

Open Education 2030

Contribution to the JRC-IPTS
Call for

Vision Papers

Part III: Higher Education

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Part 1: The Winners



Cheaper, better and more relevant Higher Education using Shared Online Courses

John van der Baaren

Open education in the form of shared online courses can reduce costs, improve quality and improve relevance of higher education.

The future of open education is largely dependent on whether or not it can contribute to solving the major shortcomings of Higher Education (HE) today:

- 1. Too expensive

For most countries education is the largest cost item on their budgets. Especially the costs of higher education has increased considerably over the past years. In time of crisis pressure is growing to cut costs somehow. Moving costs from society to the individual student clearly has its limits. In the USA debts of students have exploded and it becomes more and more clear that a proper return on these investments becomes unlikely. It is also fascinating to see that education is the only major sector in society that shows no increase in productivity in the past 50 years. On the contrary cost has increased while the quality of output has remained the same (at best).

- 2. Low quality

When we take a look at what a student gets for the 6000 – 12000 euro a HE institute receives on average for every student year we see a rather low value for money. Take for example a typical first year law in the Netherlands. Student and government together pay the university 7500 euro per year. The education of a first year law student consists of two group sessions (about 15 students) of two hours led by a tutor and one two hour lecture per week. A year has 40 weeks. Six times per year the university rents a gymnasium where the 300 students take an examination. Given 2.250.000 euro there must be either room to improve quality or cut costs.

A big mistake of current policy makers is to simply require a higher level of education from their teachers. This will hardly improve their teaching skills but it will further increase costs (problem 1) and render the curriculum even more irrelevant (problem 3).

- 3. Low relevance

This most notably applies to university level education. The vast majority of students completing their university study will never become a researcher and has not the intention to become one either. The curriculum of most studies however still focusses on acquiring the skills needed to become a researcher and what is even worse most of their teachers have no working experience other than research (and teaching).

My claim is that a combination of well designed, standardised and evidence based education and sound use of ICT can accomplish the solution to the problems mentioned above. The solution is inspired on so-called MOOCs (Massive Open Online Courses) which I label Shared Online Courses. The SOC differs from the MOOC in a number of ways:

- The SOC is a combined effort of higher education institutes and not of an individual company or a prestigious university. Current approaches to reduce cost have a negative effect on diversity (smaller studies disappear) and quality. Only by sharing resources this can be prevented. Resource sharing is not necessarily restricted to digital resources; also teachers can be shared, e.g. by using on line classes (Morgan, 2009).
- The SOC also provides support for actual certification to be carried out by the HE institute. Certification is probably the last service a HE institute wants to lose. Testing can be improved by creating shared tests, item banks and correction schemes that are of proven quality.
- The SOC covers a well-defined part of a blended course or curriculum. No significant part of any curriculum can be optimally taught using e-learning alone. Always a blended solution is to be preferred. The quality of blended learning is highly dependent on integrated instructional design of the whole course.
- The SOC can easily be adapted and enriched by individual organisations.
- The SOC delivers student data for the institute where the student is registered but also anonymised data that can be used for educational research. Looking at current developments in the field of Learning Analytics/Educational data mining having these kind of data broadly available might be beneficial for all parties involved,

It was not by accident that I left out the word “open” in the Shared Online Courses. Not that I have anything against open education. On the contrary it would be great if a free and open versions of the SOC’s were made available. But open is not essential to improving HE in Europe. Cutting costs is, improving the quality and relevance of education is. But until today OER (Open Educational Resources) has not shown a significant effect on any of the dimensions mentioned. I rather have high quality education that is cheap than free open resources that nobody uses.

What can governments do to realise SOC?

Standardisation of overlapping parts of curricula is the only way to achieve an economy of scale that leads to improvement of quality for a lower price. Governments could support standardisation by reducing the contribution to HE with say 50% which will force them to improve the efficiency of their operation. Part of the money saved could then be used to support HE institutes that are prepared to invest in SOC development.

References

Morgan, Tannis & Carey, Stephen (2009). From Open Content to Open Course Models: Increasing Access and Enabling Global Participation in Higher Education. *International Review of Research in Open and Distance Learning*. Vol. 10. No. 5.



Reimagining the campus experience in an open hyperconnected world

Jim Devine

Universities and tertiary education institutions in the public realm reimagine the nature and purpose of a campus-based education and provide leadership in challenge-based approaches.

Individualisation

Thomas Friedman argues that we now live in a world of defined contributions, not defined benefits. Our hyperconnected world already provides a “global education, commercial, communication and innovation platform on which more people can start stuff, collaborate on stuff, learn stuff [and] make stuff with more other people than ever before...but this huge expansion in an individual’s ability to do all these things comes with one big difference: *more now rests on you*”(1) The shift towards individualisation has occurred very rapidly and is already having significant repercussions in education and in the world of work, with consequences that are not universally positive. Over the next ten years, we can expect considerable disaggregation of what has hitherto been the exclusive preserve of higher education institutions. However, as we go towards 2030, a renaissance will occur in some public (not for profit) universities, as they reimagine their educational mission and their role in society and community.

Paradox (2013-2018): We re-engineer old ideas, but innovate poorly

What passes for innovation in higher education today, and what will most probably dominate developments for the next five to ten years, should be recognised for what it is: process re-engineering of *instruction* that will be accompanied by significant disruption and realignment, as many sacred cows are shattered. However, a new paradigm for higher education will not emerge from these changes. It will take a combination of other factors that will become critical to global society in the 2020’s to bring about radical innovation.

Consider the re-engineering process. Table 1 identifies a number of trends already underway or in prospect and their likely influences, both positive and negative. A shrinking mindset inevitably but understandably prevails at this time of economic crisis with a twin focus on regulation/standards and on measurable utilitarian outcomes for education (skills, jobs, employment). Re-engineering the current edifice seems like a good option, but may, in retrospect (2030), be regarded as the ‘least worst option’ for its time (2013-2018).

In the rush to disaggregate long-standing practices vested in universities and other tertiary education institutions, including a monopoly on what counts as an ‘acceptable’ qualification, the battleground is already forming around quite traditional instructional practices, namely transfer of knowledge (now contained in so many open resources), skills (more often demonstrated by written reproduction or algorithmic application), tests and examinations. There is growing pressure to embed such conventional benchmarks more widely in society and to distribute opportunities more widely. This is a laudable if limited aspiration, and the ability of a range of educational providers (particularly new entrants) to meet it becomes ever more feasible through the deployment of media and technologies now at our disposal. Transparency, the quality of educational offers and the personalisation (in reality individualisation) of learning are advanced as an achievable vision of a better future. This puts considerable pressure on existing universities and tertiary education institutions (not a

bad thing per-se) to follow the trend towards process re-engineering, when their focus should *additionally* be on radical innovation, based on an alternative constructivist deployment of similar media and technologies.

Re-engineered Process	Likely positives (and for who)	Likely negatives (and for who)
Vast catalogue of Open Resources, many well-curated	Motivated, competent individuals and tutors/teachers. Many new private (for profit) higher education providers find a route to market, widening opportunities.	Widening gap for marginalised individuals, who lack the motivation and skills to benefit.
Open Courses (not programmes) with inbuilt opportunities for collaboration through social media	Improved choice for individual learners. Significant collaborative effort within and between higher education institutions in designing and developing such courses. Transferable credits benefit students and make institutions more permeable. Efficiencies in numbers benefit educational providers.	Fragmentation of learning and the rise of a 'pick and mix' culture. Individualisation oversold as personalisation. Unlikely to improve access for under-represented groups (as measured by completion of courses).
Flexibility of time, place and pace of study	Improves ability to combine work and study. Plays a role in attracting new audiences and in encouraging others to upskill.	Time is finite. In the midst of other pressures (including a growing perception of the irrelevance of campus-based study), the ability to find blocks of time to devote to meaningful learning activities is seriously eroded.
Emphasis on competence-based, standardised education	A focus on well-understood outcomes (as distinct from process) potentially benefits individuals' life chances and workplace mobility. The entry of new educational providers is facilitated, as long as they are capable of demonstrating consistency and quality in the delivery of educational outcomes.	The process of higher education may become under-valued, (particularly what are now considered to be its intangible values). Labour force needs and the demands of employers may limit the competences that have 'currency', thus stunting creativity and opportunity.
Learning Analytics	Promises a more personalised learning experience. Provides tutors/academics and institutional administrators with an unprecedented level of	The overhead of developing analytics initially drives too great a level of homogeneity in course provision. One size really does fit all.

	student oversight. Efficiency gains as resources and supports can be more finely targeted.	
Automated Testing	Removes the significant bottlenecks associated with grading student work, allowing greater numbers to participate in courses for certification. A new genre of service provider will emerge to offer these services to educational institutions, both public and private and to professional bodies.	Even allowing for likely advances in intelligent ‘grading’, not all outcomes can be tested for automatically, but expediency wins out and we settle for what we <i>can do</i> rather than what we <i>should do</i> .
Reliable and secure personal ID enables remote proctoring of all kinds of examinations	Students will be able to take examinations at a time and place of their choosing. The ‘academic year’ is no longer a relevant driver of student activity. Again, a new genre of service provider will emerge.	As proctoring becomes common practice, we will invest heavily in examinations, <i>because we can</i> and important gains relating to other more staff-intensive modes of assessment are foregone.

Table 1: Re-engineering processes

The paradox lies in the fact that process re-engineering has a good chance of being ‘successful’ and is therefore regarded by many as a safer short-term bet. It impacts positively on the ‘iron triangle’ identified by John Daniels (cost, quality, access). It will equip a greater number of individuals for a more turbulent ‘defined contribution’ world. It delivers today’s education in new ways for tomorrow’s world. And with that there is a distinct risk of a mismatch and that we will fail to deliver the kind of innovation required for a sustainable future in 2030 and beyond. While higher education may seem to be undergoing disruptive change, it is not yet undergoing radical innovation, at least not at scale.

Facing the challenges of the world in 2030

We will be relying on graduates in 2030 to frame solutions to global grand challenges, including stabilising climate change, food security, clean water and public health – in short, the sustainability and wellbeing of an even greater global population. And time will not be on our side.

If attainment of benchmarks (qualifications at different levels, as we currently understand them) has become more open, flexible and individualised (thus assuring opportunities and a good level of general higher education for the majority), can public universities and tertiary education institutions extend their offer through more radical innovation? Freed of the constraint to ‘teach’ and ‘examine’ in the conventional manner, it may be possible to reimagine their role and purpose in society. A paradigm of *learning together* can be reinvigorated, and this will find expression in teamwork on significant, academically led,

trans-disciplinary challenges. In effect, the campus-based undergraduate experience becomes more like what we see in some postgraduate laboratories today. A problem-based learning paradigm will be the norm, grounded in constructivist principles.

What constitutes a challenge?

Bearing in mind prospects for the world of 2030, a challenge represents a very significant, ongoing problem, with local, regional or global significance, the solution of which is likely to involve a range of disciplines and high levels of professional expertise. Expertise required to engage in a challenge will be developed through advanced, immersive simulation environments, at least some of which, of their nature, will be available only on campus. In a challenge-based learning environment:

Students:

- Will value a campus-base experience for its interpersonal interactions, while engaging with others in teams addressing significant trans-disciplinary challenges.
- Acquisition of core knowledge and skills will largely take place through a negotiated learning programme, facilitated through open resources and courses underpinned by analytics for formative and summative feedback. Students will work alone or (more likely) in self-organised groups with an assigned tutor/mentor in order to attain benchmarked standards associated with their programme.
- Are likely to spend time on campus in defined ‘blocks’ (while engaged in projects/challenges), rather than for the duration of full academic years.
- Will, in many cases, combine relevant employment with their programme of study.
- Must be able to look beyond individualism and the ‘defined contribution’ world to embrace a greater sense of professional and social cohesion by investing in ideas of trust, responsibility and fair play.

Universities:

- As public institutions with a research, educational and societal remit, universities are uniquely placed to identify and contribute to the solution of a wide range of challenges, and to be differentiated from other educational providers by such actions.
- Working collaboratively (and in particular with industry) universities will focus on the development of complex, immersive simulation and experimental environments in which students can develop advanced skills.
- Will intensify incubation supports for the commercial and social enterprises that may flow from challenge-based learning experiences.

Innovation Processes and Environments

Table 2 focuses on the prospects for three innovative practices that are already finding a foothold in higher education and which, *if developed at scale*, potentially underpin a reimagining of campus-based education. Since these are resource intensive (costly to develop or require specialised infrastructure, or are demanding in terms of staffing), they are unlikely to be adopted by educational institutions favouring an instruction paradigm.

Innovation	Where we are now	To get to scale
e-Portfolio as a means of reflecting on both the process and the outcomes of learning: a core tool for constructivist learning	Limited uptake to date and more work is needed to optimise the design and interoperability of platforms. A significant bottleneck arises for tutors if portfolio evaluation is a parallel activity and does not replace traditional forms of assessment.	Projects/challenges must contribute to a greater proportion of student learning and the portfolio must become a primary repository of work for assessment. The value of the student-tutor relationship cannot be replaced but a more open approach to roles of academics, tutors or mentors can alleviate the bottlenecks.
Immersive, simulation environments (including augmented reality and what are termed ‘serious games’)	Many excellent visualisation and simulation tools already exist. However, high costs are associated with the development of realistic simulators (e.g., virtual laboratories, plant/process simulators). In particular, attempts by educators to design and develop challenging ‘games’ environments are often disappointing and unsustainable.	Inter-institutional and industry collaboration and the involvement of multi-disciplinary design teams (taking as a model the production teams involved in commercial games development) is the route to the development of high production value, pedagogically proven, sustainable simulators. The investment required to achieve such developments is considerable, but can be shared among a large number of institutions and the resulting environments can be deployed with large numbers of students over extended periods.
Framing Challenges - taking an integrated approach to learning	Problem based learning has a long and successful history in a small number of universities and represents a model from which more extensive challenges can be projected. In a majority of higher education institutions, the ability to mount challenges (as distinct from discrete projects) is limited or entirely absent at this time.	Proof of concept, multi-institutional pilots to develop capacity for challenge-based education will be a necessary first step and will require transnational seed funding. Public universities, aligned with governments and supported by major industries will set the parameters, for higher education ‘towards 2030’.

Conclusion

Open Education in the instruction paradigm will flourish in the coming decade. New and more flexible pathways to qualifications, offered by private (for profit) higher education institutions will prove highly disruptive to existing modes of instruction in campus-based public universities. Under these circumstances, universities will initially (2013-2018) seek to align with new open methods of provision to retain market share of undergraduate provision. However, many will see the opportunity to innovate in a more radical way and will introduce (from 2020, maturing in 2030) intensive, challenge-based curricula for which their role and position in society makes them uniquely suited. Challenge-based approaches will be resource intensive, but will deploy academic resources effectively by integrating efficient open methods and advanced, immersive simulation environments to enable students to acquire the core knowledge and skills required to then engage with substantial, team-oriented, academically led challenges in a constructivist paradigm.

References

- (1) Friedman, Thomas. *It's a 401(k) World*. New York Times. May 1st 2013. <http://www.nytimes.com/2013/05/01/opinion/friedman-its-a-401k-world.html?ref=thomaslfriedman&r=0>



Looking back: 15 successful years of the Open University of Europe

Bastian Hamann, Claudia Musekamp, Dr. Daniel Staemmler

2030: At the Open University of Europe's 15th anniversary, the university president talks about achievements, challenges and the future. Listen to her speech.

Today, I would like to welcome all of you to the celebration of our 15th anniversary. Founded in 2015 - only 2 years after the 1st European MOOC-Initiative, the **Open University of Europe (OUE)** proudly looks back to its 15 years of service to the public and our society.

Truly European experience

I am honoured and delighted as I look back to what we have achieved in the past 15 years. The Open University of Europe started with only 40 available courses, scattered over different subject matter areas. We have come a long way since then by expanding our available courses to cover a wide range of topics in various academic disciplines. We have managed to build and incorporate divisions for mathematics, medical, physical and life sciences, but not only that. In addition, we founded and established departments for the humanities and social sciences as well. Today we are able to offer courses in over 50 different programs and in 32 different languages. The courses offered in these different programs are being taught by an average of 5 professors per course who are from various universities in Europe. Our experience and evaluation shows that this is of great value to not only the students, but for all of the involved professors as well. The interactions across different cultures, ethnicities and between students with a wide range of experiences have fostered the idea of Europe as not only a terrain with multiple countries, but also the concept of Europe as a diverse continent that has a lot to offer.

Strong commitment to diversity

All those courses followed our code of conduct and cherished values like diversity and equity. With due respect to different cultures we were able to promote what we believe is good and right – not as an instruction or stipulation, but as an offer to the world.

We also made an effort to make high quality teaching materials accessible to illiterates. We launched an initiative to create a high quality learning ecosystem with special hardware devices and specific software tools for people with visual or auditory impairment or other disabilities. This opened up educational opportunities for millions of people in the EU and was a starting point in the careers of some of our best scientists today.

Learning analytics to shape learning experiences and collaborative work

We could have stopped at offering a diverse and high quality learning experience in all sciences someone might think - but why stop there? Learning analytic tools gave us deep insights into the motivations, experiences and skills of many hundreds and thousands of learners. They did not in the first place learn for certificates, they wanted to learn something in order to change the world. So we developed highly sophisticated collaboration tools and complex project templates to tackle real world problems. Matching algorithms helped us to form teams that fitted certain tasks. What previously had been a disconnected and coincidental process could now be controlled deliberately. We knew from our learners' data

that somebody had excellent results in many courses on modelling climatic change and proven to be a strong leader with visions and management skills so we asked them whether they would want to work as project managers. We knew others who were superior experts in their partial areas of the subject and contacted them to connect to the project. Again others would contribute with data visualization, communication campaigns, legal advice or programming skills. Those who were not experts in any necessary area, but eager to participate could do so with micro-contributions. Many clever solutions are in use today, which arose from this new way of collaboration.

Our student body mirrors the European society

Let me share with you how the innovative teamwork impacted our student body. A typical student at the end of the last millennium was male, from a middle class background and in his early twenties. Today our typical student is in his or her mid 50ties and the social background is as diverse as the European society. We have also reached an almost perfect gender balance with a slight tendency to female students. Most of our students have committed themselves to our university and agreed to the importance of lifelong learning by participating in our recall system. This participation helps them to stay abreast of the rapid changes in today's working world. We offer our students regular tests to identify dormant competencies and remedial courses for new career challenges. Our regular *Back to College-Program* is extremely popular, both for the refreshed knowledge and the new motivating personal encounters on our campuses all over Europe.

Technologies and facilities for ubiquitous learning

Back in our founding years, MOOCs, informal learning on wearable devices, adaptive learning algorithms and gamification challenged the way we were thinking about higher education. On the one hand we had to find out how to integrate those technologies into the classical university. Together with our international counterparts we developed new standards for multi-factor-authentication technologies and user-controlled privacy frameworks in order to be able to assess students all over the world and allow an easy and secure transfer of certifications between higher education institutions worldwide, be they online or offline. On the other hand we wanted to make sure our students have the possibility of real life interaction. We started our *Learn anywhere* program and build a network of small learning facilities on campuses of traditional universities all over Europe. They were equipped with back then fascinating technological options like holographic projectors, gesture based sensors or Virtual Reality environments that were hardly affordable for anyone at home and soon became centres of lively exchange, debate and learning.

Lifelong learning community

As our students are nowadays experienced professionals, the division of labour between teachers, researches, publicists and students has mellowed: During their life time engagement and sometimes even in the same class, a participant may take the role of the teacher in one session and be a student in the next one. In our *Mentor Program* we asked retirees to share their vast amount of experience and knowledge with the younger generation. We developed a political framework, smart interfaces and social networking tools tailored for this kind of communication between the elder and the younger. Soon thousands of retirees became teachers and advisors to kids, students and even business project managers in Europe and all over the world.

Promoting a joint European identity

With our open for all policy and available programs at no cost we lived up to the idea of education for all. In conjunction we truly built a vibrant online community of over hundreds of teachers and thousands of scholars that excel in academic freedom and across institutionalized organizations. From the very beginning, the OUE put emphasis on offering learning experiences in all languages spoken in the member states of the European Union to deepen understanding and exchange between our cultures and steadily shaping a common body of knowledge and memes. It is safe to assume that this contributed greatly to the growth and solidarity of the European identity.

Full integration into the European university system

In the beginning we encountered multiple obstacles. But in cooperation with our stakeholders who bought into the idea of basic, introductory and free education for all who seek it, we were able to diminish them. Today we are excited about our transfer system that allows all universities in Europe to accept OUE credits with a value of up to 30% of the European Credit Transfer and Accumulation System (ECTS). This is very encouraging. Our evaluations show that up to 70% of our students are taking advantage of this opportunity and proceed with their course work and in-depth studies into one of the residential universities.

Lively exchange with our neighbours

Beyond that, our *Digital Neighbourhood Program* offered every country in the world the opportunity to have the 100 most attended learning journeys (*LearnEys*) of each year translated into their local languages in exchange for providing up-to-date introductory courses on their country's culture, language, history, geography and political system. We will soon see in the Arab world, China, India and elsewhere a generation of young people entering professional life as politicians, religious leaders, artists, chief engineers and company founders who have attended free OUE courses on all aspects of life. The best and most motivated were invited to free exchange programs and visited our member countries and universities for a year or for the whole duration of study. They made friends in the countries they lived and studied in and I know quite a few are in the audience today, which I am very happy about.

Strong ties with the Americas

Today I am very satisfied with the established and strengthened connections between the Open Universities in the United States of America and Latin America. I want to take this opportunity to thank our board of professors from all six continents for their continuous and hard work to forge this alliance. We all are more than willing to keep up our work to extend our alliance to all those who believe in free education. This alliance so far enabled all parties to strengthen their countries relationships and the value they put on education as one of the measures to overcome cultural and ethical differences, to better understand each others needs and demands, how to help in situations of crisis and show solidarity.

When we founded the OUE back in 2015 we knew a modern university would have to find answers to global challenges such as an aging society, climate change and a growing demand for resources. And we did:

Nursing in an aging society

We are currently conducting various experiments with haptic spaces in fields ranging from the sciences to health care. Let me mention one particularly exciting project in which we work

with computer experts from Japan. The project in our *Innovative Nursing Department* develops new forms of elder health care. With a decreasing young population, we have to work with distant nurses that care for our elders with dementia in providing haptic therapy. The actual results of the services are very promising, however the cost of the equipment remains an issue, which hopefully will be solved in the next years.

Renewable energies for China and Europe

We will expand our cooperation with the Open University of China in the field of Renewable Energies. After the dramatic turnaround in environmental policies in 2023, the need for mobility-, production-, energy- and software engineers as well as educators and social scientists has increased more than tenfold. We are working with the Chinese government and companies from all over Europe. Our young brains are in high demand in Europe, so we decided to pick up the idea of a *Senior Expert Service* and bring it into life in this project. Specialists, most of them in their late career or retirement, are reluctant to spend a longer time of their life in China. Therefore, we created an integrated travel and work experience with our *Intercultural Learning Department*, in which they pay brief visits to the country and work on solving renewable energies problems in virtual work groups, using holographic projector systems and 3D-printing to foster the quality of communication and collaboration.

Demand for resources

The growing and endless demand for resources was one of the main reasons to expand our topic and focus on "Demand and Securing Resources". Within the next year we will set up research labs for companies to work and research how renewable energy, infrastructure and equal distribution models can help to solve these needs. Businesses will have the opportunity to outsource research and development projects and benefit from the know-how of Europe's best and brightest scientists. At the same time our university profits from the enriched learning environment built by these projects and the additional source of revenues.

To make things work we had to increase our own research and practice activities in virtual project management and have become experts in that field with businesses tapping into our knowledge.

A sustainable business model

We are proud that we were able to secure stable and sustainable funding for our institution.

As a public institution we receive our basic funding from the European Commission. As the major provider of introductory courses for universities all over Europe we managed to establish a trading model with those who benefit from them. Universities trade by lending professors and academic staff to us and provide their infrastructure to students who want to participate in our course syllabus. Additionally they provide learning and research materials for our courses and for use in our *Custom Creation Center*.

Not to neglect the revenues we receive from businesses for which we tailor classes to their particulate business needs. We have become the corporate university for major European companies. I am very proud to say that we do not only cater to the needs of big corporations. We are also able to provide important educational services to small and medium sized enterprises through our *SME Open Access Program* that bundles the SME's financial potential.

An unexpected source of income has been the publication department that we established in the last years. We do offer all our academic publications as open source. At the same time, our *Custom Creation Service* caters to companies that need access to highly specialized research literature.

In summary, the core mission of the Open University of Europe has always been to deliver open educational resources for everybody. Universities took our courses to complement their syllabi. Businesses used our materials to teach their staff and to build diverse business models around it. Digital goods are copied and distributed at nearly no cost, which makes the broadening of the digital commons such a worthwhile goal for politics and NGOs. We see "open" not as the opposite of "commercial", but as the soil on which solutions for global challenges and innovations will grow.

Encouraging civic participation

Businesses are an important stakeholder for our university, the same holds true for the citizens of Europe.

On our Internet platform we ask for civic participation and allow the people of Europe to vote on our teaching and research agenda within different timeframes. Thus we make sure our science does not happen in the ivory tower, but keeps a meaningful connection to our practical concerns and the needs of citizens. Often those calls for participation stimulate passionate debates on which society we want to live in and what we expect technologies to contribute to this.

Our roadmap for the next 5 years

Before closing, I briefly would like to shed light on two of the projects that will be our main milestones of our endeavour for the next 5 years:

- **Open University of Africa**

The rise of Africa as a powerhouse in sustainable production has enforced the need for skilled labour. We will be working with the Open University of Africa in addressing problems of sustainable production, health care and ecological agriculture.

- **Integrating new technologies**

While we have already achieved a sufficient level of expertise in working with haptic spaces, we have seen in the last decade the slow but relentless rise of the Neuroweb. Brain-body-computer-interfaces of various types have emerged. Combined with ubiquitous sensors they give us unprecedented precision in determining mental states and provide meaningful real-time-data about the emotions, thoughts and physical conditions of our students. Back in our founding years we already anticipated an Internet that would finally link up with bodies and brains of people. The scientific community created within the OUE received our best support for self-reflecting on those developments when they were still in their infancy. OUE scientists were contributing a lot to the European research agenda and attended to the main difficulties of privacy and authentication.

Aligned with our ongoing efforts in the Human Brain Project and through a long cooperation with the US American Brain Activity Map Project and the Wikimedia Foundation we are now on the brink of establishing globally accepted neuro-educational standards. We might soon be able to measure conceptual knowledge and skills like we did with the distance of planets hundreds of years ago. This also compromises the picture we have of ourselves as free human beings. People are afraid of being part of a hyperefficient, but soulless human machinery.

We have to and will make sure that the Neuroweb is fully adjusted to our values. It should make our life easier and our economy more efficient and innovative, but this must be all the time a means to promote the freedom, wellbeing, diversity and fairness of the society we live in, in Europe and around the world.

A promising future

As I stand before you today I am very proud of what we have achieved so far. And I am also more than confident that we will be able to take important steps to achieve our further goals that lead to a future of open education globally for all mankind.



Open Academia of Physical Sciences

Hrissi K. Karapanagioti

In Academia the key-parameters of open learning are asynchronous activities, project-based modules, educational multi-media material, and a relaxed real-time interaction with the instructor.

Open higher education in 2030 is expected to depend heavily on technology as a tool. Technology will free education from different dilemmas such as “Is the teacher or the educational material the main component of learning?” or “The student started studying Physics but he enjoys Chemistry more, should he change his degree and how?”.

Technology could provide the student with:

- An intelligent network system that can a) inform him about the best on-line instructors in Europe as well as the available laboratory and field training classes close to him, b) translate the student’s work to credit units, and c) keep track of the student activities and determining the topic he is actually studying.
- Lectures, educational material, and simulations developed accordingly by the instructors.
- Communication with the instructor in a relaxed setting.

In September 2030, Alejandro who is 25 years old wants to join Academia to study Environmental Science. He fluently speaks English and he contacts Academia to get more information.

- What does Open Academia of Physical Sciences offer?

Academia offers studying programs accredited throughout Europe. These are programs with approved ranges of credit units for each classical subject e.g. an Environmental Science program should include 20-30 credit units in Ecology, 20-40 credit units in Management, 20-40 credit units in Environmental Engineering, 10-20 credit units in Environmental Chemistry, etc. This is still based on a traditional approach used in 2000.

- How are these credit units collected?

Academia offers small modules based on problem solving that worth mixed credit units from the classical subjects of Sciences, e.g. the module “measuring pH in a lake”, can provide 1 credit unit in Ecology, 1 credit unit in Environmental Chemistry, 1 credit unit in Statistics, etc. The student selects the modules that he is interested in or based on a career plan and his credit units are added.

- This sounds a bit complicated!

Yes, it is complicated but Academia has this intelligent networking system electronic platform (Figure 1) that keeps track of the student’s choices and the instructors’ offers. The student can choose from existing modules offered throughout Europe. The student should be able to describe the topic that he wants to work on and the system gives him options of modules offered next month and related to his program. Towards the end of his study the student is informed by the system on the credit unit requirements that are left to be fulfilled. The system gives the student options of problem solving topics that fulfil the requirements in

credits. (This in 2013 was done by <http://www.elearners.com> for complete programs, Figure 2). Once the student completes the credit units of one subject e.g. 20 credits in Environmental Chemistry, he can take exams on this subject in one of the exam centers of Academia that is located close to him. Usually since the modules are interdisciplinary, the student completes the credit units of the subjects towards the end of his study.

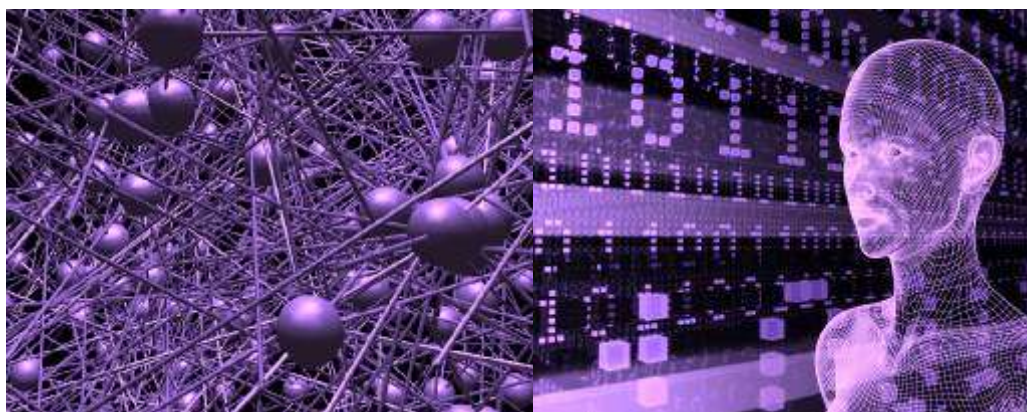


Figure 1 Intelligent networking electronic platform



Figure 2 A window presenting the 3rd option given by <http://www.elearners.com> when searching for a Bachelor program on Environmental Sciences in 2013

- Can you give me more information on the format of the modules?

The modules are short in order to be able to finish them quickly and thus, keep the student interested. For example, the module “measuring pH in a lake” lasts for 4 weeks. It includes a) week A: theory on what pH means with the necessary reading materials, exercises, software, tests, etc., (1 credit unit in Ecology) b) week B: measurement tools with the necessary project e.g. internet search to determine available tools, evaluate them, understand the principles of operation, specifications, etc., c) week C: actual measurements with simulations of field study or by providing the necessary tools to the student to perform the fieldwork himself, etc. (1 credit unit in Environmental Chemistry), d) week D: comparison of tools and elucidation of possible problems, etc. Each of these weeks is connected with

another module that could expand the knowledge of this specific topic. For example, week A could be expanded by another module called “aquatic chemistry” or “acid dissolution in water”, week B could be expanded by another module called “pH indicators”, etc. The student can decide if he wants to expand his knowledge on each of these additional topics or if he just wants to have this specific skill and finish with this topic (e.g. measuring the pH in a lake). The module network selected should be discussed periodically in a real time meeting with the student advisor that can be one of the Academia instructors. Of course the student can revisit his decisions later in his studies or every time he finds the same module e.g. “aquatic chemistry” as expansion of another small module e.g. “nitrogen cycle”, etc.

-How is learning achieved through these small modules?

The modules include introductory lectures, skill building software and exercises, simulations, and real-time forums to discuss problems and socialize with the instructor and the other students.

Introductory lectures are short and informative using bullet points such as e.g. “10 points to know about pH in a lake”. They can be either real time or asynchronous. The student can choose if he will attend or not attend the real-time lecture. He can always watch the video of the lecture including questions and comments from other students, later. Virtual reality classrooms such as Second Life are ideal for this first approach of the student by the instructor (Figure 3). Students can use real-time chat or asynchronous email or the instructor’s platform to communicate questions to instructors.



Figure 3 Lecturing in a virtual reality classroom in 2013. This is me, or more precisely my avatar, lecturing about lab safety to literature and education major students that were interested to learn more about quantitative research methods.

Since students have different learning styles multiple educational resources are provided. Educational material is prepared through the instructor guidance and includes a) skill building software that are different exercises for assessment with increasing difficulty, b) simulations that are similar to active video games that require body involvement (Figure 4) or virtual reality tests that require avatar movement (It all depends how far the technology would have progress). There are self-assessment activities to help the student practicing. However, there are required assessment activities that are used to open the activities of the next topic of the module. The student has to finalize these required activities within a week.



Figure 4 Example of active video games in 2013

The third component of the module is the real-time Forum and is the only activity that requires real-time presence from the student and the instructor. It is a chance for the student to meet the instructor and, in an informal setting, ask questions raised by performing the activities, reading the materials, or taking the assessment tests, etc. This Forum is the reason that this Open University is named “Open Academia”. This Forum facilitates extra-curriculum discussions that lead to the development of both the student and the instructor (Figure 5). It is also a good chance for the instructor to test new techniques and to promote group activities related to this specific week topic.



Figure 5 In one of Star Trek episodes in 1990s, Data, the android, meets with physics greatest minds to play poker. It seems that in order to accept knowledge, one has to understand people first. “It is proved to be most illuminating”

-Sounds interesting! Where do the instructors come from?

They are usually professors from conventional and open European universities and experts on this particular topic that are called to teach in Academia for one hour (plus one hour in the Forum) every month depending on the demand for their module.

-But what will happen if I want to study a topic that requires laboratory skills (e.g. BOD measurements) or field experience (e.g. coastal hydrogeology)?

Simulations that are similar to active video games or virtual reality experiments will bring you up to a certain level on such skills. Then, you can acquire the necessary advanced skills that cannot be obtained through simulations, from monthly laboratory and field courses offered during the summer by conventional and open European universities close to your area.

-In order to summarize what is the flow of the study and what are the requirements to fulfil a program?

You should be informed of the available programs and their requirements. Then, you should get an idea of all available modules in the area that you want to study based on your interest and your career plan. You choose the first module and start studying the material. Once you perform the necessary activities you get access to next week material and so on until you complete the necessary weeks for the certain module. At the end of the required weeks you get a week free to finalize the project related to the module that will be graded by the instructors and to decide which will be the next module. By finalizing modules you collect credit units on certain subjects. Once you collect the necessary number of credit units on a subject of your program, you can be examined on this subject. You finish your program once you have collected the necessary credit units and have been successfully examined on all the subjects necessary for your program. Exams are also project based such as modules but are necessary to assure the identity of the person examined. Exams are taken in universities close to your area and are graded by instructors of the program. The student needs to be well informed and should have an idea of what he wants to become. However, if you change your mind, an advisor will help you take advantage of what you learned so far and add new modules that would lead you to the appropriate program.

-So as I understand Open Academia is organized by technological means and heavily collaborates with other conventional universities for personnel and infrastructure. The key-parameters of open learning are asynchronous activities, project-based modules, educational multi-media material, and a relaxed real-time interaction with the instructor.



Precision Education: A Postindustrial Model of Open Learning

James G. Mazoué

The success of OER-based curricular alternatives to traditional education depends on building a large-scale, scientifically grounded infrastructure for designing precision-based courseware that individualize learning.

Since the founding of universities in early medieval Europe nearly a millennium ago their organization and operations have not changed significantly. Faculty-centered and governed, they are predicated on the belief that physically located centers of learning are uniquely necessary for the discovery, dissemination, and conservation of knowledge. The assumption that they are indispensable to providing and certifying knowledge is now being challenged, however, by a number of converging trends: advances in the learning sciences and their application to educational practice, new approaches to student assessment and credentialing, innovative business models that redefine the role of faculty and shift the balance of power to students, and a growing realization that current global economic conditions are incompatible with a continuation of business as usual. The progression of these trends into the future calls into question not only the legacy practices that have coalesced around universities, but the rationale for their very existence as land-based institutions.

Over the past two decades the accelerating development of new educational options has produced a virtual cornucopia of academic choices that has evolved from open access to course *content* to the free availability of credit-bearing *courses*. The advent of MOOCs as the latest stage in the evolution of open educational resources represents perhaps the most serious challenge yet to the historical model of location-bound, proprietary forms of campus-based learning. In the United States, the awarding of course credit for certificates of completion for MOOCs by institutions such as [Colorado State University's Global Campus](#), [Antioch University](#), [San Jose State University](#), [Georgia State University](#), and the recently announced [MOOC2Degree](#) collaboration between public universities and Academic Partnerships, the impetus from Gates Foundation grants to develop MOOCs for "high enrollment, low-success" introductory courses and its [Adaptive Learning Market Acceleration Program](#), the precedent-setting endorsement of credit for some MOOCs by the [American Council on Education](#), and partnerships like the one between the [Saylor Foundation](#), [Excelsior College](#) and [StraigherLine](#), are all opening up a path to credit for free and low-cost courses. A parallel movement away from seat-time to competency-based learning at [Western Governors University](#), [Southern New Hampshire University](#), and the [University of Wisconsin System](#) is further disrupting the traditional model of land-based education. The unbundling of institutional knowledge provision and credentialing resulting from these disruptive innovations is not only gaining momentum but appears to be inevitable.

By undermining the individually crafted course model that sustains the "college credit monopoly"¹ MOOCs and other forms of open curricula have the potential to displace land-based institutions as the primary locus of learning. Given the rapid emergence of new business models based on open educational resources, access to a free online *curriculum* leading to a degree from an accredited institution is a near-term likelihood. An even more radical alternative to the traditional university model, however, is emerging: Students may

soon be able to satisfy the academic requirements for a degree without having to enroll in a college curriculum as a prerequisite. In California, recently introduced legislation in the State Assembly would create a new tuition-free higher education system that unbundles the certification and awarding of an academic credential from a formal curriculum. The proposed “[New University of California](#)” would be unlike any other system of public education in the United States. It would not provide instruction: there would be no courses or faculty to teach them. Students could acquire knowledge from any source and then pay a fee for examinations that would certify the possession of tested competencies. A credential would be awarded upon successfully demonstrating that one possesses the requisite knowledge or skill associated with that credential.

As impactful as these innovations are, however, they need to be put into perspective. Open courseware, as currently conceived, address two of the three major challenges facing higher education: they increase access and reduce cost. They are an effective remedy to the “cost disease” plaguing higher education² and a solution to the problem of providing global access to the knowledge necessary for obtaining marketable credentials. OER-based courseware have the potential therefore to democratize education and contain its spiraling and unsustainable costs. What has not been adequately addressed thus far, however, is the third, and perhaps most important challenge: their quality. The reason why open curricula have not transformed current educational practice is because they have not yet reached a critical mass of quality improvement. Because effective learning depends on more than just having access to content – even high quality content from the best educators at prestigious institutions – access to informational resources is a necessary but not sufficient condition for learning. Implementing a truly transformative pedagogy requires a systematic understanding of how to *organize* and *apply* the conditions that enable learning. Designing courseware that successfully enable learning-optimized outcomes is therefore of paramount importance to the credibility and acceptance of open curricula as an alternative to conventional instruction.

Fortunately, we do not need to speculate about the conditions that enable effective learning. Based on the research conducted by Benjamin Bloom and his colleagues in the 1980s comparing the efficacy of three learning conditions — tutoring, mastery learning, and conventional classroom instruction — we know that the least effective condition for learning is classroom-based group instruction.³ The most effective is a combination of one-to-one tutoring and mastery learning. Bloom estimated that about 90 percent of students receiving tutoring and corrective feedback can perform at two standard deviations above the average student taught by conventional group instruction.⁴ More recent research by VanLehn has found that, although the effect size Bloom claimed for human tutoring is too high, intelligent tutoring systems, unlike conventional classrooms, have the potential to approximate Bloom's Two Sigma effect by customizing feedback and targeted guidance to the individual learning needs of each student.⁵ What the research shows is that the same conditions that underlie effective human tutoring, namely feedback and scaffolding, are operative in the design of computer-based tutoring systems. When embedded into digital content to provide context-specific coaching and guidance, cognitive tutors and feedback loops can incrementally guide each learner along a personal path toward progressively greater understanding and mastery.⁶

Although prototypes of course exemplars with robust learning analytics capabilities are now in the very early stages of being developed and deployed, the expectation is that they will have increasing impact as they mature.⁷ As digital environments that personalize learning, precision-built courseware have the potential to serve as “educational positioning systems” that can navigate students through their curriculum along individual “pathways and routes to maximize student success.”⁸ Initial indications are that courseware explicitly designed in

accordance with effective practices drawn from the learning sciences and enhanced with learning analytics to function as educational positioning systems are having a positive impact on student performance.⁹ Nascent versions of precision-built courseware can be viewed, therefore, as precursors of *course exemplars* — early prototypes of optimized learning environments that continuously improve student outcomes through the systematic application of the learning sciences. In contrast to go-it-alone legacy practices that combine batch-processed instruction with folk pedagogical approaches to teaching, a curriculum consisting of course exemplars would systematically apply research-based principles and practices to create the conditions that best enable each student to learn.¹⁰ Designing open curricula as learning-optimized environments would therefore serve as a catalyst for transitioning from our current handcrafted model of teaching to a precision-built educational system.

The advantage of precision education over traditional, classroom-based instruction consists in five core characteristics:

- Its *methodology is research-based*.
- It *individualizes learning*.
- It is *competency-based*.
- It is *scalable*.
- It is *cost-effective*.

Because precision education is evidence-based, unlike intuitive and idiosyncratic approaches to teaching that rely on hunches and anecdotal experiences, it provides perhaps the only methodology that can reliably lead toward progressive improvements in learning. A precision-based educational system systematically collects, analyzes, and applies research to educational practice in ways that continuously optimize learning for each individual. It not only treats learning as a process that is amenable to scientific understanding but it transforms educational practice itself through the systematic application of the learning sciences. A precision-built educational system therefore requires a large-scale research infrastructure to manage the ongoing development of conditions that enable optimal learning. According to Thille, “Such an undertaking to design the learning environments and data systems is not small or inexpensive and will require the cooperation of many institutions.”¹¹ A global network of research centers working together towards the common goal of designing next-generation learning solutions will be necessary to support the development of an integrated system of interoperable services and platforms.

Fortunately, a body of foundational work already exists that can be adapted to build a large-scale research infrastructure for supporting the development of precision-built courseware. At the epicenter of applied research in the learning sciences in the United States, [Carnegie Mellon University's Open Learning Initiative](#) and the affiliated [Pittsburgh Science of Learning Center](#) have led efforts to transform education into a science. Courseware development projects funded through the [Community College Open Learning Initiative](#), [Next Generation Learning Challenge Grants](#), and [APLU/OLI Multi-institutional Cognitive Coursewares Design initiative](#) are already using the OLI's research-based methodology and data-driven design model to develop courseware that systematically improve learning through a multi-level process of iterative feedback. An international coalition consisting of the Open Learning Initiative in partnership with European Centers for the learning sciences in Sweden, Germany, Netherlands, and the United Kingdom could generate the critical mass necessary to forge

common standards and protocols for designing course exemplars that massively individualize learning. As a data-informed process for improving the quality of learning, precision education could thereby serve as an *academic lingua franca*, a common, unifying academic infrastructure enabling the creation of a process with greater curricular transparency, transferrable credentials, and more flexible geographic and economic mobility for students.

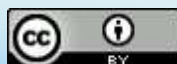
Building an educational system based on the learning sciences is central to the European Commission's vision of the future of educational reform. In its 2011 Joint Research Centre Report, *The Future of Learning: Preparing for Change*, the Commission endorses a model "shaped by the ubiquity of Information and Communication Technologies (ICT)" as its "central learning paradigm."¹² It predicts that embedding assessment "in the learning process and pedagogy will rely increasingly on interaction, including the interaction with rich technological environments, which will be responsive to learners' progress and needs."¹³ The Commission's view of the future sounds very much like a description of precision education. Indeed, a precision-based model of education is not only consistent with its vision, but it provides a framework for its implementation, a framework that is critically needed in the near future. By 2030 more than two-thirds of the adult population in Europe will be older than the traditional university graduate.¹⁴ Using technology in ways that individualize learning will not only serve the educational needs of traditional school-age populations, but the lifelong and life-wide needs of adults as well as they seek flexible options for upgrading and expanding their knowledge, skills, and employment credentials. As the European population ages in the coming decades, a precision-built learning model would offer a more effective and accessible range of educational opportunities to everyone regardless of their age, location, or economic circumstances.

A shift in the conception of education has already begun to occur: from its being largely governed by the intuitions of individual practitioners to a technology-enabled science of individualized learning. If this transition signals the initial stages of the deconstruction and reinvention of the university then we are witnessing the educational equivalent of a Copernican revolution: a paradigm change from the previous millennium's orthodoxy of place-centric instruction toward a scientifically grounded network of technology-enabled learning. As a framework for implementing this vision, precision education represents a postindustrial model of open learning that defines education as a *process-centered* rather than *place-centered* activity. Not treating education as a process that creates the conditions that best enable students to learn is no longer an option. It is no more of an option than not treating medicine as a science. Just as real-time patient-specific diagnosis and treatment with personalized outcomes is a Grand Challenge problem for medicine, so too should education seek as its Grand Challenge the creation of personally adaptive learning environments. Meeting both challenges would take us farther along the path toward being in greater possession of both our physical and cognitive well-being and help introduce truly transformative ways of interacting with our world.

References

1. Kevin Carey, "[Into the Future with MOOCs](#)," *Chronicle of Higher Education*, September 3, 2012.
2. Candace Thille and Joel Smith, "[Learning Unbound: Disrupting the Baumol/Bowen Effect in Higher Education](#)," *Forum for the Future of Higher Education*, 2009.
3. Benjamin Bloom, "The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring," *Educational Researcher*, vol. 13, no. 6 (1984).

4. Benjamin Bloom, "Learning for Mastery," *Evaluation Comment*, vol. 1, no. 2 (1968), p. 1.
5. Kurt VanLehn, "The Relative Effectiveness of Human Tutoring, Intelligent Tutoring Systems, and Other Tutoring Systems," *Educational Psychologist*, vol. 46, no. 4 (2011).
6. Marsha Lovett, Oded Meyer, Candace Thille, "[The Open Learning Initiative: Measuring the Effectiveness of the OLI Statistics Course in Accelerating Student Learning](#)," *Journal of Interactive Media in Education*, (May 2008), pp. 1–16; and Kurt VanLehn et al., "The Andes Physics Tutoring System: Lessons Learned," *International Journal of Artificial Intelligence in Education*, vol. 15, no. 3 (2005).
7. Bacow, L. S., Bowen, W. G., Guthrie, K. M., Lack, K. A. & Long, M. P. (2012). Barriers to Adoption of Online Learning Systems in U. S. Higher Education. ITHAKA.
8. Linda Baer and John Campbell, "[From Metrics to Analytics, Reporting to Action: Analytics' Role in Changing the Learning Environment](#)," in *Game Changers: Education and Information Technologies*, Diana G. Oblinger, ed. (Boulder, CO: EDUCAUSE, 2012), p. 63.
9. Karen L. Evans, David Yaron, and Gaea Leinhardt, "[Learning stoichiometry: A comparison of text and multimedia formats](#)," *Chemistry Education Research and Practice*, vol. 9 (2008); Lovett et al., "The Open Learning Initiative"; Christian D. Schunn and Mellisa M. Patchan, "[An Evaluation of Accelerated Learning in the CMU Open Learning Initiative Course 'Logic & Proofs'](#)," *Technical Report by Learning Research and Development Center*, University of Pittsburgh, 2009.
10. James G. Mazoué, "The Deconstructed Campus," *Journal of Computing in Higher Education*, vol. 24, no. 2 (2012), pp. 74–95.
11. Candice Thille, *Changing the Production Function in Higher Education*, Washington, D.C.: American Council on Education, 2012, p. 11.
12. C. Redecker, M. Leis, M. Leendertse, Y. Punie, G. Gijsbers, P. Kirschner, S. Stoyanov, B. Hoogveld, *The Future of Learning: Preparing for Change*. European Commission Joint Research Centre, Institute for Prospective Technological Studies. Luxembourg: Office of the European Union, 2011, p. 10.
13. Redecker et al., 2011, p. 30.
14. Redecker et al., 2011, p. 23.



Open Educational Resources and Practices Unfold a Brand New World Towards an Open Higher Education

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Continually and dynamically enriched Repositories of OER and OEP are used in daily practice to support teaching, learning and researching in HE institutions, and enhance professional development of academic staff towards the vision of an Open Global Higher Education.

1. The Repositories of Professionally Produced and Educators Generated OER and OEP

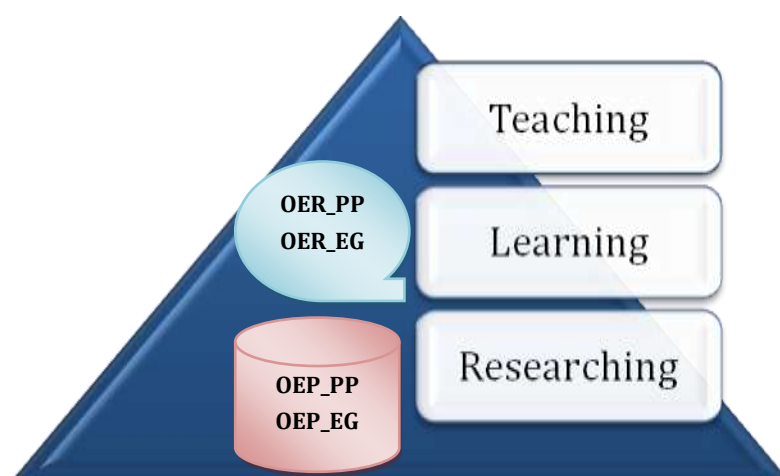
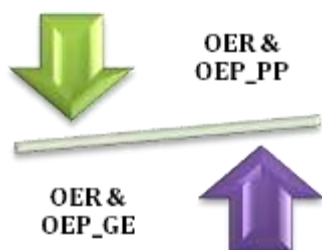


Figure 1: Repository of Professionally Produced and Educators Generated OER & OEP according three areas

in 2030, Higher Education Institutions (HEI) produce professionally OER & OEP Repositories (HE_PP) designed and developed by Universities, Research Institutes, stakeholders and associations. Educators, tutors and facilitators use resources and practices from Repositories, for teaching (OER_T, OEP-T), learning face-to-face (f2f) or at a distance (OER_L, OEP-L) and researching (OER_R, OEP-R), respectively. Moreover they have the opportunity to reuse them and develop new resources or practices. So they simultaneously enrich the Repositories with Educators Generated OER & OEP (HE_EG) and have their work acknowledged, as well.



OER & OEP Repositories provide the potential of an essential collaboration among HEI and countries. In particular, adapting and localizing Repositories' content, HEI will be benefited by sharing, using and reusing openly licensed valuable and reliable resources. OER & OEP unfold new educational models in HE.

2. Organising the Repositories

OER include *learning objects* such as full courses or programs, course materials, modules, student guides, teaching notes, textbooks, research articles, videos, assessment tools, interactive materials such as simulations, role plays, databases, software, mobile apps, learning content as series of courses, collections, journals. Furthermore, they include licenses to enhance open publishing, principles of design and the local adaptation of content. OEP include Communities of Practice (CoP), LMS¹, LCMS², content development tools, best practices, methodologies, techniques, procedures, serious games aimed at motivating, and inspiring students. OER & OEP are published and distributed on mobiles, tablets, PCs, digital TV broadcasts.

Taxonomy and metadata

A global extremely well organised taxonomy has been developed for all disciplines and topics of Higher Education (HE). Disciplines and special topics on national syllabus are developed by countries expanding the global taxonomy and respecting national cultures and languages. The taxonomy includes various levels of categories and detailed subcategories. A set of metadata is also defined in order to facilitate searching and accessing learning objects in the Repositories. Metadata include fields for language, discipline, topic, key-words and links between resources and practices.

Ensuring shared understanding across cultures and languages is a critical element in a successful project management (Lane, 2012) of this global taxonomy.

Translating to national languages

Learning objects can be adapted and translated to national languages and enrich national Repositories with new material. Both HEI and educators are highly motivated to support translations on their discipline resources.

3. The first generation of Digital natives Educators

2030's educators are the "*today's students*", an expression used by Marc Prensky in his paper "*Digital natives, digital immigrants*" back in 2001. They represent the first generation of educators having grown up within digital technology. To use his own words, Prensky said for them when they were "*today's students*": "*They have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age.... Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives*".

Therefore, the first generation of digital native educators innovates in teaching and learning using OER and OEP Repositories. They pioneer a new *educational paradigm* in HEI promoting personalised study combined with social networking and collaborative learning.

Let's hear the narration of such an educator, in regard with the main processes in HE of teaching, learning and researching.

4. Teaching

We are in 2030 and 270 million global enrollments rise in Universities. Being an educator today, has changed radically comparing teaching methodologies when I was a student. The core teaching process is based on **OEP_T** and relevant **OER_T**, developed from best practices in multiple HEI and educators that share their material in global Repositories. One

¹ Learning Management System

² Learning Content Management System

thing in common with the methodologies of the past, is that I still use brief lectures to support the learning material. In particular, my teaching is integrated in three ways:

Face_to_face courses

I have the ability to select practices among the *learning objects* of OEP_T Repositories. It includes Repositories with practices in *experiential, problem based, situated, active*, either *collaborative learning*. For each practice I can respectively select among various and rich OER_T from the relevant Repository as Media, lectures, activities, methods.

Online courses

Most students as digital natives, have the fundamental competence of using the Media³ and therefore they prefer a more flexible model in their studies with no physical or spatial presence. The university offers them this opportunity if they complete a threshold of X1%⁴ f2f participation and deliver X2⁵ essays or X3⁶ assignments. In this context, OEP_T Repositories include practices to support personalised, collaborative or hybrid learning. Most practices aimed to use them asynchronously in forums, work in groups, peer evaluation of assignments. Teleconferences, webinars⁷, e-workshops and their relevant OER_T are a main part of everyday **e-campus** using *personalised* or *collaborative* learning depending on students' learning styles. In addition synchronous mode practices include serious games, simulations and applications for mobiles or tablets.

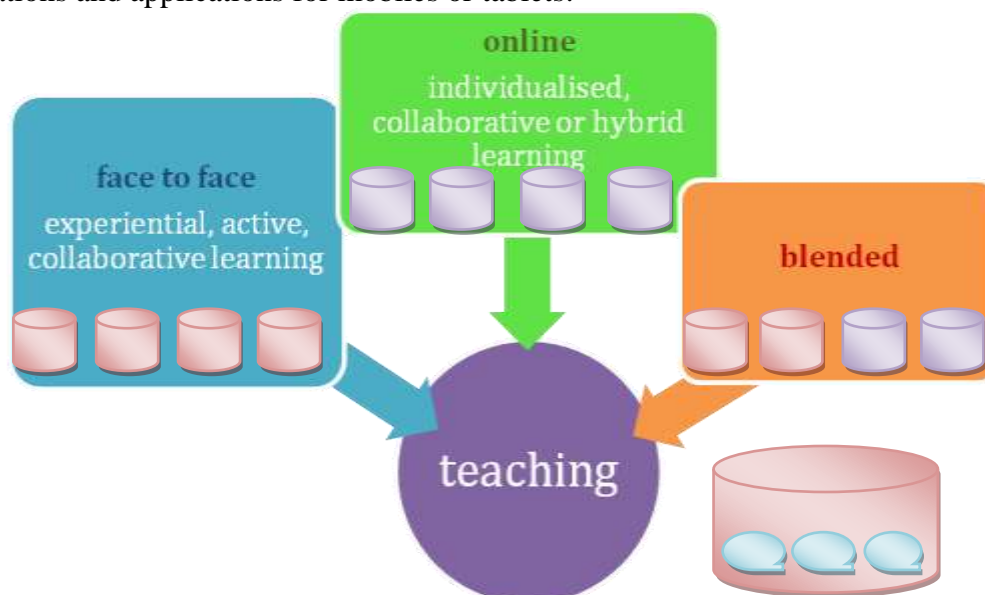


Figure 2: Teaching in 2030 using OER & OEP Repositories

Collaborating at a distance is effective and feasible in many ways using advanced learning technologies. Multiple environments are used to simulate real campus in a virtual world and students use avatars when they log in, navigate e-lessons and engage in immersive conferencing. E-campus use *emotional intelligence* theory (Coleman, 2009) to create a sense of belonging in learning communities and enhance interactions among students and their tutors. OEP_T and OER_T Repositories provide personalised, interactive, just-in-time, current and student-centric services.

³ Media literacy relates to all media, including television and film, radio and recorded music, print media, the Internet and all other digital communication technologies.

⁴ Percentage defined by each University

⁵ Number defined by each University

⁶ Number defined by each University

⁷ Web seminars

Blended courses

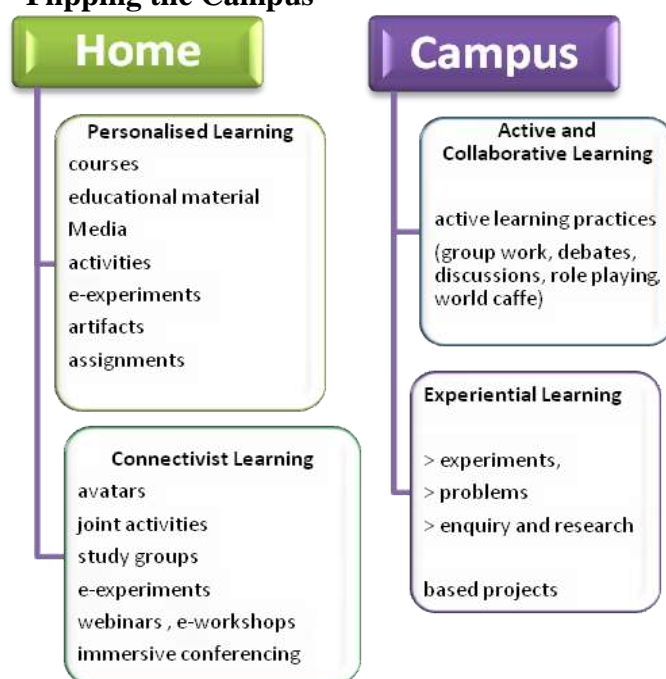
Some students would like to combine f2f with online courses according to their learning styles. Rich web based learning environments are available for them, applying combinations (mashups) from practices and resources of the Repositories using webinars and e-workshops.

5. Learning

Strategies in *adaptive personalization learning* (Mobasher et al., 2000) have provided OER_L and OEP_L dynamically adapted on personalised needs and goals of each student. OEP_L are designed according the “*Guided Didactic Conversation*” (Holmberg, 1983), emphasizing on students’ engagement during the learning process. Each student shapes his own learning profile, following specific steps in order to accomplish specific learning outcomes. Also each student selects to what extend he would like to have a live presence in the university campus or enrolling online. Universities have defined the lowest percentages of live participation in various courses.

Information in 2030 is plentiful and the student’s role is not to memorize or even understand everything, but to have the ability to find and apply knowledge when and where it is needed based on *connectivist learning* (Anderson & Dron, 2011; Siemens, 2005; Downes, 2007). The ubiquitous networked connections between people, digital artifacts, and content, leads to consider OER_L and OEP_L as *social objects* to enhance participation, reflections and interactions in CoP among students. They can shape study groups discussing and exchanging their thoughts, ideas on key points of their study or asking a peer support in their assignments.

Flipping the Campus



When students go to the campus they have already studied the major part of the educational material as digital resources at home. In the campus, the work of students is facilitated by tutors in groups or individually and the main goal is approaching **active learning**. In this context, they try to discover knowledge through theorems, laws, software programs or experiments, collecting data, implementing statistics, creating artifacts, drawing and interpreting conclusions. Multiple learning methodologies are implemented following specific OEP_L based on *the Problem, Project, Enquiry or Research Based Learning methodologies*. Learning could be also *situated* in real world situations, *experiential* based on

constructivist and *connectivist* models. Tutors facilitate and support f2f work, provide daily feedback and facilitate the necessary or optional activities on the platform. Active learning communities among students are promoted at f2f work or in study groups.

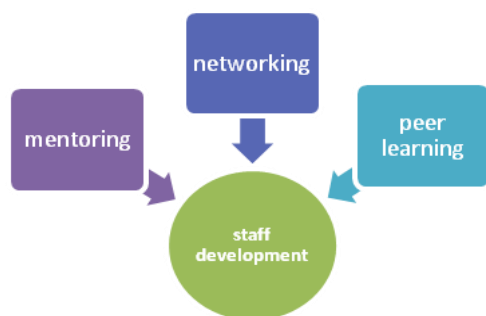
6. Researching

Academic research in 2030 uses Repositories in experiments and methodologies in research and academic writing. Repositories of **OEP_R** include research methodologies for all disciplines and each methodology includes respective **OER_R**. Methodologies as pre-

experiments, case studies, ethnography, action research, focus groups, inference, statistics, ethics, ensuring reliability, credibility and objectivity are described step by step in OEP_R. OER_R describe data collection, the relevant research tools as questionnaires, interviews, participatory interviews, observation.

7. Academic Staff development

OEP & OER Repositories support us as educators and tutors to organize and conduct our courses using the existing educational material and discovering constantly new ones, since all educators contribute with their own.



Furthermore, OEP_S & OER_S Repositories are exclusively designed to support educators' role providing practices and resources to enhance networking, peer learning and mentoring. OER_S as *social objects* support educators' participation, reflections and interactions in CoP among educators, tutors and facilitators during the overall learning process. Within communities, we could shape a common

approach in teaching, evaluating, facilitating and mentoring practices. Using OER_P, we could build and maintain our own *Professional Learning Networks*, aimed to exchange best practices and expertise in specific disciplines at a global dimension.

8. Discussion

In the information age of a networked society (Castells, 1996), teaching is still the “*scaffolding*”⁸ (Bruner, 1976) using *Global Repositories* in ways to improve students to a new level of development each time (“*zone of proximal development*”, Vygotsky, 1978). The Unesco’s proposed learning environments in 2002 are still active in 2030: educators use the same fundamental principles to create meaningful, collaborative and situated in real life, environments. Their work is supported by OEP & OER Repositories which have been built and evolved constantly, therefore they could foster creativity.

An educator is always needed to ignite the fire of learning to his students. The learning context is merely common with the previous generation but the educators have Global Repositories of ideas to implement in many rich and meaningful ways.

The transformative potential of OER & OEP includes the benefits of sharing and collaborating among HEI and countries. The creatively disruptive role of OER & OEP opens up new educational models towards the vision of an Open Global Higher Education.

9. References

- Anderson, T., & Dron, J. (2011). Three Generations of Distance Education Pedagogy in *International Review of Research in Open and Distance Learning* Vol. 12.3, March – 2011, Athabasca University.
- Castells, M. (1996). *The Information Age: Economy, society and culture: The rise of the networked society* (Vol. 1). Oxford, UK: Blackwell.
- Downes, S. (2007). An introduction to connective knowledge. Paper presented at the *International Conference on Media, knowledge & education—exploring new spaces, relations and dynamics in digital media ecologies*. Retrieved from <http://www.downes.ca/post/3303>

⁸ Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 17, 89-100. (Addresses the concept of instructional scaffolding.)

- Holmberg, B. (1983). 'Guided didactic conversion in distance education', in *D. Seward, D. Keegan, B. Holmberg, (eds) Distance education: International Perspectives*, pp. 114 – 122. London: Routledge
- Lane, Andy (2012). *Collaborative Development of Open Educational Resources for Open and Distance Learning*. Higher Education Academy.
- Mobasher Bamshad, Honghua Dai, Tao Luo, Miki Nakagawa, Yuqing Sun, Jim Wiltshire, (2000). Discovery of Aggregate Usage Profiles for Web Personalization (with H. Dai, T. Luo, Y. Sung, M. Nakagawa, J. Wiltshire). In Proceedings of the Web Mining for E-Commerce Workshop (WebKDD'2000), held in conjunction with the ACM-SIGKDD Conference on Knowledge Discovery in Databases (KDD'2000), August 2000, Boston. Retrieved from: <http://maya.cs.depaul.edu/~mobasher/papers/webkdd2000/webkdd2000.html> on 2nd of June 2011.
- OER Handbook for educators (2011). From [WikiEducator OER Handbook for educators](http://wikieducator.org/OER_Handbook/educator/advantages_and_disadvantages) accessed on 15 March from http://wikieducator.org/OER_Handbook/educator/advantages_and_disadvantages
- Prensky, M. (2001). Digital natives, digital immigrants. On *the Horizon*, Vol. 9, No 5, NCB University Press.
- Siemens, G. (2005b). *Connectivism: Learning as network-creation*. ElearnSpace. Retrieved from <http://www.elearnspace.org/Articles/networks.htm>.
- UNESCO's 2002 International Bureau of Education, http://www.ibe.unesco.org/fileadmin/user_upload/archive/publications/EducationalPracticesSeriesPdf/prac07gr.pdf
- UNESCO's 2012 World Open Educational Resources Congress Report <http://www.learning-agency.net/index.php/en/news/28-events/118-report-from-unescos-2012-world-open-educational-resources-congress>
- Vygotsky, L.S. (1978) 'Mind and Society: the Development of Higher Psychological Processes', Harvard University Press, Cambridge. MA
- Wood, D., Bruner, J.S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Psychology and Psychiatry*. 17, 89-100.

10. Abbreviations

Abbreviation	Description
CoP	Communities of Practice
f2f	Face-to-face
HE	Higher Education
HEI	Higher Education Institutions
HE_PP	OER & OEP Professionally Produced Repositories
HE_EG	Educators Generated OER & OEP Repositories
LMS	Learning Management System
LCMS	Learning Content Management System
OER	Open Educational Resources
OEP	Open Educational Practices
OER_T, OEP-T	OER & OEP for Teaching
OER_L, OEP-L	OER & OEP for Learning
OER_R, OEP-R	OER & OEP for Reasearching
OEP_S & OER_S	OER & OEP for academic Staff Development
PLN	Professional Learning Network



The Good, The Bad and The Ugly of the Future of Open Educational Resources in Europe

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*Two roads diverged in a yellow wood,
And sorry I could not travel both
And be one traveler, long I stood
To where it bent in the undergrowth...
Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference.*

The Road Not Taken, Robert Frost

1. Introduction and methods for creating the scenarios.

This paper describes three possible scenarios for the development of open educational resources (OERs) in Europe. The first scenario deliberately paints an exaggerated picture of the potential conflict between the interests of copyright-dependent academic publishers and institutions, and the publicly-funded community of researchers and other academics who feel the results of their work should be widely and freely accessible (Kmietowicz, 2005). The second scenario similarly exaggerates the concerns of some members of the academic community who are worried about the “fate” of their educational resources, should they be released as OERs (Anyangwe, 2011). The third scenario highlights the growing complexity of navigating, locating and meaningfully putting in practice an ever increasing number of OERs. The aim that the three scenarios aspire to achieve is to balance overly optimistic visions about the future of higher education and OERs in particular as research has shown that unrealistically positive “wishful thinking” visions could lead to collapse of sensemaking in organisations (Weick, 1993). Therefore three scenarios are put forward in the hope that this will open up new possibilities for debating and refining strategies for ensuring the quality and equality of higher education in the future of Europe.

All three scenarios make use of weak signals, that is examples of occurrences which seem random or disconnected pieces of information but which, if transferred by analogy to the area of OERs illuminate possible futures (Schoemaker et al. 2012). The occurrences which underpin the scenarios are real events from the past or present, drawing on the usefulness of using analogy and hindsight for foresight (MacKay et al. 2004).

2. The Ugly - Content Wars

Despite the development and spread of open access academic journals career progression for university lecturers and researchers is still dependent on regularly and extensively publishing in journals which are protected behind paywalls of expensive institutional subscriptions. The

situation resembles medieval Europe where for almost three hundred years knowledge was chained. Books were rare and valuable and were kept in so-called “[chained](#)” libraries where for security reasons they were attached to the shelves of bookcases by long chains, long enough for the books to be taken from the shelf and read but not removed from the library. Taking action against the unfairness of the situation where research realised through public funding is inaccessible to the public groups of academics engage in what becomes known as pirate publishing. Their practice follows the example of the tragic Aaron Swartz, the inventor of the RSS code who committed suicide in 2012 after facing federal prosecution in the US for gaining illegal access to a subscription-only portal for distributing research journals and downloading 4.8 million articles, almost the entire library (Schwartz, 2013). Pirate academics can be found in almost every academic institution in Europe in 2030, distributing through peer-to-peer networks content downloaded from subscription-only sources. The publishers, faced with a situation similar to the one in which the music and film industries found themselves in the period 2005-2013 react similarly – by intensifying their efforts to protect the content they consider vital for the preservation of their business models. They successfully lobby governments for introducing legislation for criminalising the practice of redistributing research articles published in paid subscription journals, they employ private security and investigation consultants to locate, apprehend and bring to court academics suspected of pirate publishing. Students often witness the arrests of lecturers mid-class for offences against academic copyright. This only serves to strengthen the resolve of the pirate academics. Let the Content Wars of 2030 begin....

3. The Bad - Ryanair Flatpack University

The abundance in 2030 of educational resources licensed under Creative Common licences gives rise to a new type of entrepreneurial higher education institutions, inspired by the success of budget airlines like Ryanair and DIY furniture such as IKEA's. Indeed, the founders of the airline are among the first to spot the opportunity and set up an institution called Ryanair University. Their advantage is the continuously increasing demand for higher education qualifications both among young school leavers and older people who have found they need new skills and new educational credentials if they are to remain competitive in an overpopulated job market driven by technological change. At the same time, following the example of the UK in 2012 more and more European countries introduce costly fees for higher education, often equating to 5-6 years- worth of potential future earnings of students. Ryanair's no-frills university offers a higher education degree for one-tenth of the cost of traditional university degrees. It is stripped of everything that Ryanair considered non-essential for higher education, including lecturers, campuses or skills for critical reflection and analysis. The educational content consists entirely of open educational resources with a Creative Commons license vetted by the airline's experienced lawyers as licensed for commercial use. It is segmented into small modular fractions so that students have full control and can construct their own curriculum by combining any modules they like, much like building a piece of flatpack furniture. The content is hosted online and students access it from home. At the end of a module their knowledge is tested via multiple-choice question tests which are the only element of the educational programme not delivered online but in a series of locations around Europe. Ryanair maintain that this is so that they can guarantee the integrity and validity of the tests but since test-takers are required to travel by Ryanair to the test location students suspect the rationale is of more commercial than academic nature. Despite this the extremely low cost of the education offered by Ryanair as well as the flexibility of their model make it one of the strongest competitors of traditional universities, who are often the very source of the content that fuels the company's growth.

4. The Good - The Ebay Institute

The wide adoption of policies of releasing open educational resources by higher education institutions in Europe resulted in an overwhelming abundance of content by 2030. Not all of what was being made available however was supported by sound pedagogical models or accompanied by guidelines for application and assessment. Libraries, teachers, learners and search engines alike were struggling to navigate their way and find resources which were of quality appropriate for their individual purposes. This is where Ebay, the online auction and selling website, stepped in. It developed and offered a platform where open educational resources could be auctioned by content developers. If an academic posts the content of a module they teach on the Ebay platform then users – other academics, students, researchers and other users can start bidding for access to that content. The degree to which the content is sought after signals to users the quality of the resource, that is the more bids there are, the better, rarer or more relevant the resource is perceived to be. In order not to infringe on the open and free nature of the educational resources there is no payment involved in the bidding process. Instead, bids are made up of commitment to release additional educational resources, provide feedback, share ideas of novel uses of the respective resource, commit to promote the resource's author institution. The guiding principle is that the higher the bid the bigger should the contribution of the winning bidder be for the further development and refinement of the auctioned educational resource. In addition, both the winning bidder and the author rate each other which builds up their Ebay rating score which then serves as a guidance for other users helping them to identify trustworthy and interesting authors and open educational resources contributors. In addition, because of the non-exclusive nature of knowledge and educational resources there is no limit to the number of times OERs are put up for auction, some which are in particular demand are continuously auctioned to all who need them in this way contributing to the further proliferation of OERs.

5. Conclusion

In conclusion, the development of new technological platforms and tools, and their increasing use, will create significant opportunities for the adaptation of such technologies to support the take up of OER policies. HE institutions will seek to improve their teaching and learning strategies as a result of student demand for new and more flexible courses, methods of delivery, support services. The rise of the OER wave of change, facilitated by technology is unlikely to sweep higher education without giving rise to unanticipated problems and obstacles. When trying to prepare for the future it is necessary to consider that technology could quickly turn from a facilitator to into an impediment. Visions will be incomplete and ineffective if they omit possible undesired contingencies.

6. References

- Anyangwe, E. (2011) Why Don't More Academics Use Open Educational Resources? *The Guardian*, <http://www.guardian.co.uk/higher-education-network/blog/2011/oct/05/open-educational-resources-academics> Accessed 2May 2013
- Kmietowicz, Z. (2005) Results of Publicly Funded Research Should Be Available To All, Says Web Creator, *BMJ* 331:476.4
- MacKay, R., McKiernan, P. (2004) The Role of Hindsight in Foresight: Refining Strategic Reasoning, in *Futures*, p 161- 179

Schoemaker, P. Day, G. Snyder, S. (2013) Integrating Organizational Networks, Weak Signals, Strategic Radars and Scenario Planning, in *Technological Forecasting & Social Change*, Vol. 80 (4)

Schwartz, J. (2013) Internet Activist, a Creator of RSS, Is Dead at 26, Apparently a Suicide, *The New York Times*, <http://www.nytimes.com/2013/01/13/technology/aaron-swartz-internet-activist-dies-at-26.html?pagewanted=all&r=0>, accessed May 1

Weick, K. (1993) The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster, *Administrative Science Quarterly*, Vol. 38, No. 4



To openly learn where no one has learned before: hybrid learning spaces as a model of future learning

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In the highly networked knowledge economy of 2030, open education, facilitated by hybrid learning spaces will be a natural necessity to cope with the social and ethical dimensions of learning, in which new sets of competencies will have to be developed.

Learning in 2030 will be hypercontextualized. Surrounded by intelligent objects in the “internet of things” [1], we will learn from interacting with our environment, directly interrogating objects around us. But it is not simply a subject-object interaction. In fact, the environment of intelligent objects will be connected with the network of people who on the one hand will have left traces of their interactions in the object environment, and on the other hand will be available in real time through that very same network to share ideas and insights – something highlighted by the so-called *presence pedagogy* [2].

When you see a building you will be able to retrieve its purpose, its history, its current function, you will directly be able to access the services of the organizations in it, and you yourself will leave tiny marks on that building that are testimony of your passage. Google glasses really is only the beginning; imagine its power when coupled to the Resource Description Framework [3]. The same will happen when you drive a car, take the bus or make coffee. The network of intelligent things and agents will have an economy of sustainable information interchange at a very minimalist, atomic level so as to facilitate huge real-time processing. The linked data that are thus stored allow for retrieval in context of the most diverse information [4].

More importantly, your interaction with the object will also interact with your personal history database which tracks your past interactions and personal story [5]. It will write its present on your wall, and slowly, together with the millions of other interactions you perform, build who you eventually become in the cyber-reality. This is only possible when concepts and names are all matched by individual numbers, ID's, that define each node in this gigantic network. The larger the network grows, the more this movement to extreme Individualization becomes important. Nodes get “thicker” when they acquire more interactions. These thick nodes constitute the value system of the network, and give meaning to the interactions, just as we give meaning to our actions today by tying them to major events or hyping topics.

Is this fantasy, a kind of deluded futurology that takes imagination to a point where it becomes almost ridiculous? Allow us to disagree; it is only a more radical description of well-known and proven scenarios already taking place. Or are your previous queries in Google not relevant for what you are served when using it today? Is facebook not already tying together the most diverse interactions you have throughout your life? The huge hash-tables that allow for these kinds of computational optimizations are not very different from the minimalist, all-encompassing number system we depict.

Now many would agree that, fantasies aside, there is a lot of informal learning taking place while interacting with the environment. But does this also mean there is an impact on formal learning, on what we call “education”, or with the stronger German word “Bildung”, which emphasizes more the students’ own perspective? Hasn’t this been proven to be very resilient towards change, so much so that 2030 is in fact a very near future, where we can anticipate that only modest impacts might be seen?

And no, 2030 will not be about MOOCs since we can imagine that this will already be a huge part of the learning reality from 2015 onwards. So yes, many of the learning activities we will do in the future will be self-explaining, like most software today which has become so user-friendly that even complex image enhancement can be done on a smartphone by virtually anyone taking a photo. But is there some interesting form of learning to it? Is the fact that a word processing system contains many clues on word processing today and helps people to write better texts for that matter an advancement in learning?

To be able to answer his question, we have to look at some properties of formal learning. One of the most striking aspects of it is that it requires discipline. We do not talk about formal learning when there is not some effort going into it. It has to do with commitment also. And then of course, it is called formal since there are a lot of organizational aspects involved: making some sort of a cohort of people who are learning, getting a kind of structure with curricula and courses, doing some training. There is also a path, with stages, evolution and achievement. Many of those aspects are now being coded into the online MOOC experience, and mimic realities of school learning.

But as MOOCs show today, new dimensions of flexibility and non-linearity are already within reach today. The abstraction caused by the online definition of all the learning process functionalities makes for higher controllability, highly improved scalability and accessibility. However the fact that there are so many drop-outs poses the question if one of the most important aspects of learning, discipline, might not be so well served by environments that work best in an informal, uncommitted setting[6]. But that is misunderstanding of what essentially happens when objects become truly intelligent. What changes is that a larger part of our environment will have a *learning imperative*. Things will be there essentially for us to learn, since interacting with them requires knowledge buildup. More and more parts of what we today call “tacit knowledge” are being made explicit in metadata, so as to be shared with others [7]. This means the discipline so essential to learning will be pervasive in all our activities. It requires immersive learning approaches [8]. More and more, the knowledge transmitted in our social interactivities and engagements with the world will be value-oriented. Unconsciously, we share a very broad array of values by our cognitive endeavors. Knowledge has an inalienable ethical dimension: we trust the truths we learned because we are confident that others in our network will take the responsibility for those judgments, because they have privileged access to it, e.g. by being an expert or direct observer. This sharing of responsibilities lets us divide knowledge labor in new ways. We can hand down cognitive tasks to others while we track the knowledgeable things others count on us for. That is what we call “track while scan”. Jeremy Rifkins talks about “lateral power”; broadening your perspective sideways [9].

Formal education, certainly in its high-end form of “building” will not disappear with new technologies, quite on the contrary. Creating a safe learning environment where we learn to build the right trust relationships will remain essential. This is why we see currently emerge in

higher education the so-called *learning labs* or learning spaces, physical environments that have fully merged with the virtual knowledge space. In this kind of holodeck for learning, students of the future will get their virtual classes, learning to become responsible knowledge agents or learning “drivers”.

The four C’s of learning: critical thinking & problem solving; collaboration; creativity and communication – are the skills “of the 21st century”, needed to perform in a world in constant evolution, where information overload matches instant knowledge based decisions [10]. It is about preparing the students for the creative economy of the future [11].

Having understood that such learning spaces are essential to prepare students for the as yet still not existing professions of the future, we have to explore why we think the notion of “open” is crucial to this. Open education is the inverse of closed education, where knowledge is not accessible to all but to the few. It is about physically assigning knowledge tasks to a particular professional group, and not to a virtual community of practitioners. More and more, however, since disciplines get hyperspecialized it is no longer possible to be the expert in everything one needs to do to perform one’s profession; an IT manager must make computer security decisions even while many today would agree that is too specialized a field for an IT manager to follow-up by himself. He needs to rely on other specialists. But at a given moment, many IT professionals will have to make a security implementation. They then need *knowledge on demand* from other specialists delivered to them in a readable, understandable format that allows for operationalization of decisions.

This requires a training in knowledge exchange. Educating people for a particular profession in a closed education model is at odds with the growing reality that people, while enjoying higher education levels, will need knowledge from many different fields to perform their jobs. A survey in Belgium on ICT workers showed that only 1 out of 3 actually got an ICT degree, to give one example [12].

Professionals need to be able to find, on demand, useful, reliable and validated knowledge on the network, curated by other professionals. While commercial materials require a previously defined market to operate in and so don’t easily adapt to provide unexpected knowledge requests, open educational materials or OERS, whether it are knowledge clips or complete courses offer this high flexibility: they make materials findable on the web across disciplines, by experts and layman alike. Social software has added to this a layer of selection that makes sure the knowledge gets the right interpretation framework. A largely underestimated aspect of Open educational resources is their backing and embedding in the social network that feeds the knowledge domain, that warrants the shared insights and that ultimately makes sure responsibility is taken for claims made. This deep ethical dimension of open learning is both its most neglected and yet most powerful attribute.

Learning spaces of the future will simulate intelligent object environments so that learning can acquire the skills to select, *curate* and make available to other professionals the necessary knowledge elements they require for beforehand undefined questions. In 2030, most jobs will be knowledge jobs. They will be focused on the production, consolidation, distribution and development of knowledge in a myriad of domains, many of them we are unaware about today. While much of the learning will indeed be online and on-the-job, this doesn’t preclude the need for special, dedicated powerful learning environments. New technologies integrate the digital and physical environment in such a way that one can swap between the real and the virtual, superimposed layer. What today is reality in flight simulators will become mainstream

for a large range of simulated learning environments in the future. The IDEA Learning Lab Lyon [13] (for teachers) and the Agora Learning centre in Leuven [14] (for students) are typical examples of such environments, that make sure the learning process is both embedded and controlled, socialized and individualized. Interacting with the topics in direct connection with a support and exchange network and technologies linking the internet feed to multimode interactions and the own digital trail give already a taste of things to come. One wonders how they will look like in 2030.

- [1] Hakima Chaouchi (ed.) (2013) *Internet of Things The Internet of Things: Connecting Objects*, Wiley.
- [2] Stephen Bronack (2008), *Presence pedagogy*.
- [3] <http://www.w3.org/RDF/>
- [4] <http://linkeddata.org/>
- [5] http://www.wired.com/culture/culturereviews/magazine/17-09/pl_print
- [6] http://www.openculture.com/2013/04/the_big_problem_for_moocs_visualized.html
- [7] Collins, H. & R. Evans. *Rethinking Expertise*. Chicago: University of Chicago Press, 2007.
- [8] Teaching and learning in 3D immersive worlds Amy Cheney 2011
- [9] Jeremy Rifkin (2011). *The Third Industrial Revolution: How Lateral Power Is Transforming Energy, the Economy, and the World*, MacMillan.
- [10] <http://blog.entrepreneurthearts.com/2010/05/06/the-four-cs-of-21st-century-education/>
- [11] Peters, M. A. (2010). *Three Forms of the Knowledge Economy: Learning, Creativity and Openness*. *British Journal of Educational Studies*, 58(1), 67-88.
- [12] Diane Smedts and Alain Smolders (2011) *Employment in ICT and non-ICT related jobs – KU Leuven-alumni 1995-2010*, KU Leuven.
- [13] <http://www.learninglabeducation.com>
- [14] <http://agora.ghum.kuleuven.be>

Part 2:

All other Vision Papers



Open Education in Year 2030 from Technological Point of View in Vocational Teacher Education

Päivi Aarreniemi-Jokipelto

Technologies such as wearable computing, haptic technology, and sense of smell will be part of open education in year 2030 enabling more senses to be used in learning, allowing a teacher to guide and counsel learning more closely and in more real situations than currently even though a teacher and a student can be on the other side of earth.

Wearable computing such as virtual glasses (see Google, New Scientist, Huffington post, 2013) are part of open education in year 2030. Teachers have wearable tools, such as virtual glasses or more advanced tools, which enable different functionalities. A teacher can see students' names and background information by looking at a student through the glasses. Glasses enable to recognize a student with the help of the facial recognition technology. Virtual glasses or more advanced tools include also possibilities to control the devices existing in the classroom.

Wearable computing such as virtual glasses will also be used in guidance and counselling of learning for example in vocational teacher education. Via the virtual glasses a teacher is enabling to see a traditional classroom or a combination of a traditional and virtual class the way her teacher student sees it. This makes open education possible because a teacher and a student can be on the other side of the earth. The context can be a classroom, where a student is teaching. Via the glasses a teacher sees what is happening in the classroom, where her student is teaching. This makes it possible in real time to guide and counsel also her students abroad. If the context is a laboratory, a teacher can instruct practising of different skills.

Open education makes it possible for students to be present in the classroom or participate via Internet. Virtual space can be connected to traditional classroom, so that participants can be seen sitting in the same classroom. Currently, this has not been the case, but instead part of the students is sitting in the classroom and part can be seen on the wall via a data projector. Online student has not had the same possibilities to collaborate as those who are present in the classroom, but by the year 2030 the situation is changed.

Haptic technology has changed open education by the year 2030. With the help of haptic technology it is possible to feel by touching how an object feels, even though you are not in the same location. This can be used in learning context, when you need to know how a material feels. Currently materials are learnt by reading a text format description or by seeing a picture, if you are not present in a classroom. Haptic tattoos will also be used by the year 2030. Nokia was looking for a patent for haptic tattoo to help you feel who is calling in year 2012. The haptic tattoos could be used to send also other kind of information than just the name of a caller by the year 2030. For example a teacher can guidance and counsel a teacher student while the student is teaching through haptic tattoo.

Sense of smell is used in open education in year 2030. It will be possible to learn to recognize smells of dangerous items in a safe way and no matter if you are on the other side of earth. Nowadays, these types of skills are practiced by reading a description of smell.

In recent years several novel technologies has been launched in society, but education has not been as swift to adopt those. However, technologies such as wearable computing, haptic technology, and sense of smell mean huge potential for open education in a situation when old education structures need to be changed and novel practises to be found. The technologies serve also the pedagogical requirement by enabling more senses to be used in learning and supporting of different learning styles. The guidance and counselling has been a challenge in open



Open Education in 2030 in Europe; a utopian and a dystopian view

Timos Almpanis

Open Education can 'make or break' Higher Education depending on the way it gets implemented

A utopian view

Open Education reaches the masses providing equality of access and fostering inclusion, active citizenship and employment by addressing emerging skills and business needs. The curricula are rewritten to become relevant and emerging technologies are harnessed to their full potential in order to link formal and informal learning and provide a quality learning experience which results in self-motivated, resourceful citizens. Inspired lecturers develop and initiate strong networked learning communities that gradually become self-sustainable and expansive. The first wave of successful 'open learners' are feeling obliged to give something back to the open learning community and they offer their support and advice to newcomers in the open, online learning communities. The networks go beyond national boundaries in Europe and strengthen the cultural, political and economic relationships among its citizens. Higher Education institutions are making part of their curricula open and students benefit from a blended model which provides quality online resources coupled with meaningful interactions in seminars on campus. And we lived happily ever after.

A dystopian view

Open Education gets tangled with politics. Each European country's government delegates their open education strategy to their respective distance learning institution, or else 'Open University', creating that way powerful, elitist monopolies. Millions of taxpayers' money are spent on creating resources some of which, by the time they become available, are already obsolete. Open Education becomes an ideology and is not used to reach its true potential. Technology not only fails to bridge the gap between the rich and the poor but it widens it further. 'Open Universities' become massive, and they dictate the curricula taught in the other Universities in their country, most of which are driven out of business. Only elitist Higher Education Institutions survive. The rest are replaced by private providers who are run by administrators and function mostly as examination and accreditation centres. And we lived happily never after.

Conclusion

Open Education is a very important initiative. It has the potential to transform the lives of disadvantaged individuals and create a fairer society with citizens that are not only knowledgeable but also more knowledge-able and resourceful. However, open education and education in general is an integral part of the wider society, subjected to its politics and policies; taking this into account, Open Education's humanistic values can prove to be simply naïve. It is the implementation of those values that is of critical importance; if these nuances are neglected, then Open Education can not only fail to have a real impact in widening access to education, but also create a monstrous, hierarchical and centralised Higher Education system.



Structural and Didactical Offensive for an Open Higher Education

Rolf Arnold TUK, Virna López UNAH, Thomas Prescher TUK

An open higher education needs a didactical and structural offensive that considers both the required standards of education and the actual conditions of universities.

1. Tendencies for a didactical and structural offensive in Higher Education

To stay competitive at the international level, higher education institutions need to take advantage of any opportunity to develop new methods for learning; including those derived from recent technological advances. According to Gates (2010), the web will offer the best educational source in the next five years. While the scientific community might not entirely agree, they do see a place for the web in future education, they agree that the combination of the web and various learning techniques can make education faster, cheaper, and more scalable. Different methods aimed at this effective combination already exist, like the blended learning (b-learning) and the mix mode learning approach. However, the authors' opinion is that any intended innovation requires a change of the learning culture, in teaching as well as in the organizational structure and inter-institutional cooperation. As such, this paper describes a new visionary concept for teacher education in higher education that calls for the openness of educational resources.

The concept is based on the results of the NetBi Project – a German acronym for “Network of Educational Science” – which is an initiative for teacher education made by universities in Rhineland-Palatinate, Germany. The main objective was to create a model aimed at developing students' self-learning competencies, and optimizing the use of universities' resources by creating a network. It was hypothesized that the best method for creating this model would be a structural and a didactical offensive (cf. Arnold 2010). As it currently stands, the Netbi project provides a fundamental system for the exchange of contents, structures, counseling, exams management and local in-class lectures. One professor e.g. at the University of Kaiserslautern can offer an online lecture into a pool, which will be available for all members of the network. This lecture is then considered part of the professor's academic load in his/her own university. At a separate university, a different professor can be responsible for giving that lecture for the online course in class. The class would then be in coordination with the University of Kaiserslautern, but each professor would take on separate teaching loads. Through the NetBi project, students from different areas of Rhineland-Palatinate and different subjects come together in virtual learning environments. They learn together, and, at the same time, develop self and collaborative learning skills with the support of e-portfolios, peer-assessment and self-assessments.

Based on the results of the project, we suggest translating this strategy into an international domain as a helpful tool that would promote openness in higher education for the near future. “To meet the increasing demand is necessary to innovate; new providers, new delivery methods, and new types of programmes must be developed.” (Faber et al. 2012, p. 1).

2. The strategy

The structural offensive suggests the creation of a network of higher education institutions for the purpose of sharing human resources, and of pooling teaching resources in the form of modular trainings. The most innovative feature of this offensive, as well as the greatest challenge, is not the creation of the network, but the development and shared acceptance of common curricular standards, and the establishment of a mode of cooperation to resolve administrative issues.

The didactical offensive focuses on creating a new learning culture in higher education, which combines the advantages of in-class-lectures and distance learning. Beyond the use of the well-known b-learning methodology, the learning process seeks to develop an approach for self-directed learning, to further students' competencies, and to promote self-learning. Therefore, it is necessary to rethink the learning culture; it is necessary to consider that adult learning could be made more open by mixing traditional forms of learning simultaneously with professional work and web-based learning, even if this kills the illusion that knowledge directly develops competency. Competence, which in this setting means the ability to link knowledge with methodological, social, and emotional skills, would directly benefit from a more hands-on learning experience. This didactical concept advocates all possibilities to improve the individual strategies of learning.

3. Criteria of a successful educational network

The NetBi project was used to create a higher education network for a special region of Germany with several universities e.g. Mainz, Trier, Koblenz-Landau and Kaiserslautern. However, as stated before, the success of this initiative lies in the development of some criteria, as follows (cf. Menzer & Faber 2010):

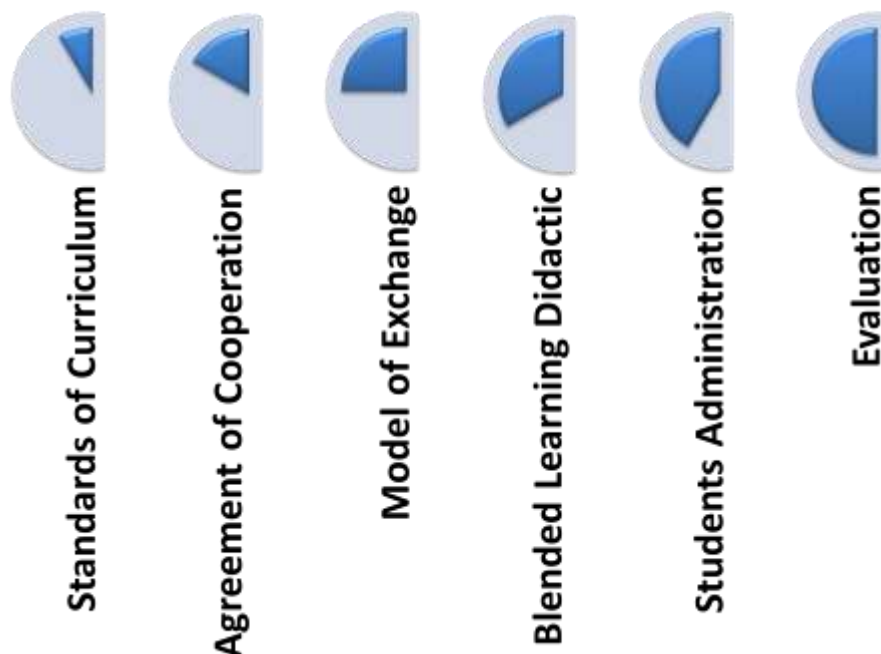


Figure 1: *Criteria for a successful educational network.*

The set of Standards of Curriculum is the most important criterion. We need to be mindful that universities have to fulfill the aims of the Bologna process for higher education. Therefore, several requirements must be met. Firstly, a flexible system for managing workload and attending grades must be developed. Secondly, the architecture of the study

system must be designed. Thirdly, a mission statement must be agreed upon by all parties involved. Lastly quality must be assured in overall education and individual course content. The requirements imply an Agreement of Cooperation that would supply courses for the system, offer them in each local university, and achieve the common coordination between universities.

The Model of Exchange regulates teaching load across different universities and the exchange of student experiences. It especially considers the common development and implementation of b-learning courses, which, if achieved, would allow students to access different course offerings across the network in a common learning management system (LMS), subsequently improving the use of university resources and decreasing the size of in-class lectures. This, in turn, implies the use of a Blended Learning Didactic to combine local in-class lectures with a distance learning mode. Therefore, it is necessary to identify local contact persons, and to agree on common standards of evaluation. In this way, the courses design changes from instructional to systemic-constructivist, with the aim of differentiating and promoting individual learning processes through the use of personal learning environments, e-portfolio, and peer assessments. The Students Administration was arranged in four steps:

1. Log-in through the online courses offering of the local university
2. Take part at a kick-off session
3. Log-in to the online course in an LMS
4. Additional in-class lectures as trainings, workshops or presentations of results

Finally, a formative and summative Evaluation takes place, which considers course quality, acceptance, and customer satisfaction. The evaluation criteria were built in 3 phases into the NetBi Project:

1. Installation and concept for cooperation and didactic
2. Integration as a pilot between the universities in one online course and the contract of cooperation
3. Implementation of several courses

4. Conclusion

A changing world awakes not only the wish, but also the need for further change. Collaborative learning and teaching in higher education through the creation of functional networks creates more possibilities for the internationalization of higher education. In this way, introduce a new form of international cooperation; a horizontal collaboration between Europe and the world's Universities, which doubtlessly empowers each participant university. NetBi, as a local example, is a model that expands the possibility to develop international standards, allowing a meeting point between universities all over the world.

5. Literature

Arnold, R. (2012): Ermöglichen. Texte zur Kompetenzreife. Baltmannsweiler: Schneider Verlag.

Arnold, R. (2010): Selbstbildung oder wer kann ich werden und wenn ja wie? Schneider Verlag, Hohengehren.

Arnold, R. (2009): LehrerCoaching – Herzstück einer transformativen Weiterbildung von Lehrkräften. In: Birgmeier, B. (Hrsg.): Coachingwissen. Denn Sie wissen nicht, was Sie tun? VS Verlag, Wiesbaden, pp. 313 – 232.

Faber, K./Lopez, V. & Prescher, T. (2012): 'i-learn': developing a new approach in higher education for lifelong learning. In: European Journal of Higher Education. Online First, pp. 1-16. Erreichbar unter: <http://dx.doi.org/10.1080/21568235.2012.709382>

Gates, B. (2010): In Five Years The Best Education Will Come From The Web. URL/AVL: <http://techcrunch.com/2010/08/06/bill-gates-education/>

Menzer, C.; Faber, K. (2010): Lernen wo, wann, wie und mit wem ich möchte - Die Ermöglichung flexiblen Lernens im Netzwerk Bildungswissenschaften, in: Apostolopoulos, N.; Rebensburg, K.; Schwill, A.; Mußmann, U.; Wulschke, F. (Hrsg.): Grundfragen multimedialen Lehrens und Lernens : E-Kooperationen und E-Praxis ; Tagungsband GML2 2010 11.-12. März 2010 in Berlin, Münster.



A Vision of Quality in Repositories of Open Educational Resources

Javiera Atenas*, SOAS, University of London & Leo Havemann, Birkbeck, University of London

In the future, Open Educational Practices (OEP) will facilitate access to open materials by promoting collaboration among educators, who will share, reuse and evaluate digital pedagogical content using Repositories of Open Educational Resources (ROER).

Nowadays, Open Educational Practices (OEP) as defined by the ICDE¹ are based on supporting the development and quality of Open Educational Resources (OER). In our view, enhancing the quality of Repositories of OER (ROER) is a crucial link in this chain, which indicates there is a need to establish a series of good practices to standardise the functionalities afforded by such repositories. Basing our definition of OER on the one given by the Kanwar & Uvalic-Trumbic (2011)² we argue that in order to *both increase the sharing of, and facilitate access to* OER, it is vital to engage academics in a cultural shift towards embracing OEP and, at the same time, to improve on current models of ROER to ensure they facilitate, improve and simplify use of materials.

Until now, the OER movement has understandably tended to focus on the creation and sharing of resources, spurring the development of a large number of repositories worldwide into which such resources can be uploaded. For Windle et al. (2010)³, there still unanswered questions about the reuse of OER and who is reusing them. These are important questions if we consider that at the heart of the OER ethos, as distilled in the Paris OER declaration 2012⁴, is the idea of *reuse and adaptation* of materials by other educators. In this paper we report on the preliminary findings of three studies conducted in 2012, which aimed to evaluate the current panorama of the use and sharing of OER. Here we briefly consider the results of these

¹ According to the ICDE, OEP “are defined as practices which support the production, use and reuse of high quality open educational resources (OER) through institutional policies, which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path. OEP address the whole OER governance community: policy makers, managers and administrators of organizations, educational professionals and learners”. http://www.icde.org/en/resources/open_educational_quality_initiative/definition_of_open_educational_practices/

² According to Kanwar & Uvalic-Trumbic (2011), OER are “In its simplest form, the concept of Open Educational Resources (OER) describes any educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been designed for use in teaching and learning) that are openly available for use by educators and students, without an accompanying need to pay Royalties or licence fees”. http://oer.unescochair-ou.nl/?wpfb_dl=29, (p.5).

³ For Windle et al (2010): “to date the OER movement has mostly focused on the input or sharing aspect of this equation. A relatively large amount of funding has been made available for the creation of repositories, and the movement has had some success in encouraging individuals to share their resources. Much less is known about the reusability or reuse of the resources that have been accumulated. Who is reusing the resources? How much is being reused? What is being reused? Why are they reusing? What makes it easier or more difficult?” <http://jime.open.ac.uk/jime/article/viewArticle/2010-4/html>.

⁴ UNESCO, 2012 Paris OER Declaration: World Open Educational Resources (OER) Congress. http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/Paris%20OER%20Declaration_01.pdf

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studies with a view to envisioning how OER might in future be retrieved, used, organised and disseminated. The studies were:

1. A survey of 217 academics from 35 countries who teach face to face, at a distance or in blended programmes, which aimed to understand how they use learning and social technologies and OER.
2. Analysis of the key literature on OER to identify a set of indicators for quality assurance (IQA) in the development of ROER.
3. Evaluation of 80 existing ROER initiatives, to understand if they uphold the quality indicators derived from the literature.

The vast majority of the academics (206) responded that they do make use of some teaching and learning, social and open technologies in their academic practices.⁵ In the first instance, we asked them which types of teaching, learning and social technologies they used more frequently (see figure 1).

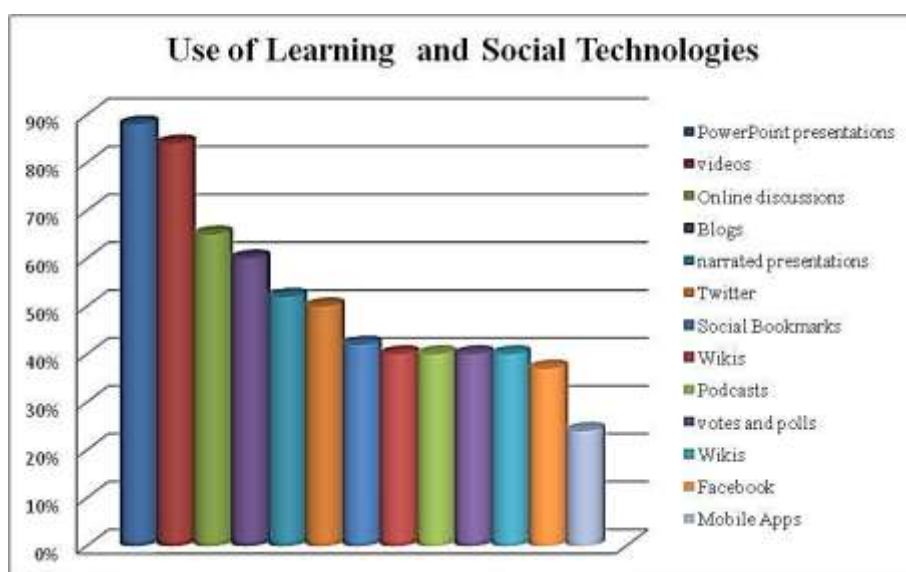


Figure 1

We further asked the academics whether they used or have used OER and which types of OER they have used (see figure 2).

⁵ This might be considered quite a high rate, but as the participants were reached via blogs, Facebook and Twitter, they may have self-selected due to an existing interest in the topic; as such our sample potentially represents 'academics of the future' better than the average academic of today.

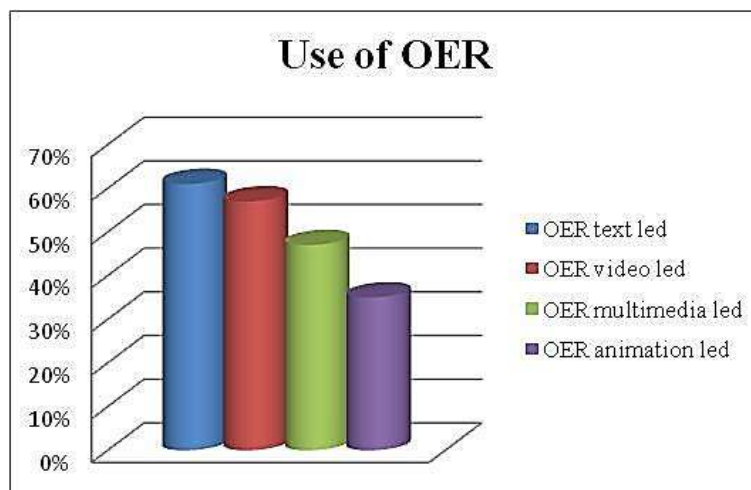


Figure 2

The participants who responded that they have used OER were asked about their personal opinions on finding and selecting OER. They reported back that the lack of training to support them in finding resources was a major issue, alongside a lack of clarity around the authorship of the resources, their pedagogical value, and the terms of licences to reuse, making the whole process time consuming. Another challenge encountered by academics which are not native English speakers is that the majority of the resources are not available in their language and the cost of translation becomes an obstacle to reuse or adaptation.

The academics were also asked about barriers they encounter when using OER, and their main concerns were about meeting their students' expectations, being sure of the real relevance of the materials, the quality of the resources, and the technical challenges they could encounter. They also mentioned difficulties with navigating between different repository interfaces, that the resources were often not easily customisable, and that they don't always comply with accessibility norms.

In parallel with this investigation of academic views, we also reviewed the OER literature to understand what the experts have said about the design and purpose of ROER, with the aim of developing a framework for evaluation and quality assurance. From this review we identified a set of ten *indicators for quality assurance* (IQA) in repository design and development, which are said to successfully support search, sharing, reuse and collaboration (see table 1 below).

IQA	Description
Featured resources	Ability of featuring resources that are potentially of high interest for teachers because of it design or content.
User evaluation tools	Tools for the resources to be evaluated by users aiming to rate a resource.
Peer review	Peer review as policy to revise and analyse each resource to ensure its quality.
Authorship of the resources	Analyse if the repositories include the name of the author(s) of the resources.
Keywords of the resources	Methodically describe the resources to facilitate the retrieval of the materials within certain specific subject areas
Inclusion of Metadata	Introduce standardised formats of metadata to describe OER

(Dublin Core - IEEE LOM - OAI-PMH)	such as Dublin Core - IEEE LOM - OAI-PMH to comply with international standards for quality making descriptions interoperable amongst ROER
Multilingual support	Design the interface of the in a multilingual way to widen the scope of users by allowing them to perform search of content in different languages.
Inclusion of Social Media tools for sharing resources	Introduce social media tools to enable the users to share the resources within social media platforms.
Specification of Creative Commons Licence	Specify the type of Creative Commons Licence per each resource or give information about the specific type of licence for all the resources.
Source Code or Original Files Available	Allow the download of the source code or original files for resources.

Table 1

Additionally, in order to understand if current ROER have integrated the IQA mentioned in the literature, we have reviewed 80 ROER initiatives.⁶ Figure 3 (below) gives a snapshot of the incidence of the IQA across the repositories analysed. These results indicate significant patchiness across the sample, with some indicators very likely to be found, and others much more rarely found. While most of the repositories comply with some of the IQA, there is a lack of common practices, and low incidence of some key good practices, which in our view are likely barriers to OER usage and OEP adoption by academics.

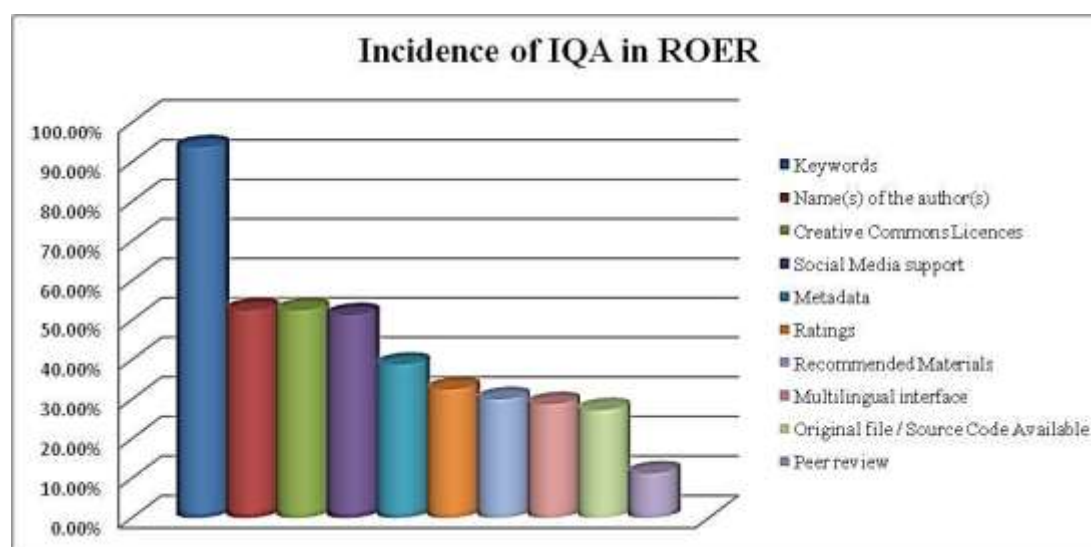


Figure 3

We understand and value the efforts of the OER community worldwide in their commitment to promote and engage with open education OER in scholarly communities, in no small part through these varied local repository initiatives. But we would contend that there is a need for

⁶ We have based our definition of ROER on the one given by McGreal (2011) and therefore excluding other related but somewhat different platforms such as iTunesU, OCW, MOOCs or youtube.edu channels. See: 'Open Educational Resource Repositories: An Analysis', [http://elexforum.hbmeu.ac.ae/Proceeding/PDF/Open Educational Resource.pdf](http://elexforum.hbmeu.ac.ae/Proceeding/PDF/Open%20Educational%20Resource.pdf)

the community to work toward adoption of a set of key common and good practices for ROER, as seen with institutional repositories in recent years.

Envisioning 2030

In the near future ROER interfaces will be designed to facilitate access, and encourage reuse, modification and (re)sharing within academics' digital communities of practice. Of course, there will continue to be a diverse ecosystem of projects reflecting cultural differences and local needs; but there will be a wider consensus around good practices in repository functionality and interface design, and in turn these good practices will be driving up OER quality and participation levels.

For example, academics will find it easier to search and retrieve relevant resources because of better content indexing by repositories, combined with the use of author-generated keywords and controlled vocabularies, or with metadata that has been added by librarians. Repositories will demonstrate trust in the knowledge of their user communities, allowing resource quality and usefulness to be evaluated via usage tracking, rating and commenting, rather than relying on more formal peer review procedures which can be expensive and complex to administer. It will be possible for users to download the source code or original files of the resources in order to update, remix or adapt it. It will also be possible to identify the author of the original resource and any additional subsequent authors who have adapted or translated it, as well as a clear statement of which Creative Commons licence is in effect. Repositories will enable multilingual navigation to support users who might not understand the default language; and will including social media tools to widen the spectrum in which the materials are shared and allow users to easily highlight recently high quality resources within their networks.

While the technology will therefore become more enabling, academic cultures will also need to evolve toward OEP. As some of the academics in our survey mentioned, there is a level of concern about the lack of professional recognition or reward for producing and sharing OER, contrasting with the high value placed on sharing their research findings in academic journals and even in their personal blogs.

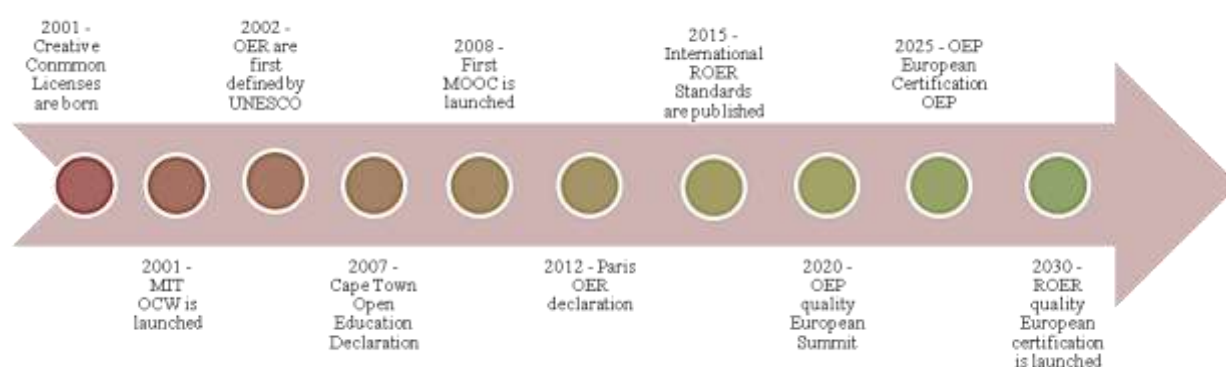


Figure 4

Our vision foresees the implementation of standards for the development of ROER and teacher training in OEP. Therefore we propose that in the near future academics could gain European certification and recognition for proficiency in developing OER and promoting openness in the academic community. This certification would become a key component in

the continuing professional development of academics and a great and generous contribution to the knowledge society.

In the future we hope that academics will be recognised and rewarded for sharing and reusing their pedagogical materials, in the same way that the sharing of research is valued by the scholarly community. We expect that academics will include in their practices sharing and opening teaching resources and publications by opening up access to information through ROER and open access repositories, and by encouraging the reuse of learning materials to ensure the permanence of the democratic ideals of a quality public education for everyone.



A liberal arts/science Competence-Duration model for universities within an Open Qualifications Alliance international framework for student global mobility

Paul Bacsich¹

A realistic vision of European society in 2030 and the universities that that serve that best

Preamble: *Universities reflect the society they are in. This paper starts with a prediction of the socio-technical civilisation of 2030, with a focus on Europe, and within that formulates a vision for the models of universities that best fit that civilisation.*

Many papers on “universities of the future” do not ground their visions in a wider vision of society. If they assume anything by default, it is a version of the socio-economic situation of the last decade (the last one where money was plentiful) but with “more and cheaper tech”.

While there are many possible visions of the future there tend to be some similarities. I hope that my vision of universities of the future might apply also to some extent to other visions.

I am indebted to many researchers and several universities, including Aberystwyth University where in their Department of International Politics I first saw student project work predicting the likely extent of the EU in the next 20 years.

Every statement and phrase could be footnoted but footnotes are omitted to maintain the flow. A few key references are at the end.

In order to ground my vision of universities in 2030 I first have to provide a vision of society in 2030 and school education in that era. Universities do not live in isolation (even if they would like to) and I envisage significant changes in schooling also.

1. The EU in 2030

Geography

The European Union is larger in 2030 than it was in 2013, but not by as much as some politicians hoped and there is still not quite a purely external frontier.

Croatia joined in late 2013 and Unified Cyprus came together somewhat later as an EU member, as a consequence of the need in the island of Cyprus for a post-banking economy within a political consensus to support economic collaboration in the Eastern Mediterranean. This led in time to Turkey joining the EU. Serbia, Montenegro and FYROM (now called North Macedonia) joined in due course, but Bosnia and Albania are still in pre-accession proctorship mode, chafing at the restrictions and waiting for the full benefits. Iceland also joined after another crisis, involving geology not only economics – thus resolving some security, fisheries and oil issues in the North Atlantic. The various crises of small states set back independence movements in a number of EU members, though several of the former EU27 member states are now considerably more devolved than they were in 2013. Among

¹ Sero Consulting Ltd, Matic Media Ltd. Project Manager, POERUP – www.poerup.info

major states, Norway and Switzerland remain separate from the EU– although taking part in many of the EU instruments including the Lifewide Open Learning Programme.

Talk two decades ago of a “two-speed Europe” turned out to be an oversimplification – as did that of a single currency – with the deuro introduced in some EU countries in 2018 and steurling in several others (old and new) in 2020. Freedom of movement is absolute but freedom of employment more circumscribed – with social payments monitored and transfer payments routine.

Moreover, outside the formal EU, there are several new layers of collaboration. Most critically, the logic of banking reform meant that the European microstates (including Liechtenstein) felt that they lost some freedom of action when they became “EU Associated States” – the process of achieving this was tortuous and incredibly sensitive to history and culture, yet was inexorable – similar “tidying up” in other regions was driven largely by the US and OECD. The process was useful, especially since the “Andorra solution” was recently applied to Gibraltar and Kosovo. For education, the European Higher Education Area grew into the Euro-Med Higher Education Area (EMHEA) by 2020, the same year that a European Schools Area, later the Euro-Med Schools Area, was created (under the Athens-Ankara accords) to parallel Bologna for Higher Education. Because these Areas reach far east and somewhat south, relevant policies of the EU and the Areas are now translated into Russian and Arabic.

Science, technology, society and economics

While the worst fears of a “lost decade” did not come to pass, significant growth in the EU did not resume until 2020 and in the last decade has still been patchy, measured in traditional ways. The reasons for this have been much discussed – on the negative side is the increasing education gap (especially in higher education) between the EU and its rival trade blocs – most notably Norte-America, Mercosul, Australasia, Union of Slavo-Turkic Republics (USTR), South Asia, Sinosphere, Gulf Cooperation Council – coupled with an inexorable knowledge flow from EU researchers to other parts of the world (the EU committed to full Open Access in 2020; other blocs did not, with the exception of Australasia and Norte-America), but on the positive side is that the traditional measures of GNP are now seen to focus too much on non-value-added activities (like banking) and too little on non-monetised activities (like much of the care of children and old people). But the upshot is that many EU citizens do not feel particularly well off and are particularly keen to see that their taxes are put towards issues that they feel are important to them and their families.

Mention of families reminds us that there has been since 2020 an increase in marriage and childbearing in citizens of most EU countries. This has put to rest many fears of the “old people’s EU” and “child-free Europe” prevalent in the 2010s. It is too glib to interpret this as a rise in social conservatism – indeed, some counter-argue that it is a consequence of the flexible and better-paid nature of many jobs including for women; others as the rise of “religious convictions” among the majority not subscribing to the organised religions active in the enlarged EU. Many argue that with a working life of over 50 years for most professionals (from 25 to 75), the gap taken out for childrearing is much smaller percentage-wise than it was two decades earlier and with a decline in ageism, the ticking clock of career transitions is not so loud. Europeans may feel (with reason) that they work harder and longer and get less state support than the previous generation but by comparison with many nearby countries (some still in considerable chaos) they still feel well looked after, comparatively speaking. And after much policy and financial work on the “social contract”, unemployment has declined a lot – even if too many jobs are short-term, part-time and not always well-paid.

Advances in computer science are regarded by many as disappointing. There is now little talk even among futurists of “the singularity” arising from artificial intelligence – instead there is a renewed interest in *human* potential and its enhancement in objectively measurable ways – faster reading, faster typing (on new-layout keyboards), clear speech (for memo dictation), mental arithmetic, profession-relevant knowledge. There is a new fashion for mental Olympiads, both bare-brained and device-enhanced (unlike the sports Olympics) – but not drug-enhanced, though major advances in this area are imminent, whether or not desirable.

In computing, innovation is slowing. It is not only that Moore’s Law ceased to be true by around 2023; associated causes are the failure to produce truly compact energy storage, an increasing scarcity of rare earth metals (vital for mobile devices) and the continuing difficulties in the supply of enough talented computer science postgraduates. Fewer non-EU students are coming to EU universities to study computing, fewer EU citizens (and still very few girls) want to take up computer science, and in recent years, an increasing number of EU computer scientists are emigrating to Norte-America, Mercosul and other hotbeds of innovation. Some even argue that an over-focus on open source led to declining personal and corporate interest in building big systems as there was no longer a clear business case.

On the other hand, while true artificial intelligence seems as far away as ever, more constrained tasks such as continuous speech recognition and automatic translation have showed great progress towards and in some cases through the Turing threshold – as a consequence of Big Data and analytics, based on a great deal of codification of linguistic data. However, the “Turingtranslator” techniques work only for languages with many speakers and a small number of dialects, causing not only divisions within the EU but also an “Americanisation” of approach affecting not only English but Portuguese and Spanish too. A rising trend, which some see as a reaction to the dominance of the Turingtranslators, is the increasing use of minority languages, and across all countries there is increasing use of regional dialects and professional jargon. Thus there are still barriers to international analysts and journalists – and many Europeans in small countries rather like that. But when English is pervasive, what private language can the English speak?

World weather is increasingly problematic. While mean global temperatures have increased only slightly in 20 years, and sea level rise has moderated, the scientific consensus is still that anthropogenic global warming is occurring, just more slowly and erratically than earlier predictions indicated – Gaia is coping better than many expected her to. However, the increasingly turbulent weather patterns first noticed around 2009 have continued and got worse. Nor can anyone deny the increasing acidification of the oceans or the melting of the Arctic ice (in contrast to the Antarctic), good news though that is to global trade routes and Arctic oil/mineral extraction (though not to the wildlife). Only a few doomsters regard the spate of European volcanic eruptions over much of the 2020s as being caused by global warming – others point to the global cooling that “must have been” engendered (but the observational data has conflicting interpretations).

After the energy scares of 2020 when the “3-day week” returned to some countries, much investment in the last decade has gone into new power stations. A couple of serious environmental disasters have at present led to a halt in the construction of massive tidal schemes. Wind energy schemes are much contested and beginning to lead to navigational hazards, noise pollution and visual blight in several countries. But in other ways too the European rural and coastal scene is very different from 20 years ago – with the massive construction of high-speed rail, cyberbahns, mines and power stations. Europe can no longer export all its dirty work elsewhere. Talking of dirty work, many sewers had to be renewed after four decades of minimal investment.

Localised solar power (on house roofs) is common, but held back somewhat by rare earth shortages; cynics say that it contributes more to feelgood factors than a significant fraction of generator output.

Thus the focus in power generation has moved back to gas-burning power stations (fracking, though politically contentious, became economically necessary) and, in some large EU countries, to nuclear fission. Oil is still plentiful, but increasingly expensive – cars now can burn a variety of fuels but there is no viable substitute for aeroplane fuel. (And there is no viable electric technology for long-haul car journeys.) While there is still much academic debate about which year was the year of “peak oil”, the consensus is that the year now lies *in the past*, around 2025. Middle East economies are now static but the Gulf States (though few of the others in the Middle East) did manage to make the key investments, especially in education, while they had money (as Norway did).

The decline of oil, and the increasing scarcity of certain minerals (not only rare earths) has at last begun to concentrate the minds of scientists and politicians on the inevitable problems of resource scarcity. There seems no solution to this on land (under sea is more possible, at high prices) within current energy parameters – but much exploration is being undertaken in Europe, even looking at mines supposed to be worked out in mediaeval or Roman times – and in European seas and oceans. (This was another factor driving a full political agreement with all states bordering the Mediterranean, and the deal that Iceland accepted, eventually.)

Futurists tend to regard undersea mining as staving off the evil day by only a decade or two; certainly, annual spend on the European Space Agency is now rising fast.

In contrast, there at last much more optimism on fusion power. The advances at CERN in the 2010s led to a much better understanding of non-baryonic matter and its interactions (more than expected) with normal matter. This led to promising experiments and then pilots on catalysed fusion in the late 2020s. Much heavy engineering remains to be done before large fusion power stations are built, and it all happened too late to avoid new and massive investment in fission power. Public debate on these matters is intense but largely uninformed, with tritium replacing plutonium and even micro black holes as the favourite tool of villains in comic books.

Air fares are now much more expensive than in 2010 and air travel less reliable, due to the increased weather problems and long periods of volcanic dust. (A new Russian supersonic airliner entered service in 2025 but this is as much to do with Russian pride and their secure oil supplies as economics. Moscow airport is conveniently little affected by the usual dust clouds.)

For these and other reasons including political changes and the increasing use of social video media, flows of tourists, students and businesspeople between the continents are now in year-on-year decline.

Within Europe there has been a refocusing on surface transport. A whole new generation of high-speed rail lines has been under construction since 2020, with inter-station average speed of 250 kph and often achieving 300 kph on the open track. The slogan is “Manchester to Moscow in a working day” – setting a benchmark of around 7 hours for the expected transit time. In contrast, it took longer than expected to iron out the difficulties of automatic control of cars, but the first cyberbahn (Hamburg to Berlin) was opened in 2027 with a guaranteed slot speed of 250 kph. At the same point the EU brought in a regulation imposing a maximum speed limit of 200 kph for all manually-driven cars even on autobahns – “long overdue” and “too high”, say most road safety experts.

2. Education in schools

The EU is now at last benefiting from the massive “Euskola” investments in schooling put into place by the Commission and the Member States from around 2020 onwards (once the EU economies stabilised enough to support such investments), based on the researches of the 2010s under the Lifelong Learning Programme and Framework Programmes. This was helped by the ubiquity of computing devices and parallel investments by member states and telcos into broadband. Great credit is due to the vision of the dedicated teachers that set up the European E-Teachers Association and the many teachers in many countries that followed their lead into effective use of the technology within the classroom and outside it – and their willingness to learn from the US teachers associations developing online education. A particular success was the rapid EU-wide deployment of a virtual schooling programme for a new computer science curriculum, with many more girls studying this than happens within physical school.

However, the 5-year-olds who entered such euskola in 2020 are only now 15 and will not enter university for a few more years.

The group of countries, led by Finland, but followed by Wales and others, that brought into being the “All-Masters” teaching profession across Europe, also deserves full praise. This allowed governments to relax (somewhat) the detailed regulatory scrutiny of schools and focus more on outcomes and value-added.

But the other key factor was the Open Qualifications Alliance. This was set up by a number of parents associations and employers in many countries – including the US – to ensure that outcomes (for their children, who would be future employees) were standardised both within nations and across nations for entry to university study and professional employment. A further prompting to this was given when leading Canadian universities decided (some said after prompting from their ministries) that foreign students accepted in their universities would have to have such qualifications. (The private sector rapidly stepped in to teach these online to the richer students in India and China.)

This process was given a further fillip when, in a rare example of US following Canada, US virtual schools adopted such qualifications (many US students were by then studying outside the US) and many mid-rank US universities insisted on them even for US students. This was despite much hysteria in the US about “states rights” and “private opt-outs”. But employer pressure coupled with the admissions cost savings and retention gains for universities made it all very worthwhile.

The model for such open qualifications was originally the International Baccalaureate (IB). Then England in its inimitable way developed its own IA, based on Pearson’s international version of A levels, which rapidly became adopted by many schools in Commonwealth of Nations countries. Fairly quickly this was followed by the IC for Canada (a kind of IA-IB fusion), ID for Germany (with universities and publishers finessing some Länder issues) and the IE for Spain (a kind of International Bachillerato), then a bit later by eastern and southern European countries where ambitious parents very quickly saw the mobility advantages of the IM (as it was called) and were already used to Matura-style exams.

The US developed the IG based on the Collegiate Learning Assessment and GMAT with knowledge elements from SAT. Many analysts said that this was 20 years overdue.

At present the wider use of OQA-certified qualifications is under active consideration by OECD and the G-100 group as well as being considered for an EU norm.

3. Universities

As some foresaw even in 2013, universities were much slower to change than schools. As early as 2005, some governments had more or less given up trying to influence universities to use ICT effectively, and the situation became much worse when the recession began to bite and ICT-focussed agencies were closed around 2010.

It was thought that students would be a source of pressure on universities to modernise but many students felt (in some cases rightly) that increased use of ICT would be paid for by decreased use of lecturers in the zero-sum game of the time. Also the views of students were dominated by those going through the traditional face to face route – it was a bit like finding out the business case for an out-of-town hypermarket by canvassing shoppers in KaDeWe in downtown Berlin.

Instead, universities in the 2010s focussed their energies on two main challenges. The first was to fight to attain a good position in the international rankings of research. The second was to aim to recruit as many international students as possible. Compared with those two challenges, the issues of who to teach, what to teach and how to teach it received very little attention.

By around 2017 it became clear to many EU universities especially on the continent of Europe that the fight for global research reputation was an unwinnable battle for them. The system was biased firmly on the side of universities who are established (50 years or more), can find ways (fees, loans, grants, alumni) of finding whatever funds they need (not a feasible task in many EU countries) and publish in the English-language literature. In particular (though not only) the Ivy League US universities and the “national champion” universities in countries able or willing to teach and publish in English were dominating the rankings and would continue to do so. Even though some ministers of research in EU countries issued rules that scientific papers and even PhDs in science should be published in English, there were no serious voices raised that this should apply to arts and social science subjects.

Moreover, by 2020 various studies indicated that for EU universities in most cases the supposed gains from the reputation wars were illusory. There was much less national research money available than there had been a decade before and there was no evidence that the way it was allocated took account to any great extent of international rankings (there maybe would be one token foreigner on some bid panels). European money was available but European measures of quality (e.g. for Framework bids) were quite rightly disconnected from such “global” rankings. The increase of social networking and the associated “cult of personality” among researchers meant that good doctoral students increasingly chose the person to be supervised by (and looking at the labs and resources he/she could deploy) rather than the university – or increasingly a research institute – that hosted him/her. At the pre-doctoral level, where undergraduate and graduate students’ destinations were more to do with marketing and good in-country agents, many universities agreed to be low-ranking made very good business out of international students.

But just as in the post-capitalist backlash of the time, more and more voices were beginning to wonder whether “very good business” was what universities were supposed to be about, the numbers of international (that is, non-EU) students coming to EU countries began to dwindle. The “pull” factors differed from country to country even in the EU but included an increasing desire in several countries to restrict immigration (even temporary visas for students), high fees, inclement weather, high living costs and the decline in employment opportunities. On the “push” side, more and more non-EU OECD countries had reformed their own university systems – often with the support of private-sector actors – and even the best institutions charged far lower fees than in the EU (or the US). There were also a large number of open

education providers who could offer an in-country virtual experience leading to a degree. Thus there was far less need for well-to-do students in Mexico, Brazil, India, China etc to study abroad and less value in going to the EU.

It had also helped, paradoxically, to weaken the competitive edge of EU universities that many countries far away from Europe had re-engineered their university systems to be Bologna-compliant or had “dual-currency” EU and US-compliant systems (as some Arab universities had developed years before).

Thus in the early 2020s EU universities faced a dilemma – and EU and national ministries were very concerned. The sources of easy money were dwindling with international students in decline; very few EU countries offered low-cost higher education and OECD had pronounced against the viability of student loan schemes in some countries. Led by a study in Sweden, better analytics had made it very clear to governments that teaching was subsidising research and that teaching hours and learning hours were not conformant to Bologna/ECTS norms. Employers were still making the same criticisms that they had been making for some years yet the answer was clear from the AHELO studies that the OECD had supported. Open learning was making no further progress in universities and in some countries was arguably going backwards. Further the increased focus on massive engineering projects and the need for an informed citizenry to facilitate key debates meant that the long-standing weakness in science education had to be rectified – for all students. At the same time it had become clear at last that all scientists had to be embedded in a wider culture. Perhaps Snow’s “Two Cultures” were soon to merge? Many civil service jobs increasingly required a science first degree with an Arts master – a saviour of many beleaguered humanities departments, who had suffered years of ministry neglect since one famous German chancellor had said in 2023 when she was asked to fund a Federal Council for University Arts: “when I fund the arts I want to see ballets, operas and plays – not research papers on them”.

The Open Higher Education Experts Group sessions in 2023 – and the three years of studies which led up to these – at last provided a cost-effective way forward in what still were tough times, with much investment (almost at former “military levels”) earmarked to fix the problems of the past and safeguard the future, and far less optimism about miracle technologies in the near future (except maybe fusion).

Though much of the initial pressure for change came from open universities and mid-rank universities (often those active in open and distance learning, such as members of the Universities Alliance in England and the Högskolan in Sweden), it is very much to the credit of the mid-rank European Universities Alliance that they stepped up to the plate and agreed to recommend that all their members would take the proposals forward – even if the elite universities were slower to change.

This provided the general scheme that we are familiar with today – the QC&D scheme (Qualifications, Competences and Duration) for all universities in the EU – be they public, private non-profit or private for-profit. It is not yet fully in place but many feel it is appropriate for a Europe where universities must take more care to justify their existence, work within a much stricter funding envelope and not try to take over activities better handled outside their inevitably high-cost operations.

4. The QC&D scheme

This, sometimes called Bologna-bis, is best described as a scheme which takes a holistic view of education, blending competency-based with duration-based qualifications, modularity with

integration, and arts with science. It takes a wide view of assessment including automated, peer- and team-assessment, and accepts that qualifications (like muons) decay fast.

1. All qualifications are normalised across at least OECD countries and EMHEA, including PhD, Master and Bachelor, in line with the needs of employers and the professional societies. In particular the PhD has a defined correlation into a standard set of research journals for each discipline. (This process started with computer science, then moved to physics, astronomy, mathematics, medicine and engineering. It is still in progress.)
2. There is an EU-wide loan scheme for undergraduate and masters degrees. (In 2020 several national student admissions schemes came near to breakdown, technical and political, due to the massive flows of out-of-country EU students into Scotland, Germany and Poland.)
3. All teaching outputs must be open educational resources to at least the proportion represented by government funds (directly via grants or indirectly via loan subsidies).
4. The former ECTS guidelines are now notional – they represent an ideal based on what the typical student. In fact the tariff is based on the fraction of the qualification – so one undergraduate ECTS point is 1/180 of the competencies for an undergraduate degree. All modules are available and charged separately but modules often have prerequisites and there are “transit time” requirements – see below.
5. Whether studied online or offline or mixed-mode, no PhD can take less than 2 years or more than 6 years (knowledge dates too fast); no Masters degree can take less than 1 year (12 months, not 9 months) or more than 4 years; no undergraduate degree can take less than 2 years or more than 8.
6. A university does not need to impose a residency requirement for any qualification but graduates must demonstrate the full range of subject skills and competences via a variety of remote and face to face assessment methods which must include group assignments and peer assessment.
7. All curricula for undergraduate degrees must include 30 points of key competences and offer a core liberal arts/science curriculum (some of which may be covered in the subject-specific parts of the programme). Every undergraduate qualification must include a “capstone” dissertation of at least 30 points – and the topic choice must be at the freedom of the student within very broad parameters on the subject and level.
8. No one of any age can enter an undergraduate programme without having an OQA qualification or a certified national variant. (There are many virtual providers of OQA.) There are similar restrictions on who can enter Masters and PhD levels.
9. Research outputs cannot be subsidised by teaching funds, grants or loans. Universities who find this challenging are encouraged to demerge their research into a separate institution, perhaps run jointly with other institutions in the region. All research outputs funded directly or indirectly by EU or national governments must be published not only as Open Access but in one of the six Turingtranslatable EU languages.
10. Languages (including Latin and Ancient Greek) are taught in universities but only from the level of OQA upwards (roughly A level in England). Any language can be learned to the level required for university study via the OQA route or at language schools associated with universities (funded at school rates not university rates).
11. The practical skills for many subjects will be taught in specialised institutes associated with universities (conservatoires etc) not within universities – with theoretical aspects taught in universities.
12. Publicly funded universities are no longer able to draw down government or loan funds to teach subjects defined by EU or national government as “non value added”, e.g. banking.

The universities are overseen by a regulatory apparatus which in the Euro-Med Higher Education Area draws on the best of the former ENQA and INQAAHE schemes within a rich techno-pedagogic mix but also has international accrediting bodies, not only national ones.

5. Further reading

Arum, R. (2011) *Academically Adrift: Limited Learning on College Campuses*, 2576 pp, ISBN 978-0226028569.

Bacsich, P. and Pepler, G. (2009) *Organisational Change in UK Education: A Horizon Scan for the CAPITAL Project*, 51 pp. Accessed from <http://www.scribd.com/doc/110519260/Organisational-Change-in-UK-education-Report-1>

Bacsich, P. (2012a) *The cost- and time-effectiveness of online learning: providing a perspective on Microlearning and the differences between academic and corporate views*. Accessed from <http://www.scribd.com/doc/96397285/Time-Bacsich-Final-Final-PDF>

Bacsich, P. (2012b) "Impact of e-learning in the 21st century university", in Kerry, T. (Ed) *International Perspectives in Higher Education: Challenging Values and Practice*, Chapter 9, pp 172-197, Continuum, ISBN 987-1-4411-0203-4. Accessed from <http://elearningeuropa.info/en/directory/Impact-of-e-learning-in-the-21st-century-university>

Bacsich, P. (2012c). *Alternative Models of Education Delivery*. Policy Brief for UNESCO Institute for Information Technologies in Education. Accessed from <http://iite.unesco.org/pics/publications/en/files/3214709.pdf>

Korosteleva-Polglase, E. (2010). Dynamic teaching in European Politics: Using Papershow for interactive group work: Aberystwyth University Case Study on Nexus. Accessed from <http://nexus.aber.ac.uk/xwiki/bin/view/Main/Papershow>

Multiversity (2012). Available from <http://www.virtualcampuses.eu/index.php/Multiversity>

OECD (2013). *Higher education and adult learning: Testing student and university performance globally: OECD's AHELO*. Accessed from <http://www.oecd.org/education/skills-beyond-school/testingstudentanduniversityperformancegloballyoecdshelo.htm>

Pepler, G. and Andries, A. (Ed) (2012) *Virtual schools and Colleges: Providing Alternatives for Successful Learning – Volume 1*, 119 pp, ISBN 9789491652004. Accessed from http://www.virtualschoolsandcolleges.info/sites/default/files/VISCED_Handbook-Volume-1.pdf

Schreurs, B. (Ed) (2009) *Reviewing the Virtual Campus Phenomenon*, 181 pp, ISBN 9789801148030. Accessed from <http://revica.europace.org/Re.ViCa%20Online%20Handbook.pdf>

Thompson, Q. (2001) *Overview of the e-University concept*. Also Chapter 2 of *The E-University Compendium Volume 1: Cases, Issues and Themes in Higher Education Distance e-Learning*. Available in several locations including from <http://www.matic-media.co.uk/ukey/EUNI-chap02-VU-overview-2004.doc>



Informal Learning: Empowerment and Support with Open Educational Resources in Higher Education - Or Not?

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Informal learning will be encouraged through open educational resources in future higher education; but will informal learners take advantage of the open educational resources in future open higher education?

What would you like to learn? How should and could your learning be organized? Why do you want to learn? In Higher Education (HE) formal and non-formal learning have historically been blossoming, paying mainly attention to nurture knowledge and expertise acquired in organized educational settings by following curricula designed to capture the needs of the society and industry. Recently, with a knowledge-based economy being the target, the outcome-centred curricula of formal education and training came to replace teaching aims and learning objectives. Re-focusing and re-defining the essence and necessity of more globalised and homogenized learning facilitated through information and communication technologies (ICT) seems to be a convenient way to re-organize formal and non-formal learning as a response to global economy needs. While though this way of learning and its support means facilitate the dissemination of information and knowledge and could create digital and other competencies, there are still limitations in the creation of (mainly tacit) knowledge, skills and expertise as well as identities; these are, otherwise, created through *informal learning* (IL). These differences create borders in social and professional life and, by and large, social inclusion with equal opportunities policies cannot be realized in employment and society.

1. Background and Rationale: Neglected and Needed Informal Learning

Undoubtedly and evidently informal learning has been neglected by the state, the industry and the society and there are many reasons for this. The surroundings and conditions, triggers, actions and processes of IL are not well-known, documented, classified; the informal learners can learn but their learning experiences cannot be evidenced by others. Moreover, informal learning outcomes cannot be formally stated, recognized and subsequently certified and accredited when practical needs must be met. On the contrary, formal and non-formal learning within organizational settings are recognised through procedures in which social capital facilitates knowledge management processes in that it enables individuals to locate and share useful knowledge and information, draw on resources and make contributions to the work and society. It has, somehow, been easier to follow certain paths in formal and non-formal education since the (mostly closed) curricula obeyed to the particular needs of industry and society. Nowadays, though, while there is a gap identified in the skills, knowledge and expertise that open knowledge-based economies and the information society require, formal and non-formal education is not enough to capture these. Thus, there is an urgent need for these to be captured or identified also through IL in open Life-Long Learning (LLL) mode.

Many types of skills, knowledge and expertise associated to IL have been neglected and are currently required at work and in society. This is the main reason that an open HE should i) explore the relationships between various dimensions of social/experiential learning, ii) define how this can be experienced and expressed by learners themselves and iii) state to which degree will this influence the existing expertise gap that has been created in the professional life. Last but not least, suitable socio-technical and Open Educational Resources (OER) support should be featured to facilitate open and informal learning.

2. The Right Research Questions Can Bring a Social Innovation

It is assumed that given an interest in identifying the needs for skills and expertise required, smart organizations, communities of practice and societies will be willing to realize social and collaborative approaches to accommodate informal learning experiences and accept informal learners who have acquired knowledge and skills through IL settings and conditions. An open HE that is willing to support IL should mainly deal with the following three questions:

RQ1: What has been informally learned and how can/could/should be identified and expressed in terms of IL outcomes? The latter format can provide comparability.

RQ2: How could we advice those who would like to find out how to learn informally and openly? Is there any open/closed HE initiative and socio-technical support for those who already use informal learning approaches?

RQ3: Why an epistemology on informal learning theory, open models, open methods and outcomes is essential and necessary?

The questions demonstrate a supportive bottom-up approach to the realization of IL in social context. The questions are researchable; they might, though, yield surprisingly unexpected answers to a subject that has been neglected and not adequately researched. The classic literature on learning theories and practice has limited research to support IL outcomes, while the recent research interest in IL has been increased. It seems that in EU countries and industries social IL and collaborative formal education could become an organic LLL process. However, so far, IL has been defined in contrast to formal learning; but they could fruitfully interact. In the long run, as more and more people and societies recognise the value of IL, more stakeholders should become involved while employers and social partners (e.g. trade and workers unions, professional societies) should participative, share and collaborate.

3. For Whom Will the Open Informal Learning Outcomes be Useful and Meaningful?

For people, information society and knowledge-based economy! There are people who are alone in their IL journeys and self-development. They need the reflective learning tools and the expression means to their learning needs. Socio-technical support and social collaboration can be used to enhance awareness of personal perception, sharing of learning experiences and understanding own potential in terms of, e.g. fulfilling and suitable employment. As an example, we mention the following: The increasing numbers of immigrant groups in EU and elsewhere can be a particular target group since they need to quickly acquire new skills (e.g. language and communication skills), certify existing ones (from previous formal and informal learning) and adapt to the new society and work as life-long learners. Thus, open IL could become an organic part of adult education through social inclusion and equal opportunities policies that overcome the digital divide by developing new digital competencies.

Conceiving open informal learning as a social activity, socio-technical support techniques must be developed considering the social context of the individual in order to provide suitable

support. Many ongoing work-life quality issues are researched regarding the design of socially aware and acceptable learning systems. Many are related to learning identity formation, to citizens' privacy and security, trust and authentication, and other.

3.1 Socio-technical Support Matters

Quite often it happens and various sponsors/donors etc. are in a rush to support any human action by any technological means; this might or might not be efficient and, in case of formal learning, generates other problems. Becta (2004) in Bocconi et al. reports that: *"Teachers cite lack of time, insufficient knowledge of the pedagogical uses of technology, and a lack of information on existing software as three major barriers to integrating technology. Teachers and support staff need ongoing training in order to make informed decisions regarding the technological needs of all students, including those with special needs"*.

IL support should consist of open or closed (!), public or private, flexible and human acceptance technologies, co-designed in open/close collaboration with the informal learner. For instance, many people already use social media as IL settings or have created trusted networks of professionals using the Internet and other social tools to communicate, collaborate and share resources, experiences, knowledge and ideas. People can also use various online tools and their own devices (ranging from pen and paper to cameras and smartphones, iPads, etc.) to address their own learning and performance problems - particularly where access to formal education and public social sites has been blocked.

Effective open educational technologies have been developed within Free and Open Source Software (FOSS) communities. The later comprise a social innovation by creating and sharing free/open social software. Their effectiveness is also a research issue because they are developed and functioned through IL cycles. Access to virtual and non-virtual communities of practice, where IL seems to outperform as apprenticeship, can provide invaluable information to be utilized by the open education designers. Members of a game-based learning community, for example, seem to provide fruitful information for collection and analysis. The aim should be to re-capture and model the reflections (where knowledge is collected) and actions (where knowledge acquisition is described as a sequence of action-oriented learning).

3.2 Difficulties in Capturing Informal Learning Activities and Conditions

Often the situations of IL are unstructured, fuzzy, and demand soft methods for problem solving. These are, perhaps, difficult to be captured with existing pedagogic models and theories. There are, however, socially-oriented and socially-constructed, holistic and systemic information systems analysis and design techniques (see CATWOE analysis, rich pictures, root definitions, etc.), originated from action research. The latter are not decision-making tools, but they can provide a holistic understanding of the situations by depicting interactions, communication lines, conflicts, worries, and social transformation possibilities, which are conditions in which informal learning happens. Additionally, knowledge from the Water Logic, Lateral Thinking and Parallel Thinking of Edward De Bono as abstraction and modeling techniques seem promising tools for capturing the essence of informal learning.

Informal learning processes might or might not be attributed to the pedagogic theories of behaviourism, cognitivism and constructivism. From personal observations and experiences so far, the authors believe that socio-constructivism as expressed by Kant and Vygotsky and socio-computational thinking models might be adequate modeling techniques for understanding the dynamics of IL. These can be used in order to provide a conceptualization

of IL or a new classification of learning itself as a social structure/conscientious model within a progressive/radical adult education paradigm as defined by Paul Freire and other.

3.3 The Significance of Open Education for Informal Learning

Informal learning can be seen as a social innovation for improving the work-life quality and bringing happiness to life. Any future Open Educational Resources (OER) policy or HE initiative should consider the importance of the IL in the times of the global socio-economic crisis while the social impact should even be featured beyond that. IL as a social innovation can be an answer to offer a fresh perspective to re-vitalise HE and society, offer re-assurance to adult learners, social stability and potential economic growth. IL's recognition and accreditation can ultimately offer an education-work balance, alleviating stress-related socio-educational and personal factors that hinder the society and the state. Eventually, formal and non-formal education will also benefit from open IL resources.

A vast amount of people have different conceptual models, preferences of learning styles and thinking styles. This difference and richness makes it difficult for them to submit themselves passively to being directed and instructed in what, for them, may be a purposeless function. They would rather actively engage in a semi-formal learning process in ways that meet their unique learning needs and allows for self-expression.

4. Conclusions, Future Research and Development: Let Learning Emerge!

Future HE can and should support IL through Open Educational Resources. The self-organised IL journey should not be viewed as a solitary activity since it takes place within a social environment that encompasses work, study and personal life habits, hobbies and other behavioural constructs. Conversational networks of learners found in communities of practice, action learning and mentoring, open learning and open educational/professional communities offer learning resources and opportunities, self-expression means and social inclusion.

Social computing theories have the means to offer learner-centred support to overcome the digital divide and offer self-organised learning that it genuinely focuses on the learner. The learner, in turn, should be enabled to develop responsibility for diagnosing personal needs and for developing personal standards of learning process/service quality for effective feedback, as well as for managing his or her own learning. Research and development must identify appropriate OER and human resources to act as catalysts in facilitating IL communities.

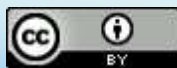
Informal learning should be seen as a social innovation. For this reason open HE should involve IL activities to reveal the dynamics, semantics, pragmatics and semiotics of IL in its social context. Among the main aims of open HE should be to establish an epistemological basis as a reference framework of IL patterns/antipatterns and conceptual formal and informal models that can increase understanding of IL settings and conditions. Only then social computing methods and multidisciplinary knowledge could effectively support the open IL process and its outcomes. *Let learning emerge, let it happen!* Do not force it to happen.

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5. Sources and Bibliography

Benigno V., Bocconi S., Ott, M.: *Inclusive education: helping teachers to choose ICT resources and use them effectively*. CNR, Istituto Tecnologie Didattiche, Italy.
http://www.itd.cnr.it/download/inclusive_education.pdf

- Berki, E. and Valtanen, J. (2007). Critical and Creative Mathematical Thinking with Practical Problem Solving Skills – A New Old Challenge. In the Proceedings of Dranidis, D. & Sakellariou, I. (Eds) *3rd South-East European Workshop on Formal Methods. Service-Oriented Computing; Teaching Formal Methods*. pp.154-170. South-East European Research Centre, SEERC: Thessaloniki, Greece. http://www.seefm.info/seefm07/PDFs/11_154-170.pdf
- De Bono, E. (1995). *Parallel Thinking*. Penguin Books.
- De Bono, E. (1993). *Water Logic. The Alternative to I am Right You are Wrong*. Viking.
- De Bono, E. (1990). *Lateral Thinking: Creativity step by step*. Harper & Row, NY.
- Checkland, P. (1985). *Soft Systems Methodology in Action*. Wiley and Sons.
- Cohen, L., Manion, L. and Morrison, K. (2007). *Research Methods in Education*. (6th ed.). Routledge.
- Conlon, T. (2004). *A Review of Informal Learning Literature, Theory, and Implications for Practice in Developing Global Professional Competence*. Journal of European Industrial Training, 28, 283-295.
- Ethnomethodology as an Influence on Community - Centred Design*.
<http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.228.2493>
- Greene, R. (2012). *Mastery*. Viking.
- Guidelines of the EC on the validation of non-formal and informal learning. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2012:398:0001:0005:EN:PDF>
- Illeris, K. (Ed.) (2009). *Contemporary Theories of Learning: Learning Theorists .. in Their Own Words*. Routledge.
- Jarvis, P. (2010). *Adult Education and Lifelong Learning: Theory and Practice*. Routledge.
- Lohman, M. (2006). *Factors Influencing Teachers' Engagement in Informal Learning Activities*. Journal of Workplace Learning, 18(3), 141-156.
- Marsick, V. (2009). *Toward a Unifying Framework to Support Informal Learning Theory, Research and Practice*. Journal of Workplace Learning, 21(4), 265-275.
- Open Source Science: A New Model for Innovation. <http://hbswk.hbs.edu/item/5544.html>
- Rethinking Education: Investing in skills for better socio-economic outcomes (Strasbourg, 20.11.2012): http://ec.europa.eu/education/news/rethinking/com669_en.pdf
- Schön, D. (1987). *Educating the Reflective Practitioner*. Jossey Bass Inc.
- Simone Braun, Andreas Schmidt: Socially-Aware Informal Learning Support: Potentials and Challenges. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.61.6596>
- Socio-economic factors related most recent documents for Europe 2020 programme.
http://ec.europa.eu/europe2020/index_en.htm
- Social Learning Theory* http://en.wikipedia.org/wiki/Social_learning_theory
- Spring, J. (2009). *Globalization of Education: An Introduction*. Routledge.
- Spring, J. (2012). *Education Networks: Power, Wealth, Cyberspace, and the Digital Mind*. Routledge.
- Stamper, R. *Organisational Semiotics: Information without the computer?* Information, Organisation and Technology; Kluwer Academic Publications
- Valtanen, J., Berki, E., Georgiadou, E., Hatzipanagos, S., Ross, M., Stamelos, I. and Staples, G. (2012). *Features for Suitable Problems: IT Professionals' and IT Students' Opinions*. International Journal of Human Capital and IT Professionals (IJHCITP), Vol. 3, No. 3, 27-41.
- Valtanen, J., Berki, E., Georgiadou, E., Ross, M. and Staples, G. (2011). *Problem-Focused Higher Education for Shaping the Knowledge Society*. International Journal of Human Capital and IT Professionals (IJHCITP). Oct-Dec, Vol. 2, No. 4, 23-37.



The Teacher of the Future : The Use of Psychosynthesis for Training Teachers

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Ms Ewa Bialek said that the future of humanity and the world lies in proper education, carried out by properly trained teachers sensitive to themselves, others and the world around, and thus it allows solving many problems of the individual, family and society, including contemporary global issues of the world.

We all have to “sing our song.” Exercising its most important resource, and using our spiritual intelligence, we should all reach the deepest layers of our true selves and from there bring out the unique “music” that every man has in himself and can offer to the world.

Danah Zohar

At any time I can be a better person. But which moment to choose?

Ashleigh Brilliant

Introduction

Current reality, given the picture of man today and today's world and its numerous dangers, combined with the escalation of social pathologies and other social processes around the globe, pose an urgent challenge facing academics. They need to prepare a teachers' training program (higher education) that would first of all:

1. support the teacher as a person – his sphere of *humanum*; make his personality immune to various kinds of stress, fears and dangers
2. enable him to control his emotions, and at the same time foster his self-actualization and motivation to practice his job;
3. give him job satisfaction;
4. build his authority and charisma among pupils, which would attract them and reinforce their positive traits;
5. prepare the teacher who promotes and enacts a universal system of values.

It is the teacher himself, his attitude, understanding, awareness that exerts influence on the pupil, though the pupil, too, can be the trigger for the changes of: attitudes, behaviors, relationships with other people, colleagues, family, immediate environment.

Through “self-education” the teacher who is enriched on all levels can pull others with himself out of pathologies and into the world of values, ideals, sense of awareness of themselves and life as a whole. The best model to use in self-education is Psychosynthesis (holistic approach towards human development).

Psychosynthesis as a model for training teachers of the future

1. Psychosynthesis introduce to the realm of education many support techniques, in accordance with physiological “constitutional homeostasis”; it also fosters homeostasis at the psychospiritual level. It is a form of education in keeping with the rule “*if something comes in time – it is education; if it comes too late – it is a therapy*”, although it can also be useful in therapy for disturbed, deviant behaviors and

attitudes, and in transformation of psychic energies (including aggressive and sexual ones) into socially beneficial forces. It is characterized by both educational and therapeutic approaches. Problems, therefore, are not left to be solved later, but are tackled immediately by one person – acting as educator, guide, adviser and therapist using one approach only. According to V. Frankl, psychosynthesis also stresses the aspect of seeking the meaning and the sense of human existence, certain higher values, spiritual level, which are just as real as biological and social needs and which should be examined in the same scientific manner.

2. Psychosynthesis deals with all the spheres of human existence, i.e., consciousness, the unconscious and the superconscious, as well as “collective unconsciousness”, in which every individual is immersed. The superconscious is the area where higher ambitions, intuition, moral imperatives are located. It is the sphere of the highest human capabilities, universal values. Given such an approach to human nature, psychosynthesis not only presents the depth psychology, explored by Freud and Jung (the cellar of human existence), but first and foremost it works at the level of “here and now”, introducing to the human world the area of potentials – it is the “height” psychology (“peak experiences”). Moreover, psychosynthesis explains inspirations, intuitions, mystical experiences, heroic/altruistic deeds, the spiritual, transpersonal dimension of our existence. The lack of this kind of education at school level, science or therapy causes numerous physical and mental pathologies which are often described as “the illnesses of meaning or sense”, and are classified as diseases of civilization (e.g. depression), posing enormous problems to contemporary medicine and psychiatry. In traditional pedagogy this dimension is omitted and detached from the view of a human being as a whole. This extends the amount of social maladjustments and pathologies, as well as disorders, leading to actions, which are forbidden or directed against oneself (e.g. anorexia, bulimia, suicide).
3. Psychosynthesis sees man as a biopsychospiritual being, driven by different energies, sometimes conflicting yet naturally aiming at harmony and power, and directed at synthesis in man himself and the world around him. It recognizes in him a transpersonal source (spiritual core) and the ability to manifest this essence – the self – as fully as possible in everyday work or social activities. It allows man to feel it as his life experience, which can be integrated with the world in everyday activity and interpersonal relationships. The qualities and higher consciousness faculties are transferred to the world by transforming the quality of *life here and now*.
4. The extremely important element of psychosynthesis is a model of mental functions called “*the star model*”. It represents mental functions as positioned around a unifying centre. The model contains such functions as: *emotions, thought, intuition, imagination, impulses, desires, sensations*, which are subordinate to *will*, which, in turn, is the tool of the personal I (*personal self*).
5. Psychosynthesis enables us to realize that we are a part of a larger whole (individuality and universality) – of life, the cosmos, the universe, and that there are certain universal laws, which we are subject to, and which, (according to Romanowska-Łakomy) are “given” to us.
6. Psychosynthesis pays a lot of attention to the body, its good physical condition, a balanced physical development, and physical health. An extremely important aspect of psychosynthetic education is coming into a vigorous relationship with “what my body says in its wordless message”, and reading “body language” – importantly, one should read the language through oneself rather than through others. One learns the “language of one’s own body” as one of the self-regulatory mechanisms of all-level constitutional homeostasis.

7. Psychosynthesis allows us to work on our senses, to make them more sensitive to everything we are surrounded by (including nature). Owing to this, it stimulates the sensitivity to other people and the world: beauty (aesthetic sensitivity), right things (doing no harm to others and nature, whose part man is, empathy, altruism) (ecopsychosynthesis).
8. Psychosynthesis teaches us to “experience ourselves in full”, by means of our experiences, cooperation with the laws of nature, eliminating conflicts and emotional blocks resulting from the negative influence of the environment or improper educational models. It is underlined that a man can defend himself from the excessive growth of one sphere of personality, or at least reduce it considerably, by means of appropriate upbringing since early childhood or solving conflicts within personal functions and reinforcing development. Owing to this, an individual realizes *who he/she may become*, and may develop all the potential abilities.
9. Psychosynthesis offers active programs, based on art, which not only help build healthy interpersonal relationships at group level, but also develop global, social and ecological awareness. The programs, through individual work, help to transfer to the ethical, universal level the experiences related to all spheres of personality and physical activity – body, senses, experiencing and discovering beauty and sensitivity.
10. By using active techniques, psychosynthesis tells us how to harmonize all functions in order to act with a definite purpose in everyday life. It enables us to use all functions of the mind: concentration and relaxation (flexibility and clarity of thinking), as well as creativity.
11. A wide field in which psychosynthesis has a lot to offer, as far as training teachers, children and youth is concerned, is emotional education (foster emotional intelligence), and especially work on controlling one’s emotions and expressing them in a positive and constructive manner (even the negative ones). It is extremely important in training teachers that they should be able to control their emotions, without displaying aggression or resorting to violence, which may turn against themselves. Quite on the contrary, they should be capable of showing their pupils restraint, *being in the centre of oneself*, outside emotions (without disparaging them, though), and be capable of suppressing them, but, at the same time, expressing them in a healthy way. Psychosynthesis uses simple techniques whereby teachers and children alike may learn to communicate with one another with love, which strengthens the heart, the immune and hormonal systems, helps relieve stress, as well as developing personal harmony, stimulating creativity and the learning process as a natural way (dr. E. Stauffer or dr. G.A. Pettit and P. Gerard, who developed techniques of going through anger, practicing forgiveness and expressing unconditional love. Prof. M. Crampton from Toronto University has offered techniques of group work at the level of heart).
12. Psychosynthesis contributes to health – physical and mental, because it ensures the complete development of a child, and enhances all spheres of the personality: the body, feelings, psyche, creativity and the ability to make choices. It also stresses the importance of adolescence as an extremely important period, as far as building one’s identity is concerned. Psychosynthesis has at its disposal educational programs for children, as well as teenagers, (dr. V. King or D. Whitmore). There is also a special program for children with exceptional abilities, which demand further enhancement. In such children, other functions also require taking care of, in order to ensure a balanced integration and assistance, so that they become fully developed individuals.
13. The next aspect of psychosynthesis, of particular importance to teachers, is the work on the *will*. Assagioli, as did his followers, dealt for many years with the issue of will

(the Project of Will, developed to this day), and came up with a set of exercises “will gymnastics”, applicable in bringing up children and adults, as well as bringing oneself up (numerous studies).

14. The most essential aspect of psychosynthesis is *self-enhancement*. It is through self-observation that one acquires the habit of correcting one’s own behavior and attitude. It is through looking at oneself “in the mirror of others” and taking care of one’s *wellbeing* that health in all of its dimensions (holistic approach) may be improved. Having created this kind of internal equilibrium, the person shows it outwardly, spreading it around himself in a “field of friendly energy”. The field affects everything that we “produce” in our thought, speech and action, exerts a certain influence on the surroundings and resonates with it, i.e. transfers our influence at a distance, and “receives the same back.”
15. The work on mental energy and the integration of an individual makes psychosynthesis compliant with the latest developments in physics and quantum mechanics, which build on a holistic and energy-based view of the world and man. It is also an introduction to psychoenergetics.
16. With its practical approach, reflected in concrete simple exercises, psychosynthesis is also regarded as “*the pedagogy of experiencing*”, and becomes, thus, a fact and a method of a scientific approach to upbringing/education, the source of scientific knowledge (make objective of subjective experiences).
17. *Self-observation* in psychosynthesis leads to the habit of rectifying one’s own behavior and attitude, as well as that of taking care of one’s wellbeing, which improves health in all of its dimensions (holistic approach). It also *reveals self-regulatory mechanisms* in the organism, strengthens them, unblocks them and teaches how to work on the harmonization of internal chaos.
18. With its comprehensive approach, psychosynthesis, as has been previously mentioned, means *education* (in the Latin meaning of *educere* – to extract something hidden inside) and *therapy*. On the one hand, it tells us how to improve our health; on the other hand, it puts in order anything that is currently unbalanced.
19. It is extremely important that teachers become familiar with Assagioli’s laws of psychodynamics (psychoenergetics), since the lack of this knowledge has negative impact on the health of teachers themselves and students alike. What is more, knowing the laws enables them to understand how the body functions at the mental level, and how its *balanced development and growth* affect behavior, mental and physical health.
20. The “being-part-of-a-bigger-whole” feeling, acquired during psychosynthesis evokes realization that *sacrum* actually exists, that there are different levels of “the very humanity in the human being”, that one intrinsically feels the need to fulfill it in one’s life.

Summary – the use of psychosynthesis for bringing up and teaching.

The use of psychosynthesis for self-education is of fundamental importance to teachers. If the teacher is aware of himself and various natural processes, he spontaneously begins to promote them in children as well: provides guidance, assistance, harmony if need be (like a gardener, fond of tending his plants and capable of “reading”, understanding them, and empathizing with them). The teacher may, thus, drive a child out of imbalance into “constitutional homeostasis” – the state of balance at all levels, *preventing any physical, mental and social pathologies*.

During self-education the teacher realizes his responsibility for himself, and, in turn, for others, in compliance with the rule “first do no harm”, as a result of which he tries not to

trigger any “side effects”, which are in fact the reason for the therapy. This kind of approach also makes for the harmonization of self-regulatory processes in the organism (rather than their disruption), and has a beneficial effect on health.

During one’s own psychosynthesis the harmonization of the personality, in other words “*managing from the centre of oneself*”, becomes *the most prominent component of education*. At the same time, it provides motivation to learn not only the outside world, but also oneself, motivation to discover one’s own self and enhance one’s capacities. Additionally, it acknowledges the right to make mistakes and provides opportunities to correct them. Owing to psychosynthesis, through everyday “centering” and calming down, children very early acquire *self-confidence, self-esteem, and balance*, and learn how to use their mental functions in a healthy way. Teachers, on the other hand, become able to “depend on” the natural process in which “everything clicks into its right place”, and to guide things into “happening”, rather than unconsciously alter physiological processes and “forcibly” shape the child’s personality. Owing to this, the spiritual dimension of the child emerges naturally and matures with him, exposing some higher transpersonal values, such as *love, empathy, forgiveness, care, right, truth, beauty etc.* The emerging ethical dimension lets the child use his talents to help other people.

This view of individual psychosynthesis makes teachers “*guides of the child’s development and growth*” early in the child’s life. They also *become role models*, by enhancing their own abilities, discovering the meaning of the world and man’s life. Finally, they experience the child’s development, its striving for its own evolution in the global context.

Another extremely important capability acquired by teachers through psychosynthesis is the ability to understand the workings of will and promote its growth rather than its constriction in the child. Will is the basic constructional force, it leads an individual’s intuition, impulses, thought, emotions and imagination into self-fulfillment. Owing to the connection of will with the source of self-consciousness/identity, and, at the same time with the Universal Will, a growing child is always in contact with his own spiritual essence, obtaining ability to “decipher” his/her own destiny.

Psychosynthesis in education and upbringing enables a child to be supported “at all levels of maturity and growth” – *physical, biological, intellectual, emotional, mental, volitional, spiritual and ethical levels*. One assumes also responsibility for one’s own thoughts, words and actions, which is a part of the integrated balanced personality.

The main goal of upbringing becomes, thus, the unifying physical, emotional, cognitive and spiritual aspect of ourselves and reveals “the internal truth”, which is hidden inside ourselves, in order to create a *more harmonious whole*, and to foster a more balanced development, including intuition, imagination, creativity and, finally, love for everyday life, as well as relationships with other people and nature.

Bibliography:

1. Assagioli R., (1973) *The Act of Will*. Self-actualization through Psychosynthesis. Aquarian/Thornsons
2. Assagioli R., (1974) *The New Dimensions of Psychology: the Third and Fourth Forces*. Psychoenergetics. The Human Dimensions Institute, Buffalo
3. Harman W., (1975) Edited transcript AHP theory conference. Tuscon, Arizona
4. Zohar D., (1990) *The Quantum Self*. Human Nature and Consciousness defined by the New Physics. Quill, New York
5. Whitmore D., (1994) *Radość uczenia się. (Joy of learning. Application of psychosynthesis in education. Practical self-guide for parents and teachers)*. Medium Published House

6. Romanowska-Łakomy H., (1996) Wewnętrzna prawda (*Inner truth*) ENETEIA, Warsaw
7. Romanowska-Łakomy H., (1996) Psychologia doświadczeń duchowych (*Psychology of spiritual experiences*). ENETEIA, Warsaw
8. Bialek E., (1998) Wychowanie do zdrowia w rodzinie, szkole i świecie (*Health Education in the Family, at School and in the World*). SEDP, Warsaw
9. King V., (1998) Teatr nasz wewnętrzny (*Our Inner Theatre. Introduction to Psychosynthesis Course. Book Translation*). CODN, Warszawa, 1998
10. Bialek E., (1999, 2013) Szkoła emocji. (*School of emotions. Educational challenges*), SEDP, Institute of Psychosynthesis, Warsaw
11. Bialek E., (1998) Być w zgodzie ze sobą, innymi i światem (*Being in Agreement with oneself, others and the World*) SEDP, Warsaw
12. Bialek E., (2000) Jesteśmy jedną wielką rodziną. (*We are One Whole Family*), SEDP, Educational challenges. Warsaw
13. Bialek E., (2002) *Sustainable Development and New Ways of Education*, w: Visegrad Agenda 21. TRANSITION FROM CENTRALLY PLANNED ECONOMY TO SUSTAINABLE SOCIETY?, Institute for Environmental Policy, 2-4 April 2002, Prague, s. 197-200
14. Romanowska-Łakomy H., (2003) Fenomenologia ludzkiej świętości (*Phenomenology of human holiness*). ENETEIA, Warsaw
15. Bialek E., (2004) Integracja osoby w psychosyntezie (*Personal Integration in Psychosynthesis*). BLISKIE I NIEZNANE: INTEGRACJA TREŚCI A INTEGRACJA OSOBY. Red. W. Pasterniak, T. Frąckowiak, Uniwersytet Zielonogórski, Polskie Towarzystwo Pedagogiczne, Oddział w Poznaniu, Zielona Góra 2004, s. 173-186.
16. Bialek E. Ph.D., (2004) Nauczyciel przyszłości. Zastosowanie psychosyntezy w nauczaniu nauczycieli (*Application of Psychosynthesis in Training Teachers*). This speech was presented at V-th Meeting of Polish Pedagogical Association, 24-th September, 2004, Wrocław, Poland at the section of Humanistic Aspects of Education and Upbringing Children). Published in the book: titled: "*Pedagogy in the contemporary humanistic discours*", V Polish Pedagogical Meeting. Conference Materials, Wrocław, 23-25.IX. 2004, p.35-46
17. Bialek E., (2005) Psychosynteza w edukacji (*Psychosynthesis in Education. Growing Human Self-awareness*), ENETEIA
18. Bialek E., (2005) *On the verge of tomorrow's education* (Sulla soglia dell'educazione di domani). PSICOSINTESI. Anno XX no 3 Aprile, p. 36-42
19. Bialek E., (2006) *The vision of the Wholeness from the viewpoint of Psychosynthesis*. La visione dell'Assoluto dal punto di vista della Psicosintesi. PSICOSINTESI, Anno XXII no 6, Ottobre 2006, p. 22-29



Knowledge is power?

Bradley Bowers

In 2030, knowledge will no longer be synonymous with mastery of material, facts, authority, or power.

We complain that students no longer want to read anything, at least anything serious. This trend will not magically reverse itself, and by 2030 the concept of reading as knowledge will be virtually extinct. It will be the best thing to happen to education in a century. Here is my experience in teaching students to think by asking them to think the unthinkable.

In 2030, knowledge will no longer be synonymous with mastery of material.

When I began teaching the first-year Honors course “20th Century Literature & Culture,” I thought I would find this task easier with students who are academically gifted and highly self-motivated. However, in line with recent studies, most if not all resist perspective transformation even more strongly (Illeris, 2003). They have no desire to abandon the paradigms which have allowed them to excel (McGonigal, 2005). Honors students, especially, have succeeded by jumping through hoops, doing everything they are told, performing exactly as they are told, and they see no reason to change this approach that has served them so well, so far.

Therefore, I exploit the one weakness they all share: they have complete faith in the authority of the “text,” whether it is a textbook, a cultural norm, the role of the professor, and especially in the “textual expectations” of them as students. My approach has been to undermine the authority of the text, of any text, of all texts. I invoke the foundational theorists: Saussure, who shows the separation of language and meaning (the “arbitrary nature of the sign”), illustrating that words, or signs, are not inherently linked to any authoritative meaning or value; Derrida, who shows that language is primarily a mechanism of repression and control, and contains privileged terms, unconsciously accepted by speakers, which exclude the unprivileged, or, more simply, the *other* terms.

I use a sequence of disorienting events which illustrate the illusory authority of texts. I force them to confront the postmodern dilemma: “If everything is a text, which text has authority?” My desired outcome is to change these students from passive readers of the textual world they live in to active writers of the world they are creating.

I force them to do the unthinkable—to think for themselves.

In 2030, knowledge will no longer be synonymous with facts.

Lesson One: Everything is a Text

Why do you go to see a movie? Because you know it's fiction. If we didn't know that--that it is not real--we wouldn't pay good money to see it. We only want to see it knowing that it is a story, that it is only a text. We also go to a movie because it's not real life. Real life is much more disorganized than a movie, much too messy. For my money, I want a traditional story that has, as Aristotle tells us it should, a clear beginning, middle, and end. And, the end had better be good. By good, I mean, it had better lead us to a resolution of the dilemmas created by the story, because if it doesn't, I want my money back. I can get all the lack of resolution I need in real life. We love our stories--our texts--so much that we live in them

outside of theaters and books as well. In fact, we exist in our texts. We exist only in our texts. Without our stories (and I use the words story and text interchangeably), we couldn't exist. Without our stories, we don't exist. And before you dismiss this idea as something theoretical, let me prove to you just how real it is. You exist because you exist in a story, and you are a willing participant--a willing and self-aware character--in your stories.

Here's a demonstration, a proof that the text is all that matters to us, and that, in fact we don't even have access to any reality, physical or otherwise, that doesn't come to us wrapped in a text. I'm also about to answer an age-old philosophical question as well as a modern-day scientific question. I will answer it definitively, and despite your most strenuous objections, you will agree with me. Question: If a tree falls in a forest, and no one is there to hear it, does it make any sound?

Your first answer is yes, of course it makes a sound regardless of whether someone is there to hear it. You are wrong. First, the tree does not make any sound, because, second, the tree does not fall, because, third, the tree does not exist.

They are getting it now, realizing that until a human being perceives an event and turns it into a text (that is, a story that explains the event), the event didn't happen. At least it didn't happen in a universe accessible by human beings, and at last check, the only universe we live in is this one. Made of stories.

But they are thinking about the tree and the forest, and whether anything happens--whether anything can happen--when there is no one around to hear it or to see it and to turn it into a story. They are thinking that, no, not one thing really happens in this universe unless someone turns it into a story. And then it really happened. Even if it didn't.

In 2030, knowledge will no longer be synonymous with authority.

Lesson Two: The Sun Also Rises

When I ask my students about the sunrise and the sunset, they mention a beautiful sunset in a romantic setting, or an uplifting sunrise as a spiritual event. Then I ask them a simple question: Do you think the sun will rise tomorrow? They say, of course. And I say, no. No, the sun will not rise tomorrow. I tell them that I'm right, that the sun will not rise tomorrow, and furthermore, that they will soon agree with me. And soon, they agree. They acknowledge that, in fact, they have never seen the sun rise and have never seen it set. The sun will not rise tomorrow, because tomorrow, like every preceding day on this planet, the sun simply does not rise. The sun doesn't move relative to the earth and, at this point, they all eagerly agree that the sun will not rise, that they knew that all along, and that I have simply played a word game that has nothing to do with the fact of the matter. But, I point out, it is not a word game that we're playing. It's reality. When I watch the sun set, I see the sun going down until it disappears below the horizon. When I watch the sun rise, I see it rise.

In 2030, knowledge will no longer be synonymous with power.

Lesson Three: You can't escape the text

You can't escape the text, because the text is where you live. It's where I live. It's where we live. One cannot escape from oneself and one's text. However, once you understand this dilemma of the postmodern world, the text will set you free. For example, let's look at the story of "Bartleby, the Scrivener," by Herman Melville, which illustrates that while you can't escape the text, you can always change the story.

During the rest of the semester, they are introduced first to the premises of Modernism, as distinguished from Romanticism, broadly defined. By spring break, we are moving into Postmodernism, and they are thoroughly uncomfortable with the breakdown of certainty and stability. However, by the time we reach the final weeks, they are not only comfortable with the postmodern dilemma, but they also feel

extremely empowered. The initiates have been given a power to understand how a text is created and maintained, but more importantly, how they themselves can alter--indeed create--new texts to serve their needs.

References

- Derrida, Jacques. (1982). *Margins of Philosophy*. (Alan Bass, Trans.). Chicago: University of Chicago Press.
- Illeris, Knud. (2003). Towards a Contemporary and Comprehensive Theory of Learning. *International Journal of Lifelong Education*, 22, 396-406.
- McGonigal, Kelly. (2005). Teaching for Transformation: From Learning Theory to Teaching Strategies. *Speaking of Teaching*, Stanford University Center for Teaching and Learning Newsletter, 14 (2), 1-5.
- Saussure, Ferdinand de. (2006). *Writings in General Linguistics*. (Carol Sanders and Matthew Pires, Trans.) Oxford: Oxford University Press.



Reimagining the University: Open Art Education in the 21st century

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This paper advances the case for open models of higher art education in the 21st century. To achieve this, we propose using open educational practices (OPAL, 2012) as a form of social entrepreneurship, supported by digital technologies. Based on our own and others recent experiences in open education we outline the nature of the problems we face, some of the practical working responses that have already appeared, and describe emerging potential solutions that can build on the progress achieved to date. Although, approaching this discussion from an arts background we think that most of our observations and proposals apply equally to higher education (HE) in general, as a consequence, we refer to art and design in particular only in a few places in the paper.

1. The Current Situation

Challenges

Art Colleges and HE are, in our view, facing a set of **external** challenges:

- Funding cuts, staff redundancies, course closures and a changing market
- Demographic trends: ageing society and an increasingly diverse student population
- Demand outstrips supply
- Growing expectation and need for more flexible learning opportunities
- ‘Knowledge economy’ discourse mystifies the fundamentals (Facer, 2009)

This situation is compounded by a set of **internal** factors that, in our experience, act as ‘force multipliers’ for the impact of the external challenges:

- Conservative pedagogical cultures - makes alternatives difficult to conceptualise
- Managerialism - financial data as the basis for planning
- Short-termism - concentration on current contexts limits long-term development
- Inflexibility - in assessment, certification, administration, employment and budgeting
- Narrow social base - UK visual arts are less diverse than most disciplines (NALN, 2005)

The Mystery of Closed Education – Moving from Scarcity to Abundance

Traditionally, university's prestigious position in society has largely been based on monopoly control of access to scarce resources, in terms of education and information. Access to information and learning resources, especially in the form of libraries, was (and is) a major component of higher education. This monopoly (especially for learning resources) is being rapidly eroded by the internet, leaving access to learning opportunities as the remaining area of monopolised scarcity.

Universities tend to be dominated by what Laurillard (1994) describes as the 'medieval information technology of the lecture' - devised as a means of transmitting information to groups of students as an economic alternative to scarce and expensive handwritten books. In art education the dominant form is the studio and workshop. In both cases the 'pedagogy of place' is the dominant form organised around the routines and demands of the academy. The challenge to both is how to make the opportunities for learning more open in terms of location and time, as well as choices about the mode of study (face to face, online, blended), duration of study, type of assessment etc. and, crucially, making it affordable.

The choice of what to teach, how to teach and the supervision of the quality of the teaching was, and still is, conflated with the research interests of the teachers and the institution – a throwback to the theological origins of this educational model. However, excellence in research is no guide to the quality of teaching, as a policy briefing for UNESCO (Bacsich, 2012) observes. Governments, policy makers, academics, and students need to move on from using research as a proxy for teaching quality, as there is no evidence of a link (Hattie & Marsh, 1996), but it does serve an essential function in maintaining the mystery of higher education. Burke & McManus (2009) provide a trenchant critique of how traditional art education operates in informal ways to perpetuate a self-serving mystique. Like most mysteries, closed educational systems do not always make sense from the 'outside' and, as Facer (2009) implies, a discourse about alternatives and openness is likely to be a challenge for those on the 'inside'.

Reaching the Limit of Traditional Educational Models

Despite its drawbacks, traditional higher education, in the OECD countries has been pushed and cajoled by politicians and policy makers into delivering more (with and without technology) to a wider student body than ever before. But, as Greller (2013) observes, progress in this area has been obscured by the recent media 'noise' surrounding the MOOCs and their evangelists (Yuan & Powell 2013). The truth, however, is rather different. Old-fashioned outreach initiatives, instigated by the public sphere, have over the last 20 years delivered some startling progress. As can be seen in the OECD statistical analyses (OECDa, 2012), it accounts for a much larger rise in education levels than MOOCs are ever likely to achieve and with lasting success. Over the past 15 years, tertiary type-A graduation rates equivalent to a degree in English speaking countries (OECDb, 2012) have risen by 20 percentage points on average among OECD countries. Even more encouraging is that across all OECD countries, "an average of 47% of today's young women and 32% of today's young men will complete tertiary type-A education over their lifetimes". Note these figures are about **completion** and **graduation**, not registration figures or certificates. These dwarf even the wildest claims currently made for MOOCs, which currently have a dropout rate of 90+% (Rivard, 2013).

A presentation by the UNESCO Chairs in OER (Open Educational Resources) at the Cambridge OCWC 2012 conference outlined the fundamental problem we face with higher education in the developed world. It is that the rapid expansion of the last 20 years has enlarged, virtually unchanged, a system designed to educate a small elite drawn from a

narrow social and educational background into a de-facto mass education system, which it was never intended to be (McGreal, 2012). As Bacsich (2012) observes, this strategy was problematic even in the ‘days of plenty’ before the current economic crisis. Now that this is economically unsustainable - that particular paradigm of higher education is breaking down.

Avoiding the Rhetoric of Crisis

Martin Weller (2012) at the OU cautions that we should avoid the language and rhetoric of crisis in education such as phrases like ‘Education is Broken’, as this usually translates into a sales pitch for a technical or commercial ‘fix’. George Siemens (2012), one of the original inventors of the MOOC concept, describes the rapid and well-connected development of venture capital backed initiatives to provide such ‘fixes’. As Klien (2008) describes, with detailed examples, the language of crisis as well as the actuality, has been used in political campaigns for the privatisation of publicly owned goods and services. In Europe the higher education system is still largely free at the point of delivery. We need to be aware that any open education initiatives that we participate in are going to be operating in a politically and commercially contested environment, facing pressures from internal conservatives and from an increasing number of private players (Facer, 2009). Rather than privatisation we see a widening public sphere in educational provision as the future, especially in relation to the idea of the ‘commons’. In the following section we describe some exciting examples that are providing a foundation for alternatives to the status quo, it is important to appreciate that the concept of the ‘commons’ is not a form of state ownership, it is bigger and wider than that.

2. Public Good and Public Goods: The Emerging Political Economy of Open Education – a foundation for the future

When socio-economic paradigms break down as they are currently doing for education, there is also an opportunity for innovation and experimentation. We can already see positive signs in the innovative responses to these problems that we list below, that are relatively simple, low-tech, and hold out the promise of being resilient. Such innovations are not accidental; they are part of a larger, evolving, social movement that is creating novel solutions to the current challenges. We think these developments provide essential foundations for the proposals we make for the future in the final section of this paper.

Legal Tools and Philosophical Leadership

The Creative Commons (CC) licensing system has been widely adopted by educational policymakers over the last 10 years and has become the legal ‘lingua franca’ of open education. This in turn has helped to support the (re) introduction of the concept of the ‘commons’ into civil discourse at a critical time when commercial interests were (and are) trying to privatize as much of the existing public sphere in society as possible. By using the language and codes of property law in relation to defining and protecting the idea of shared public spaces and public goods, CC licensing has been a profound innovation at a critical juncture.

Policy Leadership

The American Hewlett Foundation (Hewlett Foundation, 2013) has been prominent in supporting and funding open education initiatives for over 10 years and their lead has been followed in recent times by state authorities in the USA, UK, Europe, and elsewhere. These and other initiatives have led to the current growing ‘open education movement’. The message for Europe is clear, learn from experience elsewhere and prepare strong policy interventions with a long-term plan.

In the US, such as in California (Hewlett Foundation, 2009) and elsewhere (Creative Commons Polska, 2012) the lo-tech but high-impact tactic of state education authorities funding the creation of free and low cost digital textbooks and mandating their take-up and use by colleges is a dramatic example of practical measures designed to cut the costs of access to education for the less privileged. In the USA this is having rapid positive effects and is supported across the political divide, despite lobbying by the publishing industry.

Institutional Leadership

The entrenched perception that lectures are the epitome of university education is showing signs of breaking down. Why not record the best lectures, illustrate them with good quality resources, make them available for anytime access and review and use the time saved by academics to provide extra and better contact experience for students? As Vijay Kumar, the Director of MIT's Educational Innovation Office, puts it; 'then, during class, the focus is on hands-on exercises not passive information reception' (Kumar, 2012). This model has become known as the 'flipped' classroom. It depends on being specific, open and clear about the syllabus and increased upfront planning as compared to the traditional approach to teaching where planning and process are largely hidden from view. The implication is clear – if an elite institution can benefit from this then so can other universities. This also helps those arguing for change that are working in institutional contexts still in thrall to the lecture and traditional teaching methods.

Political Leadership – Sophisticated Interventions

There are signs that politicians and policy makers are getting more sophisticated about how to orchestrate funding, licensing, and policy to improve and open up education together with the grounded and realistic use of technology. The following example from California is a good illustration (outlined further in Creative Commons USA, 2012) building on the previous success of the Californian Open Textbook initiative. In 2012 a bill went before the California state senate proposing to address the problem of a shortage of college places that resulted in 400,000 students not finding a place on one of 50 introductory courses needed before they were able to progress with their education. The proposal aims to create a state funded online course 'market' where 3rd party providers (including MOOCs) can bid to offer online courses to these students. In return, the state is demanding that the 3rd party providers who want to enter this market (and get paid) must make their course learning materials and textbooks openly licensed using a range of designated CC licences. This neatly leverages the power of public money to add to the educational commons (a kind of reverse privatization) and pressures the existing traditional education system that cannot meet the demand. In the USA a common phrase to describe the philosophy behind this is 'public money for public good'.

Open Content and Open Access

There is a rising demand from politicians and within academia that publicly funded research, learning resources and other information artefacts like maps and data sets etc. should be returned to the public free of charge for social and economic benefit. This is a movement that is developing rapidly, making redundant the traditional role of commercial gatekeepers in the publishing industry. Concrete examples of this include; the UK government Finch report on open access to research outputs (UK Government, 2012), the \$2 billion US government programme creating free learning resources for colleges (Whitehouse, 2011) and the California education authority open textbooks initiatives previously described.

New Economic Educational Models

The growing amount of OER in circulation acts as a form of shared intellectual capital that in turn can be drawn upon to increase social capital. The US ‘Bridges to Success Project’ (BS2, 2013) is a strong example of this. High quality OERs from the UK Open University (OU) in Maths and Learning Skills were redeveloped and customised by a consortium of universities and colleges for US community college students. These were re-released as OERs. The powerful innovation, however, was to use these OERs to support inter-institution collaboration in the enhancement of existing programmes (including staff development) to support the progression of ‘non-traditional students’, with dramatic results (McAndrew et al 2012). Working together in this way and using shared learning resources was a new experience for the participants, and gives credence to Butcher’s (2011) assertion that what we are seeing is the de facto of assimilation of open learning tools and methods into ‘closed’ education.

Assessment and Credit

Assessment and Credit are part of the traditional powerbase of closed education; it is also a point of vulnerability and a vector for change. In the UK getting a university to accept and credit learning that has occurred outside their control can be a long and tortuous process. In the EU the European Credit Transfer System (ECTS) has long been established as part of the Bologna process for harmonising undergraduate education but it is still difficult to get academics to accept and credit learning that has happened elsewhere. This is one area where traditional closed education is vulnerable to competition from the open sector.

In the mid 19th century the University of London was involved in a number of substantial open education innovations that built on earlier innovations. Chief amongst these was the introduction of open and distance learning methods, including the separation of teaching from examination (still seen as radical in mainstream HE). This meant that students could be examined on their own learning, conducted independently of the institution, only needing to pay the fees of registering for an exam. In the USA this method is called the ‘challenge exam system’. To this day it is possible to complete a University of London Degree in this way for a total cost of less than £4,000 (UoL, 2012). This approach should be an important component of a future open education infrastructure as a means to ensure equality and rigour, so that the accreditation of open learning can be effectively endorsed in the ‘Educational Commons’ in a trustworthy way and gain public acceptance. Involving leading institutions in this development will be important in driving this process forward.

Digital Innovation in Assessment and Credit

Assessment and credit has been recognized as ripe for innovation in the digital age by the Mozilla Foundation with its Digital Badges initiative (Mozilla, 2013). This is essentially a way of providing a digital equivalent to the traditional paper exam certificate. However, because this is a digital artefact it can include proof of learning in the form of links to a portfolio of completed works and examples of application of knowledge and skills. This is especially important for employers who traditionally complain that a university exam certificate tells them very little about the attributes and skills of the person who possesses it, other than that they have passed a university exam. Trialling and adoption currently under consideration by leading institutions will be a major advance.

ODL Methods and Tools

Although Open and Distance Learning (ODL) has been practiced in higher education for over 150 years it is only very recently that it has been taken seriously by the mainstream, facilitated by developments in technology. There are a number of tried and tested methods

and tools that have emerged out of this sector that mainstream universities are now turning to in order to meet demand. An important and lucid guide to Open Educational Resources published by UNESCO and COL (Butcher, 2011) makes the significant observation that this is providing a way of introducing such open education techniques into the closed realm especially in relation to the role of resource-based learning.

3. Next Steps

Building on Success

In our view, the developments described in the previous section provide a great foundation for further development. Here we briefly describe how we think open (art) higher education can be taken forwards. Developments at Coventry, London and elsewhere open up exciting new possibilities for art education other than contraction and decline, by proposing different levels and modes of participation with a variety of assessment and accreditation models. The Department of Media in the School of Art and Design at Coventry University have, for several years, been making extensive use of social media (blogs, Vimeo, YouTube, Flickr, Twitter and iTunes U etc.) to present and collate resources to support a ‘Hybrid Open Class’ approach with interactions coming from a student ‘front of house’ and a ‘back channel’ to and from the social media world (Coventry, 2013). In the University of the Arts London (the largest art and design institution of its kind in Europe) there has been experimentation with online open ‘studios’ to share processes and the development of innovative use of rich media and progressive pedagogies to share elements of ‘tacit’ knowledge acquisition that have traditionally been thought impossible to share (UAL, 2013).

In the emerging open educational model the whole institution is beginning to be ‘flipped’ and defined by the academy going to where the students live, both online and, in a return to traditional forms of outreach, dispersed physical locations, working with community organisations and employers as equal partners. In this scenario the academy is defined by its community, not just its location, although the latter will likely always be important. As Facer (2009) observes, how institutions (and disciplines) manage this transition will be a major determinant of their future success.

New Paradigms for Progress

The challenge of changing higher education in difficult times is a classic example of what has come to be known as a ‘wicked design’ problem. Such problems are often ill defined, involve stakeholders with different and conflicting perspectives and have no clear ‘correct’ solution. Using standard methods cannot solve them; by their nature they demand creative solutions.

Because of the need for creative thinking, there has been a growing interest in applying design techniques to these kinds of problems (Rittel, 1988; Stolterman, 2008). In response to this situation the field of participatory and co-design has developed. This proposes that to effectively solve such problems it is best to actively involve all the stakeholders in the design process in order to ensure the solution / product / service is optimal. The need for such approaches has been recognised at the European policy level by the Social Innovation Europe (SIE) pilot project (<http://socialinnovationeurope.eu/>) to support networking activities for social innovators in Europe, which has been funded by the Directorate-General for Enterprise and Industry.

This design movement has formed its own international academic organization, DESIS (Design for Social Innovation and Sustainability) with a research and education network (<http://www.desis-network.org>) linked to leading art and design colleges across Europe and around the world. This could provide one of the future ‘hubs’ around which to cluster open art education projects. We think that for such initiatives to be successful they would need to incorporate and build on many of the innovations described in the previous section of this

paper. We suggest a guiding principle for publicly funded developments in this area should be the US mantra ‘public money for public good’ and that all publicly funded work should be mandated to add to the commons in some manner. Below we summarise what we see as the main features for the next steps in open higher art education:

- Create ‘living laboratories’ (physical and virtual) to gather data, explore and test different solutions, especially assessment methods, accreditation and the effective evidencing of learning. These will demand the active participation of internal and external quality assurance agencies (Bacsich, 2012). This will provide valuable practical contexts for discussions to take place about options for the future of higher education and, crucially, to ensure evidence based decision making can be achieved to support policy proposals
- Instigate open education initiatives as collaborative enterprises between institutions as a way of overcoming traditional inertia and resistance (Facer, 2009. Laurillard, 1994) using the ECTS infrastructure more widely.
- Trial the use of Mozilla Badges to provide more granular information and evidence about learning achievements in existing degrees and to provide evidence of learning that occurs outside the academy that may be accepted as part of a degree.
- Use the outputs to redesign existing universities/art colleges and/or create new ones – bootstrapping our way out of the present impasse

These changes may be enabled by technology; however, the drivers of the change will be social, cultural, educational, economic and political, both inside and outside the academy.

4. References

Bacsich, P. (2012) UNESCO IITE Policy Brief September 2012: ALTERNATIVE MODELS OF EDUCATION DELIVERY. UNESCO Institute for Information Technologies in Education Moscow.
<http://iite.unesco.org/pics/publications/en/files/3214709.pdf> Retrieved 30/4/13

BS2, 2013 <http://bridge2success.aacc.edu/>

Burke P, J & McManus J (2009) Art for a Few: Exclusion and Misrecognition in Art and Design Higher Education Admissions. <http://www.ukadia.ac.uk/en/projects/projects--research/admissions-research.cfm>
 Retrieved 30/4/13

Butcher, (2011) A Basic Guide to Open Educational Resources (OER). UNESCO & COL

Coventry (2013) Innovative use of social media networks to ‘teach in the open’: <http://process.arts.ac.uk/>,
<http://www.picbod.covmedia.co.uk/>, <http://photography.covmedia.co.uk/>, <http://www.phonar.covmedia.co.uk/>,
<http://www.creativeactivism.net/about/>, <http://wwwm.coventry.ac.uk/itunesu/Pages/itunesu.aspx>

Greller, W. (2013) Reflections on the Knowledge Society: MOOCs in the media
<http://www.greller.eu/wordpress/?p=3647> Retrieved 30/4/13

Creative Commons USA (2012) California Unveils Bill to Provide Openly Licensed, Online College Courses for Credit <http://creativecommons.org/weblog/entry/37278> Retrieved 30/4/2013

Creative Commons Polska, (2012) Digital School program with open textbooks approved by Polish government!
<http://creativecommons.pl/2012/04/digital-school-program-with-open-textbooks-approved-by-polish-government/>

Facer, K. (2009) Educational, social and technological futures: a report from the Beyond Current Horizons Programme. Available at www.beyondcurrenthorizons.org Retrieved 30/4/2013

Hattie, J. & Marsh, H. W (1996), The Relationship Between Research and Teaching: A Meta-Analysis, AERA, Review of Educational Research Winter 1996 66: 507-542

Hewlett Foundation (2013) Education Program <http://www.hewlett.org/programs/education-program> Retrieved 30/4/2013

- Hewlett Foundation, (2009) The Liberation of Textbooks <http://www.hewlett.org/newsroom/the-liberation-of-textbooks> Retrieved 30/4/2013
- Klein, N (2008) The Shock Doctrine: The Rise of Disaster Capitalism, Allen Lane, Penguin Books, London
- Kumar, V. (2012) Open Education on the Move: An Interview with Vijay Kumar. MIT News <http://web.mit.edu/newsoffice/2012/open-education-on-the-move-an-interview-with-vijay-kumar-0920.html> Retrieved 30/4/2013
- Laurillard, D. (1994) Rethinking University Teaching Routledge, London
- McAndrew P. (2012) A Bridge to Success <http://bridge2success.aacc.edu/include/pdf/presentation.pdf> Retrieved 30/4/2013
- McGreal, R. (2012) The UNESCO Chairs in Open Educational Resources: a year later and the road forward. OCWC 2012, <http://www.ucel.ac.uk/oer12/abstracts/220.html> Retrieved 30/4/2013
- Mozilla Foundation (2013) Open Badges <http://openbadges.org/> Retrieved 30/4/2013
- NALN (2005) NALN Original Funding Application (to HEFCE), citing HEFCE performance indicators for 2002-3
- OECDa (2012) Education at a Glance: Highlights, OECD Publishing <http://www.oecd.org/edu/highlights.pdf>
- OECDb (2012)<http://www.oecd.org/education/skills-beyond-school/48630696.pdf> Retrieved 30/4/2013
- OPAL (2011) OEP Guide: Guidelines for Open Educational Practices in Organizations (Vs. 2011), <http://www.oer-quality.org/wp-content/uploads/2011/03/OPAL-OEP-guidelines.pdf> Retrieved 30/4/2013
- Rittel, H.W.J, (1988) The Reasoning of Designers, Working PaperA-88-4, Institut fur Grundlagen der Planung, Stuttgart
- Rivard, R (2013) Measuring the MOOC Dropout Rate, Inside Higher Ed, <http://www.insidehighered.com/news/2013/03/08/researchers-explore-who-taking-moocs-and-why-so-many-drop-out> Retrieved 30/4/2013
- Siemens, G. (2012) Remaking education in the image of our desires, <http://www.elearnspace.org/blog/2012/04/19/remaking-education-in-the-image-of-our-desires/> Retrieved 30/4/2013
- Stolterman, E. (2008) The Nature of Design Practice and Implications for Interaction Design Research," International Journal of Design, Vol. 2, 55-65
- UK Government (2012) Government to open up publicly funded research <https://www.gov.uk/government/news/government-to-open-up-publicly-funded-research>
- UAL (2013) Social & Rich Media see: <http://alto.arts.ac.uk/>, <http://alto.arts.ac.uk/filestore/>, <http://process.arts.ac.uk/>, For innovative pedagogy, rich media and tacit knowledge see the Final report of the ALTO UK project <http://alto.arts.ac.uk/1009/> Retrieved 30/4/2013
- UoL (2012) Interview with University of London External Programme staff
- Weller, M. (2012) Education and the Language of Change, http://nogoodreason.typepad.co.uk/no_good_reason/2012/04/education-the-language-of-change.html Retrieved 30/4/2013
- Whitehouse (2011) New Job -Training and Education Grants Program Launched. Office of Science and Technology Policy, US Government <http://www.whitehouse.gov/blog/2011/01/20/new-job-training-and-education-grants-program-launched>
- Yuan, L. & Powell, S (2013) MOOCs and Open Education: Implications for Higher Education. JISC CETIS, <http://publications.cetis.ac.uk/wp-content/uploads/2013/03/MOOCs-and-Open-Education.pdf> Retrieved 30/4/2013



Cristobal Cobo

** The slow move of journals to open access and the low participation rate of university faculties in institutional repositories indicates that simply promoting the benefits of new formats of scholarly communication is not enough.*

** The 'open access' movement in the scholarly literature can offer promising possibilities for stimulating scientific work, by: a) providing access to research; b) speeding up scholarly communication and scientific dialog between researchers; and c) offering greater visibility and impact opportunities.*

** Research indicates that free access to scientific articles increases the number of resulting citations; open access academic articles are cited by peers more quickly than articles published in non-open access journals*

** If full-text, open access scholarly publications were to be used as data sources for citation-based science evaluation, scholars might be more willing to make their work available for open access.*

** It is necessary to bring open access and new publication formats into the tenure evaluation system.*

UNESCO convened in June 2012 the World Open Educational Resources Congress. One of its invited speakers was Harvard's Lawrence Lessig – co-founder of Creative Commons – who explained that knowledge elites ought to ensure free access to content for those sections of the population who can't pay for it. He emphasized that being a member of the academic community carries an obligation to enable access to one's own work. Lessig also explained the importance of adopting new forms of access that remove unnecessary controls that are automatically built into the current system of publication. He added that while he believed that author rights are important ("I am against abolitionism... I think copyright is essential") and did not believe in a dichotomy of "open" and "closed" work, he considered it important to recognize more flexible models of publication.

The 'open access' movement in the scholarly literature can offer promising possibilities for stimulating scientific work, by: a) providing access to research; b) speeding up scholarly communication and scientific dialog between researchers; and c) offering greater visibility and impact opportunities.

Today, bibliometric techniques are increasingly used as an intrinsic component of a wide range of evaluation exercises. However, the current tendency is for institutions to be graded more on the visibility of their products than on their long-term reputation or resources. The past few decades have seen a large number of citation analysis studies being undertaken in

research fields from natural to social sciences and the humanities. Citation analysis results have also been used widely in scientific evaluation for considering the granting of tenure and the promotion of academics, amongst other purposes.

Citation indices offer a new mode of analysis of the popularity and impact of specific articles, authors, and publications. The introduction of the Journal Citation Reports (JCR) from Thomson Reuters had given bibliometrics a great methodological push. Science indicator research has also been instrumental for the development of measuring and analysing science since the 1970s.

A number of academic journal databases exist today, offering indices of citations between publications and mechanisms to establish which documents cite which other ones. They differ widely in cost to the user. Scopus and the JCR are major citation indexes that limit their records to those journals deemed by experts to be scholarly and significant to the journal's given discipline. Both are subscription based, and therefore generally restricted to libraries. Other, free, citation indices include CiteBase, CiteSeerX, Google Scholar and Microsoft Academic Search.

The JCR's citation indices have been used as the data source for most of the citation analysis studies reported in the literature to date. They have contributed significantly to the wide application of a citation analysis approach in various studies and in scientific evaluation, but have also drawn considerable criticism, especially when determine tenure decisions.

JCR is considered to be one of the largest and most influential academic citation databases, containing over 46 million records relating to 11,261 high impact journals including 1,400 journals that are open access. As Zhao acknowledges, it is well known that JCR citation indices are still the main data source for citation-based science evaluation, pushing scholars to publish in journals indexed there. Scopus is also regarded to be large, with 46 million records (Delasalle, 2012) relating to 18,500 peer-reviewed journals 1,800 of them open access. It is noteworthy that between them these two databases register about 10% of the open journals indexed in their respective databases.

According to the Directory of Open Access Journals (DOAJ), an authoritative listing of peer-reviewed scholarly open access journals, the volume of high quality peer-review journals is growing quickly, as is the number of authors who want to publish in open access journals.

DOAJ represents a great opportunity particularly for "hybrid open-access journals" where only some of the articles require payment and the rest are open access. 'Gold' and 'Green' open access journals also suggest new funding models according to Houghton & Oppenheim). Authors can use the Joint Information Systems Committee (JISC)-funded RoMEO, a searchable database of publishers' policies with simple guidelines for publishing self-archiving journal articles.

JCR citation indices suggest a direct correlation between the number of times a particular article is downloaded and the number of citations it has in other indexed journals. Then again, the relationship may be more complex, since one study has posited a circular relationship, with downloads affecting citations, and citations in turn affecting downloads (Moed, 2005). Interesting studies on the relationship between citations and downloads can also be found for Citebase, an impact-ranked search service that indexes open access papers in ArXiv.

Other research indicates that free access to scientific articles increases the number of resulting citations; open access academic articles are cited by peers more quickly than articles published in non-open access journals. Studies indicate that open publications are therefore likely to benefit science by accelerating the uptake of research findings and by maximising

the impact of scientific work, as (Eysenbach, 2006; Piwowar, 2010; Wagner 2010; Borgman 2011, Norris, Oppenheim, & Rowland, 2008) explain. However, it would be unfair not to mention that other authors have expressed skepticism about whether open access articles are cited frequently.

A remarkable example of a repository of open access academic content is the Social Science Research Network (SSRN), which encourages the early distribution of research results and content, downloadable at no charge to the user. SSRN has registered 56 million downloads to date, totalling 1,000,000 per month. The SSRN eLibrary has indexed 7.7 million references and 5.2 million citations.

The slow move of journals to open access and the low participation rate of university faculties in institutional repositories indicates that simply promoting the benefits of new formats of scholarly communication is not enough. If full-text, open access scholarly publications were to be used as data sources for citation-based science evaluation, scholars might be more willing to make their work available for open access.

Finally, it seems necessary to bring open access and new publication formats into the tenure evaluation system. Doing this could not only contribute to the tenure process, but may also serve to promote open access and more efficient knowledge dissemination. As many other times in history, the required mechanisms and technology to promote the change are already available, but cultural and institutional constraints make the transition to open particularly slow.

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Open Educational Resources on the Road to the Best Case Scenario - Guidelines for Centres for Academic Instruction

Martin Ebner, Sebastian Kelle and Sandra Schön

A best case scenario with OER as essential stakeholder of future higher education will need a systematic implementation.

Worst and best case scenarios in the year 2030 are the two antipodes for the future development of open educational resources (OER) in higher education (HE). As additional (realistic) vision we develop guidelines for centres for academic instruction, aiming at a systematic implementation and distribution of OER related to HE.

1. OER in higher education in the Year 2030

At a first sight, 17 years are not a very long time, especially for often very conservative and bulky educational institutions like universities. However, looking back on the last years and the relatively short history of the Open educational resource movement and its success, 17 years in higher education are a long period, especially when considering this time equals about 5 generations of students. In this first part of our publication, we will use the scenario technique to sketch possible developments of OER in HE.

Worst case scenario: learning is a matter of personal income in a closed knowledge caste system

As ambassadors of open educational resources, we focus on the future success of its movement and its influence on open education, human knowledge, and on a society based on sharing and openness in general. Nevertheless, let us start with a very pessimistic view, the so-called worst-case scenario:

In the year 2030, knowledge and learning is a matter of money. Within higher education, knowledge is bound to universities and their official students. Sharing and publishing of learning materials is forbidden, the main assets of an exclusive university are their protected and confidential learning materials. Students are instructed not to talk to anyone about learning methods and materials, and are limited to their university's own resources. Knowledge is something that you have to pay for, in its different meanings. High cost for security maintenance around the protection of learning materials are an additional cost factor counting into enrolment fees. Discussing an old vision of open knowledge sharing in the world of higher education or the term "open educational resource" is seen as something strange, old fashioned and politically incorrect.

Best case scenario: The term "open educational resource" is unknown, because OER are ubiquitous

In the year 2030, the term "open educational resources" is forgotten, because these kinds of resources are ubiquitous and in the meantime a synonym for all existing (learning) resources. The big invention a decade ago was a new Internet service called "Open Content Network" which basically consists of liberally licenced public domain content and open source concepts. Developing, using and sharing learning resources in an open way is the base for

lecturing and learning within higher education. Although copyright laws are still existing in older Internet services as the WWW (legislative infrastructure is even more sedate as higher education), the usage of the “Open Content Network”, that means (one) open license, including modification and commercial use, is common practice in higher education and “share alike” options are not used anymore.

The reasons for this evolution are not only political and idealistic reasons, such as an open world of open knowledge; but additionally, the development of tools building on OER, such as learning resource recommenders and teacher assistants, were main enablers to the overwhelming success of open educational resources. Everything that made it technically more complicated to develop and to deal with OER in former days (around 2013, e.g. correct citation, correct usage of materials, including meta data, including license etc.) is now automatically supported and respected by daily used tools. Looking back to 2013, the Creative Commons Search¹, the App HAIKU DECK², and similar developments were such first steps towards current OER service applications. In the year 2030, the following developments have reached a mature stage:

- First of all, new services are available and used on every teacher’s and learner’s device and are influencing the daily life within HE. For example, the “Learning Nuggets Composer” recommends teachers and learners open learning objects as well as whole courses and supports their management, development and re-publication, building on a community-based quality and feedback system (and the universities’ syllabus and/or the learners’ interests).
- Teachers’ qualification in higher education is knotted directly to their reputation index at a learning resource and teaching quality platform, that systematically interpret and exploit (re-)usage of and feedback on learning materials and methods³.
- Teaching rewards and funding options are also bound to the activities and achievements within this “learning resource and teaching quality platform”. High scorers are able to earn enough money through such public funds that they are no employees of universities anymore.
- To receive enough teaching reputation and tenure tracks within universities, young academics are keen on the development and improvement of learning materials. To process orders from a free ordering system for learning resources, or teaching within open courses and tutorials are common ways to achieve the necessary levels of reputation.
- These infrastructures are financed by the society, states and also non-governmental organisations, as it is seen as a global aim and necessity of investment to develop worldwide knowledge and human development.
- As thousands of learning resources with high quality are available for free, the role of lecturers in HE has changed arbitrarily. Nowadays they are tutors and facilitators and tutoring as well as other service components are critical for HE.

Realistic case scenario? - A wide range of options, but OER will win!

Developing a realistic case scenario for OER within HE in the year 2030 is affected by a lot of influencing variables and moderators: the development of technologies, the evolution of society, and the (possible) change of legislative (copyright) are only few of them. Looking at future studies, statements for the next five years are seen as long-term foresights. Furthermore, future studies on such time spans typically (only) extend key trends and

¹ <http://search.creativecommons.org/> (2013-05-04)

² <http://www.haikudeck.com/> (2013-05-04)

³ in the year 2013 something similar was known for open source development: <http://ohloh.net> (2013-05-04)

developments¹. Thoughts about developments within the next 17 years are potentially of small validity: The wide range of options is deeply influenceable. Nevertheless, our own research work on the future of open educational resources within the German speaking Europe shows clearly, that OER will get more and more important: More than 40 experts at a two-days-workshop about the future of learning materials clearly indicates the rising success and importance of OER. They stated that learning materials, which are not openly available, will not have any importance in the year 2017 (Ebner & Schön, 2012). According to our stakes, this development has a likelihood of 78 per cent by December 2013 (vgl. Schön & Ebner, 2012). Due to these facts further developments of OER are just a matter of time, but we like to ask how systematic these developments and implementation in higher education will be.

From our perspectives, important stakeholders within the OER adoption within HE are the centres for academic instructions. Although we love to dream and develop visions on the future of OER, we propose to foster a systematic implementation of OER on their road to success.

2. Making it reality: Guidelines for centres for academic instruction

Centres for academic instruction have numerous forms of appellations, roles and institutional settings. Sometimes, e-learning centres are dealing as academic instruction centres, and sometimes universities have common central teaching centres. Within this second part of our paper we like to discuss how these organizational units may benefit from OER and how they might support OER within their institutions. The main idea is based on several sketches and prior concepts of the authors (Schön, 2011; Schaffert, 2009; Schaffert & Ebner, 2010; Ebner & Stöckler-Penz, 2011, Schön & Ebner, 2013), as well as by others (UNESCO & COL, 2011).

How centres for academic instruction may profit by the OER support

Centres for academic instruction have the following benefits from leveraging and supporting of OER among university teachers. Firstly, teachers tend to get overwhelmed with the wide field of intellectual property rights (IPR) regulations, which are especially complex (or even frustrating) in European countries. The use of OER avoids potential IPR traps when dealing with online materials (either in a reusing or creating mode). Secondly, centres for academic instructions can (re-)use available OER materials within their institution more easily than teaching materials that have a potentially hindering copyright status. Finally, OER helps in achieving a higher visibility and outreach of the institution itself, which will ultimately reflect back on the organizational unit responsible for first establishing an OER-friendly practice.

Strands of activities for centres for academic instruction

In the following outline, we describe guidelines for stakeholders of academic instruction that are planning to support OER, e.g. by providing teachers with information on how to use and benefit from OER. This proposal is divided into different fields of action representing several organizational contexts: the centres for academic instruction themselves, the universities as wholes as well as comprehensive measures for HE in general. However, although respective activities are typically interdependent, this does not mean they should happen in a strict sequence.

The suggested measures described in the following paragraphs are visualized in figure 1. This includes “defined goals” and a suggestion for “evaluation” of the respective activities. It is

¹ As it can be seen within the results of this future study: <http://www.futureagenda.org/pg/cx/view#0> (2013-04-26)

important to bear in mind that a substantial argumentation for certain measures of centres for academic instruction is vital, explaining clearly why certain goals have been set and what these goals are. These goals can be linked to arguments that support or illuminate the importance of OER to a university's educational strategy and their responsible organizational bodies. It is also crucial to analyse potential frictions and resistance factors that may influence activities and measures, and vice versa.

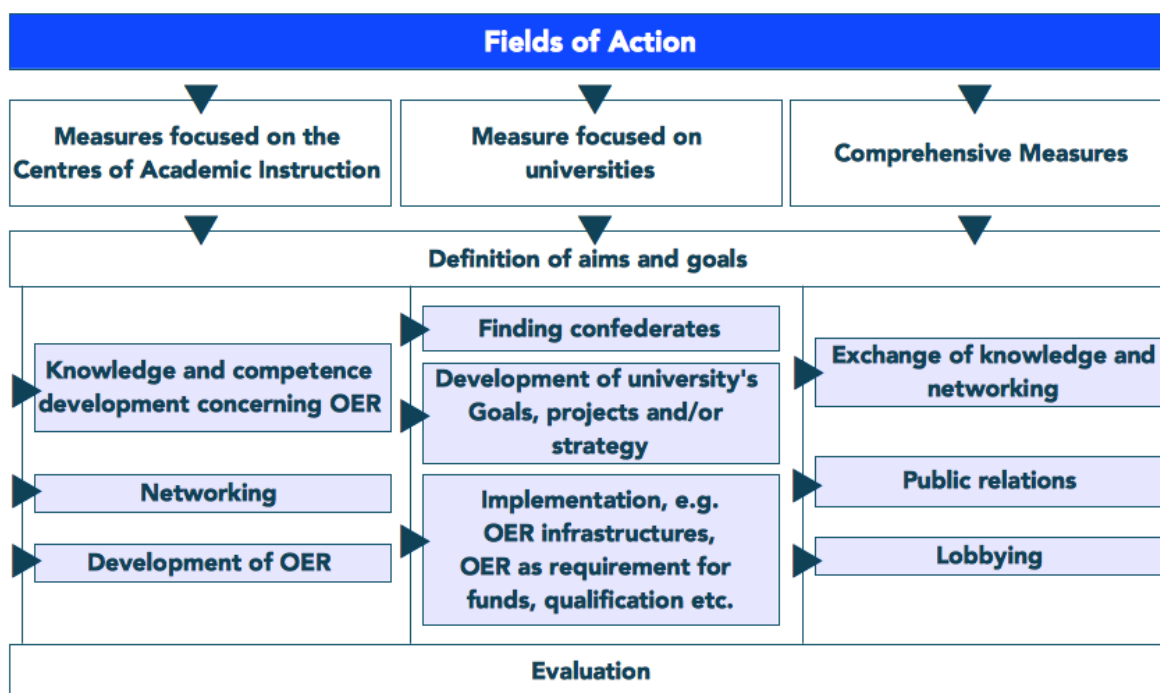


Figure 1: Field of actions and guidelines for centres for academic instruction

Guidelines for measures focused on the centres for academic instruction themselves

First, there is a need for action inside the centres for academic instruction themselves. Organizational units for academic instructions should take a swift pace on acquiring knowledge and gathering competences with respect to the topic of open educational resources, using their networks with other institutions. Exchange of knowledge is a key factor for the dissemination of open educational resources. When producing learning and teaching materials, centres for academic instruction should set a good example to offer their materials as open educational resources.

Guidelines for measures within the universities

Internal measures have to concentrate on incentives among partners and allies, beginning to proactively establish an educational strategy, both inside a university and within a defined network of universities. This is an important cornerstone for further incentives that involve the usage of OER, for example in teacher training. The probability is high that there are already a number of teachers within the own institution who are leveraging OER. These individuals are usually easily found due to a typically notable presence on the World Wide Web. Certain key positions within the organization can serve as strategic partners, such as stakeholders within the university library, faculty or administration. Especially within the administrative body there are usually specialists for intellectual property management, sporting a highly relevant professionalism on the topic of distributed learning materials. When approaching these key persons, it is important to know the potential and challenges of OER,

in order to gain the necessary support and commitment to facilitate activities that might otherwise be difficult to achieve in such an environment.

Guidelines for comprehensive measures within higher education

Finally, institutes for academic development should take measures that are targeting a cross-university context. Relevant key fields are exchange schemes, cooperations as well as public relations and publication initiatives. Centres for academic instruction should actively support OER projects, and participate in conferences and initiatives, especially those that focus on shaping and suggesting IPR.

3. Acknowledgments

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4. Literature

Ebner, M. & Schön, S. (2012). Die Zukunft von Lern- und Lehrmaterialien: Entwicklungen, Initiativen, Vorhersagen. Norderstedt: Book on Demand; URL: <http://o3r.eu> (2012-02-20)

Ebner, M.; Stöckler-Penz, C. (2011), Open Educational Resources als Lifelong-Learning Strategie am Beispiel der TU Graz. - in: The Lifelong Learning University. (2011), S. 53 - 60

Geser, G. (2007). Open Educational Practices and Resources. OLCOS Roadmap 2012. Salzburg: Salzburg Research.

Hylén, J. (2006). Open Educational Resources: Opportunities and Challenges. URL: <http://www.oecd.org/dataoecd/5/47/37351085.pdf> (2009-04-07)

Johnson, L., Levine, A., Smith, R., & Stone, S. (2010). The 2010 Horizon Report. Austin, Texas: The New Media Consortium.

Schaffert, S. & Schwalbe, C. (2010). Future Media Adoption in Learning and Teaching: Current Study Design from the Perspective of Cultural Studies. In: M. Ebner & M. Schiefner (eds.). Looking Toward the Future of Technology Enhanced Education: Ubiquitous Learning and the Digital Native. Hershey: IGI Global, pp. 1-11.

Schaffert, S. (2010). Strategic Integration of Open Educational Resources in Higher Education. Objectives, Case Studies, and the Impact of Web 2.0 on Universities. In: U. Ehlers & D. Schneckenberg (eds.), Changing Cultures in Higher Education – Moving Ahead to Future Learning, New York: Springer, pp. 119-132.

Schaffert, S. & Ebner, M. (2010). Die Standortattraktivität europäischer Hochschulen fördern? – Der mögliche Beitrag von Open Content. In: Zeitschrift für E-Learning, 5, 2, pp. 54-59.

Schön, S. (2011). Etablierung offener Bildungsressourcen in Forschung und Lehre. Beitrag für die AG „Medienbildung in der Hochschule“ (edited by Alexander Florian & Silvia Sippel) for the conference „Keine Bildung ohne Medien“, Berlin, pp. 27-28.

Schön, S. & Ebner, M. (2012). Die Zukunft von Lern- und Lehrmaterialien: Wetterergebnisse bei zwölf ausgewählte Thesen zur Entwicklung in den nächsten 18 Monaten. In: bildungsforschung, 9, 1, URL: <http://bildungsforschung.org/index.php/bildungsforschung/article/view/148.org/index.php/bildungsforschung/article/view/148> (2013-05-05)

Schön, S. & Ebner, M. (2013, t.b.p.). Offene Bildungsressourcen als Auftrag und Chance – Leitlinien für (medien-) didaktische Einrichtungen an Hochschulen. In: G. Reinmann, M. Ebner & S. Schön (eds.), Hochschuldidaktik im Zeichen von Heterogenität und Vielfalt, Norderstedt: BoD, pp. 7-29.

UNESCO & COL (2011). Guidelines for Open Educational Resources (OER) in Higher Education.
URL: <http://www.col.org/resources/publications/Pages/detail.aspx?PID=364> (2012-02-20)



Symbiotic Learning

Olav Eikeland

Symbiotic Learning Systems: Reorganizing and Integrating Learning Efforts and Responsibilities Between Higher Educational Institutions (HEIs) and Work Places

The attached article presents the idea of “symbiotic learning systems” as a possible strategy for dealing with institutional knowledge and learning challenges posed by an emerging transition from “socially monopolized” to “socially distributed” knowledge generation and distribution. As knowledge production and learning become increasingly relocated from segregated and specialized institutions for research and education and socially distributed to and within “ordinary” work life, corresponding changes are required in the basic institutionalized relationships between research, higher education, and practical knowledge application.

The concept of “symbiotic learning” addresses these problems by deconstructing age-old divisions between vocational and liberal education. In order to build foundations for a changed and improved relationship between advanced organizations in work life and institutions of higher education and research (HEIs), the general preconditions for learning in the work places themselves need to be addressed.

In modeling general preconditions for learning, and even in transcending the division of labor between manual and intellectual work, inspiration is found in the philosophy of Plato and Aristotle, and in their search for intellectual “commons” (τὰ κοινά) as constituting public spheres and community among individuals.

Open access article in [Journal of the Knowledge Economy](https://doi.org/10.1007%2Fs13132-012-0123-6)
March 2013, Volume 4, [Issue 1](#), pp 98-118:
<http://link.springer.com/article/10.1007%2Fs13132-012-0123-6>



Education 2030: the MOTHER's perspective

Rita Falcão de Berredo

Reflections from a mother of a four year old boy... my hopes, my concerns about Open Education initiatives.

I am mother of a boy, a beautiful four-year-old boy. He was born in 2008 so in 2030 will be 22. Right on the spot to be the beneficiary (or the victim?) of Open Education in 2030. I am mother, so I worry about his future. I worry and I have high hopes. This paper will talk about both, my hopes and my worries.

I am a worker, a student and a researcher of e-learning and Higher Education. From my perspective these are exciting times. Education is changing because of technology, because of Europe, because of the increased mobility of the people. Everything is changing so fast that it is hard to follow even for a researcher. Initiatives like the Bologna Process, the European Qualification Frameworks, the rise of e-learning, the social networks and now the OER and the MOOCs are reshaping Education. It is probably one of the best times for being a researcher in the field of Education. But as a mother, is it as exciting?

In this hyper connected world I envision wonderful opportunities for my son. The whole world is accessible through a computer or a mobile device. He can read, listen and watch different content produced in almost any part of the world. He can listen to the greatest thinkers of his time and he can even interact with them. He can easily learn a new language, experience new cultures and travel to a different country. He will probably have friends from all over the world with whom he will communicate frequently. We live in Portugal, a country surrounded by water and Spain. So, this possibility of interacting with other cultures is of great importance for his future.

But what does this mean in terms of his Education? What will this hyper connected world offer him in terms of Education? Right now, the world of Education is vibrant with open education initiatives. We have come a long way since the Open Courseware initiative of MIT. Schools from all over the world have channels in Youtube and iTunes U. The top Universities in the World are offering MOOCs. You can find open journals in different areas of research. You can learn almost everything you can think of, online and for free. But this is now. How will it be in 2030?

One of my first mum's concerns is about focus and concentration. How will my son be able to select the right content from all the thousands of hours of videos, from the millions of learning resources that will be available in 2030? How will he be able to not get lost or be overwhelmed with the vast amount of information available online? He will need specific skills to deal with information. He will need to learn how to select the important data from the rest. He will need to learn how to stop himself from jumping from one link to the other; he will need to learn how to keep himself focused in his learning outcomes.

Focus and concentration are also important when we deal with technology. Technology invades our lives all the time when we try to be productive: e-mails, facebook, text messages are all intruders in our productivity. Now, in 2013 we are still learning how to multitask.

Already we agree that the digital natives are better at multitasking than we are. But are they better at focusing? Can they concentrate in one task? How will this affect my son's learning and productivity?

Still in the same line of thought comes another of my worries. New trends in Education are concerned with personalized learning paths, the recognition of prior learning (formal and non formal) and the recognition of work experience. Again an amazing opportunity for embracing the diversity of learning profiles. This trend will benefit from MOOCs and other open Education initiatives. This means that my son might have the opportunity to choose what he wants to learn and may even choose the online provider for the learning experience. But who will help him choose? Who will provide guidance in choosing a learning pathway that will lead him to a profession or other type of useful set of learning outcomes? My concern is that all this openness in learning pathways will take us back to Renaissance when the world is still claiming for specialization.

One possibility is that, at some point, my son will want to have his learning accredited. To achieve some type of certification, he will have to provide evidence of achieving a specific set of learning outcomes. This of course will provide some type of guidance to his learning. But still, I believe that students will need closer guidance to help them achieve what they want. Who will provide it and what will be the cost? Will we reach a situation where the contents are open but support (or instruction?) is paid? Certification will also be crucial in Open Education. Certification and assessment are already being discussed in relation to MOOCs and other types of open education. The same questions emerge: who will provide them and how much will they cost? How open will Education be if students will have to pay not for a full package/process of education but for some bits? How will this affect the quality of the Education system?

Current news are already unveiling possible funding models of Open Education that might have serious impact on Education. Giving current funding policies in Higher Education, some professors(1) are already concerned that top universities will be licensing their MOOCs to other Higher Education institutions, increasing the gap between universities and consequently promoting inequity among students. Other opinions (2) predict that students from richer families will be attending face-to-face education while students from poor families will be attending online open courses and apply for certification at lower prices. Again, this will increase the gap between the rich and the poor. I don't want my son to be an online student of MOOCs, interacting with a computer instead of interacting with persons. I don't want him to think that watching videos and completing online assignments marked automatically is Education.

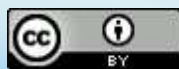
A final concern is related with expectations. Top universities are providing MOOCs for free and some are already certifying attendance and completion. What expectations will this create on these students? Will their expectations be matched by the labour market? What will be the value of these or similar types of certificates?

Open Education is a wonderful democratic initiative. But my deepest concern as a mother is that Open Education will provide a sustainable business model for higher education that will reach more people but that will also increase inequity in the access to high quality education.

References

(1) http://chronicle.com/article/Why-Professors-at-San-Jose/138941/?cid=wc&utm_source=wc&utm_medium=en

(2) http://www.mckinsey.com/insights/social_sector/college_for_all



Encouraging the emergence of viable business models for Management Schools in 2030

Maria Laura Fornaci, Cristina Godio, Lee Schlenker

The aim of this vision paper is to provide an innovative snapshot on the potential impact Open education could have on the value chain of European Business Schools. Rather than propose an illusive blue sky vision, we argue here that future possibilities will be bounded by current business models, that there will be no one "best way" but many "best fits" depending on each school's chosen market and organizational strengths, and that future value will depend on the hard choices in shaping the future of management education.

The business of management education is becoming progressively more complex as Business Schools face an increasingly uncertain and competitive marketplace. The introduction of innovative technologies offering new opportunities for producing and delivering teaching and training services has done little to change the business model Management Schools have been operating under for the last one hundred years.

Business Schools are facing challenges on two levels: on one level the pressure to preserve market share and to produce new revenue streams and, on the other, to understand how to integrate disruptive innovation (i.e. Open Access Resources–OER) into their core DNA. Responding effectively to these challenges will require reshaping traditional business models and the related value chains.

A business model describes how an organization delivers value to customers, entices customers to pay for its products or services, and converts those payments to profit. The strength of a business model depends on the organizations' ability to 1) segment its market according to customer needs, 2) implement processes and networks capable of producing the products or services required to fill those needs, 3) measure the results in order to insure that the resulting revenues are produced in a sustainable and if possible unique way. As such, a business model provides an organizational blueprint for generating the revenue needed to cover costs, reward stakeholders, and reinvest funds in order to remain competitive.

Given both the challenges/opportunities inherent in globalization (higher worldwide competition counterbalanced by the possibility to reach wider and remote markets also by means of partnerships) and the impact of new technologies on knowledge production and delivery mechanisms; organizational business models need to evolve to account for emerging opportunities of *collective intelligence* (strategy being defined not just by a school's administration but together with its internal and external clients), *network effects* (going beyond formal processes to leverage informal networks), *user generated contents* (with new technologies corporate partners and students can contribute as content producers), and the possibility of *self-improving systems* (defining quality standards not to maintain the status quo but to help the organization evolve to meet new client demands).

Business Schools most diffused value chain and business model and current challenges

Higher Education's basic value chain in general, and that of a the Business School in particular consists of a physical location where the school aggregates faculty (mainly by employing them with long term contracts), attracts students, delivers courses and finally produces “graduates/trainees” (being them both students and/or corporate clients). The process is similar to a production-based model whereby a selected input (qualified students) arrives at a manufacturing plant (called a school) where it is “processed” by knowledge professionals (called the faculty) to deliver an output (the knowledge-certified graduates-trainees) qualified (through placement services) for jobs around the world.

Two distinct strategies, *research-intensive* and *teaching led*, shape the implementation of organizational value chains. In the first case the Business Schools require their faculty (and pay for its time) to invest a relevant part of its time in research driven project/activities in order to produce a certain number of publications each year; and in the second case the Business School focuses the most its faculty's attention on designing and delivering courses in order to have an optimal number of graduates-trainees each year.

The assumption behind the research-intensive model is that the core role of Business Schools should be to increase the dissemination and consumption of research to practitioners; whilst the teaching led model is justified by the assumption that Business Schools need to ‘engage’ with practice and put in place a dialogical rather than linear model of knowledge production (research) and dissemination to reduce the theory/practice gap.

In most cases Business Schools strategic focus lies somewhere in between these polar positions leaving them with a “dual system of purposes and corresponding metrics that are all too often contradictory and confusing rather than cohesive”.

Concerning existing business models, they can be grouped in five different typologies:

- *Direct Delivery Model* (DDM). This is the most traditional and most common model, where the research and teaching activities are delivered to clients (being them graduates or companies) in a physical campus/training setting by a selected employed Faculty located in the same place; and revenues come mostly from tuition fees for course participation, and on subsidies and grant for research activities.
- *Bricks and Clicks Model* (BCM). This is the evolution of the DDM, with the partial integration of new technologies as channel for marketing activities and for the delivery of additional teaching activities (in combination with class-based one or as “stand-alone”, for free, programmes, as marketing tool for branding and stimulating enrolment in traditional classes). The revenue model is the same of the DDM.
- *Franchise Model* (FM). This model is based on the idea of a nationally or internationally successful school “exporting” its reputation and core processes to “developing” markets. Essentially, the school acts as a lead supplier who offers local schools for a fee the use of their trademark and deliver branded courses and programs.
- *Collective business model* (CBM) . This model is built around strategic alliances, partnerships and joint programs designed to pool reputational capital, resources, information and other benefits for their members. As higher education becomes a global business, local organizations have looked to collective agreements to leverage limited capital, global marketing capabilities, purchasing power and technology necessary to operate profitably

- *Managed Services Model (MSM)*. Managed Services refers to the practice of outsourcing the day-to-day management of specific business processes to improve operations. The targeted services can include administration, marketing, course production and IT support activities. Most MS providers invoice setup costs and ongoing flat fees, which allows educational organizations with predictable operational costs.

The sustainability of the traditional business models are challenged today by several market trends connected to the evolution of the consumer behavior, the raising costs of operations (campus based, class-based, delivery mechanisms with a “employed” Faculty) combined with the increased international competition putting programmes’ fees under pressure, and to the difficulty in measuring the added value provided by the traditional class-based setting for students’ learning outcomes/results.

Table 1 - Main challenges

Evolution of consumers’ needs	<ul style="list-style-type: none"> • Students as consumers • A larger percentage of older, working, and/or more culturally diverse students (Bloom, 2012). • Increased customization needs (to both learners’ and corporates’ operational needs) • Increased time-pressure in delivering customized course/services
Operational costs & competition	<ul style="list-style-type: none"> • College and Faculty affordability/unaffordability • A competitive landscape – intra-state, inter-state, internationally, and virtual (rise of MOOCs)
Measurable Results	<ul style="list-style-type: none"> • Time in college or in class-based programmes does not result in college success/graduation or skills improvements

The key question here concerns the types of innovation that could help Business Schools face the market challenges in the foreseeable future.

Emerging Business models for Open Education in 2030

Business Schools can and should adapt their business models and resulting value chains to leverage the opportunities offered by innovation:

- **The transition from physical settings of on campus/learning to Distributed Virtual Learning Networks.** In the context of globalization and rapid technological innovation, Business Schools can evolve into distributed virtual knowledge and learning networks with multiple (thanks to partnerships with other organizations worldwide) /multichannel (thanks to the massive use of ICT for course delivery) access points , allowing genuine open access (without any barrier of space and time) to learning experiences to different targets (students, non traditional students, companies) from different places, and alongside the entire life (lifelong learning) . The school of the future will no longer be confined to one physical location.
- **The value of connecting, rather than creating, value.** Given the phenomenon of OER and the connected possibility to transform consumers into producers of

Educational Resources, Business Schools need to gradually move from the production-based model, assuming that knowledge and courses should be fully developed internally, to the networking model, assuming that Business School should be able to select and meaningfully aggregate into customized and certified learning path, OER developed by others. For reshaping the value chain in this direction new internal process and organizational structure are needed, combined with specific new skills of the operational staff.

- **Positioning “Open Education” as alternative revenue streams rather than “free” education.** If in Open Education (OE), “open” is defined as ‘free’ in every sense, its introduction could be seen by Business Schools’ General Managers as a tremendous risk for the survival of their organizations, since the only sustainable business model seems to be the external funding (subsidies) model, which could not be feasible for a Business School. Whilst if “open” is defined as “accessible everywhere at an anytime for anyone”, some new business models can be developed.

In the table below a comparison of old (DDM, the most traditional one) and emerging business models is provided in order to stimulate the reflection and discussion on how the future Executive education business could be transformed (even radically) in 2030 by OE and how this transition could be prepared and enhanced.

Table 2 – Business models comparison

	TODAY -2013	TOWARDS 2030		
	DDM - Direct Delivery Model	EPP- Education Personalized Portal	EH- Educational Hub	ERSE - Education Search Engine
Business Models	Organization offering research and training courses/services on a physical location	Organization offering selected OER and a related set of value added services to the end-users	Organization that acts as a central portal for other OER providers, where partners pay a hosting fee to offer their materials and services to a broader public.	Content base search engine selecting the OER most relevant to users' needs
Customers segments	<ul style="list-style-type: none"> - Individual users (Post graduates and Professionals) - Small, Medium and Large companies 	<ul style="list-style-type: none"> - Individual users (Post graduates and Professionals) - Medium and Large companies 	<ul style="list-style-type: none"> - Business Schools - VET organizations 	<ul style="list-style-type: none"> - Device producers
Possible value propositions	<ul style="list-style-type: none"> - Excellence in research - Excellence in pedagogy 	<ul style="list-style-type: none"> -Customization to learning needs and operational needs of individuals and organizations -Enhancing the lifelong learning process -Reputation (ability to select and distribute high quality customized contents and teaching services) 	<ul style="list-style-type: none"> -Centralized value added services (i.e.. additional resources, authoring tools and formats for producing OER, train the trainers to use authoring tools and formats); -Costs saving by providing the technological platform and administrative processes; -Branding, reputation and visibility provided by the host institution 	<ul style="list-style-type: none"> - Added value tools offered to the devise buyers
Possible Related Revenue model	<ul style="list-style-type: none"> - Programme fees - Subsidies/grants for research activities - Donors 	<ul style="list-style-type: none"> -Different pricing for individual users based on different level of support and accreditation needed/requested by students. Learning resources are free, but the time of facilitators to selected, aggregate them in a meaningful and customized course/path, the tutoring activities and the accreditation service are charged. - Different pricing for customizing the platform and services to corporations' needs -Donors: ex alumni (that could benefit for all their life to the free access to the learning environment), Technology providers (that could provide for free the updates needed to the LMS system) - Advertising 	<ul style="list-style-type: none"> -Hosting fee or Pay per click - Advertisement fees from commercial partners 	<ul style="list-style-type: none"> - Apps license (to use the search engine on pc and mobile devices) - Advertising
Possible related costs structure	<ul style="list-style-type: none"> - Campus (space and equipment) - Faculty fix salaries - Internal staff (administrative, secretariat) 	<ul style="list-style-type: none"> -Technology platform based on semantic web and AI (and deployment services) -Faculty costs variables instead of fixed - Operational internal staff (less admin staff no more secretariat staff, and more e-tutors and faculty editors) 	<ul style="list-style-type: none"> -Technology platform based on semantic web and AI (and deployment services) - Operational internal staff (less admin staff no more secretariat staff, and more e-tutors) 	<ul style="list-style-type: none"> - Search engine and apps technology development and updating - Operational internal staff (IT and Marketing)

Recommendations for supporting the transition

Recommendations for Business Schools

Making change to a Business School's business model requires:

- Getting the right people on the bus and thinking outside the current knowledge base (Flanagan, 2012). In deciding on business partners, it is important to make sure that both parties' business models are complementary (Hummel et al. 2010).
- Play upon each school's strengths and competitive position rather than try to institute global standards of best practice.
- Leverage technology to capture individual and group motivations, behavior and goals to improve both tactical and strategic decision-making. Start from the premises of each school's current business model to try to position each pedagogical offer as uniquely as possible.
- Judge the opportunities and risks of transforming current challenges into future opportunities. Limit reforms to what is "adjacently possible" given each school's organizational resources (Johnson, 2010).
- Piloting and monitoring the business model on a small scale (keeping the old business model running in parallel) and try to launch it in target non-customer / non-consuming context;
- and of course management commitment and sufficient staff training.

Recommendations for policy makers

For supporting the transition to Open Education, EU institutions would:

- Create awareness on Open Education opportunities and benefits not just for students, but for all the others parties involved (Companies and HR managers, Educators, Education providers, Information Technology providers, Publishers).
- Show successful experiences from different "grounds", but being aware that there is "no one recipe for all" (business models differentiation based on contexts'/markets' specificities, organizational characteristics and strengths, competitive position).
- Promote Capacity building actions addressed to Educators (new online teaching methods) and Education providers (new business models, new online knowledge production and consumption mechanisms, etc).
- Support the piloting and up taking of new business models and the cooperation among all the actors that could be part of the new value chain (Education providers, ICT providers, Publishers, Companies).
- Work on international IPR legislation for OER.
- Work on Standardizations for OER interoperability.
- Work on ICT infrastructure to guarantee open access to everyone, everywhere and anytime.

References

Tieman, Ross (07/04/13) "*Business school models: Integration of ideas or nimble independence?*" - FT.com December 1, 2008

Hawawini, Gabriel (2005) "*The future of Business schools*" Journal of Management Development Vol. 24 No. 9, 2005 pp. 770-782 Emerald Group Publishing

The Centre for Educational Technology and Interoperability Standards (2011) "[*Is there a business model for open learning in institutions?*](#)" July 28, 2011

Frank de Langen (2011) "*There is no business model for open educational resources: a business model approach*", Open Learning: The Journal of Open, Distance and e-Learning, 26:3, 209-222

Thomas, Howard; Cornuel, Eric (2012) "*Schools in Transition? Issues of Impact, Legitimacy, Capabilities and Re-Invention*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 329 - 335)

De Meyer, Arnoud (2012) "*Reflections on the globalization of management education*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 336 - 345)

Michael Thomas, Howard Thomas (2012) "*Using new social media and Web 2.0 technologies in Business school teaching and learning*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 358 - 367)

David C. Wilson, Howard Thomas (2012) "*The legitimacy of the business of Business schools: what's the future?*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 368 - 376)

Howard Thomas, Kai Peters (2012) "*A sustainable model for Business schools*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 377 - 385)

Santiago Iñiguez De Onzoño, Salvador Carmona (2012) "*A Red Queen approach to the fading margins of business education*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 386 - 397)

Lorange, Peter (2012) "*The Business school of the future: the network-based business model*" Journal of Management Development ISSN: 0262-1711 Volume 31 issue 4 Published 2012 (pp. 424 - 430)



An EU Student Entrepreneurship Pool

Panagiotis Gioannis¹

Empowering EU academic entrepreneurship through an EU student Pool where students can find future partners for a start-up company and a portal as entrepreneurship guidance.

Nowadays it is a fact that the entrepreneurship has begun to penetrate into higher education. We are referring to the rise of student companies within the academic community. However, the opportunities provided by the tertiary institutions and countries of the European Union are not always the same. Also the knowledge level is not the same. Therefore, many students have ideas and can not exploit them because the prevailed conditions of institutions/country do not allow it or they do not have the appropriate business knowledge. While, on the other side there are students with an entrepreneurial spirit who are in the proper environment and they are looking for suitable partners to implement a business idea. How can we give them the opportunity to come in contact for a future collaboration?

Did the students of one country have the freedom to take the initiative to work with students of another or sometimes of the same country within European Union? Probably not, and how to make this possible.

What we proposed, is a students pool where the students can come in contact for a future business partnership to be created. It is important the pool and the future companies to consist only of students. Therefore, the students will have the right to choose and to come close with partners from other countries with a different knowledge level and understanding for the implementation of prototype business ideas.

Also, it is important an independent business advisory portal targeted at all educational communities within European Union to be established. The portal, for example, will have consultants to provide legal assistance and guidance to whatever is necessary to establish new business. The entrepreneurial spirit should be encouraged giving entitlements for free patents or to be rewarded through donations and as usual is through competitions.

How can all of this can be economically feasible? The future earning companies benefited

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A Distance Research: Anytime and for Anyone

Panagiotis Gioannis¹

Anyone could have the opportunity to be involved in a research anytime and from everywhere.

Is today the research available to everyone? Probably not. There are more than a few people who have completed the higher education and especially postgraduate study (MSc or PhD). However, a large percentage of them can not use their knowledge for research even if they wanted to. Usually the main reason is the distance from the frontier research centers.

It is obvious that in the European Union in the research area there is heterogeneity. In education however there is mobility and therefore many people can study in any good universities that may be outside their country. But after returning to their home countries they fail to use their knowledge in the same high level even if they want to because they can not be involved in any local or external research community. The reasons can be many, such as family obligations or a stable job that does not offer research.

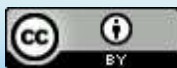
A solution can be based on part-time distance research. This will allow employees who are outside the research community to be offered and to be close to the cutting edge technology in parallel with their permanent job. However, the biggest problem that is encountered is the confidentiality. Here the European Union must introduce a proper policy for such an idea to be feasible in the future. They must also take into account the case when it is necessary for the researcher to access specialized laboratories if it is required.

A similar problem has been analyzed by Gioannis² in 2008 but it was focused more on the free access to knowledge for publishing the results of a research.

It is important to offer the privilege for research to anyone who wants and can contribute from anywhere even if the conditions do not allow being close to the research centers. Therefore, the offer of individual researchers across the European Union will not remain untapped.

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² P. Gioannis, "An Open-Research Web Based Community," *Proceedings of IADIS International Conference on Web Based Communities (WBC)*, Amsterdam, The Netherlands, July 24-26, 2008 pp. 254-256.



Smart Companion for a Smart Future

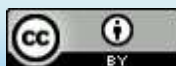
Dr. Danny Glick, Prof. Aharon Aviram & Yoav Armony
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*Human-like robots called **Smart Companion** will support the student throughout the learning process by providing cognitive, social and emotional scaffolding to help students reach their goals, both professional and personal.*

During the past 30 years, the assumption has been that the role of digital media in learning should be limited to presenting learning material (e.g. online courses, authoring tools), communication over distances (e.g. synchronous and Web-conferencing tools, forums, blogs) and to administration, documentation, tracking and delivery of e-learning courses (e.g. Learning Management Systems). Very few, however, have seriously considered the possibility that a computer program could effectively replace a significant portion of uniquely human cognitive capacities.

Living in a rapidly-changing world, this is going to change very soon. A good indication that we are approaching such a moment is the medical diagnosis program Watson, which was developed by IBM. Originally designed to play *Jeopardy!*, the program “understands” natural language, hints, and human logic. After Watson had won a competition against the best human players in 2011, IBM modified the program in order to help in cancer diagnosis. It can now perform many tasks that require a kind of intelligence that until recently was believed to be purely human. This example illustrates that the “mysteries” of uniquely human capacities is gradually being resolved by brain and cognitive research and by what is sometimes called “reversed engineering” of the human mind.

Based on these recent developments in computer science and brain and cognitive research, the authors of this paper predict that we will soon witness “technologization” of uniquely human capacities carried out by teachers. Human-like robots, or avatars, will perform tasks which require cognitive, social and emotional intelligence. These tasks, traditionally carried out by teachers, will be performed by a human-like machine called **Smart Companion** (SC). The SC will become part of the student life, and will support, coach, and guide the student. This 24/7 SC will identify and analyze students’ demographic data, learning styles, cognitive and self-regulation skills, likes and dislikes, learning goals and career goals. Based on analysis regularly carried out by the machine, the SC will assign students’ assignments suitable for students’ level of cognition, interests and goals. The SC will support the student throughout the learning process by providing cognitive, social and emotional scaffolding, which is a structure of support allowing students to complete a task. The authors of this paper predict that SC will help students reach their goals, both professional and personal.



An Educational Journey into the Growth Mindset

Fabienne Goux-Baudiment

Forging a new global, humanist and comprehensive 'growth mindset' can only be done by machines, networks and very high-level human beings.¹

I am a European twixter 20 years. And a new life is beginning for me. The third one! Wahoo, it's really thrilling! Ok, first things first.

1. First decade: primary education

The 1st life I went through was my childhood; let's say the first 10 years of my life. During this time, a major part of my education was the fruit of my parents community (my biological parents which do not leave together any longer; my added-parents, who are the new partners of my biological ones; my grand-parents —biological and added—, and all the collaterals (uncles, aunts, siblings, both biological and added). That's a quite large community of **story-tellers**, full of meaningful personal and professional stories. They spent a lot of time storytelling me so much information that, once knitted together, have progressively built my worldview.

During this time, school was just a place where I used to go, during my family work time, with no constraint of presence, just to sit with other children. There, I could do whatever I wanted: play with my mates or alone or online with distant friends; enjoy music and movies; play sports and act and dance; learn the compulsory basics (reading, writing, clicking, counting, netsurfing) and ethics (as a human being, as a citizen, as an internaut, as a friend) either with the teacher or with my tablet.

Most of the time then I used this device because online teaching was more adapted to my own pace of learning. Also because I got more fun working with software specially designed for young children. I was not afraid that my answer could be wrong: my classmates would not know my failure and laugh at me, and the device would not scold me.

So, well, during this first decade, I just learned **to be a human being, a very happy one**, far from old school's constraints and punishments. Both people and machines became my friends and I trusted them. When this period ended, my **worldview** was quite open and tolerant, smoothed by love displayed by my surrounding community, as they were no longer concerned with homework and marks and all these bothering things from the old fashion school system, which contributed so much to ruin relationship between children and parents. Moreover, this worldview of mine (and of all my classmates) was closer to the real world than the one of any other generation before, because it has been nurtured by tale-tellers who were real players of their stories, and not by teachers who sometimes did not have a clue what they were talking about.

¹ Most mentioned concepts and technologies can be checked in the following sources: Dweck, Carol (2006), *Mindset: The New Psychology of Success*. Random House; Waters, Mick (2013), *Thinking Allowed on Schooling: One Man's Overhaul of the British School System*. Independent Thinking Press; Wheeler, Steve, ed. (2008), *Connected Minds, Emerging Cultures: Cybercultures in Online Learning*. Information Age Publishing; and his talk in Doha, April 16, 2013 about *Learning Futures*; talks by Graham Brown-Martin, from Learning without Frontiers.

2. Second decade: secondary education

I shall say that the second decade was not funny in the same way. This time I had to really work to reach the schooling goals, to work on my environment but above all on myself. Collaboration, self-organization, responsibility, smart use of freedom were at the core of our implicit learning, through collaborative activities —physical or online— such as sports, games, contests and any form of educational entertainment. This was the first major goal of this decade: **being a human being living with other human beings, during a time of peace.** This might sound a fairy-tale-like thing to say. Yet, as soon as 2020, most of the world begun to understand that further economic and social developments could only be fostered by a huge reengineering aiming to implement a radical change: moving from a war-driven to a peace-driven humanity; EU was the first to understand, in line with the principles that gave it life. This is the reason why, especially during the first mid-decade, our schooling programme was to shape ourselves to leave in a peace-driven world. Transparency, empowerment, tolerance, responsible freedom, self-awareness, ethics, critical mind, ability to discern were key skills to learn and experiment, whatever the medium. This learning was mainly conducted through activities (action-learning).

However, progressively, year after year, we have had some more formal teaching, I mean academic teaching. For the second major goal of this decade was: **being able to understand human being's environment.** From then on, we had to get a glimpse of all formal fields of knowledge, from hard science to social and human science to the science of organisations and decision-making. Every student was given the same education, with no specialties, until the age of 20. Through this decade, we made our way from the observable world to the invisible mechanisms of human activities, from the sciences of the nature to the sciences of the human being and its societies.

Our job was not to learn contents but to understand what the pieces of the puzzle were and how this one had been formed —and was still. For example, we had not to learn the details of history (facts and dates that can easily be found in databases) but to understand the mechanisms of macro-history, the science of change and transformation of the human societies, and to "read" the history of each nation, all over the world, through theses specific glasses. Not to compare them in order to say what is the best, but to comprehend the deep link between culture and transformation and between accident (the right man at the right place on the right time) and causality.

3. Schooling Organisation

Since 2015, the school calendar has been fixed on the calendar year, such that every new year begins on January 2 and ends on December 30. Thus the school year is now divided into four quarters. Each quarter includes a personal learning time, a collaborative project, a collective evaluation time and a rest period, usually some free days (up to one week) after four weeks of work. The teacher is first and foremost a pedagogue, then a coach. The first day of a course, he provides the necessary basics to set up the scene and ignite our curiosity: why is the topic important, what are the impacts and implications, what are the issues and stakes. Then it is up to us, students, after personal and extensive research, to identify the system, submit and justify appropriate definitions, discuss the limits and share the results with our classmates, under the guidance of our teacher. Doing this, we collectively build our knowledge while learning to listen critically to others. That's a nice way to dialog, reflect and be the player of our own teaching. And later in the decade, when we know enough of another language, we also enjoy to exchange in foreign language and look together for the right word for the right

thing. When we do so, we are allowed to invite a native-speaking student of this language to join virtually our group.

Even **evaluation** has become quite enjoyable. There are two types of them: a human one and a "machine" one. In addition to the individual assessment made by the teacher as the student's coach, there is a collective assessment —also made by the teacher— where each student is only considered as a part of his/her group (a four-people group) such as all the members of a group get the same appreciation. Appraisal —almost daily— is also made by the "machine", I mean, not only through digital activities like computer-assisted lessons, all sorts of online edutainment (videogames, contests, simulations) and open learning, but also by a digital coach, the Preceptor. He/she is a sort of AI², built to be a friendly mentor continuously helping, advising and assessing the student, any day and time, all along his/her life, since the very first day of schooling until death.

As an individual coach, the **teacher** follows each student very closely, not to sanction us but to develop the most appropriate help for each of us. He advises one to spend more time in collective dialogs, that one insist on such part of the course through OEDRAP³, another go more often to the library. He knows every student's best way to learn, according to his/her type of memory and intelligence, personal surroundings and inclinations and innate skills. Every teacher follows a class for five years, which gives him enough time to understand every student. It is also a great way to develop teachers' own skills: they achieve a full cycle of knowledge then —after two to five years spent in the private sector— they can start again from the beginning to the end, understanding thus what skills and knowledge will be necessary for students at specific steps of the cycle. For, henceforth, education has moved from mass-education to person-education, which has been made possible thanks to the above described reengineering. During a cycle (five years), a teacher follows three (primary school) to six (end of secondary school) groups of twelve students. In this new economic model, fewer teachers are needed; they are highly educated, significantly more competent and better paid; they benefit from the same employment contract than employees of the private sector since the adoption of the civil calendar and the end of the two-month long summer holidays. The basic teacher —reading the handbook, dictating the course, correcting exams— has been replaced by powerful algorithms for open-learning systems, allowing the human teacher to become what it should have never cease to be : a mentor, a coach, a pedagogue. He/she is perfectly aware of the huge responsibility he/she has assumed in forging new minds and mindsets.

4. Third decade: tertiary education

I just age 20. The last year has been dedicated to reflection upon our achievements during our two decades long life; achievements in terms both of knowledge and personality. It is time to consciously identify then intertwine them. Who am I? What do I know about the world? How can I contribute to the development of Humanity? It has been a very challenging time, full of long-term perspectives and interrogations, enlightened by philosophy, psychology, sociology, evolutionary anthropology and big history. I understand now the structural lines of transformation of the human being and the human societies it produces. I can 'see' my worldview although it is still a difficult exercise to spot my areas of blindness and the 'holes' in my comprehensive vision. But today I feel equipped to face the world. The coming decade

² Artificial Intelligence

³ Open EDucational Resources And Practices

is that of my preparation to enter the real life, as a pre-adult, what we now call a 'twixter' (within the segment between adolescence and adulthood)⁴. This is how it will happen.

During the first cycle I will move around the world in my quest for a specific track to follow, a job, a research or a process that really fits me. I can spend these five years in the way I wish, as far as I follow the master process: 1/ looking around to identify what excites me and pushes me to work with or around it; 2/ preparing a discovery trip in at least three different countries of the world; 3/travelling and building a comparative analysis of my experiments.

During this period I will benefit from three different 'helpers': my Preceptor —my dedicated AI—, my Mentor —a tertiary teacher, responsible for this cycle and who will introduce me to other Mentors, either academic or business, in different parts of the world—, my Virtual Class (VC). My VC is a group of students, bringing together at least one person from each major cultural area of the world (North America, South America, Sub-Saharan Africa, Arabic World, EU, Central Asia, Indo-pacific Basin, East Asia, Islanders...), speaking the same vehicular language, linked by the same interests or passions. We have a one-day virtual meeting every two weeks and meanwhile we mobile-connect very often. At least one Mentor joins every meeting, according to our agenda. We will talk about our reflections and discoveries, providing thus a continuous flow of narratives from experiences and new knowledge; we ask and give advices, introductions and opportunities, building thus a mix between superficial social networks and the former fraternal social organizations for undergraduate students. You really need this community (personal learning network) to gather world-distributed knowledge about real- life and things, to secure your own knowledge (learning by teaching) and to get a friendly support when you work alone or during apprenticeship periods (collaborative intelligent filtering).

Beyond these reflective human (or almost) tools, acquisition of knowledge during the first cycle will still be the same than during my last decade of learning: I will search for information, cross-check it, look for relationship with other information and try to understand the interlinking mechanism between all these variables, that will reveal their in-depth meaning, which I will share with my virtual classmates. My digital literacies have already prepared me to become a **digital resident**, which I pretty am thanks to the wearable technology (all-in-one computing glasses, etc.) and the tangible computing that allows me to access the Noosphere (ex-Cloud) from almost everywhere (a welcome output of the old BYOD and CYOD⁵!). My Preceptor continuously and silently follows my progress, check my understanding through mobile game-based tests, organise my learning process according to my own evolution (personality, maturity, interests, skills) and develop my multiple intelligences. When I nurture a disliking of some field of knowledge, it even provides me with more suitable ways to come across.

The main differences between this cycle and the previous lie in the following items. My VLE⁶ will change from the collective platform used by my class to a personal one, just designed for me, according to the results of my previous schooling (learning analytics⁷). My learning process will be more social than it was before, but above all it will become global —the world is now my playground— and personal. I will spend a third of my time as an apprentice in as

⁴ The American word 'Twixter' describes the same phenomenon than the Japanese 'parasite single' (*parasaito shinguru*) and the French 'adulescent' (coined by Tony ANATRELLA).

⁵ Bring your Own Device and Choose Your Own Device

⁶ Virtual Learning Environment

⁷ Use of intelligent data, learner-produced data, and analysis models to discover information and social connections for predicting and advising people's learning.

many fields as I feel I can commit myself, observing and serving, testing reality against my preconceive visions. I feel a tingle of proudness when I think that this learning system is inherited from the French *Compagnonnage* dating from the Middle Ages: despite the post-modern world I am living in, shaken by disruptive technology, some roots are still there to link us to our historical past, not as a chain but as a hand through the ages⁸. My Mentor will

At the end of this cycle —even before if I success to prove my conviction— I will have discovered how I can contribute to the world development and Humanity improvement. Then I will be ready for the last stage of my Educational Journey, the last five years.

I will be 25 and mature enough to face a thorough training. My learning time, from then on, will be dedicated to the future.

Whatever the field chosen, my learning process will be characterised by the connection of my personal VLE to the OEDRAP available in the world concerning my field (open learning at the world scale). I will first acquire an intensive knowledge of the basics of the field. Then I will stand back by conducting comparative studies about contents and practices of the field. 3D-simulations, serious games, augmented reality and gestural computing will all contribute to simulate case studies I will have to deal with (problem-solving, decision-making, disruptive creativity, ethical challenges). After three years of such a training and 6 months of real practice as a temporary worker, I will have 18 months to 'build my masterpiece', that is to say to demonstrate my accurate understanding of the field and the mission I am prepared to fulfil, and contribute to advancing the field, through an innovative project or a product creation or a research...

Although this will be a very busy period of personal working, I will continue to develop my social skills by creating my own community, a personal network of friends and colleagues and mentors. Doing so, I will learn to interact with the world by myself, out of the comfortable cocoon of the 'class'. This will be the last step of my learning in this matter: rhizonomy⁹.

By then I will be 30 years old and ready to fully become an adult. I will not be afraid by this 4th new life: my Preceptor will continue all along my life span to monitor my evolution and suggest me new ways, processes, contents to improve myself, my personality and my skills. And my community will evolve with me on a rhizomic basis.

I do not fear the future. I am a person now, a sentient and sapiens person, and I deeply feel I am part of the world, a world where humans and machines are friends.

I might even become a Mentor and revolutionize pedagogy initiating the Learning 4.0. ;-)

⁸ French motto of the *Compagnons*: "Servir sans s'asservir ni se servir" (To serve, without becoming neither a slave nor a scrounger).

⁹ "The rhizonomic organisation of content will emerge from chaotic, multi-dimensional and multi-nodal organisation of content, giving rise to an infinite number of possibilities and choices for learners. As learners choose their own self determined routes through the content, so context will change and new nodes and connections will be created in what will become a massive, dynamic, synthetic 'hive mind'". Steve WHEELER's blogpost: *Next Generation Learning*.



IDEA League

TU Delft
RWTH Aachen
ETH Zürich
Paris Tech

Open Education 2030

IDEA League

What does Europe need in the future?

The answer to this question is at the basis of an examination on how education in 2030 in Europe might look, as the economy in Europe and the welfare of its citizens depends on an excellent education system. Open Education will play a mayor part in education in 2030. Experts agree, that openness has the potential to widen access to education and to improve, amongst others, cost-efficiency, and quality of teaching and learning. All these factors are quite important for the area of education, with access and costs often dominating the discussion. For the IDEA League, a network of European universities of science and technology, the most important aspect is the continuous development towards highest standards in the quality of teaching and learning.

Why is the quality of teaching and learning central for higher education in Europe?

High quality in teaching and learning will result in graduates who are equipped for the multitude of tasks awaiting them, both as experts of their scientific disciplines, and as mature members of society:

- 1) Only excellently trained scientist and engineers can provide solutions for issues as complex as the global challenges societies are facing now, and still will in 2030
- 2) Only highly skilled graduates will be able to contribute towards future innovation
- 3) Only the best education will see to the development of mature and responsible adult members of our societies
- 4) And only the best training will keep the students fully engaged in their studies, and therefore help them to explore their full potential.

Without higher education of the highest quality and standards, Europe cannot successfully develop further as a knowledge society, and thus cannot ensure the social welfare of its citizens.

1 and 2) Only excellently trained scientist and engineers can provide solutions for issues as complex as the global challenges we are facing now, and we are likely to be facing in 2030. The widening gulf between rich and poor, the continuing growth in world population combined with the rapid aging of the population in areas like Europe, the quest for energy and clean water, and the persistence of environmental destruction and the subsequent climate change are among these fundamental problems.

Education is necessary to help societies meet the global challenges. But excellent education goes one step further. It can teach how to understand the global challenges as an opportunity:

The world is running out of oil? - Where and how can solar or wind energy serve as a substitute? With people having fewer children and living longer, societies in European countries are ageing rapidly? – Where and how could this be a chance for sustainability and urban renewal?

We need scientists from a wide range of fields who are able to understand the interdisciplinary and transdisciplinary nature of complex issues such as the global challenges. Highly skilled graduates will be able to go beyond the problem analysis and see the opportunities for the development of new devices, new services, new concepts, and therefore contribute towards future innovation.

3) Only the best education will see to the development of mature and responsible adult members of our societies. While it is hard enough to deliver top-notch scientific training in higher education, the education of our students needs to go further. The students in higher education are the members of society who are expected to take on responsibilities and leadership. High quality education contributes to forming mature adult members of society. We want students who understand work ethic, and act professional and humane at the same time. The wish list for the perfect graduate goes on: We want them to have flexibility and an ability to cope with uncertainty; to have communication skills and an ability to contribute to innovation and creativity; to have social sensitivity and an ability to work in teams; to have an ability to take on responsibilities; and to be entrepreneurial and to have an interest in life-long learning.

4) Only the best training will keep the students fully engaged in their studies, and therefore help them to explore their full potential. The best training is not only based on a realisation that a generation of digitally native students who have different approaches to learning, has entered the universities, but it includes the next step, a redefinition of the approaches, methods and tools of teaching and learning. A professor reading to a group of students from a script might have been the embodiment of academic instruction for centuries, but is no longer the standard at the top universities in Europe. For a while now, the focus has shifted to student centred learning instead, with instruction being more interactive, taking into account that there are different individual learning styles and preferences, and that students learn best by doing and creating, not by passively absorbing. The learning process should be centered on the learners, taking into account their experience and encourage critical and independent thinking. Therefore, excellent training understands students as active participants in the educational process.

How can Open Educational Resources improve the quality of teaching and learning?

Open Educational Resources (OER) are educational materials designed for teaching and learning like course materials, curricula, taped lectures, text books, videos etc. As OER they are available free for all for exactly this use, namely teaching and learning.

OERs can improve the quality of teaching in a variety of ways. Once course materials are open, they are examined and scrutinized by a much larger audience than just the original audience, the students in the class. With this in mind, much is at stake, not at least academic reputation, ensuring that academics put a lot of effort into the making of the course material, thus resulting in high quality examples of teaching. Moreover, excellent universities will take responsibility to assure the quality of OERs of their academics. A joint OER presence of one institution can serve as a marketing instrument, to attract new students world-wide, to profile the strong areas and to strengthen the reputation of the university. The audience will expect only the best OERs from a university with a good reputation, and for this to be delivered it

needs an ongoing process of developing and improving curricula, programme and course design, of instruction in pedagogy, and of designing effective assessment activities.

OERs can improve the quality of learning, the most obvious issue being a great deal of flexibility. Learners can choose more freely, where, when, what and how they learn. For students who are enrolled in a university, OER can be offered as part of the teaching material by their instructor, or can be searched for by the students themselves in order to complement their course material. By comparing how other academics are teaching the same academic content, students are able to find out what suits their style of learning best. They are also able to add a new quality to their feedback and evaluation for the teacher. However, the real educational value is not necessarily the access to the content of a course, but it is the ability of the instructor to guide students effectively through educational resources via teaching and learning materials and methods. Essential in this respect is the assessment of the student's work, and critical feedback for the students in a feedback process that is transparent, comprehensible and fair. In summary, the principle concern is not the vision of open access to learning material, it is the conversion of this vision into a continuous development towards highest standards in the quality of teaching and learning.

Before OERs can take on a key role in education, legal issues need to be assessed. Most prominent are the intellectual property rights of the developer of the educational materials. Authorship needs to be acknowledged, as well as commercial use prohibited. It needs to be clear if materials can be used as is, or can they even be modified. However, privacy rights can also be an issue, for example for the users of platforms offering course materials.

What role could OERs play in the daily routine of the student in 2030?

While still in high school, the future students are already familiar with the OERs available from different sources. They see them as videos in the classroom, they encounter them as tests preparing them for the university entry, they use OERs course material to do well planned projects and then connect via video conference with a partner class in a foreign country who did the same project, in order to compare the results. In fact, part of their learning experience is to prepare their own course material and make it open and available.

When choosing a university, students know which university offers the best OERs in the field they are interested in. They have worked with these OERs and through them even got to know some academics and their way of designing and conducting a class. They compare their choice of higher education institutions by looking at the OERs on display by several universities. Their final decision will depend on the quality of teaching and learning that the university can offer.

During the welcome week, the students take a test to find out how they learn best. Each person has personal learning preferences resulting in an individual learning style (generally, but not undisputedly categorized into aural, logical, physical, verbal or visual) and this can be translated into individual learning guidelines. To know, how one's mind works, is quite helpful and can save a lot of time and frustration. Students are also instructed in writing their own learning journal in which they keep track of achievements and challenges, as well as goals, a time line, comments on tools and methods. In the journal the student will record successful learning experiences and frustrating ones. This journal is to be discussed with their personal advisor on a regular basis.

In preparation for a class, the instructors have help from the Teaching and Learning Center of the university and receive continuous training and feedback on how to improve their teaching. Adaptive learning systems play an important role in the class preparation. They are computer based interactive teaching devices adapting the teaching material to the student's level of knowledge as indicated by the student's response. The visualisation and analysis of the students' interaction can be used to gain insight to the knowledge level of a class. The instructor will receive valuable information about the pace and depth of the teaching and learning process of a class, and can access data to compare this to other classes on the same subject. Teaching is seen as valuable as research, even in the research-based top universities, and the academic reputation, as well as the benefits of the academics, depend in part on the teaching performance. Before teaching a class it will be common to go to best ranked taped sessions in the field and see, how an award-winning teacher is guiding the students through the course content. In preparation for a class, the students will do the background reading at home, as class time is reserved for interactive learning. Students who know that reading is not their preferred learning style, will have watched a video or a taped instructions session, or done a project instead, all based on OERs available.

In class, the instructor and the students will spend time on issues, which are interactive and take advantage of the presence of the instructor and the other students. As in high school, OERs are part of the teaching and learning. The materials and methods will vary in order to ensure that all students are engaged. The instructor checks if the course content is understood by the students, sometimes by posting questions or problems which will be solved in teams. The answers are collected via cell phones and gauged, and give a good picture, if more, or different explanations are needed. Students who are not in the class room can participate via conference lines and post questions in a twitter feed which is visible on a screen for the instructor. It is the task of the instructor to guide the student effectively through educational resources via teaching and learning materials and methods. Especially in engineering and design, 3D printing and how it is affecting learning is taken into account. 3D printers are standard class room equipment, and make it possible to see, touch and evaluate newly designed objects without much cost or time effort. Students can become manufacturers, and this could be a first step toward entrepreneurship.

After a class session the students can sign up for tutorials, to deepen their understanding of the course content, if necessary. Again, students can choose the format, according to their learning style. Adaptive learning systems are available which can serve as tutors for the students. These systems are intelligent and have been designed to challenge the students with questions which are closely linked to their actual level of knowledge. Due to a feedback loop taking into account the previous answers of an individual student, the adaptive learning system will make suggestions for content in order to gain more in-depth knowledge on a subject and it will provide exercises. By being able to break down a big question complex into smaller units and questions, it will help the student to eventually arrive at the solution at the pace fitting to the needs of the student. Other tutorial will feature as a highlight that the students solve some problems together online with students from other continents, or they volunteer to answer posted questions on a platform dealing with their subject, and thus help others, for example high school students or distant learners to better understand.

While meeting with the advisor during the weekly office hours, the students get feedback on their performance in class, and in the tests. If a student needs help to understand the subject, the advisors used to point to a reading list. Now they have ready a list of high quality OERs tailored towards the student's preferred learning style. These can be videos, taped lessons or

other course materials. The same goes for further input to deepen the understanding or to broaden the subjects at hand. It is the task of the advisor to guide the student effectively to educational resources.

After graduation the students will still be in connection with their university. As alumni they receive information about new developments and invitations to events. As practitioners of a certain field they also want to keep informed about new developments in their field of science. For refresher courses, or courses on new developments they go to the OERs provided by the alma mater. Many alumni will be in a position where they act as teachers and transfer their knowledge to junior staff. They are aware of key issues in learning and teaching, for example developments in teaching interfaces and how miniaturization changes the way we interact with the internet, but also with teachers for learning. Life-long learning will be part of the alumni's educational journey.

The current state of Open Education in higher education in Europe

Over the past few years the world has seen rapid and far reaching developments in open and online education. Innovation in this area is mostly taking place in the US, with developments such as Open Course Ware and MOOCs, both changing education and learning in a fundamental way. What is happening in Europe?

Although Europe has not been at the forefront of this movement, awareness of its importance and impact is gaining momentum. As partners of the IDEA League, a network of leading European universities of science and technology, we share a vision that these developments will change the face of higher education in the future. We believe that the enhancement of the quality of teaching in higher education needs to be the guiding principle for the engagement of our universities in open and online education.

Challenges in higher education are world-wide the same: rapidly increasing numbers of students, but the funding does not increase; international competition for talent, an increasing gap between secondary education and higher education and last, but not least, a generation of digitally native students who have different approaches to learning. Open and online education offers innovative opportunities to deal with these challenges. They provide tools for accommodating the massively increasing number of students seeking higher education and circumventing the rising cost of traditional education. They allow learners access to educational materials they would not otherwise have, thus fostering talent.

Moreover, for the IDEA League partner universities open and online education can help bridge the gap between secondary education and higher education, bringing the students entering the universities up to the same level. Open and online education can help us bridge the widening gap between the current education and the world of new generations of students. Most importantly, we believe that these innovations have the potential to enhance the quality of education, online as well as on campus.

IDEA League in the European Arena

The IDEA League, with its shared vision and integrated approach to research, education and innovation, is a unique network. With its excellence in science and technology and its longstanding record of working together, the IDEA League presents an ideal nucleus for forming larger communities, as in the OCW4STEM proposal, addressing high demand for science, technology, engineering and mathematics with use of open educational resources.

The IDEA League partners embrace the developments in open and online education. We have joined forces and decided to share experience and resources. We invite our governments and the EU Commission to support open and online education:

- By taking away possible legal barriers;
- By stimulating initiatives of higher education institutions;
- By facilitating the exchange of experience of higher education institutions who are active or want to become active in this field;
- By developing national policies and support European policies and programmes on open and online education.

Together, we will make a difference.



Pedagogy supporting the simultaneous learning processes of open education: Pedagogy of Simultaneity (PoS)

Pekka Ihanainen and Michael Sean Gallagher

The Pedagogy of Simultaneity (PoS), a pedagogical attempt to account for intersections of time, space, intention and simultaneous learning processes, provides a holistic structure for engaging open education formally and informally.

Abstract

The influx of open learning has provided the learner an unprecedented opportunity to engage learning that otherwise would have remained inaccessible. While there is a general agreement that openness has the potential to improve learning, our community has failed to address what open learning represents to the average learner and how it represents one of many possible learning pursuits. In short, formalized open learning represents a fraction of the investment spent by the learner on their learning. As a community, we need to begin to ascertain how open learning fits within the larger learning environment with all the layers that the learner constructs, refines, and engages with routinely. We need metaphors to articulate, frameworks to bound, and pedagogies to employ these layers of activity for learning effect. This paper introduces one such approach: the Pedagogy of Simultaneity (PoS).

Why do we place such emphasis on linearity when nonlinearity is so relevant?

The authority of linear meaning-making is inevitably entwined with the use of text as a tool for information dissemination. This process is well established and documented (Ong, 1982, Lebre & Martin (1976), Bolter (2001). There has been resistance to the totality of this linear approach. Much experimentation has taken place in learning through the presentation of different modes and forms of media (Kress, van Leeuwen, 1996; Jewitt, 2009) for meaning making, encapsulated and being explored through multimodality. In employing different modes and media for the presentation of meaning, learners oscillate between linearity and nonlinearity in their presentations of meaning.

We think in colors, sounds, images, and other modes and we do so simultaneously. Why doesn't our formal learning reflect that?

While we routinely engage with learning artifacts (however defined) of varying modes through varying degrees of consciousness at varying intervals and intensities, formal learning, including much open learning, emphasizes traditional learning outputs, such as text-based essays and tests. This represents a cognitive disconnect for the learner in terms of what is being engaged with (multimodal input) and what is being produced from that engagement (linear, text-based essays). This process is at odds with how learners engage their learning outside the formal curriculum. We think in colors, sounds, images, and other modes, or at the very least we are emotionally and intellectually informed by them. Hence, our formal learning constructs (encapsulated in open learning) need to allow for that same complexity of presentation. Open learning needs to be as open to output as the learner is to input.

What does a prototypical learner look like in this space?

The focus of this discussion is the learner and how they employ the seemingly unlimited learning resources at their disposal to make meaning. This is also where the community surrounding open learning can develop strategies for increasing the impact of open educational resources. These strategies begin with acknowledging what a prototypical learner might look like in this space. For that, we turn to metaphor and analogy to frame activity in a seemingly limitless, volatile, and highly chaotic space.

Several approaches to these spaces have been developed, such as rhizomatic education (Cormier, 2008), but our emphasis is on the characterization of the individual in this space. These characterizations are often bound by intentional or serendipitous activity. We might view learners with highly articulated learning intentions as miners or scientists employing method to filter meaning from open space. Much formal education sits in this realm of intention.

For the serendipitous learner, those open to but unaware of the existence of a particular learning opportunity, metaphors include Baudelaire and Benjamin's oft-used flaneur, a 'man of the crowd' wandering and loitering through learning spaces with little urgency, but one open to discovery like a playing child. For our purposes in discussing open learning, a more useful analogy might be a bricoleur, a term originally used by Levi-Strauss in his observation of 'primitive societies' (1962). A bricoleur is a generalist, one who uses few, non-specialized tools for a wide variety of purposes. For learners, these non-specialized tools are used to sift through the artifacts of unlimited choice to construct meaning.

How does open learning alter this space?

Open learning not so much alters this space as embeds itself within the fabric of this existing process. Open learning, merely by being open and accessible, becomes one of many artifacts vying for attention in the larger pursuit of meaning-making. Open learning and OER enmesh themselves in a competitive environment by removing the differential of exclusivity. This is a positive process in terms of accessibility, but it places these educational resources on the same plane of use and reuse as almost any other learning artifact. The learner in this space, through their process of mining or foraging, will evaluate these learning resources based on their applicability to their larger goal of meaning-making. The criteria for selection in this process of meaning-making includes almost anything in open spaces. Open learning accelerates this levelling of materials and subsequent selection, a process that happens simultaneously with other learning processes.

What is so important about simultaneity?

In overlapping realities and activities of meaning making, simultaneity means understanding

1. when I am here, I co-exist there as well,
2. when I evoke then, I can be in the now concurrently,
3. when I am learning on my own, I can compose both me and others simultaneously.

This investigation needs to be open, because it exists in the very realm we live and learn. To be responsible educators and to respectfully walk side by side with our learners as peers, we need pedagogies to account for all of this. The Pedagogy of Simultaneity (PoS) is a possible answer.

What is this PoS?

PoS offers a bounding grip to our overlapping and messy world. It is a pedagogical approach to emergent, complex human behavior and a humane modern life. PoS is an understanding of simultaneous reality being constituted by the layers of time (Ihanainen, Moravec, 2011), space

and social presence. It is a method and attitude that acknowledges a firm connection with the world we live in; it acknowledges the interplay of both off and online realities mediated through immersive (mobile) technology. PoS as such is not a technology issue at all, although technology is a natural part of PoS. The real tools of PoS are trust, discussion and collage permeated by aesthetic substance and orientation.

What is it to trust?

In the PoS context, trust refers to the belief that learning takes place all the time, everywhere and by anyone. Trust in learning is first and foremost accepting and admitting that learning exists although we are not able to immediately understand its being, its composition, or its implications. Trust means giving up of control and orienting oneself to the recognition and supporting authenticities of learning.

Why is intertwining in discussions so important?

Encounters, meetups, and other manifestations of social presence help make us human. We become people in relations and mutual and manifold responsiveness (Shotter, 2011). Practical transitions from referential-representative performances to relational-responsive meetings are at the heart of PoS. A discussion is the very activity by and around which all natural and ordinary learning happens. Learning in discussions (which can enlarge to many kinds of collaborative activities) so permeates our life that we do not realise its role in our becoming aware and improving our capacity to know and master. In PoS affording discussion to facilitate learning is the basic pedagogical activity of a teacher.

What is meant by collage?

Collages first appear as aggregates of separate fragments, but then - after aesthetic orientation - they emerge by themselves as beautiful wholes. They are intuitive facts, which yet are perpetually being defined. In practice all mashups, collections, summaries and other aggregates whether text-based or multimedia can be seen as collages. Collages are never external truths but personal and inviting, constructed to help the individual see and understand them by themselves. Academic articles seen as collages are like cubist artwork in a gallery. They entice and challenge you to make something useful for yourself but simultaneously for others as well. OER are collages, aggregates of meaning generated by others for our use; it is important to understand both the production of collages and the existence and use of those already produced. In PoS, collages are encouraged to be seen and produced as multimedia.

What is a learner in PoS?

S/he is an artist-creator multitasking in between subconscious and conscious processes. The PoS learners use open resources, remixing them for themselves, to create and discover something new. Discernment qualifies PoS learners' intentions to their ecosystems. PoS learners are curious and ready to experiment; they are not stifled by schooling structures and frameworks that encourage repetition. PoS learners dabble here and there, sporadically engaging across a wide range of interests and artifacts to identify useful materials for later use. Online, we can view this process as a sort of foraging and the learners as "cyborg forages navigating through electronically mediated resource fields" (Mitchell, 159).

Do PoS students need teachers?

Discipline-wise yes, but in terms of work and life in general, no. They need encouragement and support for practical experimentation and critical thinking; they are to be met as ordinary and appreciated people. To put it briefly in the PoS parlance: university students expect to

have peer to peer (P2P) encounters in their life and work, encounters that reinforce this artist-creator aesthetic. Aesthetic values and practices are key points in the pedagogy of 2030.

So what is the teacher's role?

In addition to facilitation and encouragement, teachers produce OER from their own fields of interest and expertise and present them as PoS collages. PoS teachers form a PoS network while working individually and in teams inside formal and informal learning settings.

Is it possible to imagine a PoS university?

Let's try. Universities are spread out all over the EU (and globally). Local universities provide places to meet face to face; online, they meet everywhere. The PoS university consists of material and virtual learning and sharing hubs. As a learner, teacher, or researcher, you can step into a PoS Hub in New York, London, Helsinki, Jyväskylä, Seoul, Chongqing and Brussels. i.e. in all material universities joined to the PoS Hub network. You can do this wherever you are.

PoS Hubs are open for everyone who behaves tactfully (i.e. respects others, is interactive and open-minded, and ready for critical and developing responses in dialogues). PoS Hubs afford the possibility to filter knowledge and know-how as well as filtered and curated OER. In material hubs, real peer facilitators help and support hub users and actively try to maintain a relational (or connective) and responsive atmosphere to collaborate and discuss. The latest technology and support for it is a standard addition to any PoS Hub. It is through such a structure that we begin to see OER being used, circulated, redesigned, and remixed for learning; through this type of activity we begin to see OER as the pivot on which PoS aligns activity with meaning.

What is the PoS Manifest?

We believe that there is a need for learning and a pedagogy that accounts for the simultaneous engagements that occur in any given learner's environment. We believe that the learners of today and tomorrow require a pedagogy that makes the challenges of complexity and simultaneous activity visible and affords a learning structure to make sense of this complexity and simultaneous activity. We believe that the Pedagogy of Simultaneity (PoS) is one such pedagogy.

We believe that learners will make meaning both intentionally and serendipitously and that pedagogy and formal and informal learning needs to reflect this. We believe that this learning is made at all times and in all environments where human interaction is possible. We believe that learning takes place with and without our awareness and understanding. We believe in the role of time, space, and intention in making meaning from seemingly disparate variables.

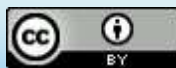
We believe that the greatest learning we can provide is learning that empowers learners to make sense of their own interactions, to compile learning into collages or other assemblies of meaning, to consistently and confidently interact with their peers to negotiate meaning. We believe that the role of teachers is to facilitate trust and authenticity in learning, to help learners create metaphorical constructs to filter meaning, to become comfortable in the use and analysis of multimedia, and to become accustomed to consistent meaning-making.

We believe in OER as a collage of meaning, meaning expressed and left to be analyzed and understood, to be remixed and remade, to be circulated again, an evolving artifact for a larger community of investigation. We believe OER holds the key to this realization of learning as a

layered entity, existing within time, space, and social presence simultaneously. Without OER, the meaning-making that PoS identifies is less circulated, has less scope of application, and provides less depth of meaning. We believe that trust, discussion, and collage are the salient features of learning in both our modern times and through the Pedagogy of Simultaneity. We believe that all learners have a right to participate in this pedagogy.

References

1. Bolter, J. D. (2001) *Writing space: computers, hypertext, and the remediation of print*, Mahwah, New Jersey: Lawrence Erlbaum Associates.
2. Cormier, D. (2008). Rhizomatic Education: Community as Curriculum. *Innovate: Journal of Online Education*, 4(5), n5.
3. Eisenstein, E. (1980) *The printing press as an agent of change: communications and cultural transformations in early-modern Europe*, Cambridge: Cambridge University Press.
4. Ihanainen, P., Moravec, J. (2011) Pointillist, cyclical, and overlapping: Multidimensional facets of time in online education. *The International Review of Research in Open and Distance Learning*, 12(7), 27-39.
5. Kress, G., & Mavers, D. E. (2009). *The Routledge handbook of multimodal analysis*. C. Jewitt (Ed.). London: Routledge.
6. Kress, G.R. and van Leeuwen, T. (1996). *Reading Images: the grammar of graphic design*. London: Routledge
7. Lebre, L. and Martin, H.-J. (1976) *The coming of the book: the impact of printing 1450-1800*, London: Verso.
8. Lévi-Strauss, C. (1968). The savage mind. *Man*, 3(3), 488-488.
9. Mitchell, W. J. (2004). *Me++: The Cyborg Self and the Networked City*. Boston: MIT University Press.
10. Ong, W. J. (1982). *Orality and literacy: the technologizing of the word*, New York: Methuen.
11. Pedagogy of Simultaneity (PoS). Retrieved April, 2013 from <https://sites.google.com/site/pedaofsim/>
12. Shotter, J. (2011). *Getting it. Witness-Thinking and the Dialogical ... in Practice*. New York: Hampton Press, Inc.



Digital Didactics – Scaffolding a New Normality of Learning

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Higher education is like an old building that is being constantly augmented with new technological fixes, but the authors propose that it is time to radically question and rethink education, to build a new house from bottom up in order to construct a new normality, which we propose to call “Digital Didactics”.

1. Looking back over the shoulder

Back in 2010, the movement of Open Educational Resources (OER) and the process of “opening-up education” focused on providing access to information and scientific knowledge in different online spaces, echoing the hacker mantra “information wants to be free”. Many problems persisted with worries about intellectual property rights. Many stakeholders in education and research had long trusted the bundling of information with sellable media (books, journals), selective places (schools, campuses, formal educations) and persons (the teacher as information source and judge of learning). Another worry of OER was less discussed: what about learning outside of universities, in communities and self-directed learning? Was that a threat to universities? Life-long learning had for long been on the university “to do” list, but had the university lost its opportunity? In addition, “distance education” also had been a project idea, driven by technology or political discourses, and its use of ICT focused as “transportation for education” to a broader range of students. Distance learning made some motivated students happy to finally access education, but other students ended up lonely, with lost passwords and half-completed courses, ensuring they would never try again. Teaching on campus went on like before, but with shrinking resources and with ICT as an “add-on” for rationalizing tedious functions in traditional courses. People with older educational conceptions, meaning that relevant information should to be memorized, had almost all drowned in information already, but the associated teaching methods were still there, with the teaching classroom as the natural home.

But we all knew, deep within, that **this was all about information**. We had our bookshelves full long ago, without knowing and being able to use the information therein. Education is a knowledge and creativity process for individuals and groups. Knowledge is about processing information and being skilled in its use, and creativity refers to innovative, unexpected use. How can universities tweak their role and business idea in a new age where limited access is not the problem? A modern idea of a university ought to be about information creation, information use and information processing. This idea may already be concerning research, but must education be lingering so far after, **still being more reproductive than creative**?

Being here and now in 2013, as we are writing, the feeling is slightly different. We talk about ICT-use for learning in designed creative spaces instead of new bigger lecture halls. The classroom areas convert into “commons”, social spaces for around-the-clock learning, where students socialize when experimenting, reading, reflecting, discussing, creating and peer-reviewing. The remaining lectures are increasingly consumed when convenient for the students at tablets and smartphones as the PC is dying. Moreover, teaching spaces are

becoming learning spaces; the “flipped classroom”, an inverted use of campus and personal spaces. The use of ICT in courses has become more natural.

ICT is used for effectiveness and quality enhancements in a more profound way than back in 2010, helping access and flexibility as well. The expression “education distribution” doesn’t feel as a fit expression any longer, nor does “distance learning”. Former “decentralized” and “distance” students are sometimes in the same courses as campus students. But we still don’t have suitable words for what’s happening; the discourse is still to be constructed and our understanding is lacking as well. “Blended learning” is one of the few expressions that seem to allow new teacher-created, bottom-up interpretations, using both the online environment and the physical surroundings (Sharp, Benfield & Francis, 2006). Some courses are still a blend of places, focusing on a distribution of content online and teaching in classrooms as a kind of “half-distance” education”. Others go beyond and concentrate on how ICT media and tools can enhance the process of learning, using “places” as designable and combinable tools.

Offline and online are still perceived as two worlds, one we inhabit, the other we visit by log-in procedures. But digital natives and digital immigrants are not so striking metaphors any longer; the digital dualism is blurring. The online world is still sometimes, but not often, called virtual, in the meaning “not real”. Perhaps, as Floridi argues, we are the last generation to make a clear difference between on- and offline worlds? (Floridi, 2007).

Where is higher education headed? We don’t know. But it seems unlikely that higher education will be *in* the Internet as a place nor that any search engine university would take it all over and solve the problems of education. Business as usual is also unlikely. There is obviously a need to rethink how education works in time and space, and to form new process designs affecting all stakeholders. Futures can, at least in part, be created, designed and constructed; they don’t just happen to us. Here are some modest guesses about higher education in 2030. You are invited to disagree. **In 2030...**

- The question of how to provide access to information to all everywhere is considered solved. It is even more evident than today that **information and knowledge are different entities**. People may not complain over information overload. Information can have many structures, and linear text may not be as dominating in higher education as now – the hypertext structure has gained importance.
- Teachers and students live in *off-online* spaces – offline and online constitute aspects of a one and only human life and social world. The **climate in student-teacher collaboration** can be enhanced when redesigned examination procedures includes informal learning and is no longer solely a university responsibility. Teachers may be of more kinds: from nationally or globally specialized lecturers to accessible learning supporters and supervisors, and to local mentors.
- **Learning as a process is made visible**. It belongs to the learner who has many tools and strategies to her/his use. Learning is learning without prefixes as “distance”, “blended”, “mobile”, “non-formal”. The individual’s learning is more important than fitting into educational structures. The individuals learning portfolio, peer-reviews and network quality may leave content test results behind as assessors of knowledge. Life-long learning is combined with learning processes enabled by universities.
- The **difference between teaching and learning is clearer**, and not blurred in language as today; they develop as interdependent but distinguishable processes. Teaching is crucial, but the teacher’s role for the teaching institution and in relation to the students may have changed into an even more interesting and creative job, leaving some duties behind, taking on others.

2. Approaching a new normality

But how do we approach and work our way to 2030 in European higher education? The **European way of trying to understand and design education, “Didaktik”**, is a research-based and theoretical approach, but the approach is sometimes unknown, hard to imagine and difficult in its application. The American model of Instructional Technology/Design does not harmonize perfectly with European traditions of objectives for higher education. But the European experience is important, also for co-creating global development. We want to identify and co-construct a European flavor of what ICT integration in higher education can mean and bring in a longer perspective. We humbly *invite cooperation, collaboration and coopetition in the design of “digital didactics”*. We are not proposing a transatlantic competition rather a more constructive dialogue in questions on ICT, OER & open education.

Digital Didactics, we propose, draws on Vygotsky’s “Zone of Proximal Development” (1978) saying that learning can reach longer and deeper outcomes with teacher and peer interaction and peer-reflection. This can be supported by DESIGN, implementation and continuous redesign of PROCESSES that includes the intelligent combining of digital and traditional tools for teaching and learning – leaving the earlier focus of the pure transport and content delivery characteristics of ICT behind as a historical phenomenon. Digital Didactics must make a real difference in a) student learning, compared to self-directed individual learning, b) institutional effectiveness, upgrading the teacher role by reinventing it, and c) value of education for society, by increased access and worthy concepts of lifelong learning, which draws on a close cooperation with the public and company sector.

“Digital Didactics” must critically question everything in the search for such appropriate processes, like the course concept, the isolation principle of teaching, the isolation of teaching and learning from society, the student homogeneity ideal, current forms of grading and feedback, separation of formal to non-formal learning, and designs of learning environments.

When looking forward to 2030, we want to discuss **a new normality of higher education**. This draws on Peter Hinssen’s “new normal” idea (2010), a fearless proposal that claims we are now about half-way in the implementation of ICT in society, and from now on we will see more benefits of ICT. The ICT-tools work well enough to make ordinary activities easier and more effective in a notable way. When we apply the „new normal“ idea on education, there has been a lot of experimenting in the past, half-successes and technical troubles when trying to use ICT, but now in 2030 we can expect a more rewarding use of ICT tools.

In 2030, ICT-supported OER, Digital Didactics, teaching and learning are intertwined and shape **a new educational entity** that is hard to imagine. What is the place for future open higher education if we have to call it something? It won’t be the “teaching place” any longer, nor the “classroom as learning place” (that was long ago), not only a “student collaboration place”, not really all in the “cloud” (we have bodies as well) but probably there will be a sort of “ICT-supported social information sphere” between teachers and learners, always using places as tools as well as books, OER, and wikis as tools. For a long time, we used technology to record, broadcast, recreate classroom practices and structures in virtual learning environments (VLE), streamlining them. But in 2030 the traditional teaching space may not be the central metaphor for education, and not meaningful to augment with technology. References to the learning process would suit better than references to places. We suggest thinking of “Learning Expeditions” (a time/process metaphor), happening in an “Arena X” (place metaphor). The central assumption is that **personal participation will be supported and reviewed by social learning processes**.

The use of OER affects many layers of education including content, activities and actions in classrooms, and local and national decision-making. The new situation affects three levels of Didactics a) the relation between teacher, students and content, b) the didactical design (teaching aims, learning activities, assessment/feedback) as well as c) course development (incl. examination design), curriculum development and academic staff development for teachers (*figure 1*).

Digital Didactics embrace digital, didactical designs aim to enabling individual and collaborative learning. Following a constructivism approach, learning is knowledge co-

construction defined as co-creation of new knowledge that is “an active process of constructing rather than acquiring knowledge” (Duffy & Cunningham, 1996, p. 171). This approach represents a shift in designing teaching towards learner-centered approaches (Barr & Tagg, 1995) which support deeper understanding and reflections, and which boost several other skills like critical thinking. Such ‘active learning’ is related to the role of learners, where they are not only consumers (surface learning) but also active agents (producers) in the co-construction of new knowledge: “pro-sumers”. Teaching then contributes to a form of deeper learning, not surface learning only, and can integrate opportunities for learning,

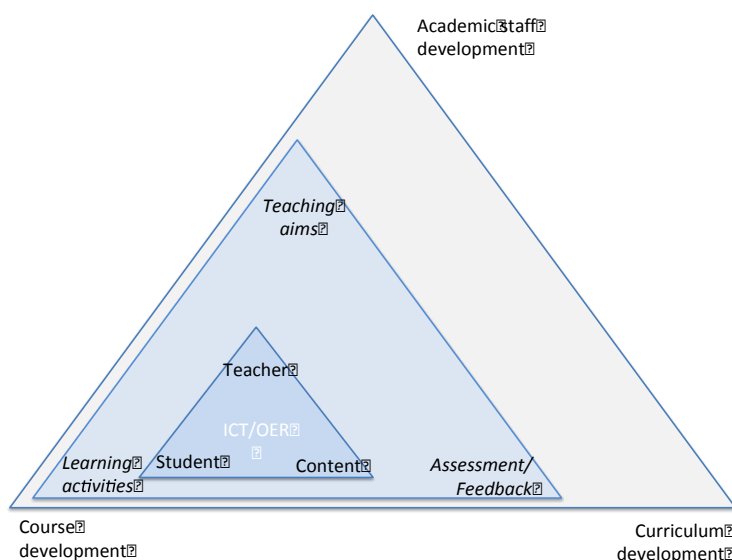


Fig 1. Digital Didactics - The three triangles of challenges

where learners expand their thinking beyond consumptive behavior and beyond traditional reproduction of existing knowledge (“conceptual change”, Kember 1997).

Our “Digital Didactics” is inspired by the German concept of Didaktik by Klafki (1963), Hudson (2008), Fink (2003) and Lund & Hauge (2011) who stress the differences of teaching concepts and learning activities and call them designs for teaching and designs for learning. This view on didactics and design puts teaching and learning into a new light. Teaching is not only a tool to reach the cognitive dimension; teaching is rather an activity-driven design to enable learning as a social process and as an activity for knowledge production (“activity designs for learning”, Hauge & Dolonen, in Olofsson & Lindberg, 2012; “multimodal perspective”, Selander & Kress, 2010). A digital didactical design (*figure 2*) includes different elements and their relations: a) teaching objectives, b) learning activities, the plan how to achieve those objectives in such a way that the learners are able to develop competencies and skills which the teachers have in mind (expected learning outcomes), and c) different forms of feedback and assessment (Chapman, 2003) to evaluate the student learning progress (“constructive alignment”, Biggs & Tang,

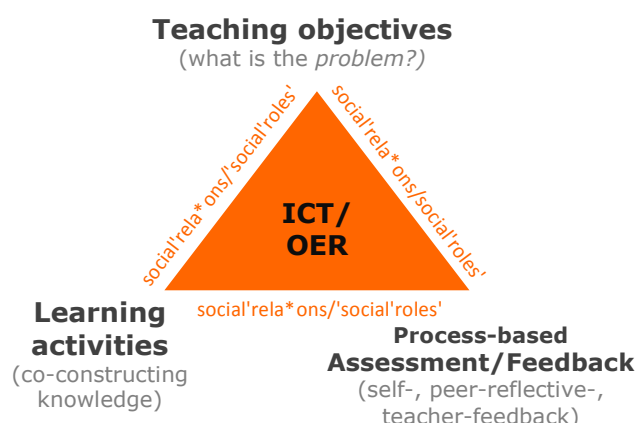


Fig. 2. Digital didactical design – elements and relations

2007). According to Bergström's study (2012), process-based assessment is the most effective method to foster learning, but summative assessment is the common routine. A didactical design also includes d) the design of social relations, teacher-student-interaction and student-student-interaction by the "dynamics of social roles" (Jahnke, 2010; Herrmann, Jahnke & Loser, 2004), and e) the design of using mobile technologies and OER in an Arena X. In an ideal world, mobile technology enhances learning at each point of the didactic design. Mobile technologies can make a significant contribution to learning, especially in "making learning visible" (Mårell-Olsson, 2012). Mårell-Olsson & Hudson (2008) illustrate different types of digital portfolios in which students develop the ability to "collect, organize, interpret and reflect on their individual learning and practice, and become more active and creative in the development of knowledge" (p.73). The integration of mobile technologies in didactical designs and vice versa, however, is more complex than it seems (Kirschner & Davis, 2003). Koehler et al. (2007) show how complex the integration of content, technical and pedagogical knowledge is (TPCK model). In addition, Loveless (2007) illustrates at the example of primary schools how the co-evolutionary development of subject knowledge and didactics needs the support of "improvisation".

The approach of Digital Didactics is not just the addition of didactics, ICT-supported OER and mobile devices to traditional concepts. It envisions new models with new questions, as:

- To what extent can teaching practices approach informal-in-formal learning in an Arena X? How do we combine traditional textbook readings with open, unstructured, informal learning space where "students are encouraged to experiment, play and explore topics" (Johnson et al., 2013). Concepts like access to information along with notions of transparency without barriers to interaction are central.
- To what extent can teachers create new learning goals on-the fly in a "Learning Expedition" in an Arena X in a fast-changing surrounding?
- To what extent can teachers focus on producing and creating, instead of reproducing and recreating in an Arena X for a Learning Expedition? Teachers create designs that focus on **learning as a process in time** and make learning **visible**.

In 2030, there is a range of digital didactical designs that go beyond surface learning and enable deeper learning. The teacher makes deeper learning possible and triggers the students to go beyond their horizons. It is not enough to learn on surface levels like remembering facts, understanding the information and applying knowledge (Bloom, 1956; Anderson & Krathwohl 2001). When societies want to support learners to become critical and reflective, then skills like analyzing, evaluating and collaboratively creating new ideas/things are important. The vision for 2030 is to make the different designs and the relation to the quality of learning visible, especially in the analysis and the design of key principles and themes across different cases to inform a new Theory of Digital Didactics.

3. Conclusion

Will there be any significant differences in learning outside and inside of higher education? Yes, we argue, the teacher and digital didactical designs can make the difference. A teacher in such a role, for example asking uncomfortable questions, can usually bring a learner further than a student can come on her own. The challenge is to rethink teaching in such a way that fosters deeper learning. Such a European approach needs the constructive alignment of digital didactical designs, OER, mobile devices and creativity. The challenge is to **design** learning in higher education institutions – where **not only the ICT-supported open educational resources** are in the center of teaching **but new forms of Digital Didactics** unfold the evolution towards learning expeditions in open education.

References

- Anderson, L. W., & Krathwohl, D. R. (2001): *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman
- Barr, R. & Tagg, J. (1995): *From teaching to learning. A new paradigm for undergraduate education*. In *Change Magazine*, pp. 198- 200.
- Bergström, P. (2012). *Designing for the Unknown. Didactical Design for Process-based Assessment in Technology-Rich Learning Environments*. Umeå: University Press.
- Biggs, J. & Tang, C. (2007): *Teaching for Quality Learning at University*. 3rd ed. New York.
- Duffy, T. M. & Cunningham, D. J. (1996). Constructivism: Implications for the design and delivery of instruction. *Handbook of research for educational communications and technology*, 171.
- Fink, D. L. (2003). *Integrated Course Design*. Idea paper #42. Idea Center, Kansas.
- Floridi, L. (2007) The future development of the information society. In *Jahrbuch der Akademie der Wissenschaften in Göttingen 2007*, pp. 175-187. Available from <http://num.math.uni-goettingen.de/schaback/info/mat/FloridiInfSoc.pdf> . See shortened version at <http://aminotes.tumblr.com/post/5980255524/luciano-floridi-on-the-future-development-of-the>
- Granberg, C. (2011). *ICT and learning in teacher education: the social construction of pedagogical ICT discourse and design*. (PhD Thesis), Umeå: university press.
- Hauge, T. E., & Dolonen, J. (2012). Towards an Activity-Driven Design Method for Online Learning Resources. In A. D. Olofsson & O.J. Lindberg: *Informed Design of Educational Technologies in Higher Education*. Hershey: IGI Global, pp. 101-117.
- Herrmann, Th., Jahnke, I. & Loser, K.-U. (2004). The Role Concept as a Basis for Designing Community Systems. In: F. Darses; R. Dieng; C. Simone; M. Zackland (Eds.): *Cooperative Systems Design*. Amsterdam: IOS Press. pp. 163-178.
- Hinssen, P. (2010). *The New Normal – Explore the limits of the digital world*. Kindle edition, Amazon.
- Hudson, B. (2008). A Didactical Design Perspective on Teacher Presence in an International Online Learning Community. *Journal of Research in Teacher Education*, 2008 Umeå University, Vol. 15, No3-4, pp. 93-112.
- Jahnke, I. & Kumar, S. (2013). iPad-Didactics - Didactical Designs for iPad-classrooms: Experiences from Danish Schools and a Swedish University. In: Ch. Miller & A. Doering (Eds.), *The New Landscape of Mobile Learning: Redesigning Education in an App-based World*. Publisher: Routledge. In press.
- Jahnke, I. (2010). Dynamics of social roles in a knowledge management community. In *Computers in Human Behavior*, Vol. 26, pp. 533-546. DOI 10.1016/j.chb.2009.08.010
- Jahnke, I. (2009). Socio-technical communities: From informal to formal. In: B. Whitworth, A. de Moor (Eds.). *Handbook of Research on Socio-Technical Design and Social Networking Systems*. Hershey (PA): Information Science Reference, IGI Global Publisher. Chapter L. pp. 763-778.
- Johnson, L., Adams Becker, S., Cummins, M., Estrada, V., Freeman, A. & Ludgate, H. (2013). *NMC Horizon Report: 2013 Higher Education Edition*. Austin, Texas: The New Media Consortium.
- Kember, D. (1997). A reconceptualisation of the research into university academics' conceptions of teaching, *Learning and Instruction*, 7(3), pp. 255–275.
- Kirschner, P. & Davis, N. (2003): Pedagogic benchmarks for information and communications technology in teacher education, *Technology, Pedagogy and Education*, 12:1, pp. 125-147
- Klafki W. (1997). Critical-constructive didactics. In Uljens, M. (ed.), *Didaktik*. Lund, Sweden: Studentlitteratur, pp. 215-228.
- Klafki, W. (1963). *Studien zur Bildungstheorie und Didaktik*. Weinheim: Beltz.



Learning DoJo's and multisensual holo-suites environments create learning journeys through time and space

Oliver Janoschka

The Learners leitmotif form the fundamental basis of the universities activities; Learning holosuite DoJo's create learning environments through time & space

The internet has gone neuronal and the learner sets up his individual learning DoJo- through „Holosuites“ which apply to all learners senses and which help to create spaces, times and complex learning environments. Big Data program software provides numerous scenarios for the learner to define time & space- he creates the learning journey and provides the parameter of his learning experiences- e.g. going back to the era of the Egypts building pyramids or having a chat with Freud and Einstein in a café in Vienna. A complete augmented reality environment provides „real“ learning interaction with famous experts, key figures and essential historic and present places and times. The individual learning DoJo accesses and processes all existing data, information, OER&OEP worldwide creating multisensual learning environments and scenarios.

Leitmotif: Individual Learner's agenda & curriculum & portfolio @core

The Learner designs his/her own university curriculum- individual interest & motivation form the core pillar for all learning activities. The development & implementation process of the individual learning agenda is supported by the entire higher education institution. Learning & Counselling services cater to provide customized support for each learner as well as other stakeholders (representatives of sme's & corporate companies, NGO & politics, etc). Learners portfolios substitute degrees-Universities validate the learners competences and the participation in its structural framework.

Agora & participatory learning designs & for learners as lifelong alumni's

The universities provide learning opportunities based on a series of activities, catering for open discussion, extensive peer support & mutual exchange. Frequent events like bar camps & open spaces & garages & peer coachings offer meta-structures in which learners can elaborate their topics and questions while finding support & inspiration & feedback from others. Learners are not considered as students for a specific degree and/or a period of time but the institutions provide a lifelong relationship, accompanied through frequent events, catering for the needs of the learners and using them as a key resource (e.g. crowdsourcing and crowdfunding, network)

Virtual Assistants & social learning interfaces

Individual virtual learning assistants help to operationalize the learning process, providing feedback, monitoring learning processes and keep track of results and key questions. Social learning hologram-platforms bring peers with similar interests in virtual networking spaces together, providing the opportunity for real time experiences, exchange and open discussions

Universities form international collaboration clusters & platforms with Learning Hubs in major cities

- Universities regard the world as a valid campus for learning & research and form clusters and international collaboration networks. Learners are choosing between different multinational university platforms which provide learning & research facilities and trained staff in hubs in major cities throughout the world.
- The structures of faculties and disciplines have been transformed into transdisciplinary research schools dealing with the Grand societal Challenges beyond regional and national borders.



The humanized e-learning raises the completion rate

Antoine Kantiza

The future of learning is reliable to the improvement of e-learning pedagogy model and to the common access in the online learning where the human tutor will support the e-learners in the appropriation of their knowledge in order to ensure the level of education and to increase the completion rate of students involved in Higher Education.

Background

The future of learning has already begun, the e-learning has become an obligatory way for the completion of Higher Education, the problems which remain are the common access to the online learning as well as the human validation of knowledge for insuring the level of knowledge acquired during the e-learning where the learner is limited by the human behavior in interaction with a rational machine.

Indeed, the future open education 2030 will be online learning based and it has to be built on a solid pedagogy model in order to stimulate the learners in the achievement of their knowledge and complete their studies as they did in the traditional classroom.

The e-learning pedagogy model

The community of e-learning is based nowadays on the socioconstructivism theories of Piaget and Vygotsky as the self-directed learner is on the center of apprenticeship. The community of e-learning model is suitable for the student involved in Higher Education because he has a big background in its matter of knowledge, also this learner is self motivated in sharing its knowledge as do the researchers in searching information in the libraries before providing its proper publications to be read and saved for others in the same libraries. The students who are involved in e-learning have prior to acquire a huge background in their discipline fields of learning and so they could learn online as do researchers in libraries.

The model “community of e-learning” where a learner achieves and shares knowledge through a community of virtual apprenticeship called otherwise “the community of inquiry” is suitable to the Higher Education as it is shaped by deep foundation of cognitive psychology and socioconstructivism theories applied in e-learning.

The mandatory human online tutors

The humanized e-learning is fundamental because it secures the students involved in e-learning process who are afraid of being let alone in the digital jungle as it has been proven that many e-learners discard their courses even in the latest Massive Open Online Courses shaped by Coursera.

The students involved in e-learning have to be organized by human online tutors through synchrone and asynchrone session such as in the formal group and more than in the community of inquiry in order to simulate the real classroom and to emphasize the

upbringing's values such as equity; fair analysis; good faith; know-how; leadership; rightness and other human values among learners.

The difference between the traditional classroom and the virtual classroom using asynchrone session like forum or video is that in the virtual learning, the learners could not stop their teacher, the voice and text go on automatically, the virtual teacher seems to be infallible in his say which looks like a speech of the great verity not questionable and not falsifiable or not refutable until the next learners' forum scheduled to be held in the asynchrone session and for the moment the speech seems to be out of science's field as wrote Karl Popper in its "Epistemology of science" because the argument has to wait the forum session in order to get its plausible validity nevertheless, the logic of synchrone session like webinar allows interactions between the learners and their human tutor in the synchrone session which is supposed to allow any e-learners to learn anywhere and anytime.

The evaluation of e-learning process

The universities will not be empty due to the increase of e-learners however the university teaching model have to be revisited and adapted to the new challenge of ICT tools like the blended learning which mixes already the traditional face-to-face with the open university in the same institution responsible of the quality of knowledge delivered offline and online.

Nowadays a website conceived with a dynamic format like PHP could be built such as a model of e-Learning Management System, this explains the threaten of false courses which could be widespread anywhere and anytime and against the shortage of education, there is the reason for keeping awake the guardian of the knowledge for human kind which remain the traditional universities involved in blended learning and those universities are able to acknowledge the quality of education granted online.

At the completion of its online course, the future student of Higher Education will be granted a certification of knowledge recognized worldwide due to the involvement of traditional universities in the belonging of knowledge taught online.

The common access on e-learning

A learner involved in e-learning needs to get this ICT tools and this one. The named ICT devices could not be download easily or freely, to mean that e-learning is not available for all, hence, the future platform of e-learning have to work in the interoperability with all kind of software in order to let a common access to learners from worldwide.

The synchrone session which is fundamental in a humanized e-learning could not be achieved in all cases because the e-learners couldn't learn easily anywhere due to the lack of some ICT devices and sometimes they will not be connected on time in order to learn anytime in all cases, so an online learner who does not get an opportunity of participating effectively in a synchrone session looks like a student involved in applied sciences who missed the laboratory application in the real classroom.

The adaptation of human behavior in learning toward an intelligent machine

The new self-direct learner online is similar to a student entering in the lecture hall and instead of listening a lecturer, he listens a recorded voice synchronized with a text which is spreading on the blackboard nearby a shadow who has a mimetic of delivering a public speech and anyone except the electricity shortage or other cable failure could stop the speed of the shadow's talk, the shadow is seen by the newcomer as an infallible person and not a

true scientific person with the humility of the Cartesian doubt. The learners could enter in the virtual class and be back to look the event for a short time less than they went sometimes to the open-air theater and may never stay for a long period.

The behavior psychology should explain likely why a student involved in the real classroom may accept to stay for a long period when a student in e-learning has more tender to desert its courses than in the traditional classroom to mean that the e-learning in the short period is more viable than in long period.

Indeed the exploitation of the model of Daniel Kahneman (2011) in 'Thinking fast and slow' should support the fact that many students drop out their online courses even if those e-courses are conceived with the updated information technologies and it is for the reason why I believe that the master of ICT tools used in e-learning added to the enhancement of cognitive psychology remains fundamental in the future of learning.

Conclusion

The future of High Education will be enhanced by the integration of the pedagogy model applied in e-learning together with the master and accessibility of ICT tools used in the appropriation of knowledge in favor of learners involved in the community of e-learning.

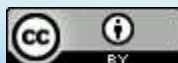
The humanized online learning is the foundation for the High Education where the blended learning is there to stay for a long term because the traditional universities have again a great role of validation and certification of quality of education and the knowledge granted offline and completed online.

Key words

Community of e-learning; Completion rate; E-learners; High education; Humanized e-learning; Human values; Traditional universities; Tutor; Validation of knowledge; Virtual classroom

References

- Jeffrey A. Roth (2013), A View into the Future of eLearning, Available at <http://elearningindustry.com/a-view-into-the-future-of-elearning>, Accessed on May 07th, 2013
- Jézégou, A (2013), Community of Inquiry en e-learning : à propos du modèle de Garrison et d'Anderson, Available at <http://www.jofde.ca/index.php/jde/article/view/652> Accessed on May 07th, 2013
- Kuhn, B (2013), The Future of E-Learning, Available at <http://www.shift2future.com/2013/02/the-future-of-e-learning.html>, Accessed on May 07th, 2013
- Online Learning Day (2013), Available at <http://www.diplomacy.edu/blog/webinar-digest-online-learning-day>, Accessed on May 07th, 2013
- Wikipedia (No date) Thinking fast and slow, Available at http://en.wikipedia.org/wiki/Thinking_Fast_and_Slow, Accessed on 07th of May 2013
- Wikipedia (No date) Réfutabilité, Available at <http://fr.wikipedia.org/wiki/R%C3%A9futabilit%C3%A9>, Accessed on May 07th, 2013
- Wikipedia (No date), Karl Popper, Available at <http://en.wikipedia.org/wiki/Popperian>, Accessed, on the 07th of May 2013



Hybridised OER and Rotation Based Learning

Sophie Kershaw

The power of information lies in its transforming potential through derivative works, applications and reuse; a 2030 vision of European HE must train students to be research users as much as producers, enfranchising a new generation of knowledge workers to deliver high-yielding projects in academia, industry and the wider world.

Traditional approaches within higher education focus almost entirely on the student as a **research producer**. Little attention is given to training students to see themselves as **research users**; the resulting research output from the academic community thereafter reflects this skewed perspective.

In this vision paper, we outline why an overt emphasis on the producer, at the expense of the user, role within the higher education system is detrimental to the viability of the resulting research output. We propose a new educational model to address this issue, employing a novel approach we term **rotation based learning (RBL)**, which harnesses Open Educational Resources (OER) to deliver in-person education in a digitally advancing research landscape, coordinated over a broad geographical region.

We outline how such an approach can:

- be used to **foster extensive research networks**;
- drive **interdisciplinary collaboration**;
- deliver **continuity of education provision** in open techniques and digitally assisted research, with the aim of supporting large-scale changes in research culture;
- enable the research community to **keep pace with the digital age** in the face of ever-accelerating technological developments;
- **secure a research legacy** of accessible, repurposable data and information in the sciences, arts and humanities that provides a **firm foundation for future enquiry**.

In the interest of providing a contextual example, we examine the inaugural pilot of an RBL instance, the **Open Science Training Initiative**, which was successfully delivered at the University of Oxford in January 2013 [1]. Having explored these teaching methods in practice, we go on to showcase some hypothetical “case studies” which demonstrate how this model can be adapted to a range of teaching scenarios and environments in different disciplines as part of our vision for Open Education 2030.

Our proposals, which we shall now motivate and describe, focus on higher education as a gateway to training future generations of knowledge workers who are skilled in producing viable information outputs at the research levels of academia, industry, governance and commerce. To this end, we now return to the theme of the research producer/user roles and examine how the imbalance between the two impacts upon academic output.

1. Motivating a balanced focus on research producer and user roles

Assessment patterns in higher education traditionally require the submission of work by each student, which is then assessed and graded by a tutor or lecturer before being returned to the student with feedback. Although this approach helps the educator to ascertain student aptitude and comprehension, it focuses solely on the student as knowledge producer.

Higher up the academic hierarchy, so-called “*publish or perish*” attitudes entrench this perspective further, placing researchers under considerable time pressures to publish regularly in highly rated journals, sometimes at the expense of innovation and utility [2,3]. Peer review in its current form cannot provide a full assessment of the transparency or validity of all the findings in a given paper. Greater emphasis needs to be placed upon the knowledge dissemination and utility accomplished by the research [4]. Provision needs to be made for training upcoming academics in how to achieve this.

Undue emphasis on the research producer role fuels one of the major problems facing scientific research at the present time: that of **reproducibility**. Many findings from peer-reviewed literature cannot be recapitulated by other scientific teams following the methods and details provided in the accompanying paper. Begley & Ellis [5] detail two studies in cell biology, each of which attempted to reproduce results from 50-70 landmark papers in the field. Reproduction was only possible 11% and 25% of the time respectively. Begley & Ellis note that “*some non-reproducible clinical papers have spawned an entire field*” and call for increased openness and data sharing in science as a partial solution [5].

Such fundamental problems call for a transition from the research producer model of education, to one which acknowledges the value of communicating findings to potential information users. This will require a significant cultural shift and students must learn at an early stage of the educational ladder how to produce high-utility research through adept communication of a **coherent research story (CRS)** which facilitates maximum dissemination. A CRS not only encapsulates the written research, but the bibliographic data, experimental data, figures and/or computer code which contributed to its production.

If we can train students to be information producers *and* users, we can establish a generation of researchers and knowledge workers that deliver highly viable research outputs. This should provide a greater return on research funding, both academically and economically.

We have established that a 2030 vision for Open Education across Europe needs to adopt a dual perspective of information production and use. What other features should it incorporate? An in-depth study by JISC and the British Library in 2012 fielded responses from 17000 PhD students, discussing their research methodologies, the training they required and the aspects of their education experience they would like to change [6].

According to the report, modern research students:

- have a strong inclination towards “*face-to-face support and training*” and favour subject-specific teaching over generic content;
- hold many misconceptions about open access publishing, copyright and intellectual property rights;
- are slow to utilise the latest technology and tools in their research work, despite being proficient in IT;
- are heavily influenced by the methods, practices and views of their immediate peers and colleagues.

These findings highlight the need for **subject-specific training** in higher education, utilising a **hands-on approach to learning** and promoting an **integrated approach** to data, licensing and open methodologies as part of the natural research process.

2. Introducing Rotation Based Learning

We now describe a novel pedagogical approach, which we term Rotation Based Learning. The outline below provides a pattern for training PhD scientists, but is amenable to adaptation for other subjects, group sizes, ages and teaching objectives.

The student cohort is split into separate groups. If delivering a course in an interdisciplinary setting, efforts should be made to distribute subject backgrounds across the groups. **No communication is permitted between the groups at any stage during the exercise:** this provides the stimulus for reproducible research and encourages students to view their own work from the perspective of a potential user.

Phase 1 is the **Initiator** phase. Groups are allocated one of two subject areas and given a list of pre-selected, published papers from the relevant literature. Each group must select one of these papers as their focus and subsequently attempt to reproduce its results, delivering code, data and a written report, all appropriately licensed. They are informed from the beginning that their work will be graded not only on its research quality, but also on the extent to which it delivers a CRS and correctly implements techniques in open scholarship and data management.

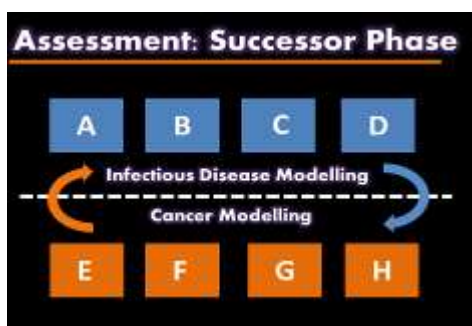


Figure 2: Rotation of themes for RBL Phase 2

Throughout Phases 1 & 2, the cohort receives daily mini-lectures examining core transferrable skills such as data management, licensing and academic publishing. Each addresses skillsets which should be developed through first-hand application to their rotation projects. Short, daily supervisions with each group enable the course leader to take an active part in the students' learning process and identify future research stars, as well as providing an open forum for students to question their own methodologies and draw directly on the research experience of the educator.

A pilot scheme utilising this RBL approach was run at the University of Oxford in January 2013, involving a cohort of 43 pre-doctoral postgraduate students from a range of backgrounds in the physical and life sciences. Entitled the **Open Science Training Initiative**, the two week, full-time course delivered subject-specific instruction in computational biology, integrated with hands-on training in digital and data management skills and received excellent feedback from students and course demonstrators alike [1]. Student productivity and work quality was significantly improved compared to the traditional, single project approach used in previous years. By integrating general lectures in academic culture, open science and digital research techniques into the subject specific programme, students not only learned new skills but consolidated them into their working practices through direct application. Indeed, 100% of respondents to the exit questionnaire agreed that the course had contributed to their awareness of scientific working practices, while 91% would be happy to implement open practices in their work, either by themselves or with further guidance.

This teaching model could be modified easily to suit the needs of undergraduate educators;

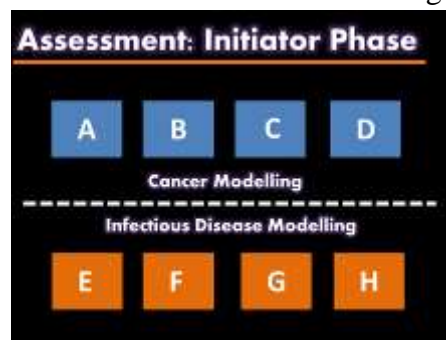


Figure 1: Group formation and topic allocation for RBL Phase 1

turned into a remote access course online; or modified to suit the demands of arts and humanities faculties. We refer interested readers to the Section 4 case studies for illustrative examples of such adaptations.

University-based instances of RBL would utilise local expertise and permit educators to pitch material at a suitable level for their students. Nonetheless, its true potential is realised when hybridised with Open Educational Resources to facilitate collaborative working, foster research networks, and to deliver the same integrated “skills training” in different institutions.

3. Hybridised RBL-OER approach

A hybrid RBL-OER approach combines teacher-led RBL with OER course materials shared with other institutions. Such hybridisation would require a central European repository of slides and teaching materials: some relating to the skills training component, others providing subject-specific tasks for the overall course themes. Each set of OERs could be rated by users over time to help educators determine the most popular or user-friendly contributions.

The central repository could provide a facility to assist institutions in linking up with one another if they have registered an interest in running a course on the same theme for similar ages of students. Course leaders could then download the same set of course materials from the system and deliver similar courses simultaneously, enabling the RBL groups to draw on students from both institutions, or alternatively for the groups at one institution to swap projects with one another in Phase 2. We explore this idea in Case Study 4.

Transition to an open working culture will require a significant cultural shift in academia over the coming years. Hybridised RBL-OER can support continuity of training provision across institutions to help facilitate these changes and aid development of a unilaterally well-informed academic community. Furthermore, successful training in data and information curation and release throughout European institutions would contribute significantly to a research data legacy for industry and academia for future generations.

Advantages of the hybrid OER-RBL approach include:

- **Continuity of provision** for skills-based training and progression of research culture within European institutions;
- Opportunities for young students to establish **extensive networks for learning and research** which they can draw on in their future work;
- **Opportunities for talented researchers at smaller institutions** to make a prominent contribution to the European network by feeding their expertise into the repository and/or acting as a collaborative partner in a joint-institution rotation course.

The potential for hybridised RBL to adapt to a variety of settings is best demonstrated through hypothetical case studies, as we show in the next section.

4. Case Studies

The following imaginary case studies showcase a variety of possible applications of hybridised RBL at several different levels of Higher Education across Europe.

Case Study 1 (Undergraduate Education): Adam and Nadya are undergraduate Physics students at a UK university. The course leader for their experimental modules has established an RBL link with another UK institution. For one of their assessments, Adam and Nadya must design an experiment and document all methods and findings in a lab book, critically evaluating their work to ensure the research is well communicated and includes all necessary details. Adam and Nadya’s lab writeup is swapped with students at the partner institution. Both lab teams attempt the other’s experiment following their instructions, and produce an assessed critique of the other’s work, which is subsequently shared with the original team.

Case Study 2 (Undergraduate Education): Social sciences undergraduates at three European institutions are linked up by their course tutors to collaborate in groups on a study examining attitudes to health care in different countries. The tutors streamline the in-person training in data collection, analysis and licensing for their respective cohorts by using shared OERs. The students collaborate online to develop a questionnaire and subsequently share their local responses with one another via an online system. Projects are then rotated and each successor group has to develop the work further. Their institutions later fund a mini-symposium for the students to meet in person and showcase their projects.

Case Study 3 (Remote Learning): Milo is a Masters-level student in English Literature, who has to study remotely from his home in Portugal. His first extended assessment has already been graded by his university tutor. Milo has drawn on many references during the work and has catalogued these using open bibliographic software. He joins a network of Masters students via an online RBL educational community, for the purpose of discussing and critiquing one another's work. Initially Milo has to complete a MOOC in content licensing to be able to license the writing he contributes. Milo then gains additional course credits at his university by sharing bibliographic data; engaging in discussion with the remote network; and by writing a critical evaluation of the work of Jennifer, a student who lives in Italy and has similar research interests to Milo. In turn he benefits from Jennifer's critique of his paper.

Case Study 4 (Establishing Research Networks): Two classes of PhD students, studying computational biology at institutions in Germany and the UK, are undertaking a pre-doctoral taught year. One of their courses is run as an RBL-style collaboration between their two universities, in which each rotation group includes students from both institutions. Each group must use digital communication and online data-sharing technologies to coordinate their project management throughout the rotation based assessment. Meanwhile, the course leaders draw on the same set of OER lectures in content licensing and data management to deliver daily lectures to the cohort at their respective universities. Students emerge from the course with first-hand experience of: data management, curation and sharing; content licensing; and collaborative working practices. Several of the students capitalise on the opportunity to foster a broader research network with their colleagues from the other institution and produce papers of their research findings for submission to an open access journal.

These hypothetical scenarios demonstrate how RBL variants can be employed in higher education within different disciplines and at different levels, ranging from in-person PhD training, to a geographically diverse, remote-access incarnation.

5. Concluding Summary

Our vision of hybridised rotation based learning with OER can be used in higher education to combine the strengths of local, subject-specific expertise with the diverse perspectives provided by a broader educational network. Globalising the approach to RBL fosters the development of progressive, robust research communities, equipped with the skills to deliver high-utility, high-impact research in a rapidly changing digital landscape.

Bibliography

- [1] Kershaw, S.K. (2013) Open Science Training Initiative: Post-Pilot Report.
- [2] Fanelli D (2010) Do Pressures to Publish Increase Scientists' Bias? An Empirical Support from US States Data.
- [3] M. De Rond, A.N. Miller (2005) Publish or Perish: Bane or Boon of Academic Life?
- [4] Lee (2013) Publish or perish: the myth and reality of academic publishing.
- [5] Begley C.G., Ellis L.M. (2012) Raise Standards for Preclinical Cancer Research.
- [6] British Library, HEFCE (2012) Researchers of Tomorrow: the research behaviour of Generation Y doctoral students.



Each one, teach one

R.J.M. van Leeuwen

This generation will build transreality

It is this generation which will boost the rise of the digital world. It is this generation which does not think linear and live in a digital world.. For them digital is normal. Main question about this fact is how teachers must deal with this new generation. A hard question for many teachers because they are not used to digital media because they grew up without these media. But still they have to deal with the merge of the virtual with the physical world. We think what teachers must do is listen to those new students and learn as soon as possible from this new generation within their classrooms.

Transreality deals with the transfer of knowledge, data and challenges between the real world and any type of virtual or digital world. Its applications are to be found in simulation, online education, (serious) gaming, avatar technology, marketing, organizational development, safety and cybercrime, crisis management, education and training.

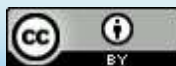
By integrating the classroom reality into the students reality there will arise an environment in which the student does not need to be best in class form a cognitive point of view. More important competences will be developed. Finally there will step up leaders that really understand the principle of don't do to others what you wouldn't like to be done to you.

This requires an approach in which traditional teachers are more like coaches for a specific reality. This will certainly not be the dominant reality. Teachers must understand that they don't earn students respect by age or 'power'. Teachers must understand that they do earn respect by means of adding value and fulfilling development needs for students. Why is it that hacking school sites is a very popular activity under students? How is it possible that most successful internet applications are developed by students (facebook, napster, google). It is not because they were thought so good. It is because students took the wheel of their own development in their own hands and started exploring their ideas. If teachers would have been involved in this process, a lot of initiatives would have been killed even before they started. Just because they would not fit into an existing traditional format. A traditional format that comes from somewhere two ages ago. And still we believe that this format is the only successful format. Of course, hardware has entered the classroom. But it's only to be used the way an Internet immigrant (read: teachers "now let's push this button all together, because we do it always this way") think it is right. Not the way Internet natives (read: students "Hmm, it could be more effective if it could be used like this or that and what would happen if I used this application like this") think it is useful.

We think that we need to come to a new model. An open format in which students are encouraged to develop themselves and where they are seduced to explore other fields of interest. That will lead to better performers. Performers that organizations are desperately waiting for (but still don't know because they are also immigrants, educated in a traditional way).

The current generation knows more about digital media than most of their teachers. The youngsters also change many times from identity in the virtual world. So, don't try to stop this but encourage it. When do we accept that youngsters have a revolutionary changed view on their world?

LET'S FACILITATE A MODEL IN WHICH TEACHERS ARE ABLE TO LEARN FROM THEIR STUDENTS. IT IS A REAL PROBLEM: THEY NEED OUR HELP!



Is there any need for classroom presence in technology-intensive teaching?

Juho Lindman

Hanken School of Economics

Higher education (of technology skills) of 2030 needs physical classroom teaching that complements MOOCs

This experience paper is based on my professional development project conducted as a part of International Teachers Program (ITP), a faculty-development program organized by the International Schools of Business Management (ISBM), a group of twelve leading business schools located in Asia, Europe, and North-America: HEC Paris, IAE Aix en Provence, IMD Lausanne, INSEAD Fontainebleau, Indian School of Business Hyderabad, Kellogg School of Management - Northwestern University, London Business School, Manchester Business School, SDA Bocconi Milan, Stern School of Business - New York University, Stockholm School of Economics, as well as the European Foundation for Management Development (EFMD).

Introduction

As university (as a club, a school, a workshop, an atelier or a library) changes, so do their classrooms. The development of communication and information technologies that enable virtualization of education, distance learning and increased self-study have challenged the traditional classroom that relies on learner presence (Barabasi, 2003; Lombard & Ditton, 1997). The learning situations have extended all around the campus, as well as far beyond campuses.

In addition, the budgetary and institutional pressures to offer standardized modules that would enable students to acquire commodified and internationally certified learning outcomes demand higher and higher levels of teacher productivity. At the same time, the teacher needs to offer innovative solutions and high-quality teaching. Increased use of IT technology has been seen as one of the possible solutions to tackle this double problem.

Different learning situations have of course existed already quite a long time before MOOCs. What is new, are the virtual communities that can build-up to complement the courses, as well as new digital tools that help self-education (usually available on these same platforms) (Cusumano, 2013; Martin, 2012). In addition, it is also possible to take part to the courses of other universities virtually as groups and complement the course by the use of physical presence (ibid).

Need of physical presence in higher education?

During the summer 2012 I visited Stanford University as a Scancor scholar. Back then in Stanford, “everyone” was talking about virtualizing further and opening up education beyond the campus. The exact ways on how to do this was, and is, still under discussion. Stanford has so far moved forward not only by replicating the success of for example MIT’s Open Courseware, but opening up aggressively their educational assets.

This is in line with my own research interests in Information Systems: Open Source, Open Access and Open Data. I firmly believe that academics should eat their own dog food on openness: and so academics will somewhat open up, but at the same time, there will be some tension to limit the availability of teaching to physical locations. Virtual and traditional learning are complemented – neither will go away, but there is a growing demand for teachers that can operate in both environments and combine them in novel ways.

Self-study is the main way of learning many computer related skills. For example programming is a craft that requires a lot of hands-on learning in front of a computer. Acquiring these basic IT skills usually happens before universities: most usually through hobbies or primary education. Those who have the basic skills, are a lot better prepared to learn similar skills in universities that offer them. The specific content of self-study is often claimed to make MOOCs especially interesting way to learn these basic skills, for example programming.

Setting

Currently, I am teaching in Hanken School of Economics (business school) three courses: Databases (introductory level), Computer Programming (intermediate level) and Decision Support Systems in Business (advanced level). All my teaching is in English. I am organizing the courses on my own from the choosing/producing the material, to lecturing/facilitating, to correcting the exercises and grading the exams. Typically each course has around 40-70 students.

My courses combine technical skills to organizational (customer) requirements. Courses form and build on basic technical understanding, but more importantly they aim to convey the importance of the fit between 1) what is technologically possible in designing systems to 2) what is organizationally feasible from the user/customer point of view. Understanding this fit is a main requirement in any IT consulting or IT project managerial position.

The Computer Programming course is quite technical and mainly elaborates programming skills. Course's grading is based on evaluation of the source code the students hand in to solve the weekly exercises. My philosophy is that programming skills are mainly learned by coding. Therefore teaching is hands-on, often individual, solving of technical problems, which are difficult enough by using the methods taught in the course. An abundance of information is available online (tutorials, manuals, tools etc) on programming, but the main effort needs to be taken by sitting down, finding the required information and making the pieces of the code to work. Teacher has four main roles in this is: 1) to make interesting problems that suit the overall aims of the course and what students already know/have learned, 2) to explain clearly their solutions, 3) support the students when they solve the problems, and 4) to provide feedback after the student hands in the solution. Most of these roles are quite different from the roles required in teaching not so hands-on content, for example legal and economic impacts of open source in commercial companies.

My two other courses are more traditional and follow different approaches, where a range of more interactive and constructivist teaching styles are possible. These courses include for example course diary, facilitated group discussions, reactions papers to scientific articles and written exams.

Do we need physical presence in classrooms?

My viewpoint is that of a teacher engaged in teaching the IT related skills. I am strong proponent of physical presence in the classroom. Experience shows that although open educational resources and their creative use can significantly aid the learner, there is still a strong call to support these efforts with traditional classroom setting. There are several platforms that offer automated and more thorough learning materials than almost any university could offer.

Students could well learn to program themselves (and many do) without any intervention from the university. Why would students then still come to classes? I think this question is posed in a wrong way. Classrooms offer things that MOOCs do not: for example group presence and educator face-time. Both these are very valuable, but MOOCs also offer things where the teachers cannot compete. Therefore the real questions that need to be addressed are related to the ways MOOCs and physical presence can be complemented.

References

Barabasi, A. (2003). *Linked: How everything is connected to everything else and what it means for business, science, and everyday life*. New York, London: Plume Books.

Cusumano, M. (2013). Are the Costs of 'Free' Too High in Online Education?, *Communications of the ACM*, Vol. 56 (4).

Lombard, M., & Ditton, T. (1997, September). At the heart of it all: The concept of presence. *Journal of Computer-Mediated Communication*, 3(2).

Martin, F. (2012, August). Will Massive Open Online Courses Change How we Teach?, *Communications of the ACM*, 55 (8).



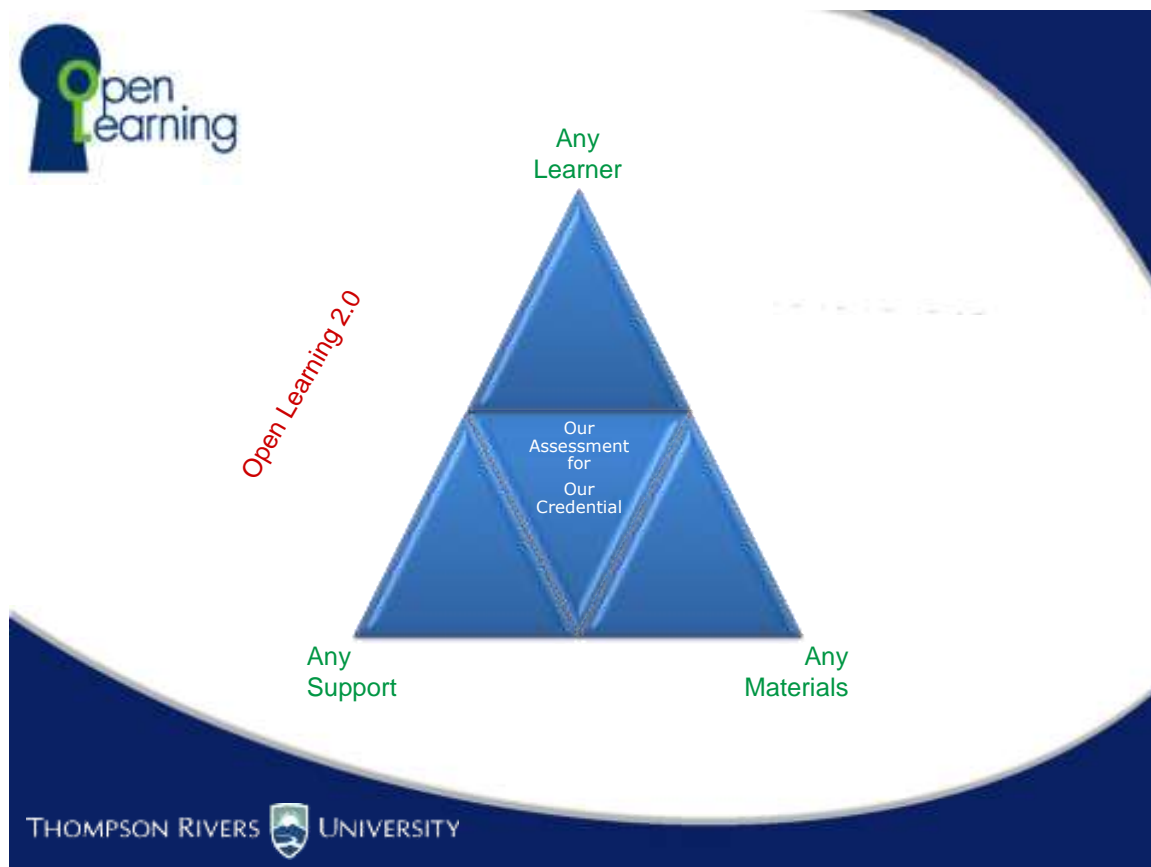
Unlocking the Possibility of Open Assessment and Open Credentialing

Judith Murray

With more than 20 years of experience in higher education in both Canada and the USA-- including public, private non-profit, and for-profit higher education-- I have a unique perspective on the future of open education. As I envision it, the future is one of “openness” in all that we do. Open access, open content, open development, open pedagogy, open resources, open technology, and open practices including open assessment and open credentialing. Rather than focusing my limited space on talking about specific innovations/disruptions facing higher education today (OERs, MOOCs, learning analytics, social networks, recognition of prior learning, badges, etc) I want to focus on philosophy and transformation.

I see universities and colleges as stewards of the public trust, who are responsible for “signaling” to society that an individual has achieved a particular educational standing or outcome. In order for this “signal” to have value it must be meaningful. In order to have meaning, the “signal” must align with societal values and expectations. Thus, I believe that one of the threats to higher education is our “signals” losing their meaning and therefore their value; and others, outside of the academy, will step in and generate “signals” that are better aligned with the values and expectations of society. To avoid this from becoming reality, I believe that we need to look beyond just developing new ways of doing the same thing, beyond incremental improvements to the status quo, and beyond the notion that we should continue to do things a particular way because we have always done them that way. We need to envision new things to do and new ways of “signaling” to society that educational standing and outcomes have been achieved. We may even need to redefine the “signals” we send and how we send them.

My vision for higher education is grounded in an outcomes-based philosophy. I believe that as educators, we are responsible for articulating the learning outcomes that must be met in order for a learner to receive a credential (signal) or academic credit from our institutions. We are also responsible for developing the assessment vehicles for validating and authenticating that our specific learning outcomes have been achieved. Once this is done, we should accept that there are multiple pathways that an individual learner can follow to acquire the learning necessary to meet our outcomes. Finally, I believe that it is our responsibility to accredit and credential the learning that meets our outcomes. I have called this vision Open Learning 2.0.



In order to achieve this vision we need to innovate in all aspects of this model including: defining the outcomes; developing new methods of delivery and support; creating new mechanisms for validating that the outcomes have been achieved; creating new pathways for learners to follow; and developing mechanisms for accrediting the learning that occurs in nontraditional ways.

I believe we are at an opportune time to rethink the teaching, learning and research paradigm. In doing this, there are many questions, which need to be asked. They include: What does open education mean in the 21st Century? What are the unmet needs and where is the untapped potential? How should we support learning through teaching and research? Which technologies will best enable us to achieve our goals and aspirations? How can we provide access to quality learning experiences in a more cost effective way?

In my view, transformative change requires creating an environment which embraces imagination and creativity; where people are encouraged to take calculated risks; where initiative and experimentation are expected; and where continuous improvement is a state of being. Progress comes from being able to discern which opportunities, of all that are possible, are the best fit for an organization and therefore the most likely to be implemented successfully. Success is achieved when the transformations implemented prove to be sustainable, scalable and financially viable.



Open Resources for Digital Entrepreneurship

Francesco Niglia, Laura Schina

Entering the professional domain through open data and cooperation activities

Universities are used to open their doors and offer to the students the opportunity to study entrepreneurship. Most of the four-year schools already offer classes or degrees in entrepreneurial studies and the state's two-year colleges are also developing certification programs. The number of entrepreneurial studies programs has increased during the year.

However to acquire practice entrepreneurial skills and expertise requires more flexibility in the structure of learning pathways that lead to implement the business ideas of students who are particularly innovative and have a greater chance of success. Often it happens that even the best ideas are made void because you are not willing to devote resources (both in terms of time and money).

Indeed, entrepreneurship education must be encouraged, and true stories of entrepreneurs can be examples to young people.

Often the practical world is very different from the theory studied and in order to overcome this barrier people require a way to reduce the gap between the Academic and Business world. Young people express their dissatisfaction when - at the end of a brilliant university course - their work is often not considered as a result of bias that do nothing but increase the gap between academia and the corporate world. More and more business skills and even more field experience are required. *At this point, so why not help young people to build their experience already within universities?* The benefits would be two-way because on the one hand, the university would gain value in terms of reputation, which in practical terms validated seeing their academic expertise in the field; on the other hand, young graduates could contribute their expertise to promote the exploitation of academic results in business contexts where Universities do not always have adequate resources to address in order to deal effectively and efficiently a path of practical exploitation. The rethinking of a path entrepreneurship-oriented could also go to the benefits of mature business environments in which you want to also support the ideas generated internally and can through the renewal and the exploitation of academic skills to add value at their business activities.

1. What is the service in 2030

The International Digital Entrepreneurship Platform (the platform) is a free access web application supporting teachers, educators and students for entrepreneurship, since it builds the links among open data sources and between education establishments for entrepreneurship and the real entrepreneurial world, making entrepreneurial career more attractive to young people.

The platform acts as a global integrator of skills, expertises and people, giving the possibility to identify and learn from the best practices and contributions on the field. Its openness makes possible to collect different inputs from around the world both in theoretical and practical

terms, involving private and public players. In addition the platform provides personalised international networking & mobility schemes for students' entrepreneurs.

There is a multi-channels accessibility, indeed the services are provided through different communication channels (mobile phone, television, laptop, etc.).

Through the fully exploitation of the ICTs functionalities, people can stay in a virtual learning room, or in a business meeting and play an active role in discussions and training sessions. Periodically workshop, at international, national and local level will be organise so to support the establishment of an entrepreneurial mindset in participants and favour their mobility.

The digital entrepreneurship platform enables:

- The establishment and sustaining of public-private partnership between businesses and universities;
- The access to e-learning and interactive personalised modules;
- The built of patterns career according to the background, skills and expertises of each participant;
- The creation of different types of network communities;
- The scheduling of meeting, discussion, training sessions with entrepreneur and academics;
- The possibility to exploit multiple communication channels;
- The capability to identify funding opportunities for skilled and brilliant ideas under a common framework.

2. How our characters/categories interact with the service

Monica: was graduated with honours and has a PHD in Business Administration and now aims to attend a practical graduate programme in Digital Entrepreneurship. The course will be held in London while she lives in Portugal and has just started to work for a global business company.

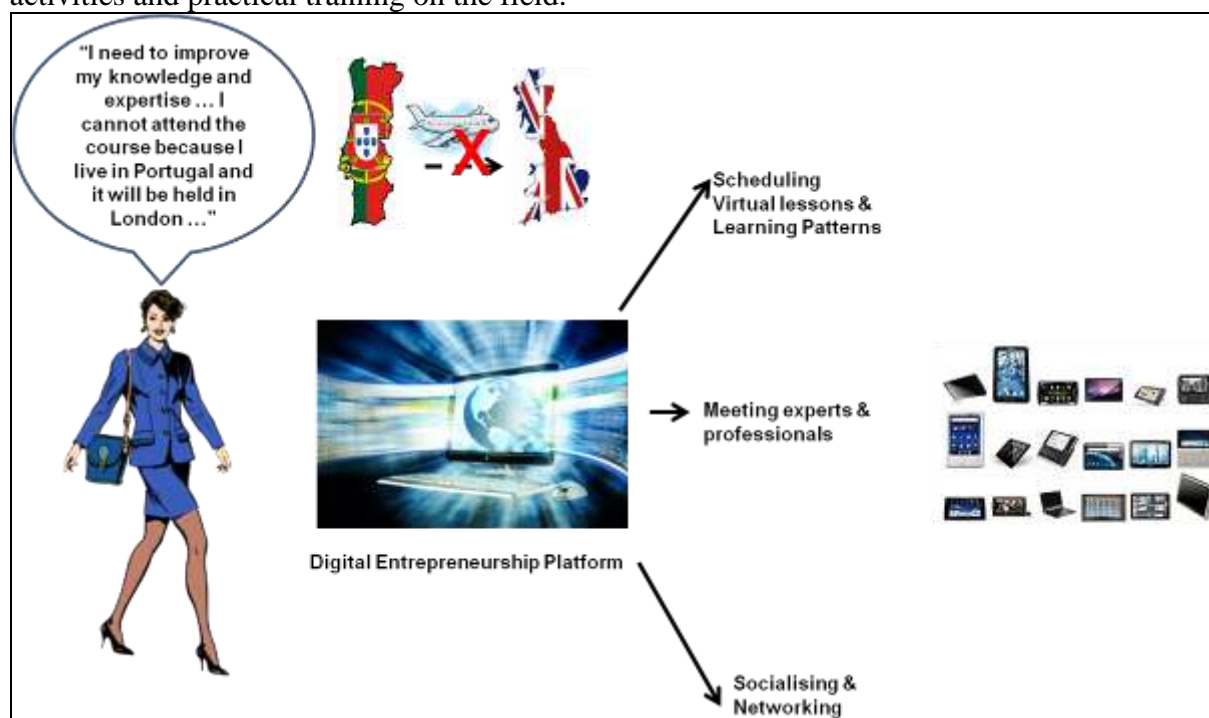
Her boss suggested her to apply for the programme provided by the platform in Digital and Innovative Entrepreneurship in order to improve her knowledge and expertise. In this way she will be most suitable with the position currently covered within the company (focused on the monitoring and implementation of new trends and business model for conducting business activities) and will give her the opportunity to become the chairperson of the spinoff that will be started the next year. Indeed the platform gives the possibility to initiate an entrepreneurial activity related to the field of research strictly related with the main skills of the candidate. In this way also the academy can put in practice the theoretical results most suitable to be translated into successfully business activities

Since she cannot stay in London for the duration of the course, she would to have the opportunity to alternate in site and tele-lessons.

She enters the platform and receives all the information required in order to activate her account and starts to structure the programme according to her needs and major requirements. The course lasts one year and is articulated in 6 months of theoretical and practical activities in order to learn about techniques, studies and activities on the fields and other six months dedicated to periodically update twice a months.

She works full time but the course is considered as part of her working day. Indeed the programme is strictly focused on the daily activities of Monica with a specific orientation towards the development of Entrepreneurial skills. According to the programme, she

structures the activities so to dedicate 4 hours per day to the course, by integrating theoretical activities and practical training on the field.



During the morning, before going to work, Monica checks for the activities planned during the day through her smartphone after receiving a reminder message. At the beginning of the week she has the possibility to adapt her working tasks with the training course and add quality of the outputs needed to be reached, avoiding any waste of time in doing activities to much different each other. Three times a week she attends virtual lessons by accessing a virtual space in which each participant easily interact and play an active role in the discussion. These lessons can be attended both by connecting through the PC and by TV through a Wi-Fi connection. Once a month she flies to London in order to meet the most important representatives of the organisations and institutions involved and for reporting to her tutor the activities carried out. Otherwise, once a week each participant makes a weekly exam in order to measure and monitor progress, commitment and eventual problems.

At the end of the graduate programme Monica has increased her skills and expertise; indeed she levels up within her organisation. During the last two months of the programme she has collaborated with a manager who led the establishment of a spinoff. In this way she acquired the additional skills for leading the new spinoff. In addition she gains a lot in terms of reputation as direct evidence of the success of the initiative and as a good example for the young who could not be confident of having the opportunity to make in practice their personal studying background.

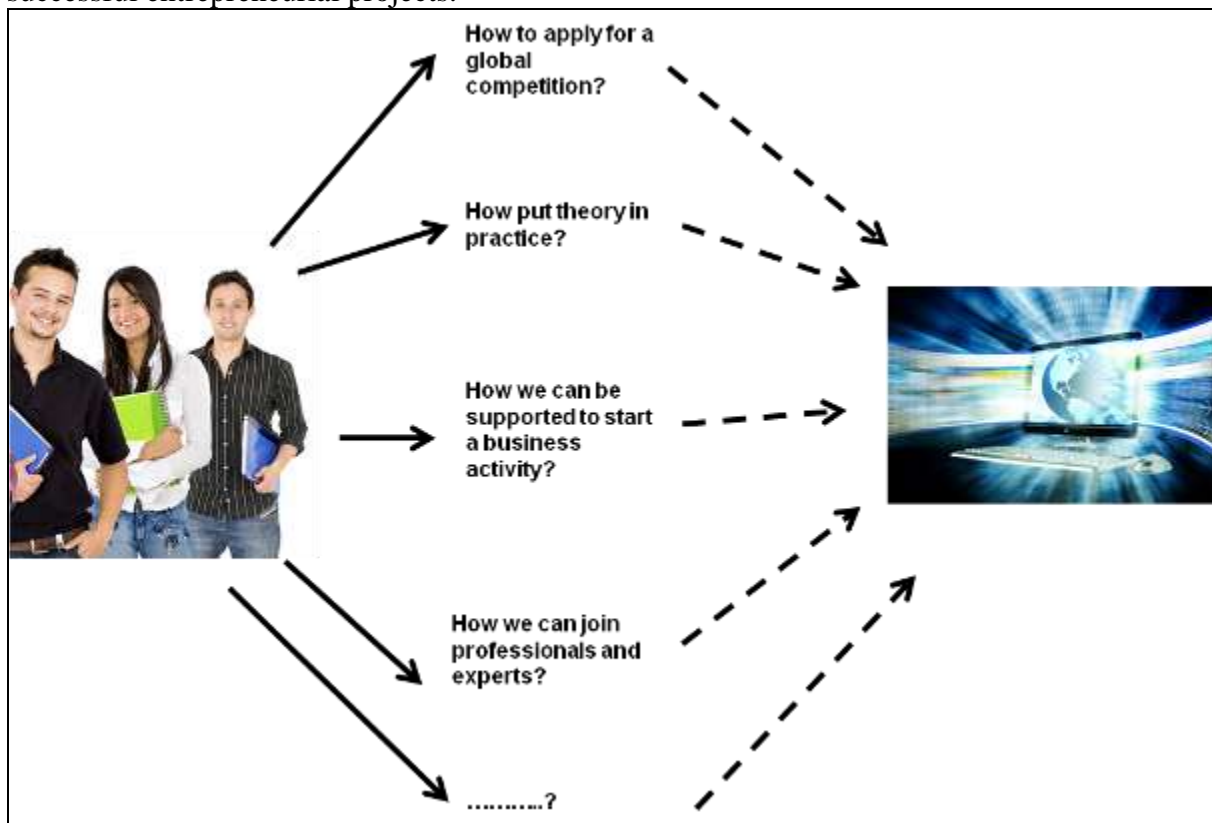
During the training period, Monica met a lot of people with her interests and expectations so a lot of informal communities were established bringing the increase of the network inside the digital platform.

The modality of the course has contribute also to reduce the needs for external funding, thanks the possibility to integrate the daily activities with the learning patterns of Monica who continued to make her work without added costs for the company she works for. So thanks to the excellent reputation of the initiative each organisation invests on the training and learning pattern and considers the students as workers to be paid for the activities provided. In addition

Monica has been supported also by her company that – being confident of the results she would have achieved - has paid for her travels and the other accommodation required.

Martina, José and Miguel are three Portuguese students in management and business administration. In order to finish their brilliant studies, they intend to participate to a global competition for young entrepreneurial and have the opportunity to start up a business in collaboration with successful companies located worldwide. They know how difficult is to put in practice their theoretical experience and also to succeed in being funded through public co-financing mechanism. In order to be supported in their initiative the platform provide the opportunity to submit brilliant innovative ideas in order to be linked with potential stakeholders interested to support the start up of new businesses.

In this aim they enter the platform and register themselves in the section dedicated to the students who want to apply for launching an innovative idea. They have to submit their proposal and wait (at maximum two days) for having the first feedback and eventually being linked to potential interested stakeholders. Indeed the platform collects also groups of organisations differently composed in multidisciplinary consortium and available to join groups of students in order to support and finance innovative ideas and put into practice successful entrepreneurial projects.



In case of approval the students will immediately start to work on the project, on the other hand they will be supported in order to improve their initiative and make it in line with the entrepreneurial requirements and expectations.

A few days later, they receive an e-mail that confirms the acceptance of their proposal. By now they start their challenges. The first step is to be linked with the consortium of the stakeholders interested in put in practice their idea. Once they have discussed about all the activities needed to be carried out, Martina, José and Miguel have to provide the detailed business plan for the next three years. The platform provides the young with all the material needed to produce the documentation and also with a virtual tutor that they can contact 24/7 for additional questions and clarifications.

The tutor can be contacted through multiple channels (mobile phone, PC, television, etc.) with different level of interaction. After one month of courses and hard work the young provide the consortium with their business plan that will be submitted to a peer review by the consortium. In this way the students have learned about techniques and practices required to the entrepreneurs in order to start a business. The process has been also structured in order to address administrative and financial issues.

In fifteen days they receive the feedbacks from the consortium and a lot were the changes required. They have had the possibility to access the knowledge base available on the platform in order to collect the information and the data missing in the first version of the business plan. In the following fifteen days the work has to be finalised.

The following months have been dedicated to learning and training comprises theoretical and practical sessions. Each student has had the opportunity to access the platform and to attend the courses according to their needs, scheduling their activities and task and regular brainstorming sessions are held in order to share opinion information and skills. Once a week the students meet the consortium in order to monitoring the planned work. Important feedbacks and insights are inserted on the platform in a special section where the most relevant issues are addressed. Students are involved throughout the process of establishing the company and therefore are required to deal with all matters in entrepreneurship (i.e. the equipment, the daily bureaucratic procedures, the personnel recruitment, the energy expenditure, licenses permits and concessions, rules on patents, etc.).

The platform provides contents for any issues related to the entrepreneurship and also the possibility to establish different level of interaction with experts on the different fields.

During the last six months a spinoff has been created. The final dissertation of the students raised their direct evidence concerning the value-added gained from this experience, and show the skills and expertise acquired by the students. In particular they have had the opportunity to address the transition from academia to work step by step, supported by the contribution of those who took part to the initiative and that as they have believed in the feasibility of the proposed idea.

The platform collects also a lot of testimonies about ideas not considered interesting during the first stage of evaluation, but that with the adequate support of professionals and experts have been led to become winning ideas. This is also for demonstrating the potentialities of students those often don't have the possibility to explain and be driven in putting theory into action and compete for the validity of their intuitions.

3. Conclusions

The outlined platform is able to build a bridge between academic and business so to develop and improve entrepreneurial skills and attitude both of students of or workers. It will enable the possibility to build own high-level courses by choosing among all the open information provided by teachers and endorsed by the business sector

In order to exploit all the platform's functionalities we need to consider:

- Use of multiple channels like mobile phone, digital television, games consoles, computer;
- Building eLearning content in open standard, open source environment
- use of APIs for multi-channel delivery or built to standard that allows content migration across various channels;

- The training content would need to address entrepreneurial and professionals skills;
- Feedback systems to the learner (virtual learning environment);
- Link to / use of social media tools;
- Offline / face to face provision and e-learning provision;
- Synchronisation of databases among States;



OER Quality 2030

Jan M. Pawlowski, Anthony F. Camilleri, Grainne Conole, Alastair Creelman, Ulf D. Ehlers
EFQUEL European Foundation for Quality in E-Learning (www.efquel.org)

Open education needs open quality approaches. These are quality approaches using flexible instruments that allow learners and teachers to assess their teaching and learning quality themselves through self-assessment and peer-assessment, rather than using rigid, pre-defined standards. Quality instruments will change with the rapid uptake of OER and OEP towards dynamic, user-centered, crowd-based mechanisms substituting traditional certifications.

Introduction

Quality is one of the main challenges and concerns of education and training. Open Education poses a new challenge to the field. Whereas before content-oriented quality mechanisms could often be used, open educational resources make this impossible (Clements & Pawlowski, 2012). Users need to be sure about the quality of educational opportunities. However, as OER are subject to frequent change, time-consuming quality mechanisms do not work – they are too static and too expensive when resources change frequently due to adaptations, localizations and updates. The need for quality, however, is still there – so which mechanisms can be applied and how can those be promoted by adequate policies and programs? These are the main challenges of R&D on OER.

This paper describes some previous experience of OER quality assurance from different projects. Based on those, we introduce learner-centered mechanisms towards a consistent quality framework. We conclude with recommendations for policy support to promote and direct the future of open education quality.

Lessons Learned on OER Quality

OER require new approaches to quality and this regards all aspects of quality: management, assurance / accreditation / certification, individual quality competences as well as recognition. Many of those aspects have been addressed as part of EFQUEL's project and member activities. The most notable experiences have been gained in the following projects:

- The Open Educational Quality Initiative (OPAL)¹ which defined a quality maturity framework for Open Educational Practices (Andrade et al, 2011)
- The Content Excellence through Dialogue² project which examined modalities for quality assurance of collaborative content creation
- The OERTest Project³ which has looked at transparency, recognition and portability tools for open education in Europe

¹ <http://www.oer-quality.org/>

² <http://www.concede.cc/>

³ <http://www.oer-europe.net/>

- The project POERUP⁴ has analyzed OER policies including quality strategies across Europe.

In all of those projects, steps towards more flexible quality approaches were made, focusing on user participation, dialogue, and contextualized processes. However, there are still challenges regarding the uptake on policy, strategy and implementation level.

To address some of those challenges, the projects COSMOS⁵ and Open Science Resources⁶ have implemented different quality strategies which react to the changing needs of OER quality. Both projects have continuously validated user-focused quality approaches, mixing traditional and user-centered mechanisms. Examples for such a mixed approach contained the following aspects:

- Quality of contents: Quality boards and expert reviews to certify certain resources.
- Rating and commenting to include user views and encourage more user involvement
- Quality awareness: Guidance and support was given to provide users with the opportunity to improve their knowledge on quality and assess how resources fit in their context.
- Metadata and tag quality: Metrics and assessment mechanisms were used to increase findability and metadata/tag quality.

The projects have enabled initial user quality assurance and can be used as a basis. Broad validations are currently carried out in the school sector in the project Open Discovery Space⁷.

In summary, it becomes clear that a portfolio of flexible quality instruments is necessary and this needs to be adapted to the context of learning. It is essential to develop quality competences and tools which can be combined depending on the purpose and context. With open education a shift can be noted where attention is shifted from resources to learning processes in which resources are just one element amongst many others. Also quality mechanisms and approaches will in the future focus more and more on the learning process in the sense that quality learning/ teaching involves finding, adapting and reusing educational resources within the course of the individual's own learning and/ or teaching process.

Quality of OER – 2030 Vision

How will quality be assured for OER in the future - in the following we develop a vision for the next decade and beyond. In 2030, the landscape of educational resources will have changed. OER will be as mainstream as Wikipedia today but on a higher quality level. Open Educational Practices are employed by teachers and learners in their everyday learning and teaching. Students are well aware of OER, use them in their daily life, millions of resources are utilized every day. But what has happened to quality? The understanding of quality will have shifted away from a focus on resources to a focus on learning experiences and educational practices in general in which resources are a part amongst many. The quality of educational practices takes into account all relevant context factors, and quality checks will in many cases be automated or crowd-based.

⁴ <http://www.poerup.info/>

⁵ <http://www.ea.gr/ep/cosmos/>

⁶ <http://www.openscienceresources.eu/>

⁷ <http://www.opendiscoveryspace.eu/>

A variety of quality aspects are addressed now with broadly accepted, validated and mainstreamed approaches. The following quality aspects are addressed:

Quality of Organizations: Quality Management approaches are still in place and widely recognized, targeting a holistic quality culture. Equivalent to accreditation, certified organizations have processes in place to develop high quality programmes, courses and modules. Well managed organizations have a quality label which is displayed in all OER portals and recognized by users. Quality is understood as part of the professionalisation process of all stakeholders to qualify their open educational practices.

Quality of Courses: The quality of courses will not be defined by course resources only but by learning and teaching process standards. With regards to content, key features are assessed automatically such as metadata quality, language and grammar, tag quality as well as essential elements (learning activities, media usage, technical correctness).

Quality of (Dynamic) Content: Clear models are in place which allow incremental quality checks and user experience reporting after short initial quality checks. In the future, a 'universal citation' system will allow each use, re-use and edit of content to be traced and measured, wherever it happens (and not only if it happens within a walled garden of journals). Thus, much in the same way as happens with journals today, the most-used and best teaching materials will be recognised as such, and their creators/editors will receive appropriate recognition and status.

Quality of learner experiences: Learners continuously report ratings, peer-reviews and comments. Some OER providers have started to make these reports mandatory for their users as part of the membership.

Quality of metadata: Metadata are assessed automatically for spam and inappropriate content and validated against given taxonomies (contents, curricula, didactics, context). This allows simple automated feasibility checks.

Individual quality: Do OER fit a learner's context? Automated mechanisms allow for the representation of user-context. As quality is not a generic concept, users only receive OER fitting their context. Based on user behavior and comments, users receive high-quality objects for their context.

Quality improvement: As OER are mainstream, quality is assured through the large number of users. As authoring tools are simple and intuitive, a large number of educators and learners works on 90% of available objects and assures quality in the crowd.

Adoption: OER for learning is no longer a component only for non-formal and informal learning. With the development of the right quality and assessment tools it can also form an important new pathway for student-centered learning within formal education (this aspect is supported by the feasibility study done within the OERTest project, see www.oer-europe.net)

Certification: Most available OER are certified using broadly accepted approaches. This started with the strong move towards MOOCs (Massive Open Online Courses) – assessed and certified educational programmes which are certified by both, HE and professional organizations. The OERTest model ‘learning passport’ is established as a supplement for the European Diploma Supplement for this explicit aim.

Transferability: Language is no more an issue - whereas language was a major barrier for both export, import and exchange of OER within Europe. The large majority of OER is now available in all EU languages based on automatic translation engines - more and more institutions facilitate learning across borders and countries supporting EU-wide dialogue.

Open Educational Practices: Standards are established for practices and have been adopted by most HE organizations. They include all stakeholders and learning and teaching processes, as well as all organisational levels. Open educational practice aims to use open resources to improve teaching and learning in an innovative way.

However, there might be also threats to quality which needs to be taken into account:

1. **True openness** gets superseded by MOOCs and other 'intermediate' open systems, due to commercial pressures.
2. **Openness/MOOCs** become dominated by a handful of brand name providers. Who will want credits from a small European University, when they can get the Harvard ones? Ironically, openness in effect leads to less diversity.
3. **Diploma mills, accreditation mills** and other incredible providers run rampant. The lack of proper standards for tracking, monitoring and rating content leads to chaos

These aspects need to be addressed. The proposed aspects should be smartly combined and implemented due to the needs of HE institutions. However, further challenges such as the MOOC movement with questionable quality will emerge and need to be addressed in the framework outlined above.

Recommendations

To achieve the outlined vision, we see different steps necessary on policy, institutional and individual level:

Recommendation 1 – Promote Research on User-Centered Quality Approaches

It is essential to clearly understand quality based on simple mechanisms such as peer-reviewing, rating or commenting. However, it needs to be clearly understood which parts of traditional quality approaches those mechanisms can accommodate.

Recommendation 2: Continue Policy Support for OER Quality

Clear policy support for the usage of OER and OEP including their quality is still important: There is a need for an analysis on an EU level as to how EU, national and institutional policy can effectively support open education and OER, leading to OEP. These studies would deal

with the question of which policies effectively support OER and open educational practices (OEP) in breaking away from individualistic or closed group settings to become mainstream in higher education and adult learning institutions.

Recommendation 3 - Develop and deploy institutional strategies

Better knowledge about effective institutional support strategies is needed to foster open educational practices. Specifically educational professionals' and policy makers' demand for a better understanding of what effective institutional strategies are to evoke and nurture open educational cultures in educational institutions.

Recommendation 4 - Create Networks of Innovation

Networks of innovation play an important role in shaping OER developments and open educational practices. It seems a timely suggestion that in the future OER related support initiatives focus their attention more on partnerships with other institutions to various other forms of networks of innovation. This also includes perceptions regarding their potential value in moving forward both effective OEP and enabling communities of practice shaped around collaborative OEP.

Recommendation 5 - Validate and improve specific approaches

Specific quality assurance processes for OER are viewed necessary including new and automated processes. The development and promotion of quality assurance frameworks for OER are viewed as necessary and receive a very high rating in our studies. This includes the development of assessment concepts and recognitions schemes providing HE institutions with an opportunity to value and certify studying and learning taking place on basis of OER.

Recommendation 6 - Promote OEP towards pedagogical quality

Open educational practices are supported through cultures of innovation and in turn provide innovation in organisations. The OPAL studies show by way of conclusion that there is a clear positive opinion in all education roles and across the two sectors surveyed that the use of OER and the implementation of OEP lead to innovations in pedagogical terms, in learning strategies and at institutional level. It should also be stressed that there is a recognition that such innovation poses challenges to organisations, and institutional leaders seem to be quite aware of this.

Recommendation 7 - Use Badge Systems evolving while OER evolve

OER develop dynamically - thus it is necessary to also utilize dynamic systems for quality assurance such as badges. Using these, quality development can dynamically be documented and evolve while the resource develops.

Summary

Based on our broad experience in the domain, we have started to develop visions and recommendations for quality of OER in 2030 – it is a starting point for discourse and should lead to clear actions in the field. We intend to continuously develop this approach and work

towards the next generation of quality systems and mechanisms, always focusing on the most important outcome: the improvement of learning!

References

- Andrade, A. et.al. (2011). OEP Guide: Guidelines for Open Educational Practices in Organizations (vs. 2011). online at <http://www.oer-quality.org/wp-content/uploads/2011/03/OPAL-OEP-guidelines.pdf>
- Clements, K., Pawlowski, J.M. (2012). User-oriented quality for OER: understanding teachers' views on re-use, quality, and trust. *Journal of Computer Assisted Learning*, 28 (1), pp. 4-14.
- European Commission (2012). Public Consultation on Opening up Education – a proposal for a European Initiative, online at http://ec.europa.eu/dgs/education_culture/consult/open_en.htm



Learning through ICT for Everyone

Barbara Plasonik, Miodrag Petrovič, Matej Leskovar

ALL-INCLUSIVE-ICT:

- *for the inclusion of people with special needs into the mainstream education and training, and*
- *for teachers to develop attractive and accessible education using CMS (Central Management System) in order to provide nurturing inclusion and mutual support for each participant IN EDUCATION AND TRAINING.*

The purpose of the following document is to present:

1. the most unique ICT for the Education and Training of people with special needs, and
2. the FUTURE VISION of ICT for ALL.

1. A UNIQUE ICT FOR THE EDUCATION AND TRAINING OF PEOPLE WITH SPECIAL NEEDS

The fact is that the **QUALITY OF EDUCATION AND TRAINING** should be measured by the **ACCESS** each person has **TO INFORMATION** and thus to **KNOWLEDGE**. Moreover, the **QUANTITY OF INFORMATION** a blind person, for example, must ‘accumulate’ in order to participate in learning through ICT can prevent him/her from participating in any other education or training that is of crucial importance at any level.

The ICT and its vision we are about to present is appropriate either for Lifelong Learning or School Education. However, **what is especially challenging in our opinion is the Higher Education and inclusion of people with any kind of special needs**, which is the reason we are presenting this paper within the framework of part III: Higher Education.

THE REAL CHALLENGES TO OVERCOME

- The existing (ICT-based) Education and Training systems do not provide equal opportunities for all participants regardless of their impairments or socio-economic backgrounds and thus do not provide ICT or learning environments that would nurture inclusion and mutual support in order to ensure the potential development of each participant.
- Adaptations of teaching materials and contents for people with special needs are insufficiently presented within the European Education and Training system.
- The existing teaching methods, materials, and approaches are not keeping pace with the technological changes, meaning that ICT has insufficient presence within European Education and Training systems.
- The gap between education and employment is wide, thus preventing learners from acquiring the skills, knowledge, and competences necessary for facing the challenges of the labour market – e.g. digital competence as one of the key components.

- Learners with special needs are excluded from mainstream education and training since there are no ICT solutions that would enable learning through ICT for different kinds of people with quite opposite special needs, such as blind and deaf people, as well as people without impairments.

The **common goal** throughout the European Union's Education and Training system should therefore be:

- Development of ICT-based Education and Training, accessible for everyone at the same time, specially adapted for those learners with special needs, such as the blind, partially-sighted, deaf and hard of hearing, as well as other target groups with special needs, and people without impairments.

HOW CAN WE PROVE THAT THE VISION WOULD BE BENEFICIAL FOR EVERYONE

[OZARA d.o.o.](#) is a company with a special mission: education, training, employment, vocational and employment rehabilitation, and the social inclusion of persons with disabilities.

Within the framework of its mission, being aware of the skills and knowledge one has to acquire in order to participate equally within the labour market - which should be the goal of each active European citizen - the company in 2009 accepted the challenge of becoming a coordinator of an international project proposal within the framework of LLP, the LdV programme Development of Innovation, in order to develop innovation beneficial for everyone throughout education and training.

Everyone is invited to explore the successfully finished [project ACTrain](#) and the innovative [PROTEUS](#).

The goal of the partnership was to develop an innovative ICT-based training in ceramic design that could at a later stage be transferred to any sector or level of education and training, accessible for everyone, specially adapted for the blind, partially-sighted, deaf and hard of hearing in 5 different European languages and 4 different sign languages with all the adaptations necessary for equal participation within education and training for everyone even for those people with the severest impairments, who are normally excluded from education and training.

The results of the project, which are the product of very close cooperation between many experts and target groups, and the final international conference [Education and Training for all – Innovation not Discrimination](#), have shown not only that these kinds of projects are necessary but that they should become a priority when inclusive education and training are in question.

The partnership has also conducted a very thorough analysis of different EU policies, priorities, and strategic documents such as LLP, LDV, ET 2020; Rethinking Education Strategy; EC Report from 2008: The use of ICT to support innovation and lifelong learning for all - A report on progress that show that the vision we are going to present during the next stage of this paper is exactly the right goal to achieve by responding to almost all those issues that should be considered within the framework of this Call for Papers be it for learners, teachers, organisations, and socio-economic aspects.

2. THE FUTURE VISION OF THE ICT FOR ALL

Qualities of ICT for ALL:

- Everyone can participate in education and training equally, regardless of their particular impairments;
- Through a high-quality CMS (Central Management System) teachers are able to develop high-quality education and training within any sector one can imagine;
- Education and training is available in any language one can imagine, thus providing opportunities for education and training in different countries at the same time;
- ICT provides opportunities for any adaptations necessary, thus providing opportunities for the development of education and training for different kinds of people with or without special needs, whilst at the same time providing them with opportunities to have access to the same education and training equally;
- Education and training is accessible free of charge for everyone.

HOW IS THIS POSSIBLE?

- The website would be developed with the latest technologies and tools available, used worldwide, and the existing innovation [Proteus](#) would be improved and CMS (Central Management System) for teachers would be developed;
- This concept is based on HTML5 (the latest language version) used for the building and developing of websites and the usage of multimedia contents – the technologies HTML5 and CSS3 enable – whilst using multimedia elements – the presentation of multimedia contents with different modern browsers, such as Internet Explorer, Mozilla, Google Chrome, Safari etc., which is crucial if we want the support of the different platforms being used today;

WHY HTML5 and CSS3 TECHNOLOGIES?

- Following the long-term view in the world of ICT, these technologies are the more optimal options if we want to ensure the development of key ICT tools for the education and training of people with special needs, which is the long-term goal of the project [ACTrain](#);
- They are the leading technologies for the presentation of multimedia solutions on the internet;
- These technologies would enable us to follow and keep pace with the rapidly developing ICT and would be in line with the website-defining standard [W3C](#).

In order to provide equal access for everyone regardless of their disabilities, as well as taking into consideration the already existing technology that has been used by the target groups, such as screen readers for blind people etc. and all the opposing needs of the target groups (blind and deaf people) within HTML5, we use the following elements:

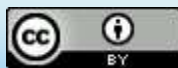
- HTML5 multimedia elements: video, audio, and track elements in combination with other attributes;
- JAVASCRIPT and jQuery with all existing Multimedia API elements;
- CSS3 (cascade style sheet) technology, that is closely connected with HTML5 because of the form and different transitions on the web-site;
- WAI-ARIA that is now added to HTML5 and would enable the implementation of screen readers such as JAWS etc., which would be one of the biggest challenges during the development of the ALL-INCLUSIVE-ICT, since blind people need their already-existing software and hardware, whereas deaf people, for example, have quite

opposite needs thus meaning that each step of the development would have to be considered from the points of view of all the target groups. One of the most demanding challenges one can imagine is to find the common ground for joining and using all available technologies for the benefits of everyone.

Conclusion

In order to understand our vision, one should imagine a nurtured learning environment providing everyone - regardless of their impairments – an opportunity to learn, develop, grow and participate equally in the world of learning through ICT.

We need to find a way of making **knowledge** accessible, if we ever wish to become 'the most competitive and dynamic **knowledge-based** economy in the world' as foreseen in the Lisbon strategy.



Paperless Open and Distance Learning at the Reputed University

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We learn how to use ICT better; the requirement for people to meet F2F for effective teaching and learning will diminish

Introduction

Development of open and distance learning (ODL) has been tremendous during the past decades as ICT plays a vital role in implementing the educational programmes in the reputed universities. If anybody says that “I graduated from Harvard” – it’s a prestige, it’s a dignity. But it’s not a cup of tea – because there are lack of money, time and competence to be Harvard graduate. ICT likely to eliminate this problem as it provides print, visual lectures, and evaluation through online-based periodical examinations, and/or on-demand examinations with a very little cost. Learners with high competence will be able to acquire degree in the required field from the reputed universities. This will limit to establish new universities as the reputed universities will go for having mini-campuses (nodal places) in different places to provide learners support services only at a minimum range and soft copy of self learning materials (SLMs) with video links of specific topics. As a result; the increase in number of new universities in emerging nations will likely to limit as the learners would get the opportunity to obtain the degree from the highly reputed universities like Oxford, Cambridge etc. if they implement the paperless ODL programmes through ICT as part of dual mode activities. This paper discusses this visionary issues and certainly impact on redesigning the new paperless ODL programmes by the reputed universities.

Today’s hybrid-learning environment

University is simply a knowledge centre and the transmission of knowledge in world leading universities is tethered to the campus which is considered as costly and less flexible. Today, societal changes created by the ICT and which, in turn, brought changes in the system approach to the educational delivery. Today’s society is termed as “networked society”. Therefore, the transmission of knowledge need no longer be campus-based because the technical affordances of computing, digital texts, cellular connectivity, streaming video and “just-in-time” information gathering have pushed huge amount of knowledge to the “placeless” Web. This is simply “paperless”. This has changed the modern university’s mission and its role within networked society. Some universities are exploring into hybrid learning environments, which deploy online, and offline instruction and interaction with teachers. Others are channeling efforts into advanced ODL platforms—with streaming video and asynchronous discussion boards—to heighten engagement online. Students are increasingly challenging the affordability of a university degree’s ultimate value as an employment credential. That’s why; they demand for degree from world’s most prestigious universities. Today’s ODL institutes provide SLMs (print) as main materials, learning CDs

and Radio-TV broadcasts as supplementary materials and sometimes, this are delivered through online. In addition, they provide face-to-face (F2F) tutorial sessions at the weekend near to the learner's place. Finally, learners sit to periodical examination as per the university schedule which is not considered as flexible which can be replaced by introducing the "on-demand examination" and it is predicted that this will be the center to the open education in 2030.

What will higher education (HE) through ODL look like in 2030?

Imagine where we might be in 2030. It is projected that substantial change in higher education delivery of the reputed universities. By 2030, HE will be quite different from the way it is today. There will be mass adoption of ICT and distance learning to leverage expert resources. Large numbers of learning activities will move to individualized, just-in-time learning approaches. There will be a transition to "hybrid" classes that combine online learning components with less-frequent on-campus, in-person F2F meetings. Most universities' learning evaluation will take into account more learner-centric outcomes and capacities that are relevant to subject mastery. Requirements for graduation will be significantly shifted to customized outcomes. Finally, the prestigious universities will launch ODL courses as part of their dual mode activities (pl. see fig 1).

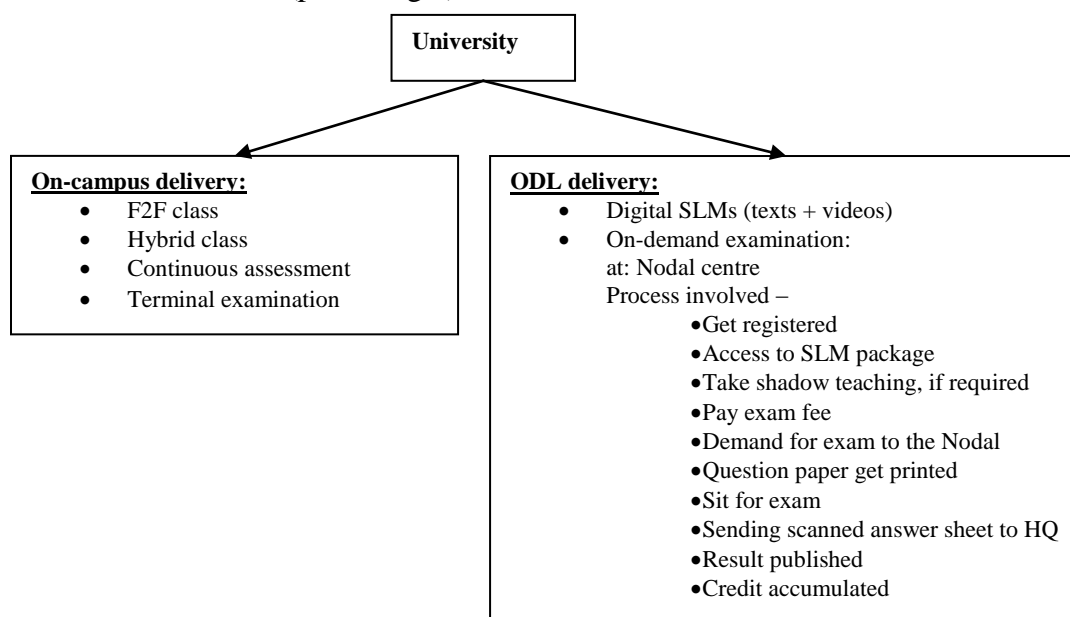


Fig 1: Open Education in 2030

The university will develop digital self-learning materials (reading and video materials) by its in-house professors and which will be available in the 'Web' and registered students will have the opportunity to get accessed to complete the learning. Finally, the course lecturer would develop question bank and which will allow print question paper coupling answer sheet with less than 5% repetition. The learners will complete his/her learning using the help from the shadow professor, if required, then sit for exam at the Nodal place of the University. Student will attend the Nodal place and demand for question paper to the Nodal Officer producing required exam fee. The Nodal would print the answer sheet with questions and allow the learner to sit for exam and as soon as finished the exam the script to be sent to the Head

Quarter for evaluation. Subsequently, the result will be published and credit will be accumulated in the student's account. If the learner is not happy with the result, he/she can sit for same exam with required payment and is quite possible because the repetition will be of less than 5%.

Learner would get degree from prestigious university because of the importance of education for the entire global labor force and the importance of reducing its crushing costs—will be developing ways of integrating ODL with social networking. I am confident this challenge will be met. As communications technologies improve and we learn how to use them better, the requirement for people to meet F2F for effective teaching and learning will diminish.



Global mathematics teaching

Jeanne Schreurs

Mathematics teachers are choosing the learning model of blending life online presentations and active problem solving sessions, by implementing online captured lectures, shared by them in a global pool with a global community of practice.

1. For some time, even the professor of mathematics is no longer using the blackboard in teaching. He is following the trend of using multimedia presentations and so he is also working with in advance prepared power point presentations. Powerpoint presentations are not suitable for mathematics education. Professors in mathematics must go back to their blackboard!
2. Students are expecting active learning and like to participate in problem solving of real life applications of the theory.
3. Professors can develop life online lectures of high quality, simulating their blackboard sessions, via lecture capturing.
4. Professors can replace some face to face sessions by selfstudy, and by the way freeing classroom time . Students can use the online lectures to study the theory and come to the classroom to participate in more student centered and more productive learning activities: research activities, problem solving, project work .. .
5. Lecture capturing is already adopted in universities. Often capture is not seen as a lecture replacement, but it is seen as a way for students to review materials, and when necessary catch up when they are forced to miss some classes. Application of screen capturing and handwritten flash presentations can be found in the following case examples: Khan Academy, NROC, Coursera, Missouri State university, ...
6. High quality mathematics online course modules and virtual classroom sessions can be prepared by combining lecture capturing (digital recording of computer screen output) and voice input and handwritten input on a Wacom display, using the SW Lecturescribe (open source) or Camtasia. The presentations can be made available as online flash files. (e-tutor Hasselt University)
7. Mathematics is a global science. Mathematics professors must join in a global network and become members of a global community of mathematics practice. They will share their developments of life online lectures of mathematics course modules. Standards and certification rules will be agreed upon and universities will accept these online course modules as part of the regular institutional courses.



Mass Customization: ultimate form of open education?

Robert Schuwer

In 2030, learners are able to assemble their own program from the supply each institution of HE offers, both open as closed.

Current trend of the unbundling of education, where learning, certifying of learning and degree-awarding does not have to be bundled by one single university will be mainstream in 2030. A learner will be able to shop to fulfill his demand, thereby challenging universities to satisfy this demand. Among other, this needs learning materials fit to the demand of the individual learner.

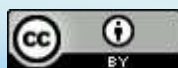
This scenario can be considered mass customization for learning materials, using an Assemble-to-order (ATO) approach: there is a demand from a learner where the learning materials and the learning services around them should fulfill certain requirements (explicit or implicit) and a supply of building blocks that can be combined into learning materials, together with a supply of learning services fulfilling the demand. The resulting program should comply to several general requirements (e.g. complying to demands a curriculum determines) and potentially there are a huge amount of building blocks and services available. To manage the complexity that arise from the potentially combinatorial explosion, both in producing as in consuming, IT-support is necessary to perform this task.

IT-support will consist of the main components:

1. Advanced bill-of-materials to store information about the building blocks and the organizational degrees of freedom to offer the services that together with the learning materials build up the program
2. User friendly configurators to guide the learner through the process of assemble a program fit to his/her demands

With this trend, education follows other fields in the society where mass customization is common practice for several years or even decades. A good example of this is the car industry, where the success of selling a specific type of car depends hugely on the ability to customize the car as much as possible to the preferences of the buyer.

My expectation is that the institutions of HE that will offer the most flexibility in their program, tailored to learners needs, will be most successful in 2030. Even further: I guess only top-level universities can ignore these developments when they manage to attract the minority of learners that are willing and able to pay for a really unique tailored program. This also reflects developments in other fields of society like the car industry. When I want my car to have very specific features, I have to spend a lot more money and visit Bentley instead of Volkswagen.



A university course: discussing the ways for better design

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The paper discusses how to structure a University course through establishing technology-enhanced learning environment that aims at sustaining psychic and cognitive development of a learner. A student-focused perspective based on agency, collaboration, reflection, and culture serves as a background for developing a University course.

Today it is absolutely clear that advances in communication technology do bring changes in all education sectors. The development of online courses that have recently become freely accessible via the web has shown the very probable patterns of the next-generation higher education learning environment. Nowadays, there is a big temptation for educators to transfer learning online. It looks more economically beneficial and less time consuming. However, it is not the technology but transformations in the society that have effect on education. In the world of rapid changes and avalanche of information developing such skills as collecting and managing information cannot be the ultimate goal of education. Nevertheless, majority of online courses still support traditional learning approach where the new “knowledge” is delivered through video presentations supplemented with short quizzes and testing. Such courses very much rely on individual cognitive autonomy of students (Gaebel 2013), and exploit their abilities to learn as if they were an inborn skill.

In the paper I propose a scenario of a University course that highlights the importance of *psychological* and *cognitive* side of the educational process. Developing such skills as critical and creative knowledge construction are put in the center of the educational process. The use of ICT is viewed as a natural component of the learning setting. The course design is based on a set of learning principles singled out by Bruner (1996) who describes the process of learning in the following categories: (1) agency; (2) reflection; (3) collaboration; and (4) culture of a learner. My vision of the course has been influenced by my 15-year experience of working with University students in Ukraine as well as my participation in fully online, blended as well as Web facilitated face-to-face courses in American and Swedish Universities. My experience is also enriched by the opinions of my colleagues which they share with me during informal talks and formal interviews.

Theoretical Perspective

To understand how learners can benefit from the use of ICT in the educational environment it is necessary to analyze the concept of learning itself. Learning can be viewed from three different perspectives. They are *what*, *where* and *how*. The *what* of learning includes the curriculum within the set of courses and their content which students are supposed to acquire. The *where* and *how* are the situations where learning is happening (Brown, 1997, 399). Advances in technology fit all these aspects.

Due to the lack of space I turn directly to Bruner's principles that fit *where* and *how* of learning. The idea of agency emphasizes the active strategic nature of learning. According to Bruner a learner is the one who takes control of his/her own mental activity; and learner's mental activity is a proactive, selective, and problem-oriented process that leads to transfer

and creative use of knowledge. It means that learners should be involved into a dynamic process in the course of which they actively choose and evaluate strategies, consider resources, and receive feedback.

The second is reflection that Bruner defines as “learning in the raw”. Since understanding is an ultimate goal of the educational process it is important to help learners recognize and monitor their learning experiences. Focus should be put on sense-making, self-assessment, and reflection on what worked well and what needs improving (Palincsar and Brown 1984). It helps increase knowledge transfer and enhances learners to keep acquiring adaptive expertise.

The third is collaboration. For successful learning it is important to create cooperative environment that results in knowledge co-construction. It includes cultural tools, varied forms of social interaction, and interpersonal scaffolding (John-Steiner and Mahn, 2002; Wells 2002). Bruner (1996) underlines that to promote an atmosphere of joint responsibility, mutual respect, and sense of personal and group identity expertise should be deliberately distributed among the members of the community. “No one is an island; no one knows it all, collaborative learning is necessary for survival” (Brown 1997, 411).

And the fourth category is culture that “shapes the mind, ...provides us with the toolkit by which we construct not only our worlds but our very conception of our selves and our powers” (Bruner 1996,x). Learning cannot happen outside situated, cultural context. Understanding and knowledge construction is based on what is already known and believed (Piaget 1978, Vygotsky 1978). The meanings that are attached to cultural knowledge are important in promoting transfer. If students’ initial ideas and beliefs are ignored, the understandings that they develop can be very different from what the teacher intends (Bransford 2000). It is important to design classrooms that foster active exchange of multiple roles and multiple voices (Bakhtin 1986). In this case culture of learning, negotiating, sharing, and producing work that is displayed to others is the backbone of the educational environment (Brown 1997, 401).

Course Design

In Table 1 I discuss how the mentioned above principles can be implemented in a University course. I divide the course into phases, and according to them describe appropriate learning activities and analyze the expected outcomes. I also add a phase that is rarely employed by educators. It is *syllabus construction*. Making decisions about the content and organization of the course encourages students’ independent thinking and their responsibility to take charge of their learning. It allows a better understanding of the learning process and develops skills needed to progress towards students’ own goals in a particular subject (Zhang and Head, 2010).

As learning is a complex process, it is almost impossible to find an activity that sustains only one principle. However, in my analysis I highlight the principles that have a more central position in a particular activity in comparison with the others. The opportunity to mix online and face-to-face sessions (that is often neglected in many recent courses) can be a big advantage. First, it is really difficult to develop collaborative skills if learners meet only online. Second, knowledge construction happens in the process of *active negotiation* of the meaning with the others. Although the social relationships integral to group learning can be developed through asynchronous communication, this development tends to take longer than in traditional, face-to-face settings (Cox & Cox, 2008).

The next important section that correlates directly with Bruner's principles is “expected outcomes”. The proposed activities that lead to them are not viewed as the only possible ones. They can be modified and enriched. However, the expected outcomes should be located in the mentioned dimensions.

TABLE 1 Design Considerations for a University Course

<i>Course Phase</i>	<i>Bruner's Principle</i>	<i>Type of session</i>	<i>Learning Activities</i>	<i>Expected Outcomes</i>
Introduction	Culture	Online	Video self-presentation of course participants, Scrap Blogging	Establishing social presence in an educational community
	Culture Agency Reflection	Online	Creating e-portfolio	Documenting pre-existing knowledge of the subject
Syllabus Construction	Culture Agency Reflection Collaboration	Online	Participating in thread discussions on Wiki	Making decisions about the content and organization of the course
	Culture Agency Collaboration	Face-to-Face	Small and large group discussions	Finalizing the syllabus; forming interest groups
Pre-class assignments	Agency	Online	Commenting the assigned reading on Wiki, sharing a set of questions based on reading	Adjusting subsequent discussion to the students' needs
In-class activity	Agency Collaboration	Face-to Face	Large and/or small group discussions moderated by students	Collaborative construction of meaning and content around the concepts and theories
After-class activity	Reflection	Online	Articulating on Wiki what you learned from class activities, readings, discussion	Realizing how understanding of the discussed concepts developed and what new meanings were constructed
	Reflection Collaboration	Online	Commenting peers' reflections	Enhancing collaborative work experience, mastering feedback skills
Group project work	Culture Agency Reflection Collaboration	Face-to-Face Online	Designing a project to be implemented in the local community	Defining objectives, sharing responsibilities, gathering data, processing the results
	Reflection Collaboration	Online	Creating Webpage/ Weblog/ Podcast etc.	Reviewing discussion activities, finalizing group thoughts, presenting the results
Project work resolution/ application		Face-to-Face	Making poster/ PowerPoint/Prezi etc. presentation	Mastering presentation skills
Self-Assessment	Reflection	Online	Completing e-portfolio/ Weblog	Documenting academic achievements, meaningful self-reflection on the accomplishments

Teacher is responsible for assessing students. The Pass/Fail grade should include both the results of final paper/ examination and active participation in the mentioned above activities.

Conclusions

Higher education institutions experience changing expectations associated with the demands to learning experience and the technological advances. In the proposed University course design there is an attempt to converge classroom and communications technology. The emphasis is made on improving the quality of education rather than quantity of students. Although there are a lot of advantages of using ICT in education, there is still an issue of how to use it in educationally appropriate ways – not just for its own sake.

References

- Bakhtin, M.M. 1986. *Speech genres and other late essays*. In Emerson, C. and Holquist, M. (eds.). Austin: University of Texas Press.
- Bransford J. (eds.). 2000. *How people learn: brain, mind, experience, and school*. Washington, DC: National Academies Press.
- Brown, A.L. 1997. Transforming schools into communities of thinking and learning about serious matters. *American Psychologist* 52(4): 399 – 413.
- Bruner, J.S. 1996. *The culture of education*. Cambridge, MA: Harvard University Press.
- Cox, B. & Cox, B. 2008. Developing interpersonal and group dynamics through asynchronous threaded discussions. *Education*. Retrieved from <http://web.ebscohost.com.ezproxy.lib.utexas.edu/ehost/>
- Gaebel, M. 2013. MOOCs – Massive Open Online Courses. *EUA Occasional papers*.
- Mahn, H., and John-Steiner V. 2002. *The Gift of Confidence: A Vygotskian View of Emotions*. In Wells, G. and Claxton, G. *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. Blackwell Publishers Ltd.
- Palincsar, A.S. and Brown A.L. 1984. Reciprocal teaching of comprehension-fostering and monitoring activities. *Cognition and Instruction*. 1(2): 117 – 175.
- Piaget, J. 1978. *Success and understanding*. Cambridge, MA: Harvard University Press.
- Vygotsky, L.S. 1978. *Mind in Society: The Development of the Higher Psychological Processes*. Cambridge, MA: The Harvard University Press.
- Wells, G. 2002 *Inquiry as an Orientation for Learning, Teaching and Teacher Education*. In Wells, G. and Claxton, G. *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. Blackwell Publishers Ltd.
- Zhang, X. and Head, K. 2010. Dealing with learner reticence in the speaking class. *ELT Journal* 64(1): 1 – 11.



Higher Education as Gateway of LLL for ALL

Alfredo Soeiro

LLL will be for all persons and ages and universities are the predominant enablers.

Universities have been providing Continuing Education and Professional Development for adults since XIX century. Most universities have been developing activities beyond educating young students and researching towards providing training and education for adults. Universities have been researching and cooperating to develop structures, procedures, teaching methods, fora and know-how to provide the framework for adult education and training.

1. Several networks and associations have been active in the last decades to develop. Examples are EUCEN (www.eucen.eu) and UPCEA (<http://upcea.edu>).
2. Adult Education and Learning, Andragogy and Gerontagogy are areas researched by university members and their centers for education and training. These are areas that enable proper methods to address adult needs and learning profiles.
3. A large number of universities have created centers, departments and external bodies to handle the provision of LLL training and education. These have been working for years in the provision of education and training for a large sector of the population. An example of that panorama is the project ALLUME (<http://allume.eucen.eu>).

Universities and other HE institutions have been addressing the use of Open Educational Resources (OER). The last movement have been the MOOCs (Massive Online Open Courses) that create free access to courses in most areas of knowledge. The MOOCs represent an effective development for the LLL for all. The attendance of courses comprehends learners from all over the world and without prerequisites in terms of previous education and training. The courses address different levels of the educational system although being produced, in a major portion, by HE staff.

1. Initiatives are spreading around the world with success. Some courses have attendances of hundreds of thousands of learners. Examples are Coursera (www.coursera.org) and EdX (www.edx.org).
2. Most of these successful OER initiatives are led by prestigious universities leading to a visible improvement of the quality of the education and training available. This is a motivation for all potential attendants.
3. Universities have led research in terms of quality evaluation and assurance of LLL. Some examples are projects like EQUIPE (<http://equipe.up.pt>) and DIALOGUE (<http://dialogue.eucen.eu/>)

HE institutions have also enabled the recognition of prior learning of learners. This recognition addresses informal learning and non-formal learning (as for instance work based learning and work place learning). This recognition is relevant for qualification in professional or academic terms. Universities have played a large role in the research, definition of methods and innovation in the assessment and validation of the qualifications

acquired outside the formal educational system. That leads also to accreditation of the competencies acquired and that can be a motivation for all to continue their LLL.

1. Many initiatives have been undertaken by universities or groups of universities to promote this advancement of the recognition of prior learning. Some examples are OBSERVAL (<http://www.eucen.eu/completed/observal>) and URPL (<http://www.urpl.eu/>).
2. Many countries, like France, Denmark, Norway, Sweden, Finland, Belgium, Netherlands, Switzerland, Portugal, Germany and Australia, have published specific legislation to promote the recognition of prior learning performed by universities. In most cases the accreditation of the prior learning leads to partial qualification towards a degree but it is a major incentive for all to continue LLL.
3. The HE institutions have been leading this process of addressing the inclusion of learning and training acquired outside the traditional educational system in their usual learning paths. This innovation is possible also for other levels of the educational systems and can be replicated in the primary and secondary sectors.



Higher Education outside classroom

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The upcoming model of education is learning outside classroom, in the real world via mobile learning.

Over the last years there appear to be an extreme use of mobile devices-such as smartphones, tablets, mobile phones and mp3/mp4 players. The evolution of wireless networks (WiFi, 3G, LTE) has lead to the fast delivery of data to such devices. On the same time there is a transition from teacher-cantered to student-centred education and from face-to-face to distance and e/m-learning [1]. One dominant feature of this transition is the application of technology to enhance the delivery of education ether by e-learning or m-learning. M-learning (Mobile learning) is an application that is going to be adopted in large scale by higher education institutions [6]. Many definitions can be found in the literature on mobile learning. In general, mobile learning can be viewed as any form of learning that happens when mediated through a mobile device. According to Singh et.al. (2010), Moore et.al (2009), Nana Yaw Asabere (2012) it offers the following advantages:

1. Ease of use
2. Ubiquitous access
3. Continuous, ongoing, flexible
4. Personalization in learning
5. Readily available
6. Informal and formal learning
7. Anytime, anywhere data delivery

Furthermore, mobile learning will support a wide variety of conceptions of teaching and also approaches to learning, as it will be adopted from students of all educational stages. A learning approach that is facilitated by m-learning is situated learning. Situated learning is meant to be learning that takes place in the course of activity, in appropriate and meaningful contexts [2]. Moreover, m-learning can be transferred outside classroom. It can be applied in field work, in hospital ward, in class, and in the workshop. Obviously, mobile learning is uniquely suited to support learning outside classroom, and this is a major challenge for learning since mobile technologies can connect learners with data almost everywhere [3].

M learning includes authentic learning. Authentic learning is meant to be learning that involves real-world problems and projects that are relevant and motivating for the learner. This approach implies that learning should be based around authentic tasks, tasks that students will encounter in real life. In such tasks, students will be engaged in exploration and inquiry, try to find pioneering solutions and have opportunities for social discourse, as a consequence. So, these learning actions will be easily adopted by students as they deal with meaningful

problems. So, mobile learning enables authentic learning, along with collaborative learning [8].

All these features of m-learning motivate institutions of higher education to support mobile services for their educational purposes and also for administration, library, support for the disabled, for distance learning, and for social media. M-learning is using web 2.0 & web 3.0 technologies and could be widely used by students and other academic staff. In general, mobile technologies can be used for all educational settings.

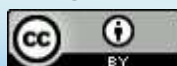
Furthermore, mobile learning is environmentally friendly, because transportation of people involved is significantly reduced, printed paper and carbon is less used and storage space of data is eliminated [9].

Conclusion

In the future, learning will take place not only in formal settings (universities, colleges, high schools) but learning will be individualized and will take place informally in everywhere, like industries, offices, market, within appropriate and meaningful contexts. Students will be in the centre of learning and will use the mobile learning to encounter real world problems. Sources of learning will be enlarged, available anytime and anywhere to everyone. Learning resources will not be scarce but they will be categorized, easily transferred, and updated. The status of employers/employees will change with vast opportunities of learning for both of them and better propensities for communication and information.

References

- [1] Jarvis Peter, Holford John and Griffin Colin (2003). *The Theory and Practice of Learning*, (London, Kogan Page)
- [2] Lave & Wenger (1991). *Situated Learning: Legitimate Peripheral Participation*.
- [3] Liestol Gunnar (2011). *Learning through Situated Simulations: Exploring Mobile Augmented Reality*. Research Bulletin 1, Educause Center for Applied Research.
- [4] Moore, John , Oussena, Samia and Zhang, Pei (2009). A portable document search engine to support off-line mobile learning. *Proceedings IADIS International Conference Mobile Learning*, Barcelona, Spain
- [5] Nana Yaw Asabere (2012). *Towards a Perspective of Information and Communication Technology (ICT) in Education: Migrating From Electronic Learning (E-Learning) to Mobile Learning (M-Learning)*, *International Journal of Information and Communication Technology Research*, 2012
- [6] Pange, A., Toki, E. I. and Pange, J. (2008). Are University Students Ready For M-Learning? A Pilot Study In Greece., *IADIS International Conference Mobile Learning 2008 Proceedings*, Portugal.
- [7] Singh, Mandeep (2010). "M-learning: A New Approach to Learn Better". *International Journal of Education and Applied Sciences* 2 (2): 65–72
- [8] Traxler J. (2007). *Defining, Discussing and Evaluating Mobile Education*, *International Review of Research in Open and Distance Learning*.
- [9] UK Open University (2005). "Towards Sustainable Higher Education: Environmental Impacts of Campus-Based and Distance Higher Education Systems".



The importance of community for the open higher education

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Community – understood as shared experiences, past and present - will matter for the open higher education of the future

One of the issues that the current experiments with open education (namely, the MOOCs) persistently face is the low rates of completion of the offered courses. The companies working in this field attempt to solve this issue mostly by technical means – e.g., improving ways of how the lectures are presented, introducing certificates and university credits, and limiting the number of enrolled students. However, it appears that the low rates of the MOOC completion may indicate a more fundamental issue with the way MOOCs conceive of learning.

Today, MOOCs treat education mostly as a process of acquiring information by an individual. Indeed, they provide one with a freedom of choosing courses, or choosing how one spends one's time with these courses.

Yet, access in itself is not enough to ensure the motivation necessary for learning. What is missing in the MOOCs today is an educational environment that makes open access to educational resources *meaningful*. We argue that open higher education in 2030 should provide not only open resources but also a culture that fosters learning, and community is important for such a culture.

What creates this culture of learning in a traditional brick and mortar university? Some suggested that the university first and foremost is a *place* where learning is ... everywhere (Kumar). University provides us with a rare environment where asking questions about non-mundane issues is legitimate and expected. However, it is not just classes that contribute to this place of constant learning, but also informal contacts with peers and teachers who make up a loose *community* bound by the purpose of learning. On a daily basis these past and present formal and informal conversations, encounters, meetings, discussions combine into an imagined community (Anderson) that contributes to the atmosphere of learning (Delanty).

Indeed, if we wanted to make open educational resources work for the purpose of higher education, we would have to think about how to recreate such a community of learning online. Here, we offer a few suggestions on how such shared experiences may be created online :

- “Before- class culture”. Even though the Internet allows us to have access to courses offered from the leading universities of the world, there should also be ways to localize online learning. One way to do this is to organize teaching by regions. For example, online universities could form around the countries of the Former Soviet Union or the Balkans or the Nordic countries. This is not to say that they would exclude students from other regions. Rather, it is that regional professors would be invited to teach there not just on cosmopolitan subjects but also on the issues that are pressing to the region. Such regional focus could not only solve the issue of the language divide. It could also improve teaching, since understanding is based on the

shared history and culture - references to which always ease understanding and learning.

- “In-class culture”. Learning in itself should recreate a sense of place. MOOCs assume that high numbers of students is what matters. However, students may feel lost in front of such a class. We argue that, on the contrary, open access higher education should have as its ideal small groups of students working in close touch (synchronous and asynchronous) with professor. Small groups matter as they create a group culture which makes people motivated and eager to succeed. Teacher and peers would be important in such exchanges, for they provide for the discussions and conversation that create a sense of belonging and community.
- “Between- class culture”. Open education projects should orient themselves towards taking learning beyond a course’s end. There should be means for the participants to keep in touch even after the course is over. Such additional group culture- which may involve as little as an online forum – may further keep people motivated and organized, for they see that somebody out there cares to hear how they are doing. Through such informal communication students may keep on learning, discussing new publications in the field, or having their own work discussed by their peers.
- “Outside-class culture”. Open education offered online allows the university to leave the limitations of one particular place and enter a larger society. Websites for such online universities would feature public events – similar to today’s google hangouts – where anyone can join in a discussion. This further spreads in time the inclass conversations, and learning continues even after a course ends.

In conclusion, for the higher education of tomorrow, based on open educational resources, it will be important to create a culture where open access is valued by students. Open access may be made meaningful through a formation of an environment where learning is spread in time through communal learning experiences.

References:

Delanty, Gerard. 2001. *Challenging Knowledge. The University in the Knowledge Society*. The Society for Research into Higher Education and Open University Press.

Kumar, Krishan. 1997. “The Need for Place” , *The Postmodern University?*, pp. 27-35. Buckingham, Open University Press.

Anderson, Benedict. 1991. *Imagined Communities: reflections on the origin and spread of nationalism*. London: Verso.



The OERuniversity Project: Executive Progress Report, May 2013.

James C Taylor, Wayne Mackintosh

The OERuniversity project demonstrates that it is possible to use existing open technologies to devise and implement a strategic plan that maps an explicit path between the present and a vision of a viable future scenario.

Introduction:

In February 2011, with the support of UNESCO, the OER Foundation hosted a meeting at Otago Polytechnic with the aim of exploring the concept of using OER for assessment and credit for students http://wikieducator.org/OER_for_Assessment_and_Credit_for_Students. The meeting in Dunedin was limited to 23 participants, but the associated live web stream sponsored by UNESCO attracted an additional 203 participants from 45 different countries. A record of the meeting is available at http://wikieducator.org/OER_university/First_meeting. The essence of the project, which now provides the framework for the Open Education Resource university (OERu), is illustrated in Figure 1.

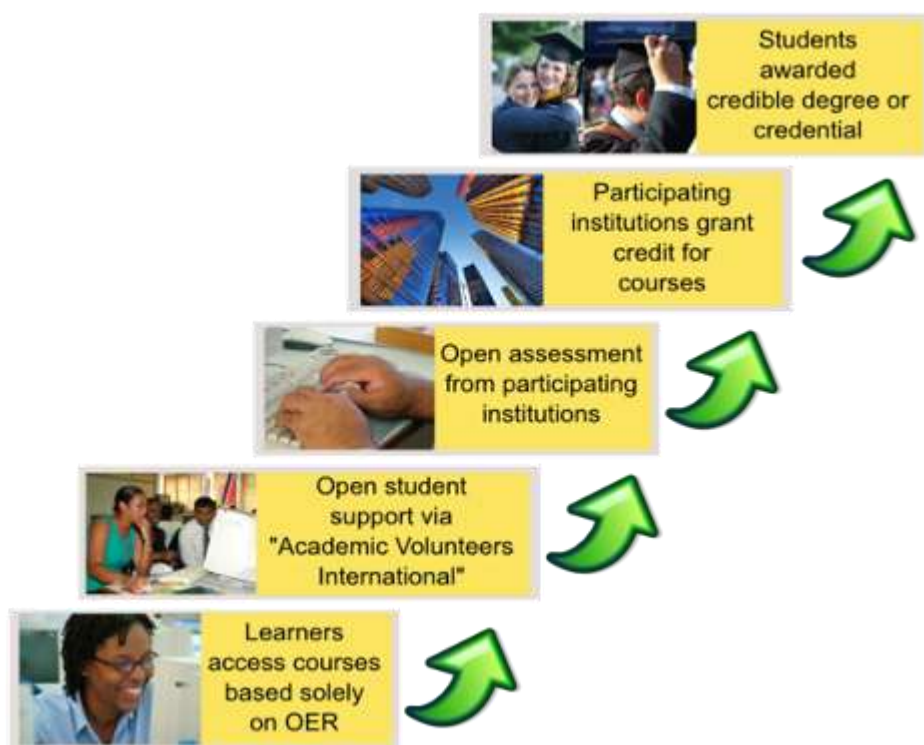


Figure 1: The OERuniversity Concept (¹ Adapted from Taylor, 2007).

¹ Taylor, J.C. 2007. Open courseware futures: Creating a parallel universe. e-Journal of Instructional Science and Technology (e-JIST), Vol 10, No. 1. Online: http://www.ascilite.org.au/ajet/e-jist/docs/vol10_no1/papers/full_papers/taylorj.htm. Retrieved 6 May 2013

As illustrated, students will gain free access to high quality courses that are based solely on OER. They will receive support through a global network of volunteers and peers using social software technologies. Students will then have the option to be assessed for a service fee, thereby enabling them to earn credit towards a recognised credential from participating institutions. The service fee will be based solely on the cost recovery of assessment and administrative overheads, estimated to be about 20-25% of typical tuition fees charged presently to students.

What is the OERu?

The OER university <http://wikieducator.org/OER_university> (OERu):

- * aims to widen access and reduce the cost of tertiary study for learners who are excluded from the formal education sector;
- * is an international innovation partnership of accredited universities, colleges and polytechnics coordinated by the OER Foundation<<http://wikieducator.org/OERF:Home>>, an independent educational charity;
- * does not confer degrees, but works in partnership with accredited educational institutions who provide assessment for academic credit on a fee-for-service basis;
- * collaborates with the global WikiEducator network of educators in the formal sector for shared course development;
- * is designed to cover the operational cost of institution-based OERu services on a cost-recovery basis (or alternate revenue sources).
- * will provide pathways for students to achieve credible credentials for approved courses based solely on open education resources (OER), that is learning materials that have been released under an intellectual property license that permits their free use or re-purposing by others;
- * optimises the visibility and impact of the community service mission of tertiary education institutions requiring less than 1% of institutional budget allocation of staff time and/or institutional resources.

The OERu Logic Model

As a result of the initial planning meeting, Athabasca University, the OER Foundation, Otago Polytechnic and the University of Southern Queensland released a report entitled OER University: Towards a logic model and plan for action.



[OER University: Towards a logic model and plan for action.](#)

The report documents the logic model (Figure 2) and associated planning framework for building the OER university.

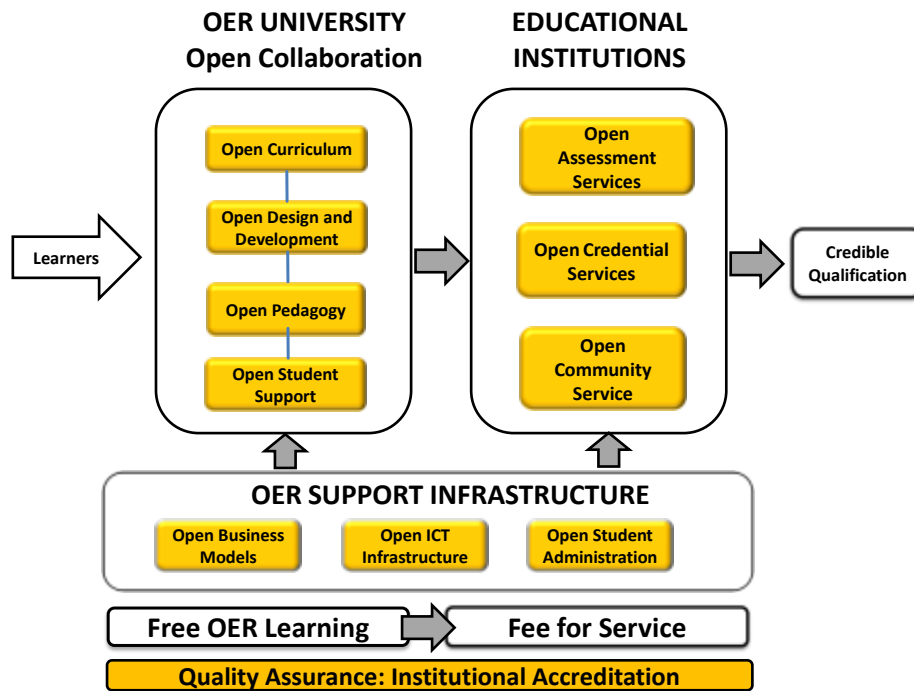




Figure 2: High-level logic model for the OER university

Current institutional membership of OERu: Since the inception of the project little more than two years ago, the OERu has attracted the active participation of 23 institutions and two sponsors, as follows:

Founding Anchor Partners

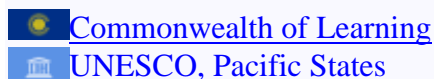
-  [Athabasca University](#)
-  [BAOU](#) (Gujarat's Open University)
-  [Empire State College \(SUNY\)](#)
-  [Nelson Marlborough Institute of Technology](#)
-  [NorthTec](#)
-  [Open Polytechnic](#)
-  [Otago Polytechnic](#)
-  [Southern New Hampshire University](#)
-  [Thompson Rivers University](#)
-  [University of Canterbury](#)
-  [University of South Africa](#)
-  [University of Southern Queensland](#)
-  [University of Wollongong](#)
-  [OER Foundation](#) (non-teaching)
-  [BCCampus](#) (non-teaching)

Anchor Partners

-  [Excelsior College](#)
-  [Kwantlen Polytechnic University](#)
-  [Open University of Catalonia](#)
-  [Thomas Edison State College](#)



Sponsors



How does OERu work?

Individuals are free to learn from digital materials hosted on the open web. The problem is that learners who access digital OERs on the web and acquire knowledge and skills either formally or informally, alone or in groups, cannot readily have their learning assessed and subsequently receive appropriate academic recognition for their efforts. OERu students will gain free access to high quality courses that are designed for independent-study using OER. OERu learners will receive student support through a global network of volunteers and peer support using social software technologies. Students can be assessed for a fee by participating institutions and earn a credible credential.

The OER university is building a sustainable OER network among accredited educational institutions which will provide free learning to learners excluded from the formal system with pathways to gain academic credit from post-secondary institutions around the world. OERu is founded on the community service and outreach missions of tertiary education providers, and develops parallel delivery systems (now possible with the open web and free content licensing of learning materials) to augment existing educational provision.

The OERu initial credential:

At the [inaugural planning meeting of the OERu founding anchor partners](#) held in Otago, 9-10 November 2011, it was agreed that the initial credential to be offered would be a Bachelor of General Studies. Partner institutions each agreed to contribute at least two courses to the OERu initiative. Using the Australian context as a reference point, with each of the existing 21 member teaching institutions offering 2 courses, it will be possible to provide students with a choice of studying 24 from 42 courses for the equivalent of a three year Bachelor's degree. Associated issues of guaranteed cross credit between partner institutions, and relevant national qualifications frameworks are currently being addressed, and will be discussed further at the forthcoming meeting on transnational qualifications, OERu course articulation and credit transfer to be hosted by the Commonwealth of Learning in Vancouver, 4 November, 2013. This meeting is scheduled to follow the official launch of the OERu by Sir John Daniel on 1st November, 2013, during the second meeting of OERu anchor partners at Thompson Rivers University.

Why is the OERu important?

The OERu aims to demonstrate that education at all levels can be more accessible, more affordable and more efficient. By 2015, the OERu will provide empirical evidence that it is feasible to provide more affordable access to post-secondary education. In effect, the OERu is nurturing the development of a sustainable and scalable OER system that can operate in parallel with the mainstream formal higher education sector. Participation in the OERu will enable institutions to fulfil their community service and social justice missions in an open and sustainable manner. Governments have the opportunity to improve the return on taxpayer

dollars by providing the systemic incentives to support such OER services at all levels of education.

The OERu is also important because it demonstrates that it is possible to devise a future-oriented strategic plan that maps an explicit path between the present and a vision of a viable future scenario. Based on the common missions and motivations of *like-minded institutions*, it demonstrates that by working collaboratively using current open technologies and existing OER licensing agreements, it is possible to make decisions and allocate resources capable of creating the future. The OERu is demonstrating the use of ***creative commons sense*** to improve the quality, efficiency, equity and, critically, the sustainability of higher education.



The Pedagogy of Discovery: OER-enabled Self-directed Learning

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By 2030 traditional teacher-directed pedagogies will have been largely superseded by OER-enabled learner-centred pedagogies, designed specifically to engender the development of digital learning literacies and self-directed lifelong learning.

It is increasingly clear that there is a critical mass of OERs that can support scholarly activities at the foundation level across a wide range of disciplines, especially in the liberal arts, humanities and social sciences. Now that online access to such open educational resources for individual study is extensive, and the scope for social interactivity online is huge, there are many opportunities for pedagogical innovation. Further, if we are not to render a disservice to students, we need to ensure that their “learning journey” embraces digital literacies that will enable them to participate fully in technology-rich work environments.

The design of the *pedagogy of discovery* was informed by a 2009 study managed by the Director of the Caledonian Academy, Professor Allison Littlejohn and her colleagues who developed a comprehensive framework for investigating “Learning Literacies for a Digital Age” (LLiDA)

<http://www.caledonianacademy.net/spaces/LLiDA/index.php?n=Main.FrameworkOfFrameworkOrks>. This seminal study delineated an expanded set of literacies, including academic practices (what competent learners do) and related digital practices (what competent digitally enabled learners do). As well as focusing on the significant contribution digital technologies can make to the development by students of such learning literacies as academic practice, metacognition, information literacy, ICT literacy, media literacy, the LLiDA team also included a detailed analysis of digital practices engendering citizenship, employability, communication and collaboration skills. The LLiDA project highlights the value to students of developing expertise in selecting, critically evaluating and deploying a wide range of digital resources and digital tools to support scholarship in the context of particular disciplines. Students need to learn how to use digital technologies to participate in networks thereby contributing to knowledge acquisition and creation, to present information and evidence digitally in a range of media, to manage digital rights and responsibilities, and to use digital technologies to manage their own continuing professional development.

The *pedagogy of discovery* was designed to enable students to select and evaluate relevant OER content of personal interest appropriate to their needs within the intellectual framework provided by the course structure.

A short video “**The Pedagogy of Discovery: Enabling Free Range Learning**” (approx. 13 minutes) demonstrating a practical application of the *pedagogy of discovery* is available at: <http://vimeo.com/user10756933/review/44500482/42c3fdccab>

The *pedagogy of discovery* is based on well-designed learning activities challenging students to undertake meaningful investigations entailing the discovery, evaluation and discussion of OERs in collaborative networks with other students. It provides one appropriate OER-enabled pedagogical innovation that moves away significantly from the traditional teacher-directed model, and places the student in a personal learning environment that not only engenders the acquisition of discipline-specific expertise, but also facilitates the development of the digital learning literacies necessary to support self-directed lifelong learning.



CULTURis – Leadership for Learning and Access to Higher Education and to Cultural Resources sustained by Information Systems

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Use the intangible technology to make tangible the Creative and Innovative Leadership for Learning in Higher Education in Open Education concept.

Integrated approach of the scientific areas involved: Information Systems and Education Sciences.

Summary idea

The creative interaction between Education/Training and Quality of Life generates a process of reciprocity which promotes a smart sustainability (an intelligent sustainability) that gives rise the Higher Education in Creative University and in Creative City. This is the motor of the Open Education – Intervention and investigation with/in the university and in the city. Within a collaborative action research methodology, pervasive and ubiquitous technologies (Fernandes, Machado & Carvalho, 2007) are adopted to make tangible the concept of leadership for learning and innovation.

The Leadership for Learning framed in the Creative University and in the Creative City is a space capable of generating educational proposals, which influences the configuration of the spaces for life, for city, as well as how to live in it, in order to empower its inhabitants to promote lifestyles and life conditions to construct sustainable spaces of life and cities. While structural axes for plural and global integrated learning and development of citizens, of learners, assuming itself a concept of leadership and inclusion (Viana & Serrano, 2010).

In the internationalization plan, searches to articulate a format of development capable of answering to the challenges of contemporary society – understood not only as flow of ideas, but also capable of teaching and learning from each other, respecting the uniqueness of each university, of each country, of each city – promoting interactions between people. Propose the guidance for creative education/training. Bets on the innovative use of ICT.

CULTURis Motivation

Potentiate the principles of Leadership which intends to be creative and innovative for learning and access to cultural Resources.

Respond to various typical challenges of the current societies, capable to contribute to the nation of knowledge. Where the central concern focuses on the citizens of all social conditions in the core of a network, to, desirably, communicate with formal and informal spaces for education and training, companies, associations, libraries, museums, among others.

Mediate the knowledge (within a plural relational space), providing diverse offerings and stimulating the presentation of entrepreneurial cultural projects by the citizens, developing the participatory, creative, innovative and critical thinking, in order to build social cohesion in an Innovative Open Education in a Creative City - the culture is a dynamic engine of the economy.

Integrate the theoretical and practical knowledge, the collective living experience, as a valuable and attractive space for enterprises, for the cultural/training/social solidarity spaces and for the people of the city - the cultural resources are the raw materials of the city.

Vision

Reply to education/training through an innovative performance of the institutions – placing the digital resources to emancipate learning in the century. XXI – the learning of future – promote the learning relations oriented towards work.

Project and support the learning spaces – problematize the education that any contexts demands.

Create spaces that represent different learning styles, needs and interests of learners - customize the education/training, engagement with the learning spaces.

Generate possibility and visibility of the choice – what they learn, how they learn, when and where they learn – learn between institutions and beyond institutional walls – learn with different people and organizations in search the specialized Knowledge – The ICT to enable the learners to have access/visibility from the place where they are.

Leverage the higher education/training through the exploitation of ICT:

- Supports the development and emancipates the idea of creative education in innovative spaces for life.
- Promotes a communicative approach between the plural stakeholders and education/training - the narrative environment as essential content the education/training - integrated perspective of lifelong learning .
- Becomes an inclusive university - approaches the education /training to the Citizens of all social conditions - living the difference, equality of opportunities.
- Highlights the Higher Education as an environment that learn and enables learning – construction of meaning of who we are and what we want to be ways of creative learning in the open education – what to learn, with whom, for what, when, where to learn?

Core ideas

CULTURis propose is to create spaces that represent different learning styles, needs and interests of learners and a contextually model of teacher's training which generates learning beyond institutional walls.

The **ICT enables the teachers and learners** to have access/visibility from the place where they are and leverages their education/training.

CULTURis project contributes to improve the knowledge and skills which leaders must have to meet the expectations for 21st century challenges (ET, JRC and EU 2020), enriching and creating a space of learning opportunities (new spaces for learning – encouraging development and learning).

In the management of information resources, the project coordinates and integrates critically the various media – people, information sources and technologies – ensuring the quality of information and the use with quality (effective), allowing informed decisions.

The role of information systems as part of construction of meaning in leadership for learning – a creative and innovative response to the challenges of inclusion, constitutes a major

challenge about knowledge on the role of university, teacher and education for 21st century learners.

Long Term Goals

Provide means so that the universities articulated with the cities can meet their responsibilities in the educational, cultural, technological and scientific plan, as well as creative entrepreneurship in shared and co-responsible leadership.

Conceive an organizational system, where the processing of knowledge, cultural resources, information, production of goods and services arise interconnected. Promoting sustainable development of the Higher Education, reinventing collectively the university and public space, in order to establish, develop its citizens and to create wealth, with an impact on their life quality.

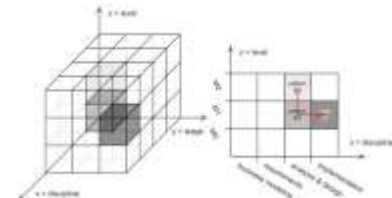
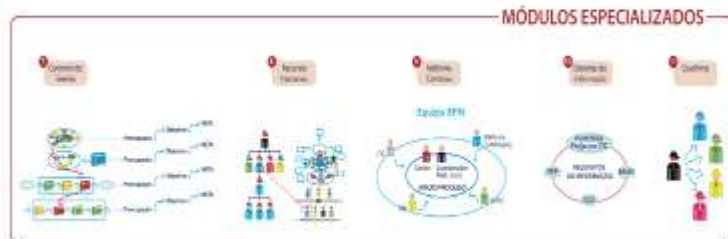
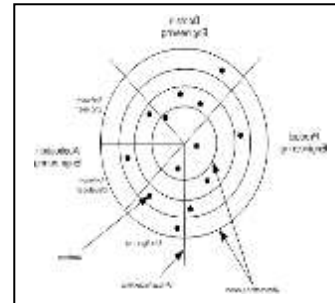
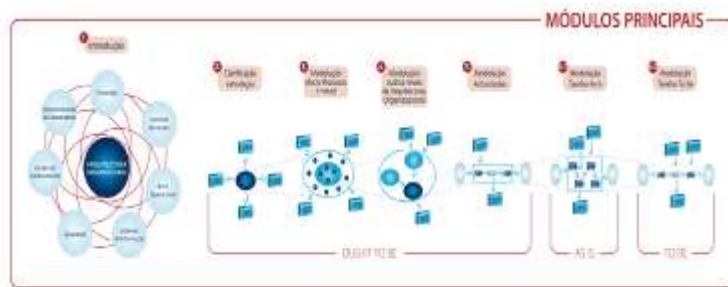
Main Goal

Develop the concept of Creative Leadership for Learning in Higher Education articulated with a creative city as a driver of innovation and sustainability of social cultural and economic cohesion, with a sense of respect for diversity and human rights, capable of promoting the well-being of its learners/citizens.



Objective 1

Conceive organizational models (reference models, ontologies) to support the creative and innovative Leadership for Learning in Open Education concept as a privileged relational space of sustainable development.



Objective 2

Develop ubiquitous information services to catalyse creativity and talent of people as active agents in the valorisation of the experience and in the Higher Education articulate with the city, which allows for building, enriching and using the public space with a significant form and through practices with sense.



Objective 3

Promote the use of digital technology interaction (human-computer interaction, usability, semantic web) to stimulate the knowledge, to bring citizens closer to science and technology and mediate the plural intergenerational dialogue.



Conclusion²

Innerarity (2009:103) states that "space isn't the receptacle of our actions but what comes between us by our actions, so that, each society produces its own space." We would add that not only the society but also the local communities. Information Systems assume, in this new concept of space, a useful role in the creation of articulated process with human activity in order to allow that each individual, each community, can view and use it in an open an evolutionary way, fleshing out the concept of global spaces that could accrue to the development of higher education and their learners, if it is grounded in the value of open education.

Information and communication technologies are an asset to transpose the survival barrier. Today, education is still very much sustained, set on fixed and static structures, in the contents and in objectivity. This inhibits creativity and overshadows development giving the illusion, to be safer. They are an asset for the communicational emancipation of the individuals of any social conditions (supported in the processes, activities, creativity, senses appreciation and meanings assigned by different actors and residing in the contingency, which means no fear of assuming risks) (Viana, 2011:168-169).

Fernandes, Machado and Carvalho (2008) reported that, over time, the organizational, technological and social evolution brought a change to information systems, usually a monolithic organization, with clear objectives in complex information systems, distributed and technologically heterogeneous. Today, a digital world is emerging taking precedence over the real world. Everything has or produces information in real time. According to the authors, the world gets computational communication capabilities and is increasingly governed with digital information and processes. Each day it produces more quickly more, information about everything and everyone. Therefore, the space presents to us swinging, claiming to be organized in processes which are linked to the uniqueness of human activity.

However, ICT it's an accessibility that highlights the needed to regulate the quality of available information, with strong implications for the knowledge building. It's an accessibility that gains strength when dialoguing with the different players in the planning, management, higher education articulate with city development and in the organization of new learning spaces. We ask ourselves about:

² Text adapted from Viana, I. C.; Machado, R. J. & Brito, M. A. (2011). BETWEEN THE VIRTUAL AND THE REAL: TECHNOLOGY AND THE CITY AS AN OPPORTUNITY AND CHALLENGE TO THE EDUCATION OF THE FUTURE. ACTAS ICONO14 - Nº 8 II Congreso Internacional Sociedad Digital, Ciudades Creativas | 10/2011 | REVISTA DE COMUNICACIÓN Y NUEVAS TECNOLOGÍAS (pp. 1580-1590). ISBN: 978-84-939077-6-1 | C/ Salud, 15 5º dcha. 28013 – Madrid CIF: G - 84075977 | www.icono14.net. Madrid, 26-28 outubro. <http://portal.ciudadescreativas.es/index.php/es/>

- What is the relationship with the reality, which interactivity with the environment it allows for?
- What is the relationship with the everyday lives of citizens?
- How to explore the digital, technological and interactive experience?
- How to explore the mix between virtual and real?
- What is the articulation with the exploration of metropolitan wireless high speed network?
- Which dialogue should be developed between engineers, architects, educators, builders, rulers? Which dialogue should be developed between key stakeholders involved in the organization/image/profile of the university and city? Which dialogues have already been done?

The open education, expression of tomorrow's education, is presented in a multidisciplinary approach, where multiple sources of knowledge could be available and used in an integrated way in the learning process and made profitable if leveraged by information and communication technology (Viana, 2011:174).

References

- Fernandes, J. E., Machado, R. J. & Carvalho, J. Á. (2008). Design Methodologies for Pervasive Information Systems. S. K. Mostéfaoui, Z. Maamar & G. M. Giaglis (Eds.). *Advances in Ubiquitous Computing: Future Paradigms and Directions* (chap. III, pp. 45-82). Hershey, U.S.A.: Idea Group Publishing, February [ISBN: 978-1-59904-840-6].
- Fernandes, J. E., Machado, R. J. & Carvalho, J. Á. (2007). Model-Driven Software Development for Pervasive Information Systems Implementation. In Sixth International Conference on the Quality of Information and Communications Technology (pp. 218-222). IEEE DOI 10.1109/QUATIC.2007.26.
- Innerarity, D. (2009). *A Sociedade Invisível. Como observar e interpretar as transformações do mundo*. Lisboa: Editorial Teorema.
- Viana, I. C. & Serrano, A. M. (2010) Inclusion and citizenship – plural cultural context of creativity and curricular innovation. *Inklusion*, 3. <http://www.inklusion-online.net/index.php/inklusion/article/view/69/73>
- Viana, I. C. (2011). A Cidadania no imaginário da educação urbana, um valor com perfil tecnológico. *ELO18*, Revista do Centro de Formação Francisco da Holanda, Julho, Guimarães, 165-176, ISBN 972-96465.
- Viana, I. C.; Machado, R. J. & Brito, M. A. (2011). BETWEEN THE VIRTUAL AND THE REAL: TECHNOLOGY AND THE CITY AS AN OPPORTUNITY AND CHALLENGE TO THE EDUCATION OF THE FUTURE. ACTAS ICONO14 - Nº 8 II Congreso Internacional Sociedad Digital, Ciudades Creativas | 10/2011 | REVISTA DE COMUNICACIÓN Y NUEVAS TECNOLOGÍAS (pp. 1580-1590). ISBN: 978-84-939077-6-1 | C/ Salud, 15 5º dcha. 28013 – Madrid CIF: G - 84075977 |www.icono14.net. Madrid, 26-28 outubro. <http://portal.ciudadescreativas.es/index.php/es/>
- Viana, I. C.; Machado, R. J. & Serrano, A. M. (2012). *CULTURis: Leadership for Learning supported by information systems*. In ICET International Yearbook on Teacher Education, 56th International Council on Education for Teaching (pp. 205-218). Ghana: ICET. ISBN 0-9827113-2-3

Related Links:

European Commission Education & training
http://ec.europa.eu/education/index_en.htm

Joint Research Centre Learning & Skills

<http://is.jrc.ec.europa.eu/pages/EAP/eLearning.html>

Europe 2020: a strategy for European Union growth

http://europa.eu/legislation_summaries/employment_and_social_policy/eu2020/em0028_en.htm



Gamification of Higher Education

David John Wortley

Apply a gamified approach to Higher Education to improve student engagement and multi-disciplinary collaboration

There are many challenges in Higher Education, not least the financial sustainability of Universities and their increased dependence on student registration fees. The ability of Higher Education to engage and retain students is not only important for their income, but also for the effectiveness of the education. Gamification of Higher Education means using the strategic application of methodologies with proven commercial effectiveness in community building and active engagement. Taking the lessons from serious games, social networks and other immersive technologies, Universities could develop policies and strategies which could be unique to each university to build on academic strengths and create win-win partnerships that would significantly improve the student experience and support ongoing financial stability. The early results from research work carried out by Microsoft seem to support the effectiveness of this approach.

Gamification is essentially a multi-disciplinary approach which brings together arts and sciences that combines technological, scientific and logical skills with creative and innovative thinking across boundaries. One of the chronic problems in education at all levels is the silo mentality that exists within faculties. Bringing faculties together to collaboratively address global issues in health, environment, society etc requires the kind of attitude and approach that gamification can deliver.

Generation Y and Z students and so-called digital natives are no longer prepared to accept traditional models of teacher-centric education and Universities need to rapidly adapt to the needs, demands and preferences of the students. Gamification provides a potential solution to these issues

Gamification of Higher Education is a radical yet low cost / risk approach to not only delivering a better quality educational experience but also to supporting the financial sustainability of Higher Education.

Open Education 2030

Contribution to the JRC-IPTS Call for Vision Papers

Part III: Higher Education

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