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ELIG Position Paper on
"Opening up Education"

Roland A. Burger, Elmar Husmann, Florence Rizzo (Editors)



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Introduction



Collaboration, partnership, and co-creation is the only way to transform education at the pace the learners we serve require.

Sir Michael Barber, Chief Education Advisor, Pearson

Digitizing education has been a topic on the European agenda for over a decade and ELIG members have been closely involved in this long term transformation. ELIG has also been involved in advising on the related policy and innovation programs as well as in concrete European initiatives under programs such as FP7 or the Life Long Learning Program.

Based on this experience, we have strongly welcomed the September 2013 communication from the European Commission on „Opening up Education“ – which marks in our view an ambitious strategy to accelerate the digitization of European education until the year 2020. This strategy is very timely and sets the right agenda. We share the belief that the digital transformation of education is now – after many years of slow progress – about to accelerate strongly. And we can witness evidence for this around the world. One reason for this is the availability of cheaper, more powerful, connected and ubiquitous ICT technology. But not the only one. It is also that the digital transformation in other parts of our lives and work has been progressing so fast and increasingly a young, Internet savvy and connected generation demands the same from education.

We have decided to provide in this paper, our view on how the ambitious goals laid out in the „Opening up Education“ strategy could be achieved from the viewpoint of our community – that includes leading education technology providers, educational publishers and education institutions.

We advocate further for an approach that is entrepreneurial and bottom-up at the same time – thus building on the creativity and innovative spirit that is already present in the education sector while not being mainstream. In the same way, we are arguing for collaboration and new forms of partnerships and co-creation between education institutions and the learning and ICT industry.

We argue that Europe needs to provide a fertile environment for innovations in digital education to flourish. In this paper we will describe key characteristics and ideas of this fertile environment and link them to concrete actions.

Achieving the digital transformation of education will be a key factor for Europe's future as a leading market for talent, new ideas, creativity and business growth. ELIG is prepared to support the European Commission in these ambitious goals and welcomes the dialogue on how they can best be achieved in practice.





1. Open the classrooms



The Education box is about to open up and so far the box is almost empty. It will be our collective task to fill it and spread the word.

Pierre Antoine Ullmo

The classroom is an archetype of the place where education is happening. However, the term also evokes traditional impressions in our minds. With the digitization of education we have to challenge this traditional picture of what a classroom is – in the same way as digital technologies have changed our picture of what a workplace is. Today, we are used to work from home, on the move and in many different locations. In the same way, learning can happen in many different locations and many places can effectively become your „classroom“.

In the we.learn.it initiative supported by ELIG and the European Union (via the FP7 Programme), school pupils embark on creative and explorative learning expeditions into real life environments. This has already included forests, museums, city expeditions or foreign countries. Mobile devices are used to capture experiences, collaborate and share. In the initiative, ICT is used as a means for creation and collaboration as part of the learning experience.

Vittra schools in Sweden have created open environments where groups of pupils can team up to work and learn. ELIG Member Aalto University in Finland has transformed old factory buildings into similar flexible spaces for students. ICT is pervasive in these environments – but mostly in a small, flexible way. This is a significant development beyond the traditional „computer classroom“ of the past. It also indicates that – again similar to modern work environments – the digital technology is supporting more flexible, location independent and connected working modes.

In our Classroom of the Future at the Frankfurt Book Fair 2013, ELIG, we.learn.it and further partners have demonstrated how future learning spaces can look like in practice and several hundreds of school pupils, parents, external facilitators and visitors have engaged in this.

What we suggest to make it happen

We greatly support the European Commission's ambition to make every classroom digital by 2020. However, we suggest to combine this with an initiative on new innovative learning spaces in Europe. This could partially build on existing European structures like the LivingLabs and engage European cities and regions. Europe needs „lighthouse“ examples for the classrooms of the future – tangible places that inspire and that show the power of digital in education in practice.



2. Let's get personal & social



You can't get around the need for great teaching. All the 21st century skills ultimately depend on teachers who understand what learning is, have an in-depth understanding of what learning processes are, and are capable of personalizing learning through understanding that different students learn differently at different stages in their life. For example, there has been a belief that technology will bypass teaching. I don't agree, but what we do see is that good technology can leverage great teaching.

Andreas Schleicher. Education Policy Advisor, OECD¹

Education should provide an environment for personal development and growth. However, adaptation to the individuality, personal needs and goals of each learner have not always been possible in traditional education systems that were designed for scale. Digital technologies hold the potential to make education more student centric and better support self-directed and personalized learning. However for this to happen, we have to acknowledge the critical role of teachers, mentors and coaches in this process and find optimal ways to empower their role with digital technology.

1

<http://dailyledventures.com/index.php/2012/04/12/you-cant-get-around-the-need-for-great-teaching-france/>

2

Banks, J. A., Au, K. H., Ball, A. F., Bell, P., Gordon, E. W., Gutiérrez, K. D., Heath, S. B., Lee, C. D., Lee, Y., Mahiri, J., Nasir, N. S., Valdés, G., and Zhou, M. (2007). Learning in and out of school in diverse environments: Life-long, life-wide, life-deep. Seattle, WA: NSF LIFE Center and University of Washington Center for Multicultural Education. Retrieved from http://life-slc.org/docs/Banks_etal-LIFE-Diversity-Report.pdf

Leveraging great teaching with technology and supporting teachers effectiveness in personal interaction with students will be an important element of open education in the future. In fact, a reason of the surprising success of massive open online courses (MOOCs) was that they effectively distributed great teaching with a relatively simple technical base. On the other hand collaborative MOOCs (cMOOCs) have demonstrated success in leveraging learner collaboration. Also studies – e.g. at Harvard University and edX – have shown that learner collaboration can increase success in traditional MOOCs. A third approach are skill sharing platforms that challenge the traditional role distributions between teachers and learners which have a great potential for life long learning and continuous sharing of learning.

The next steps will be technologies that blend these approaches and achieve the same massive scales for personal interaction with teachers and among students.

An example is the Israeli start-up learni.net. Learni has developed an online social environment to work with digital school books. Here, teachers can infer directly in the reading and learning process of individual students as well as join into discussions of groups of students about specific sections of learning material. At the same time, students can interact among themselves and e.g. mutually explain or discuss questions. Thus the next generation of schoolbooks becomes digitally social.

The research project MIRROR supported by the European Union (FP7 programme) and advised by ELIG is developing approaches for virtual coaching that supports learner self reflection.

Life-Long/Life-wide Learning

We also have to acknowledge the fact that the time people spend in classrooms and other formal educational settings is only a small fraction of the time potentially available for learning (see Figure 1). This spurs the need for integrated/holistic education policy approaches that bridge the gap beyond formal education.

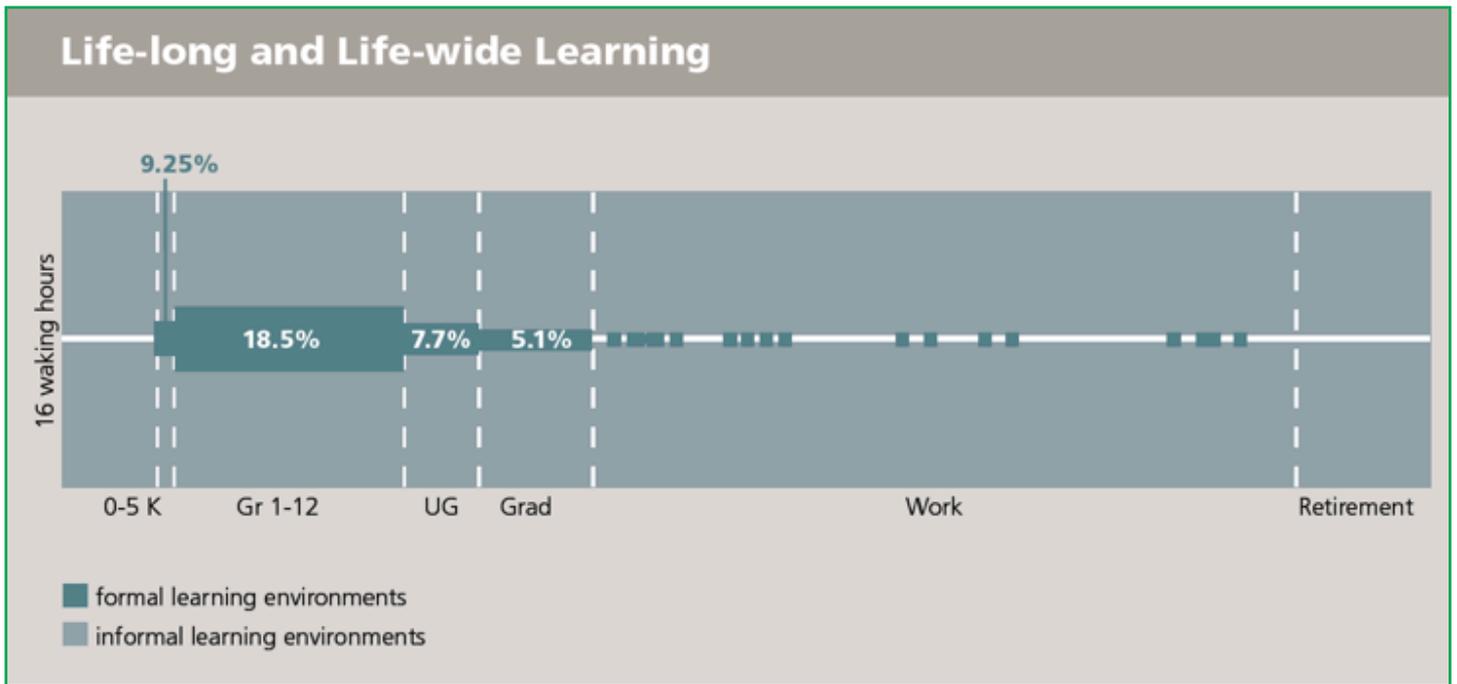


Figure 1:
The potential of lifelong and life-wide learning (Banks et al., 2007, page 9)²

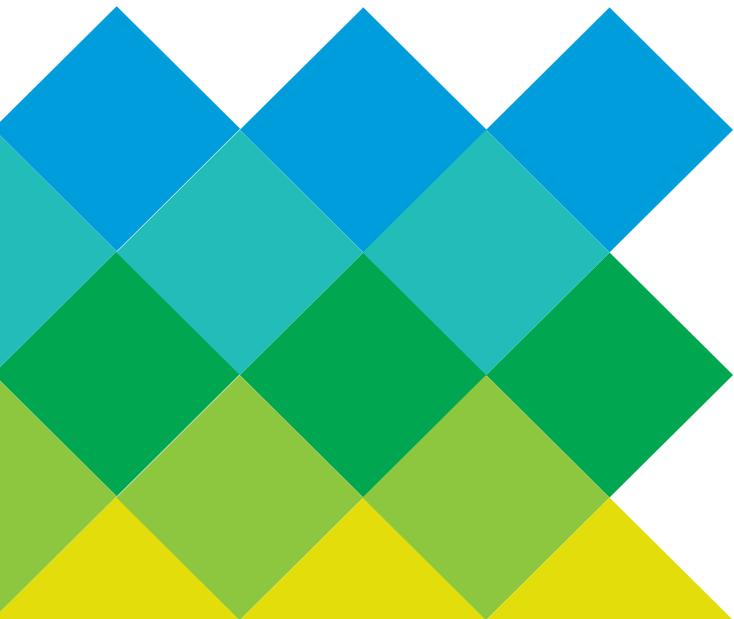
What we suggest to make it happen

We support the European Commission's claim for more personalized learning. Europe should create an initiative to identify and reward great European teachers that are effectively using new technologies to empower their teaching. Here the focus should be on the person, in order to create a network of teaching innovation leaders that can inspire others.

In addition, Europe should put further research efforts into learning technologies that support self-reflection and technologies that support large scale social interaction between learner, coaches and teachers.



3. Support digital creation skills



The European Commission is rightly pointing to the importance of digital skills. However, there is a need to adapt our understanding of what is meant by digital skills. At ELIG we regard digital literacy and media competences – e.g. the skills to assess the quality of information sources or preserve one’s privacy in a digital world – as only one part of the medal. Also eSkills that shall enable employment in the ICT industry are different from digital creation skills.

Digital technologies hold great potentials for developing creative results, for making things and creating own digital assets (e.g. software, services, new data and content). Digital creation skills are an important factor to empower citizens to become active participants in a digital world – rather than passive consumers. New technologies – like e.g. 3d printing or easy-to-program embedded computing – are yet to enter the domain of education. However digital creation is taking place in many disciplines and domains of the curriculum. It should not be seen as limited only to domains like science, technology and math (STEM) education.

We believe that it is important to support building digital creation skills widely into European education as a cross cutting topic. For this reason it is important to develop a holistic and extended understanding of digital skills.

Initiatives like MaketechX in Germany are supporting the development from user to creator and have developed a roadshow approach for showing the potential of using technology to create.

Industries that are strongly using digital creation skills – such as new media, software or computer gaming belong to Europe’s growth sectors.

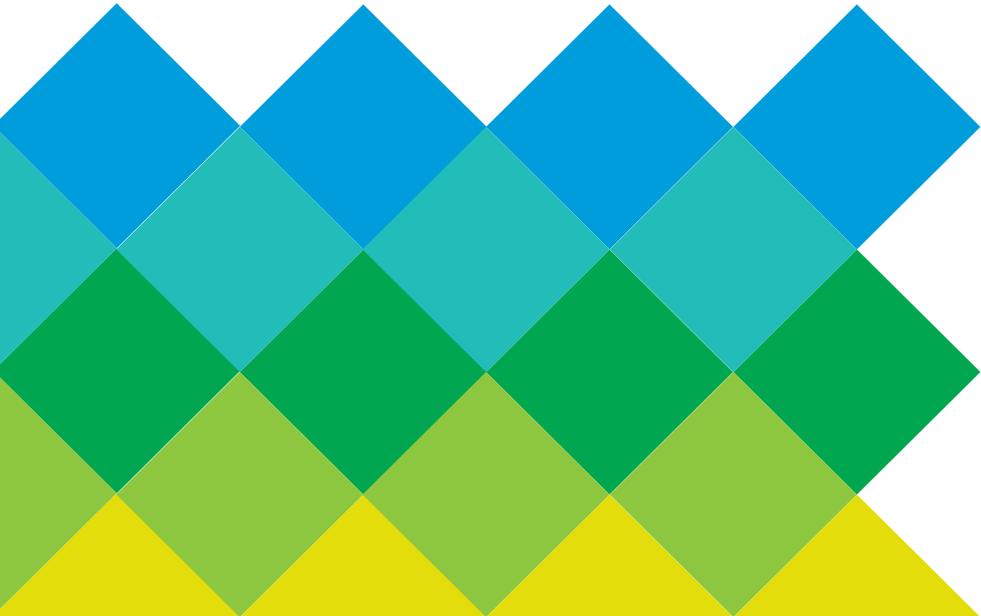
What we suggest to make it happen

Europe should initiate a learning initiative on digital creation skills building on experiences e.g. from the European eSkills initiative and the Grand Coalition for digital jobs.

We should foster a European platform for idea generation and launching digital creative projects in an education context.



4. Built on smart devices, internet scale platforms & big data for education



Personal data is becoming a new economic “asset class”, a valuable resource for the 21st century that will touch all aspects of society.

World Economic Forum Report on Personal Data³

Tablet computing and the advent of Mobile Internet Access and Cloud computing

The combination of ever increasing computing capability in smaller and smaller form factors and at lower cost, combined with the availability of high speed mobile Internet access creates a disruptive environment for European businesses but also for the educational landscape. Cloud computing acts as a glue to integrate mobile devices in a heterogeneous, always on – always connected everywhere way enabling totally new ways of creating, sharing and the fruition of educational content.

To a large extent, digital education uses generic ICT devices and partially also generic Internet service platforms (like e.g. cloud providers). The same applies for the use of own devices by students and pupils. A multitude of heterogeneous devices is the de facto reality and has to be taken into account at the policy level.

Big data is an important new development – not only in Education

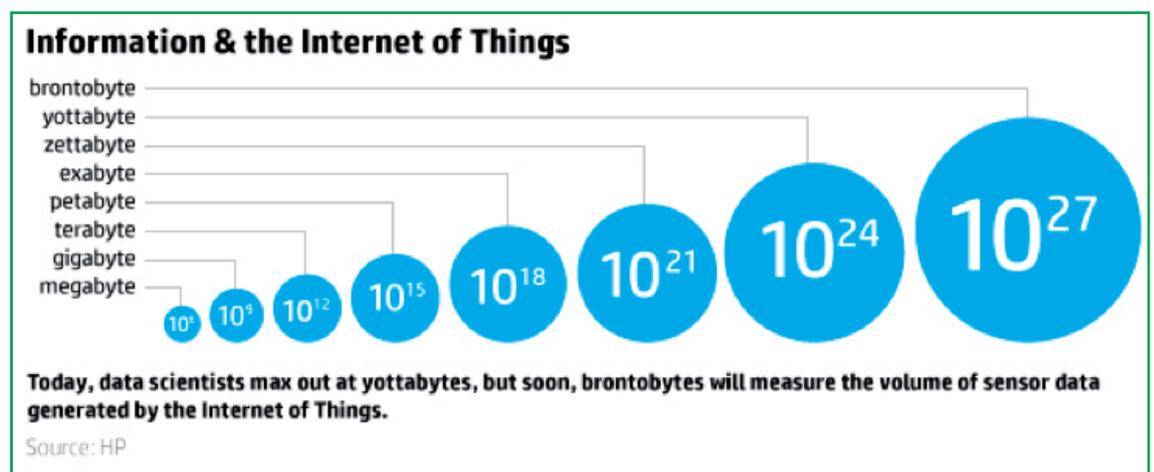


Figure 2:
Every 60 seconds, 1,820 TB of data are created – and that rate is steadily increasing.”
Source HP Report 2013⁴

3

http://www3.weforum.org/docs/WEF_ITTC_PersonalDataNewAsset_Report_2011.pdf

4

<http://h30458.www3.hp.com/us/us/discover-performance/info-management-leaders/2013/apr/from-the-internet-of-things-a-business-intelligence-bounty.html>

5

<http://www.informationweek.com/big-data/hardware-architectures/ibms-big-data-education-outreach/d/d-id/1111576?>

Internet of Things and Education

While social media and personal mobile devices each contribute to the data glut, the advent of intelligent sensor and machine to machine communication/ connected products commonly referred to as “Internet of Things” has a “big” role in big data, generating huge amounts of data.

The role of Learning Analytics

Learning Analytics, understood as the “collection, analysis and use of data patterns to optimize conditions for improving learning” will play a fundamental role in harnessing the power of big data for education. While there have been promising attempts to tackle this problem, a uniform framework for Learning Analytics will have to be developed within an European Context.

However, the education sector also implies a number of specific problems and challenges. Increasingly companies are having difficulties to find the needed new workers, trained in the latest data-science concepts and techniques. IBM for instance reports⁵ that it is having trouble hiring enough data scientists to fully exploit the potential of big data. This is even more true for educational applications of big data and Learning Analytics. A specific educational policy is needed to bridge this gap in the EU.

In the future we are also expecting increasingly web entrepreneurs and SME activities in this field of bridging between generic ICT tools and services and special needs of their application in digital education in order to be able to offer tailor-made services that cater to the specific needs of the education sector. Interoperability and standardization of services, strong privacy protection and data anonymization mechanisms, modular service extension are important building blocks for a successful strategy.

What we suggest to make it happen

The European Commission will support in the upcoming Horizon 2020 program major public-private-partnerships on Future Internet research, the next generation of 4G mobile networks and big data. Digital education needs to become an essential usage area and societal challenge topics in these important European digital infrastructure projects.





5. A new open view on learning content



We strongly support the European Commission's embracing of Open Educational Resources (OER) as a key element in the „Opening up Education“ strategy.

There is however in the European debate a tendency to polarize between OER on the one hand and non-open proprietary resources on the other hand. However, as we have seen in other areas like open source software both can be two sides of the same coin.

Diverging demands on educational content are e.g. derived from the need for effective open mass delivery (as in the case of MOOCs) on the one hand and the increasing demand for intensive co-creation and peer production on the other hand. Standardizing mass delivery has clear advantages in effectiveness, assessment and ensuring a consistent quality. However, it can be an insufficient approach for domains that have a lot of local diversity and where most of the knowledge is distributed „on the ground“ – e.g. in sharing educational practice experiences.

A second pair is the demand for open (and often free) access of education resources versus the legitimate interest of creators of content to be incentivised. This in particular holds for complex and difficult-to-produce content – like e.g. schoolbooks or educational films. The „copy left“ movement is trying to provide a new way of thinking about intellectual property law but it remains a work-in-progress. Creative commons licences are still not widely used in education, albeit the new Opening Up Education portal is an interesting starting point for the use of CC BY licensing of content within.

Many of the current Open Education Resources (OER) platforms therefore contain resources that are produced rather as by-products by educators (like course material) than material that has undergone a rigid design and production process.

A third pair is the demand for accreditation, for measuring learning outcomes and certification on the one hand and the informal side of Open Education on the other hand that is obviously attracting so many people even apart from any interest in formal recognition.

What we suggest to make it happen

ELIG supports the „Opening Up“ of Education. However, the definition of „Open“ and the ambiguity with „Free“ needs to be refined and focused in order to avoid misunderstandings. Europe should lead on developing approaches for handling digital education resources that can blend content with different rights and degrees of openness.



6. Making MOOCs work



The advent of massive open online courses (MOOCs)... has inverted the funnel of all postsecondary learning institutions: Rather than needing to pass through a narrowing admissions filter to gain access to educational opportunities, potential learners worldwide can now freely access high quality, interactive certification granting programs, so that only their ability to master the material in a timely fashion limits their experience...Like any ecological disruptions, not all species will survive, as new niches in the ecosystem are filled by species better suited to new conditions.

Prof. Chris Dede, Harvard University⁶

We witness the fact that the 21st century is certainly different from the past, with regards to the capabilities people need for work, active participation in society and self-realization. This implies that our current educational systems must transform their objectives, curricula, pedagogies, and assessments if they want to play a role as an enabler for to help all students harness their full potential both in the workplace and in society at large.

6

Chris Dede in Open Education—Disrupting the Classroom, ELIG Publication

Over the past few years, MOOCs have gained public awareness with at a breath-taking pace. Universities all over the world, including MIT (edX) and Stanford (Coursera), and EPFL and many others in Europe have launched MOOCs, or are considering doing so, as well as innovative start-ups such as Coursera, Udacity, iVersity, and many others have entered into the marketplace spurring attention and imitation. Designed to provide high quality, online learning at scale to people regardless of their location or educational background, MOOCs have been highly discussed due mainly to their potential to reach a previously unimaginable number of learners. The potential for thousands of learners participating in a single course, working at their own pace, relying on their own style of learning, and assessing each other's progress has changed the landscape of online learning.

According to Prof. Dr. Pierre Dillenbourg, Professor of Learning Technologies at Swiss Federal Institute of Technology, Lausanne (EPFL), Academic Director of the Center for Digital Education, "in one year, 265'000 students registered to the first MOOCs from EPFL".

The rapid proliferation and also fragmentation of the MOOC landscape represents also a risk that the overall fruition at a European level becomes difficult to handle and ultimately hinders the expression of its full potential. This needs a clear European wide policy effort surge. While MOOCs are expanding at a rapid pace in Europe, the geographical distribution clearly shows a heavy bias towards Western Europe, while for instance Southern Europe and Eastern Europe clearly lacks behind, risking to create another dimension in the Digital Divide landscape.

What we suggest to make it happen

ELIG thinks that the loosening of Authoritative sources with the advent of MOOCs will demand a specific policy shift to counter balance this trend positively with curation and validation of content. A common European Aggregator would certainly be a positive development.

We further suggest that the European Institute of Technology and Innovation (EIT) should lead in European higher education with a lighthouse approach on open education and spreading of open educational resources from its many contributing institutions – mirroring the success of initiatives like edX and MIT Open Courseware outside Europe.





7. Stimulate entrepreneurship in the education & learning sector



Europe faces a number of challenges that can only be met if it has innovative, well-educated, and entrepreneurial citizens who, whatever their walk of life, have the spirit and inquisitiveness to think in new ways, and the courage to meet and adapt to the challenges facing them. Moreover, a dynamic economy, which is innovative and able to create the jobs that are needed, will require a greater number of young people who are willing and able to become entrepreneurs... A common European understanding and approach to learning outcomes for entrepreneurship education is still to be developed.

7
http://eacea.ec.europa.eu/education%20/Eurydice/documents/thematic_reports/135EN.pdf

8
www.insme.org

While we see an important recognition at policy level regarding the importance of entrepreneurship in the education sector in general, much needs to be done to fully harvest the potential that entrepreneurship has in linking it with education.

We need to see the coming of age of an integrated holistic policy framework – transnational, holistic and interdisciplinary, a concerted effort to harmonize strategies at the European Commission Level, at National Level and at Regional Level. The inclusion and fostering of Regional Information Society is especially important in order to ensure the recognition of Regional Diversity in Europe and fostering the specific regional competencies and skills.

The inclusion of SMEs via associations like for example the International Association of SMEs (INSME⁸) can be a very good approach to include the specific needs of SMEs in Europe into policy making. The majority of companies in Europe are SMEs and due to their organizational structure SMEs can benefit most from the Opening up of Education.

What we suggest to make it happen

The European Commission has long supported and fostered entrepreneurship and education. Within the education and training agenda, the strategic framework for European cooperation, Education and Training 2020 has, as its fourth long-term strategic objective, that to enhance creativity and innovation, including entrepreneurship, at all levels of education and training. However we need a reinvigorated effort at EU level with strong participation of the Committee of the Regions in continuing and enhancing the support through the Europe 2020 strategy with a clear need to embed creativity, innovation and entrepreneurship into all policy levels, beyond the three flagship Programmes (Youth on the Move, An Agenda for New Skills and Jobs, and Innovation Union). This should also include a stronger emphasis on school education and earlier age groups.

In addition are we suggesting a specific programme on entrepreneurship and support for bottom-up innovation for the education and learning sector itself. This should be combined with a specific European fund for supporting education innovation and a European exchange program for education innovators (including innovators from within and from outside of the educational system).





8. Monitor impact transparently (and timely)



The very underpinnings of our society and institutions – from how we work to how we create value, govern, trade, learn, and innovate – are being profoundly reshaped. We are all migrating to a new land and should be looking at the new landscape emerging before us like immigrants: ready to learn a new language, a new way of doing things, anticipating new beginnings with a sense of excitement if also with a bit of understandable trepidation. We are all immigrants to the future; none of us is a native in that land.

Marina Gorbis, Institute of the Future



The advent of massive amounts of data and the capability to ingest, process and store a plethora of usage and feedback data in education coupled with new and exciting near real-time data analytics and visualization opens up enormous possibilities for tapping into the potential of Opening up education – given the imperative need to address rising concerns about privacy and data security.

However many challenges exist. First, there are still wide and persisting disparities across the EU. Participation in learning differs substantially between Member States, between low-qualified and highly-qualified, low-skilled and highly-skilled, younger and older adults. Policy change cannot be forced upon national institutions. EU level initiatives still take a considerable length of time to be translated into action and to yield tangible results at Member State level. Disparity exists between uptake and results of policy change in younger population versus adult learning. We still see that EU-level efforts are unable to produce sufficiently detailed and reliable and especially timely evidence.

It still takes a long time to develop and apply instruments for the collection of data on indicators of policy and governance in education and training due to the process of Statistical data collection involved. A new crowd-sourcing data approach could be the solution to this bottleneck in time and resolution of available data.

What we suggest to make it happen

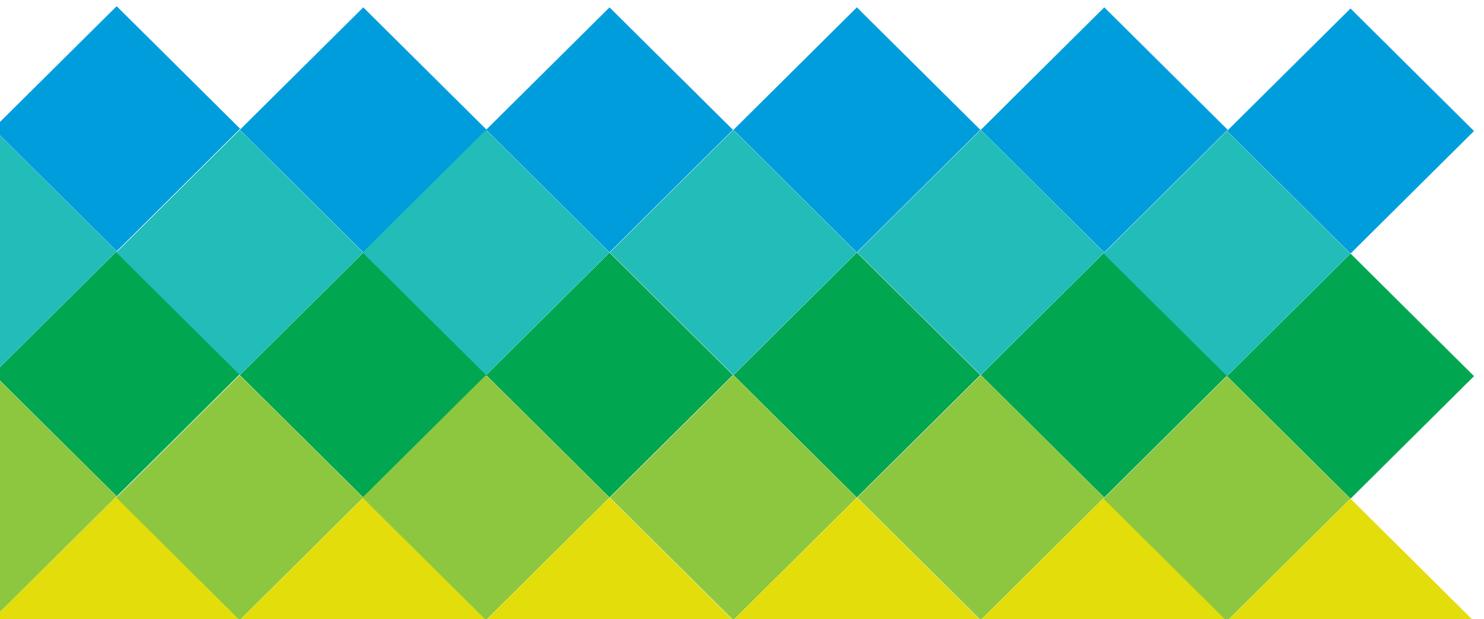
We believe that a good way to convince Member states for specific policy change/ adoption is to be able to provide tangible evidence on the benefits of reforms enjoyed by other countries for instance. A well designed analytics policy framework could be the necessary tool for that. We need to avoid sectorial impact assessment but need to develop a multi-level, pan-european, down to regional level, impact assessment at near real-time frequency. We need to update the framework of indicators and benchmarks for monitoring progress in education to the new possibilities of big data and cloud computing with the use of innovative data gathering approaches that shorten the data cycle time.

As the same time we should take the opportunity of access to rich data to foster a broader concept on "progress" in education – including skills like creativity, sense of entrepreneurship, ability to collaborate or empathy.





9. Globalize cooperation



Changes in business models and practices, such as the 'digital Taylorism' depicted in Brown et al are interesting for education as they may shape the future of education and education systems...If globalisation and information and communication technology are inducing a second industrial revolution, it is important for educationalists to think of how this might translate to the world of education and tertiary education. What are the kinds of skills, curricula, learning and social experiences that would fit the emergence of this new form of capitalism (digital Taylorism)? Can we think about a more personalised and modularised education? What would the school and university of the digital Taylorism era look like? This will be a fascinating future research agenda.

9
Commentary on Brown,
P., Lauder, H. & Ashton, D.
(2008) 'Education, Globalisa-
tion and the Future of the
Knowledge Economy', Euro-
pean Educational Research
Journal, 7,2,131-56

The 21st century will be the age of digital Taylorism. This involves translating knowl-
edge work into working knowledge through the extraction, codification and digitalisa-
tion of knowledge into "chunks" of logic that can be transmitted and manipulated by
others regardless of location.

While there is a "clear and present danger" for European "white collar" worker, there
clearly is also a gain for European companies to take advantage of a more flexible and
reactive service offering in relation to "knowledge work". However, we need a clear
policy framework that addresses these challenges and maximizes the benefits while
minimizing the clear risks that such a development poses, bridging these two antipodes.

The challenges ahead are global challenges, and thus, the benefits of cooperation far
outweigh the risks and thus the global dimension has to be reflected in policy.

What we suggest to make it happen

The European Union strives to have a high-skill and high-value economy and this
implies an educated workforce. The direct link and the importance of education in this
respect has been recognized. However this is a race with global competitors that are
aiming for the same direction and at the same time the need for cooperation, clearly
demands a policy that addresses these issues. Fostering global cooperation needs to
be recognized as a priority at policy level.

Globalized cooperation should also put an emphasis on bringing qualitative education
for all through new technologies and on the particular needs of worldwide regions
that risk to be marginalized in the digital transformation of education. At the same
time Europe needs also to drive inspiration from regions that might have less resour-
ces but often more creativity.



We are



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