

Which Driving Forces Can We See in This Development?

If you, in any country, look at the statistics for job less individuals or the salary ladder ordered after level of education you find that education and especially higher education always stands out as a powerful discriminator. An academic degree safeguards the individual from becoming jobless and rockets career opportunities and income. As youth unemployment has become a global problem this has made higher education very attractive and has increased the demand significantly.

In the US, college and university education is based on tuition fees paid by students and their parents. The financial crisis has hit US State economies and lowered the support for higher

education and as a consequence tuition fees have risen dramatically. According to President Obama, excessively and more than motivated by the state funding decrease. The net results is that the need for more high school students to go to university is hindered for economic and availability reasons. Also, in today's society lifelong learning has become much more common and many deploy their higher education to later in life. Virtual universities delivering higher education by Internet could be a way both to scale up, broaden the availability and to lower the costs of higher education. If this is going to happen a number of issues on quality, attendance and assessment and examination must be solved. The commercial potential must be considered high enough to both entice existing brick universities but also new ventures to enter the MOOC or virtual university market. Tuition fee based university education contributes to a viable business model for MOOC, but also other factors as branding, especially in global context hunting for talent is important.

In Europe, where higher education almost to 100 % is paid by tax money, the lower cost and availability driving force is much more sluggish. Governments keep their costs for higher education unchanged (ignoring inflation), and often lower the cost per student by block funding and lowering the education quality by letting the university teach using fewer contact our with teacher, sometimes 3 to 4 a week. This is the death of the frog paradigm, "raising the water temperature gradually". The Bologna process has from the start put quality assurance on the agenda, but this development takes time. Existing public and government owned quality assurance system have not grown strong enough to expose and stop this development with force. Here we must probably wait for the students or the labor market to clearly realize that they are not getting their expected value of the education before we see any major changes.

In Europe the economic forces driving MOOC will rather become industry's and the labor markets' need for specific competencies. It could be the technical content as ICT competencies for driving industry towards cyber physical logistics, product design and production methods. Or it could be to teach for learning outcomes as creativity, innovation, entrepreneurship and thought leadership. The foresight of the European labor market clearly shows that the lack of individuals with these competencies will severely hamper European development. In a sense education is at the heart of business and industry concerns but they have not yet taken the initiative and responsibility on a larger scale to do something about this situation. One such initiative, which may well break the ice here, though is the Academy Cube. Academy Cube an SAP initiative integrates in a holistic way the labor market needs with the eLearning or virtual learning platform and transforms it into learning outcomes necessary for the students learning; jobless graduates, career seeking employees or just students not satisfied with the traditional learning outcomes. Just the right education just in time!

In the academic Europe the virtual University might instead be driven by the European cohesion and the European outreach to new member states and states in line to become members. The natural way to move from joint programs and joint degrees is now to aim also towards European degrees. This would increase both the competition and the collaboration among European universities and hence increase both quality and diversity. A European degree, preferably combined with a European loan scheme, would also truly establish the European Higher Education Area, creating a higher education area both for European and non-European students: the global students.

Maria Gonzalez from Barcelona

Maria graduated from University Polytechnic Catalonia (UPC) with a master degree in civil engineering. She is one of the jobless young Spaniards (over 50 %) looking for work. She is still in a

lucky situation with an engineering academic degree, but the financial crisis in Spain has hit the building sector very hard and she has not been able to find a job within her specialty. She is working part time in a hotel reception. She searches regularly on job portals for engineering jobs to apply for. One day a Linked in friend recommend her to search on the Academy Cube education and job portal. She recognizes a number of job offers from a German civil engineering company working on new highway concepts. The job specifications demand a background in software design to be able to develop and construct, safety and emission surveillance. She notes that the Academy Cube portal offer a virtual university educational package that will give her competencies needed to apply for the job and that the company is prepared to cover half her education cost through a voucher. She is also given a Linked in connection to a network of people working in the company for discussions about the job, its challenges, benefits and pay and about the company. Anna borrows the 500 Euro and pays the tuition fee for the educational package. She chooses to start to repay when she got a job. She studies, make friends with other students studying the same MOOC package. She does well and gets her European software certificate for her new competence. The company is impressed by her study work and together with her engineering degree she is very competitive. She is recommendations by one of her company Linked in friends She gets an invitation to the companies HR/HQ in Munich. 3 months after her first visit to the Academy Cube portal, she is hired and she move to Munich. As a member of the new global young generation she looks forward to work and live in Munich and to start a life and a career.

Recommendations

Build systems for linking student recruitment, education and active matchmaking to the labor market – embedding universities into a larger societal context to match these competencies into the right context for their working life.

Invest in research to understand students interactions with content, media, teachers and fellow students. The knowledge society is characterized by a paradox: at the same time as a rapid increase of international cooperation and collaboration takes place - academic institutions and their researchers, their teachers and students are more agile and mobile than ever, creating new networks and mixing personal and professional relationships in totally new ways - the race where regions and nations compete about how to generate the best academic education, research and innovation activities to gain a global competitive advantage, is stronger than ever.

Invest in research to build education expert systems based on AI.