

High Level Group on the
**Modernisation
of Higher Education**



REPORT TO THE EUROPEAN COMMISSION ON
**New modes of learning and
teaching in higher education**

OCTOBER 2014

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“We need technology in every classroom and in every student and teacher’s hand, because it is the pen and paper of our time, and it is the lens through which we experience much of our world.”

David Warlick

“...if we teach today as we taught yesterday, we rob our children of tomorrow.”

John Dewey

European Commission

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New modes of learning and teaching in higher education**

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The online and open education world is changing how education is resourced, delivered and taken up. Over the next 10 years, e-learning is projected to grow fifteen-fold, accounting for 30% of all educational provision. But this transformation should be shaped by educators and policy-makers, rather than something that simply happens to them. And the benefits of these developments should be available to all Europeans. This is why, with my colleague Neelie Kroes, Commission Vice-President responsible for the Digital Agenda, we launched a joint initiative in 2013 on Opening Up Education, to set out a framework for enhancing learning and teaching through new technologies and open digital content at all levels of education.



ANDROULLA VASSILIOU
*European Commissioner
for Education, Culture,
Multilingualism
and Youth*

Within higher education, new technologies have enormous potential to effect change. They enable universities to meet a broader range of learners' needs, adapting traditional teaching methods and offering a mix of face-to-face and online learning possibilities that allow individuals to learn anywhere, anytime. They also create openings to engage in new kinds of collaboration and offer opportunities to distribute resources more effectively. Given the societal and economic potential that can come from harnessing technological innovation in higher education, it is imperative that Europe takes the lead in this arena.

But many universities are not yet ready for this change – and governments have been slow to take the lead. While there are instances of innovation, the landscape is fragmented, various barriers prevent widespread uptake, and fully-fledged institutional or national strategies for adopting new modes of learning and teaching are few and far between. This is why, after last year's successful report on 'Improving the quality of teaching and learning in Europe's higher education institutions', I invited the High Level Group for the Modernisation of Higher Education to set out recommendations on enhancing higher education through new technologies.

I would like to thank the chair, Mary McAleese, and all the members of the High Level Group for the time, expertise and enthusiasm they have devoted to this issue. This balanced and incisive report shows clearly that Member States, supported by the European Union, have to act swiftly to set the right frameworks so higher education institutions can make best use of the potential these new modes offer, enabling Europe to become a global player in transformative higher education.

The European Commission will play its part, offering funding through the Erasmus+ programme to policy-makers and education providers to take forward the recommendations given by the Group. One recommendation that the European Commission has already put into practice: all educational materials supported by Erasmus+ are freely available to the public under open licences. We hope our good practice will be copied across our Union.

A plethora of new terms have been making recent headlines in higher education – xMOOCs, cMOOCs, SPOCs, DOCCs ... – with the promise, or threat, that digital technology will revolutionise our traditional, bricks and mortar universities. In a fast-changing discourse, even to cite these acronyms is to risk being out of date, and this was one of the challenges the High Level Group faced when tackling our second report on new modes of learning and teaching in higher education – keeping pace with developments, without being derailed either by prophets of doom or purveyors of dreams.



MARY McALEESE
*Chair of the EU High Level
Group on the Modernisation
of Higher Education*

All of this made the report a constantly moving target; now, we hope, we have nailed it down, taking not so much a snapshot as a freeze-frame of the higher education landscape, and examining it long enough to detect the change that is happening, but also the resistance that may be slowing it down – and the barriers that prevent it.

Our exploration of the topic confirmed that MOOCs and their cousins are only one part of a wave of innovation in higher education, as blended learning or other forms of on- and off-campus learning take off. These are multiplying the opportunities for learners at the same time as the latter's numbers, and kind, grow apace with Europe's need for a highly skilled, flexible workforce. Nonetheless, this wave of innovation is progressing at a very uneven pace across Europe, and we risk being left behind as other parts of the world act more nimbly in garnering the benefits of technology – including by resourcing the teachers on whom successful adoption of technology depends.

While pedagogy and curriculum design are matters for institutions, governments are responsible for defining the policy, legal and funding contexts which impact on the motivation and ability of institutions to integrate new modes across higher education provision. This is why we have sought, where possible, to direct our recommendations to policy-makers, and to urge strategic action to tackle the key challenges we identify: instigating an open culture for change; developing political and institution-

al leadership; supporting digital skills for teachers and learners; and adapting funding frameworks for targeted investment into new technologies and pedagogies, and quality assurance regimes that apply to onsite and online education. We believe that Europe has a comparative advantage compared to other regions in the world. With our European Credit Transfer and Accumulation System (ECTS) we have a credit system recognised worldwide, that can be used for all forms of provision and help solve the knotty problems of certification and recognition of online learning.

Digital technology is an ally for higher education. However, the latest developments concerning data protection and privacy issues have shown that technological advances are not always used for educational goals. The High Level Group therefore wants to see the learner in the driver's seat when it comes to collecting, analysing and using data on his or her learning progression.

I would like to thank all members of the Group and the support staff for their valuable contributions in the preparatory work, the discussions and in drafting this report. My special thanks to all presenters to the Group (representatives from Member States, researchers, higher education institutions applying new modes and other stakeholders) who shared with us their in-depth knowledge, gave wise and timely feed-back to our report and its recommendations, and helped us devise a pathway towards embedding new modes of learning and teaching at the core of European higher education.



Executive summary	9
1. Introduction: why Europe needs to act	13
2. Harnessing new modes of learning and teaching to modernise higher education	17
3. Challenges and how they can be addressed	23
4. Recommendations	53
5. Selective glossary of terminology	57
6. Acknowledgements	59
7. Members of the group	63

Executive summary

Executive summary

The higher education landscape is undergoing significant change as a result of technological innovations. We are witnessing changes in the way higher education is taught and in the way students learn. While the conventional setting of the lecture hall will continue to form the bedrock of higher education systems, it will be enhanced by the integration of new tools and pedagogies, and it will be complemented by many more online learning opportunities and a greater variety of providers in higher education.

These new technologies and approaches to education are already having a clear and positive impact on higher education provision. They can support efforts within the Bologna Process and the European Union Modernisation Agenda to enhance the quality and extend the reach of higher education across Europe. And they are already starting to facilitate better quality learning and teaching for both on-campus and online provision, as educational resources from around the globe become more freely accessible and more interactive media for learning are employed. Methods of teaching can be better tailored to individual students' needs and advances in learning analytics are enabling quicker feedback on students' performance.

There is enormous potential for widening access to higher education and increasing the diversity of the student population. Online technologies provide opportunities to learn anywhere, anytime and from anyone. This flexibility is essential for non-traditional learners and will enable a shift change in the engagement of higher education institutions in lifelong learning and continuing professional development. This will provide an important tool to governments in ensuring a diversity of provision within higher education systems to meet the needs of all learners. It also provides a platform for reaching international markets and complements existing developments in cross-border education.

Finally, new technologies can facilitate greater collaboration, both with global partners and at a more local level. Developing educational partnerships is an important element of Europe's strategy for cooperation with other parts of the world and also provides a mechanism for enhancing educational attainment rates in emerging economies. At the local level, technologies can underpin national efforts to drive greater collaboration between institutions, combining expertise and delivering greater critical mass.

The benefits are clear and Europe needs to take concerted action to ensure that the potential is fully realised. While the debate on digital learning has been dominated in recent times by the MOOC phenomenon, the impact of technology can and will be much wider. Governments must strongly encourage and support a greater integration of new technologies and associated pedagogical approaches in conventional provision. Traditional providers must diversify their offering and provide more courses online, especially targeting continuing professional development and lifelong learning. They should also be encouraged and incentivised to engage with newer forms of open, online courses as these become more established. The momentum towards openness and freely accessible education resources needs to be maintained and built on. The goal should be to ensure that all publicly funded education resources are openly available.

Realising these ambitions is not a straightforward task. It will involve significant changes in how higher education institutions operate, as well as a change in culture and mindset. The challenges will require targeted actions and support.

There remains a culture of conservatism within European higher education which needs to change. This demands strong leadership and vision from both public authorities and institutional leaders. While a broad range of good practice is already emerging across Europe, this is happening to a large degree in an uncoordinated bottom-up approach. It is now time for governments and institutions to develop comprehensive strategies at both the national and institutional level for the adoption of new modes of learning and teaching within higher education. Governments need to decide on the mix of provision necessary across the system to meet the needs of all learners, and they must identify the support needed to deliver this. In particular, targeted financial incentives will be paramount in kick-starting initiatives. Dedicated centralised structures and supports within institutions can provide the engine for driving change and mainstreaming new approaches across the institution. Teaching staff are, of course, at the frontline of delivering these changes and they must be equipped with the skills and knowledge to allow them to fully utilise the range of new teaching tools available. Continuing professional development for teachers must become the norm across all European institutions.

New models of provision such as open online courses bring specific challenges. But given the opportunities that they offer for lifelong learning, continuing professional development and internationalisation, it is imperative that public authorities consider how these learning opportunities can be brought more fully into the higher education system. There are many anxieties about the quality and wider acceptance of these learning experiences, and action is needed to quell these concerns. Guidelines around quality assurance and developing a means of providing credit and recognition for these forms of learning will advance efforts to instil them as a credible alternative to the traditional degree programme. The ECTS system gives Europe an obvious advantage in this regard. Online learning has also brought with it the ability to collect and analyse learner data that has not been possible before. This brings great potential for personalised learning and enhanced retention, although the utmost care must be taken to ensure students are fully aware of and give full consent for the collection and use of their personal data.

Our message is clear. While accepting that higher education institutions and, more particularly, teaching staff are the main actors in delivering these pedagogical changes, it is the responsibility of public authorities to create the environment and incentive for action. The European Union also has an important role to play. Through the Erasmus+ programme, financial support can be given for supportive policy initiatives at a national or institutional level. Support can also be made available for peer learning and collaborative cross-border initiatives, for example, infrastructures, quality assurance guidelines and credit recognition.

We stand on the cusp of real transformative change in higher education. This must be embraced fully to ensure that we provide the best learning experience for all students, not just in Europe but across the globe.

Introduction: why Europe needs to act

1 Introduction: why Europe needs to act

The advent of digital technology in the last two decades has changed the world dramatically, and will continue to do so. Technology is driving major changes in people's professional and personal lives across Europe and the world, impacting every facet of society, and is now an integral part of how most people interact, work, learn and access knowledge and information. New and emerging technologies are already starting to have a transformative effect on higher education provision. There is every reason to harness the potential of these developments in the service of high quality higher education. But to do that effectively we need to both widen and deepen our understanding of how these new technologies and pedagogical tools can be an integral part of the way higher education is delivered, and identify what measures can be taken to further stimulate, facilitate and advance it.

We have witnessed considerable – and ongoing – changes in higher education in recent years and the landscape is constantly evolving. This is being driven by many factors: the economic and social imperatives are calling for higher levels of skills, the student body is becoming more diverse, people are continuing to study throughout their working life and there is a growing desire for more flexible study opportunities. Furthermore, as digital technologies become ubiquitous, there is an emergent expectation from society for easier access, better quality, more flexible approaches and greater online opportunities in higher education provision.

Worldwide demand for higher education is expected to grow exponentially from 100 million students currently to 250+ million by 2025¹. This growth will be particularly driven by emerging economies like China and India. Even in the EU where many countries are experiencing declining populations, higher education enrolments continue to increase. A considerable portion of this growth is coming from adult and returning learners – a complex cohort, most of whom will study whilst also working. These projections call for well-planned action and they raise several questions. Will our higher education institutions in Europe and beyond be able to sustain and improve the quality of the learning experience in the face of continuing growth and diversity in the student population? How do institutions need to adapt to meet a broader range of needs? Will there be sufficient funding to cater for this expansion of higher education? There is growing recognition that the development and integration of innovative modes of learning and teaching must be part of the response and that Europe must be a relevant player and partner in this effort.

The pace of developments worldwide has already been quite striking. MOOCs especially have generated remarkable interest and attention. But they are only one part of a wave of innovation gathering pace in higher education, affecting both pedagogy and mode of delivery. Growing momentum towards open educational approaches and resources, and advances in technology-enabled learning, have resulted in the emergence of a plethora of digital platforms and portals which offer easy access to educational resources and course materials from institutions across the globe, and allow individuals to undertake a vast range of courses online. New types of short, focused online courses are emerging. The concept of higher education provision itself is being fundamentally challenged with the potential to “unbundle” its core components. Higher education institutions are no longer the sole provider of higher education services, with a range of specialist companies now providing elements of the higher education package such as course platforms, examination and certification services, learning support, learning analytics, etc. The degree programme itself is facing competition with moves towards shorter, more targeted types of courses.

The impact is already visible – both for conventional provision and distance learning. Traditional degree programmes are modernising. Teachers and students alike have access to a wider range of materials, and new technologies and pedagogical approaches are being “blended” with the traditional classroom setting. There has been a shift in the concept of and attitude towards distance education. Increasingly, people are opting to study online. In tandem, these forms of learning are becoming more recognised and more widely accepted in society. As a result both traditional higher education institutions and new types of providers are developing a range of online offerings spanning full degree programmes, continuing professional development and shorter type courses like MOOCs. For the purposes of this report, the High Level Group considers that developments in new modes of learning and teaching can be differentiated in three main categories (see box).

There has been much debate about how disruptive and far-reaching these developments will be. These range from those who have prophesied the end of on-site campus education² – to those who consider that recent trends are over-hyped and are merely a passing “fad”³. No one could have predicted the explosion of interest in MOOCs that occurred in 2012 and 2013. But now a clearer picture is beginning to emerge and we can examine these innovations and consider how best to use them to transform and reimagine higher education.

Digital technologies have proved disruptive to many sectors in the last decade. Publishing, music, media, photograph and travel industries – to name but a few – have seen a complete overhaul of their products and services, along with a stream of new entrants into the market and the exit of some traditional players. Incumbents have had to completely rethink their products, services and business models to survive. This has happened despite the efforts of vested interests to retain the status-quo. While higher education is not an equivalent market, it is just as futile to think that it can withstand these innovations and remain within the existing model. The level of disruption may or may not be as radical, but it is clear that there will be changes. Higher education systems and institutions need to be active drivers of this change process, rather than letting technology and external interests dictate it.

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Differentiation of models of the use of new modes of learning and teaching:

a) Conventional higher education providers offering programmes and courses on campus that make use of online technologies and pedagogies within courses and programmes – better known as blended learning. This also applies to conventional distance education providers.

b) Conventional higher educational providers offering full programmes or short courses online. These courses and programmes can be limited to enrolled students, or open to non-enrolled students with or without credits. This model has particular potential for lifelong learning and transitional education.

c) Non-university providers offering courses free of charge or fee charging, with or without credits.

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“Just a few decades hence, half the colleges and universities in the United States will have disappeared, but schools like Harvard will have millions of students” Nathan Harden, <http://www.the-american-interest.com/articles/2012/12/11/the-end-of-the-university-as-we-know-it/>

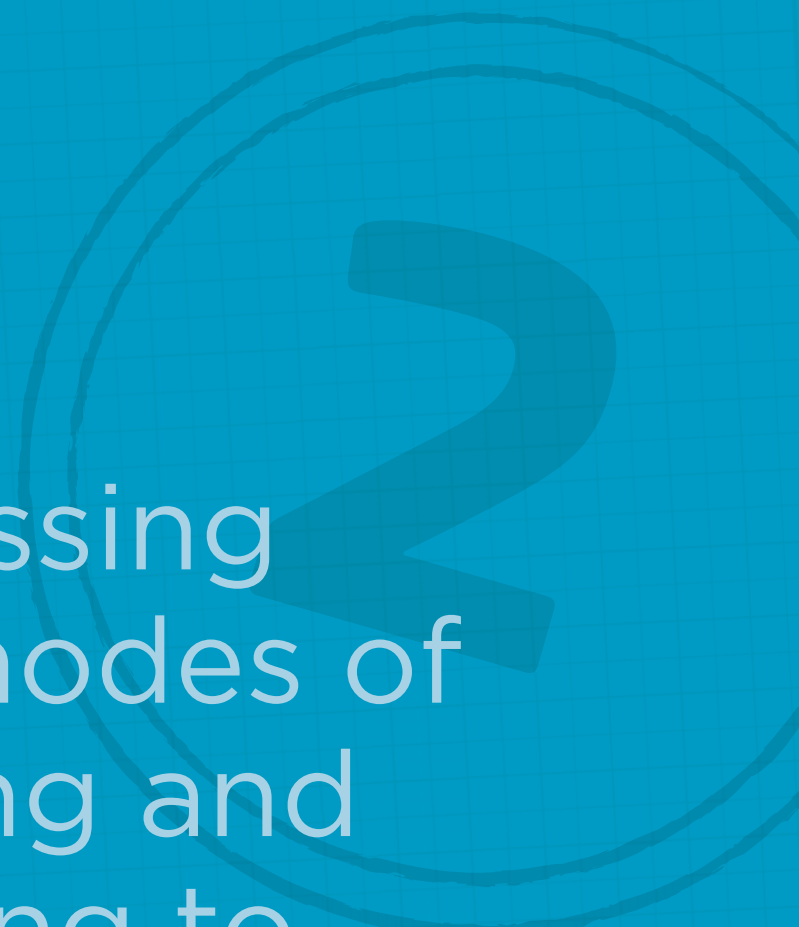
— 3
“I don't think that you can give a Stanford education online, in the same way as I don't think that Facebook gives you a social life” Susan Holmes, Stanford professor

— 1
UNESCO, <http://unesdoc.unesco.org/images/0019/001924/192417m.pdf>

In Europe, developments have been slow and the debate on these issues has not been as far-reaching as we have seen in other regions, most notably the United States. Established higher education frameworks, such as the Bologna Process, have yet to really consider the impacts these new developments can have. But we know that attitudes are changing. During our deliberations we heard from a wide range of experts who are involved in developing new approaches and mechanisms for higher education provision. University organisations such as the European Universities Association and the League of European Research Universities have published reports this year on online learning. A number of significant European initiatives have been taken in the last year and are referenced throughout the report. This includes the publication of the European Commission's Communication on Opening Up Education, which sets out a framework for enhancing learning and teaching through new technologies and open digital content at all levels of education. It also includes the development of MOOC platforms such as FutureLearn in the UK, MiriadaX in Spain, Iversity in Germany, FUN in France and Openup Ed from EADTU.

These actions reflect a growing realisation of the potential impact that new, innovative modes and technologies can have on the quality and reach of our higher education offering. Ignoring them is not an option, nor is a wait-and-see approach for, despite some encouraging developments, the landscape across Europe remains fragmented. Policy-makers and higher education institutions are still uncertain about how to respond to these changes. Initiatives are scattered and often uncoordinated. There is not yet a full understanding of the positive impact that new modes of learning and teaching can have, strategic and policy planning is notably absent, and a range of barriers are preventing more wide-spread integration of new modes into mainstream higher education.

This report builds on the action lines in the Commission Communication and provides guidance to the European Commission, Member States and institutions on ways to respond to these challenges, and more fully embrace and make better use of the potential of these developments for European higher education.



Harnessing new modes of learning and teaching to modernise higher education

2. Harnessing new modes of learning and teaching to modernise higher education

Providing high quality, relevant and widely accessible higher education is a fundamental goal of the European Higher Education Area. Within the frameworks of the Bologna Process and the European Union Modernisation Agenda for Higher Education, higher education systems and institutions have been engaged in a constant drive, both individually and collaboratively, to achieve this. But these goals have not yet been fully reached. New and emerging approaches to learning and teaching, made possible by new technologies, can complement, consolidate, support and further advance these efforts.

The philosophy and motivation behind recent trends in online and open education are not new, and date back to earlier developments including the open university movement, earlier technologies such as radio and TV, and open education resources. These “new” modes sought to expand the reach of higher education by creating more flexible opportunities and were very much driven by the principles of equality, diversity, quality and efficiency. These principles remain at the heart of current developments.

However, while the principles are similar, the landscape of open and distance learning has changed quite dramatically in recent years. The technological capacities have evolved, and are evolving, with increasing rapidity when it comes to the speed, interactivity and potential reach of new technologies and online platforms. Digital materials are reproducible at low or almost no cost and more flexible approaches can be applied to copyright. Broadband has given us the opportunity to reach learners in every corner of the world, and with 2.7 billion people already having online access⁴, this presents a powerful realm of potential.

Quality enhancement as a result of shared, high-quality learning materials and more creative and individualised pedagogical approaches

Digital technologies in themselves do not necessarily constitute an enhancement of the quality of learning and teaching, and it goes without saying that quality of content must remain paramount, but they are an enabler for such enhancement and can underpin efforts towards more student-centred teaching. Teachers now have the opportunity to draw on a wide range of materials in a variety of formats which can improve the quality and diversity of the curriculum.

Students are unique, and so is the way they learn. Therefore, the teaching tools used in universities and colleges should cater for individual ways of learning, with the student at the centre. Some of our students will learn better and faster with the help of interactive media that incorporate images, graphics, videos and audio elements. Others will prefer static text and numbers in different measures. Technology in the classroom can combine all of these for a personalised learning experience for each student, based on each student's strengths. As well as improving the effectiveness of learning, such adaptation to individual needs can also have a significant effect on the reduction of drop-out.

⁴ ICT Facts and Figures 2013, International Telecommunications Unit

New technologies and communication platforms also allow for greater interactivity between the teacher and the student, and between students both inside and outside the classroom. While much of the content of programmes can be delivered through “self-administered” e-learning, teachers can concentrate on their role as mentor, developing with students the skills of information management, understanding and questioning, critical thinking and knowledge application. Thus, digital media can facilitate more active, problem-based learning which has been demonstrated to encourage greater student engagement and leads to better learning outcomes⁵. Digital assessment tools can enable quick feedback on student progress and curriculum adjustment to student needs. Technology's potential to free teachers and students alike from the “old ways” of doing things, to complete the move, long talked about but less frequently delivered, from the mere transmission of information to a co-partnership in learning, can have a worthwhile, meaningful impact on both the learning and the teaching experience.

This connects very strongly with the Group's last report⁶, which focused on enhancing the quality of teaching and learning in higher education. Its recommendations called for a change in attitudes towards the teaching mission, by introducing greater professionalism in teaching, more student engagement in the learning process and better recognition of good teaching.

Already the hype surrounding MOOCs has brought a much needed focus on learning and teaching. For too long, this core mission of higher education has been overshadowed by research priorities. The very fact that people are talking about teaching is progress in itself. Many higher education institutions and academics are starting to rethink the process of teaching. They are challenging the status quo and bringing new energy and fresh approaches to the teaching mission.

Creating a more diverse higher education system by widening access and facilitating lifelong learning

Governments across Europe are embarking on different pathways to ensure that their higher education systems have the capacity to respond effectively and efficiently to diverse economic and societal demands and global competition. Governments are increasingly taking a systematic view and are implementing policies aimed at designing a coherent landscape of complementary, collaborating and diverse institutions, providing a mix of provision across the system to collectively meet the needs of individuals, employers and society.

Traditional higher education provision has never served all groups in society. While access has greatly increased in the last decades, the constraints of money, time and location continue to preclude groups of learners from participating in higher education. This is especially the case for adult and continuous learners. Our ambitions of becoming a knowledge-intensive society and economy hinge on the availability of a highly-skilled, flexible workforce. There is an urgent need to provide upskilling, reskilling and continuing professional development opportunities to ensure that all our citizens have the skills and attributes required by the labour market of today, and more importantly tomorrow. Governments will want their higher education institutions to become much more active providers of this type of education. This will necessitate changes in their offering to meet the needs of this type of learner. Digital technologies and online provision provide a means for doing so.

⁵ ‘What the student does: teaching for enhanced learning’, Biggs, 2012

⁶ Improving the quality of teaching and learning in Europe's higher education institutions, June 2013

The flexibility inherent in this type of provision can also enable quick adaptability to the ever-changing needs of the labour force and emerging skills gaps. There are a number of interesting developments happening in the United States that give us an insight into the types of partnerships and provision that might develop in the future. Starbucks has teamed up with Arizona State University to offer subsidised online degree courses for its employees. AT&T and Udacity have created a “nano-degree”, a short, focused course offering learners a basic level of relevant knowledge and skills which will be accepted as a credential for entry level positions within the company.

Increased global visibility by reaching new target groups in an international context

Enhancing the attractiveness and competitiveness of European higher education is a key goal of the Bologna Process. In an increasingly globalised world, and with the expansion of higher education provision in emerging economies, European higher education institutions need to develop a strong brand to ensure they remain competitive in attracting students, staff and international partners. Internationalising the student and staff body, and developing global partnerships with leading institutions worldwide, enhances the quality of learning, teaching and research, and contributes significantly to the student experience.

We can no longer rely on ever more international students travelling to Europe, as more and more local educational opportunities open up. Online provision and open access to education resources provide a means for reaching this ever-increasing worldwide audience, and for enhancing global visibility and reputation. It can also provide a cost-effective complement to international campuses and “flying faculty”, and can allow the internationalisation of education without the same risks of brain drain.

Greater global and local collaboration and cooperation

Developing educational partnerships is an important element of Europe's strategy for cooperation with other parts of the world. Wide availability of quality education resources and the ability to adapt and customise these materials to specific circumstances, and languages, is providing a step-change in educational attainment levels in many countries, especially emerging economies. We are already seeing very interesting developments including the Swiss Federal Institute of Technology in Lausanne's MOOC initiatives for francophone Africa⁷, the Spanish portal Miriada X's engagement with Latin America and ‘Globalizing OpenupEd’ in which EADTU and UNESCO are partnering with the African and Asian institutions in order to establish OpenupEd initiatives in Africa and Asia. An EU funded pilot project, EMMA, is also advancing efforts in this area⁸. This project will provide a platform for hosting courses from across Europe in multiple languages to promote real cross-cultural and multi-lingual learning, and potentially strengthening the use of less-widely spoken languages.

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16% of students in French language MOOCs are from Africa

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EMMA was launched in April 2014 and will provide a system for the delivery of free, open, online courses in multiple languages from different European universities. Its added value is the inbuilt translation and transcription services for courses hosted on the platform. There are currently 12 universities and companies in 8 European countries participating. Further information available at: <http://europeanmoocs.eu/blog/>

At local level, new modes of learning and teaching offer opportunities for reaching out to local communities. One example is the fab lab (fabrication laboratory) movement that started in 2002 at the MIT and can now be found all over Europe. The labs offer a (mostly) public space open to everyone to use the latest digital technology (3D printers, CNC router, vinyl cutter, electronic labs, laser cutter, etc.). The labs give access to education in workshops, for individual and cooperative production, learning and networking. The networks created by fab labs are important drivers for university spin-offs and innovative SMEs.

More personalised learning informed by better data

In traditional lecture hall settings, it is difficult for a teacher to follow the progress of each and every student. It is impossible to adapt the pace of the course to match individual needs. Online provision allows the capturing of a range of data that can be used to monitor student progress. Advances in big data and learning analytics can help our higher education system customise teaching tools and develop more personalised learning pathways based on student data. However, the collection, analysis and use of learning data must only occur with the explicit consent of the student.

Data can capture how students engage in the course, interact with other students and retain concepts over time. It can provide information on the learning process as opposed to just learning outcomes. Teachers can experiment with different approaches and examine the immediate impact. Data can also be used to identify at-risk students at an early stage, assisting in efforts to increase retention rates. While still a relatively young field, exciting developments in learning analytics are underway. Several universities in the United States have programmed automatic dashboards, giving teachers the possibility to monitor their student's performance live. The massive availability and usability of data has also great potential for empirical research on learning and teaching. Stanford's Lytics Lab is one example that applies empirical research to better understand the performance of students. Learning process and feedback tools are yet another development that allows students to monitor their own performance and adapt it accordingly. The Open-Learning Initiative of the Carnegie Mellon University and the Check-My-Activity-Tool of the University of Maryland are two examples of these promising developments⁹.

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See CHE working paper 174
“Die digitale Revolution?
Chancen und Risiken der
Digitalisierung der akademischen Lehre”, Gütersloh,
October 2013



Challenges and how they can be addressed

3. Challenges and how they can be addressed

Changing culture through strategic leadership

Europe has been slow to embrace the potential for higher education offered by new modes of learning and teaching. While there are pockets of innovative activity emerging, in general there remains a degree of conservatism and a lack of leadership and vision across Member States at both a national and institutional level. Too often, these new developments are viewed as small-scale experiments or optional additions to the normal business of higher education institutions. There is still a widely-held view that off-campus provision is inferior to conventional programmes. Teachers and students alike are more comfortable and familiar with the lecture hall and more traditional teaching styles. As summarised by the recent NMC Horizon report: “A pervasive aversion to change limits the diffusion of new ideas, and too often discourages experimentation¹⁰.”

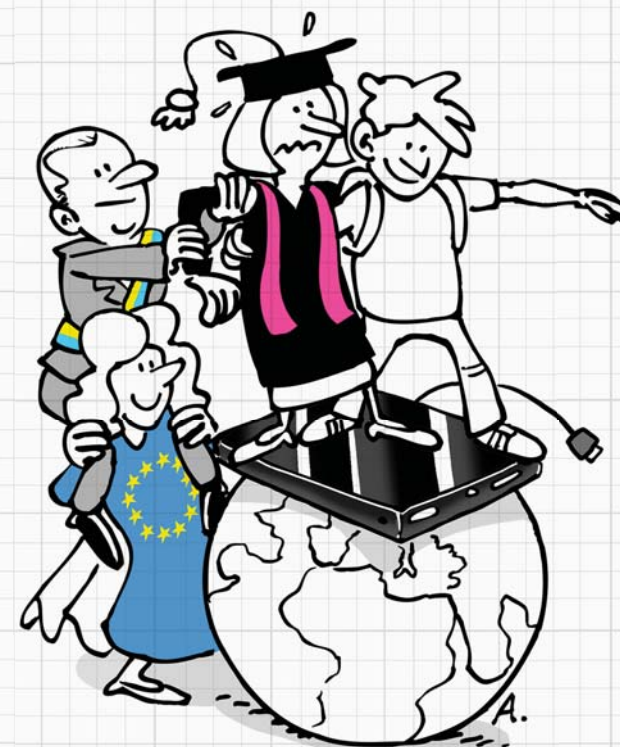
While the schools sector in different Member States has undertaken various actions and initiatives on online learning, national authorities have, to date, been hesitant in involving themselves in these issues in the higher education sector. While accepting that pedagogy and curriculum design are matters for institutions, governments are responsible for defining the policy, legal and funding frameworks which have a direct impact on the motivation and ability of institutions to integrate new modes across higher education provision. Yet there is a clear lack of comprehensive national strategies in the vast majority of EU countries. This is simply not good enough for it belies an inertia and lack of ambition which future generations will not thank any of us for. Policy-makers need to shift into a higher gear.

The development of a national vision and framework on how new modes of learning and teaching will be used to support high level policy goals for the higher education system is an essential first step in delivering the change that is required across Europe. This process will provide an opportunity for dialogue with all stakeholders and will raise the profile of, and add impetus to, new developments. Strategies should provide clarity on the diversity of provision expected across the system (on-campus, distance, online, short-type provision, etc.), supports for enhancing conventional provision through the use of ICT, and also address issues associated with newer forms of provision (e.g. MOOCs) and new types of non-higher education providers. National strategies should identify necessary national support structures that are needed to facilitate the take-up of new modes and approaches such as funding, infrastructures and training, and should outline policies on essential aspects such as quality assurance, credit and recognition, open access and copyright. Authorities should not seek to be overly prescriptive, or to try to “pick winners”, but instead the aim should be to develop conditions that encourage and embrace innovation, and generate real momentum. Europe has the chance to become a centre of gravity in higher education innovation using these new tools and technologies. More importantly, Europe needs to establish its credentials as an innovator in this sector.



RECOMMENDATION 1

The European Commission should support Member States in developing and implementing comprehensive national frameworks for diversifying provision and integrating new modes of learning and teaching across the higher education system. It should promote mutual learning on key aspects including skills development, infrastructures, legal frameworks, quality assurance, and funding, in particular by exploiting the potential of the Erasmus+ programme.



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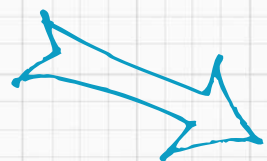
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National frameworks will provide a blueprint for institutional action. Similar to the national level, there is currently little evidence of European higher education institutions adopting an institution-wide, strategic approach to integrating new modes of learning and teaching into their educational programmes. In general, initiatives tend to be developed in an ad-hoc manner and by individual staff who have an interest themselves in using new technologies and pedagogies. In many cases, staff are not aware of the opportunities available. While a recent EUA survey of institutions reports that half of responding institutions have a strategy for e-learning, only one quarter are using e-learning extensively across the institution. The same survey reports that only 12% of institutions are offering MOOCs. Even more interesting is the staff reaction to MOOCs with 42% reporting mixed feelings, 30% claiming to have limited knowledge or lack of interest in MOOCs and only 10% being positive towards MOOCs¹¹.

Once again, strategic vision and leadership is needed to address these perceptions and to more fully engage staff in the potential offered by new modes of learning and teaching. The integration of new technologies and pedagogies needs to be placed at the heart of institutions' teaching and learning strategies, and they should become an integral component of everyday institutional business. Institutional leaders need to consistently communicate the expectation that all staff - while recognising the scope for doing so will differ across disciplines - must become more active, skilled and experienced in using new, innovative pedagogical tools and provide the support they need to meet that expectation. Institutional strategies should set out a coherent framework for the development of new modes of delivery as part of an institution's offering, the embedding of innovative technologies and pedagogies in curricula, and the provision of appropriate training for academic staff and students.

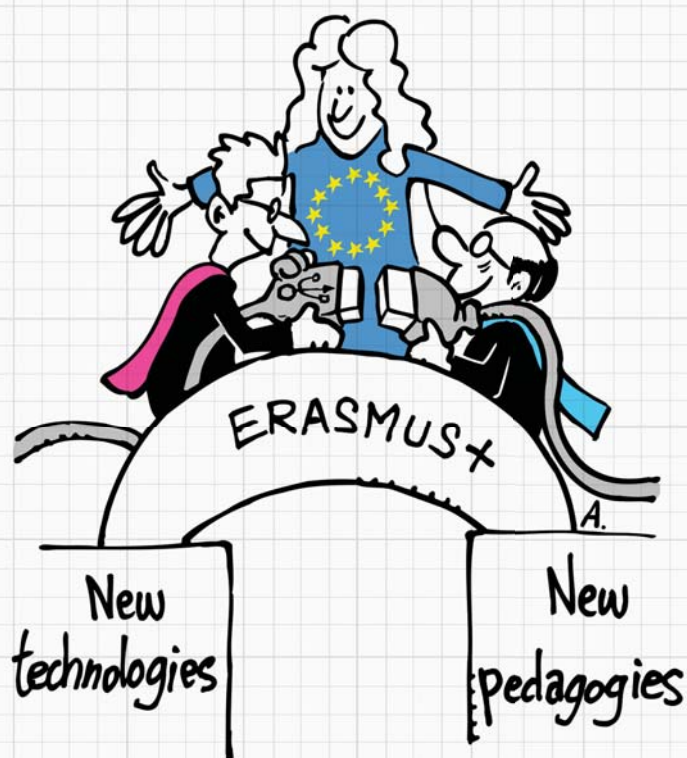
Creating dedicated organisational structures is important to ensure that innovations are mainstreamed across the institution. Creating hubs or centres for excellence in digital learning and appointing senior staff as “champions” can ensure the ongoing support, promotion and development of innovative approaches. Appointing specialist staff such as learning technologists, ICT experts and educational developers will provide institutions with up-to-date professional expertise which can support academic staff across the institution. These staff must be seen as key players in developing digital capacity across the institution, and should be involved in planning and designing of programmes. These types of centralised structures can also ensure that a common institutional approach is taken to the challenging aspects of open and online provision such as copyright, intellectual property and validation of learning.

Institutions should also be seeking opportunities to collaborate with external partners. As already noted, there are a range of companies now providing higher education services such as assessment and certification. These companies are developing innovative products which can complement an institution's offering and provide more efficient means of delivering these services, allowing academics to concentrate more on curriculum design and teaching.



RECOMMENDATION 2

The European Commission should prioritise support to higher education institutions under the Erasmus+ programme to enhance digital capacity and mainstream new modes of learning and teaching within the institution. Erasmus+ funding should also be made available to promote experimental partnering with specialist service providers.



There is considerable scope for cooperation across institutions and across borders in relation to designing digital learning strategies, infrastructural supports and frameworks for pedagogical training. It is encouraging that a number of platforms, portals and repositories have already been developed: FutureLearn in the UK, MiriadaX in Spain, Iversity in Germany, FUN in France and OpenupEd as an initiative of EADTU (European Association of Distance Teaching Universities). The Open Education Europa portal, launched by the European Commission last year, provides a pan-European framework. These developments are promising and provide good practice examples for others to follow. The European Academy of Teaching and Learning, which was proposed in our first report, could, when instituted, also play an important role in providing leadership and guidance on the integration of new modes of learning and teaching, and could serve as a forum for the collection and exchange of good practices across Europe.

►► FutureLearn was established by the Open University in September 2013 as a UK MOOC platform. In the months since its launch, it has expanded its number of partners to 40 and now includes institutions from countries around the world including South Korea, Australia and Norway.

►► OpenupEd was launched by the European Association for Distance Teaching Universities in April 2013 as a pan-European platform for MOOCs. It is currently offering a broad range of courses from 11 partner institutions in 12 languages.

►► In September 2013, Welsh universities signed an Open Education Declaration of Intent to embed the use of online resources by staff and students across the Welsh higher education system.

►► École Polytechnique Fédérale de Lausanne (EPFL) opened a Center for Digital Education in April 2013, which has become the hub for MOOC expertise in the institution. It is driving the development of MOOCs for EPFL and its partners, operating MOOC-based educational programs and carrying out research activities on the use of digital technologies in education and training.

►► The Open Education Europa portal, established by the European Commission in September 2013, provides a pan-European gateway to free-to-use open educational resources. The materials available on the portal have grown dramatically since its launch and includes learning resources, courses and MOOCs. This has also proved a useful tool in capturing the pace of developments. There are now nearly 600 MOOCs available on the portal, a huge increase from just under 100 a year ago.



RECOMMENDATION 3

The integration of digital technologies and pedagogies should form an integral element of higher education institutions' strategies for teaching and learning. Clear goals and objectives should be defined and necessary organisational support structures (such as the European Academy of Teaching and Learning) established to drive implementation.



Digital skills for learning and teaching

Ensuring all staff in higher education institutions have the skills and attributes necessary to successfully use these new technologies, and incorporate them into course delivery, will be essential to the successful mainstreaming of new modes of learning and teaching into conventional provision and the expansion of online learning opportunities. The wide ranging selection of tools, programmes, technologies and information sources can make it difficult for teachers to know where to start. New technologies and associated pedagogies require a very different skill-set from more conventional teaching, and this can place additional pressures on teaching staff. Academic staff are not all technology experts and in many cases, they have not received any form of pedagogical training at all. They need specific training, guidance and support if they are to deliver quality teaching. This is especially true as the integration of these new modes of teaching is resulting in a changing role for teachers, from knowledge transmitters and experts in a particular subject to mentors and facilitators of critical thinking. In our last report we called for certified pedagogical training for all teaching staff and the introduction of mandatory continuous professional development. Digital skills need to be an essential element of this.

Institutions must also provide digital skills training for students, especially for first year students. Evidence shows that students are not being prepared adequately in schools for digital learning. A recent Commission survey showed that in all EU countries except one, over half of students do not use ICT for projects or classwork¹². This further confirms findings in the Commission's Communication on Opening Up Education last year. If students are not receiving these skills in school, they must in higher education. This goes further than enhancing the student learning experience; it is about acquiring skills that are essential in the labour market and, increasingly, simply for everyday life.

Institutions must also be conscious of the need to replicate the softer skills acquired during an on-campus learning experience in online offerings. Networking and interacting with peers is an important element of the learning experience, and online platforms for doing this, such as Google hangouts and Second Life, must become an integral support for online students.

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Teaching and Learning
International survey (TALI)
2013, European Com-
mission

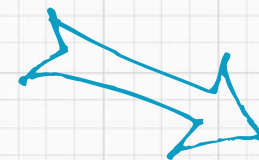
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UNESCO ICT Compe-
tency Framework for
Teachers <http://unesdoc.unesco.org/images/0021/002134/213475e.pdf>

► UNESCO, in partnership with Cisco, Intel, ISTE and Microsoft, has developed an ICT Competency Framework for Teachers detailing the competencies that teachers need to integrate ICT into their practice and professional development¹³. Although this is designed for secondary teachers, it has the potential to be tailored for higher education.



RECOMMENDATION 4

National authorities should facilitate the development of a national competency framework for digital skills. This should be integrated into national professional development frameworks for higher education teachers.



RECOMMENDATION 5

All staff teaching in higher education institutions should receive training in relevant digital technologies and pedagogies as part of initial training and continuous professional development.



Funding models

The current models of higher education funding and tuition fee regimes in many European countries do not promote the development of online-delivered programmes and, in some cases, act as a barrier. This manifests in a number of ways. Firstly, funding models in the majority of countries are predominantly linked to the numbers of “traditional” students on “traditional” courses. This means that an institution will not receive public funding in relation to a student taking an online course, giving it no financial incentive to increase its online offering. This has always been a disincentive for already established modes of distance and flexible learning, and even for part-time studies. The increased use of distance modes of formal education, both by traditional and distance/open universities, e.g. fully online Master programmes, will test these funding models further.

Secondly, tuition fee regimes in some countries prevent the application of fees in any circumstances. The inability to earn additional revenues from online courses can dampen institutions’ enthusiasm for investing in the development of more diverse delivery options.

While this may be a thorny issue for national authorities to tackle, it is essential if we want to deliver more flexible provision across the EU. The issues are complex given the transnational nature of online and open provision, and the national, or sometimes regional, nature of public funding. Furthermore, decisions on funding matters are not solely within the remit of Ministers for Education. However, the ability of monetary considerations to drive behaviour is well known. Performance funding models are being introduced across Europe and these provide an opportunity to incentivise a greater diversification of provision.



RECOMMENDATION 6

National funding frameworks should create incentives, especially in the context of new forms of performance-based funding, for higher education institutions to open up education, develop more flexible modes of delivery and diversify their student population.



Providing incentives within mainstream funding models may not be enough to generate the level of change that Europe needs. There is a widely held belief that online courses are a cheap form of provision. There is also a complete under-estimation of the effort and costs involved for institutions in developing their digital capacity and fully embedding new technologies and pedagogies across their operations – both within conventional provision and in newer forms of online offerings. This requires dedicated expert staffing resources, training and professional development for teaching staff, infrastructural investment and, most importantly, significant time and effort on the part of the academics delivering the courses. To put it into a simple equation: the use of technology, open and online learning is scalable; human resources and their knowledge, skills and competences are not.

Public authorities need to recognise this and take measures to incentivise activity. Dedicated targeted funding can provide an important means of kick-starting activity. Some countries and higher education institutions are already moving in this direction with the introduction of targeted funding initiatives to support technological developments, the design of online courses and pedagogical training. As was seen by the recent competitive fund for MOOC development launched in Germany, where even the relatively small sum of €250,000 Euros - to fund development of 10 projects - led to the submission of 250 well-designed proposals.

- ▶ eCampus is a five year programme, funded by the Norwegian Ministry of Education, focusing on making technology available for the Norwegian higher education sector to make their teaching and research better, more effective and more available across organisational and geographical barriers. One of the areas that eCampus focuses on is lecture capture. The goal is to be able to record 40% of all lectures and make them available online by the end of the programme period (2017).

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MOOCs: Expectations and Reality, Hollands & Tirthall, Columbia University, May 2014



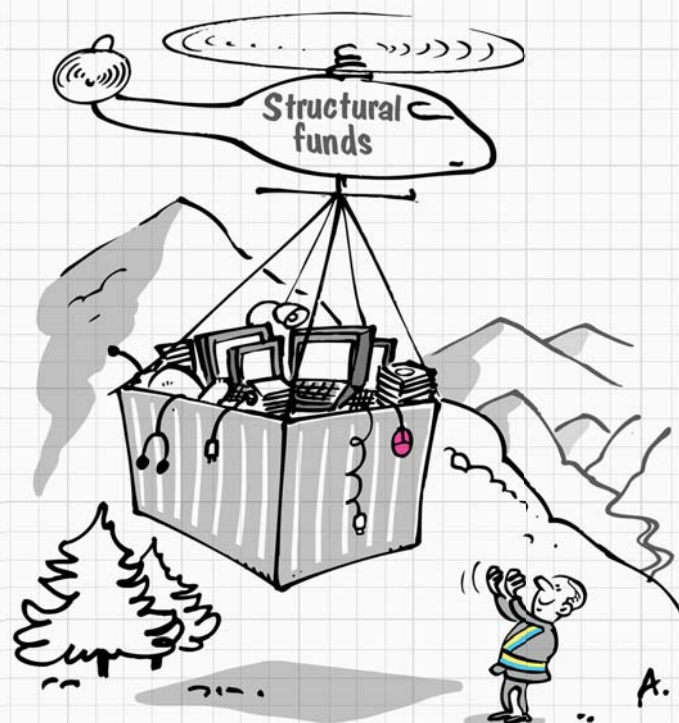
National authorities should introduce dedicated funding to support efforts to integrate new modes of learning and teaching across higher education provision. Funding should encourage collaborative responses to infrastructural needs, pedagogical training and programme delivery.





RECOMMENDATION 8

National and regional authorities should utilise opportunities under the European Structural and Investment Funds programme to support the development of necessary supporting infrastructures, technologies and repositories.



Quality assurance and accreditation

Robust processes for assuring the quality of higher education provision is a fundamental requirement for instilling trust in and recognition of qualifications. Significant efforts have been made under the Bologna Process to strengthen quality assurance procedures across the European Higher Education Area. As a result, national quality assurance regimes are coping well with ensuring the quality of on-campus, distance education and even transnational provisions, leading to smooth accreditation and recognition of study programmes. These processes can therefore provide the appropriate mechanism for ensuring the quality of new ICT-based approaches within conventional provision (blended learning).

However, newer developments like MOOCs have yet to really feature in discussions on quality assurance. Higher education institutions are responsible for the quality of the qualifications they award and institutions will ultimately be held accountable to students, graduates, businesses and governments for the learning of students, regardless of the modes of delivery. Higher education systems need to prepare themselves for the foreseeable transition of entire education systems to more providers, be they public, private, semi-public, diversified offerings, blurred boundaries between VET, higher education, further and continuous learning. Whereas courses from private providers will be "recognised"/"quality assured" by market forces and reputation, higher education institutions must be able to assure the quality of all aspects of their provision including outsourced and unbundled elements. While we do not see the need for separate procedures, authorities must consider these developments and ensure that they are appropriately captured within established systems. Quality assurance systems will also be important for monitoring retention levels across an institution's portfolio of provision, and in guiding the level and type of support needed for different types of learner.

It is equally important that quality assurance procedures do not act as a barrier to the emergence of creative and innovative pedagogical developments and course design. In particular, requirements for individual programme accreditation sometimes create rigidities that do not encourage the timely adaptation of courses, including the introduction of novel approaches and pedagogies. In this regard it is promising to note from the European Commission's recent progress report on quality assurance that there is an on-going trend in external quality assurance, from the traditional focus on accreditation of individual programmes to the evaluation of the entire institution. This will allow for a much greater flexibility in course design and delivery, and the integration of emerging technologies and new pedagogies within normal provision (e.g. OER, classroom technologies, etc.). These should become fully integrated in normal quality assurance and accreditation procedures, taking due account of the European Standards and Guidelines for Quality Assurance.

To go a step further, digitalised learning and teaching modes offer the opportunity to bridge procedures of quality assurance used in research and in education. In the area of research, peer review of content (and conduct) are institutionalised procedures. Teaching and learning in digitalised formats allow ex-ante peer reviews of course material and these should become an integral part of quality assurance of online provision. This can further add to the quality of learning and teaching across our higher education systems.



RECOMMENDATION 9

Public authorities should develop guidelines for ensuring quality in open and online learning, and to promote excellence in the use of ICT in higher education provision.



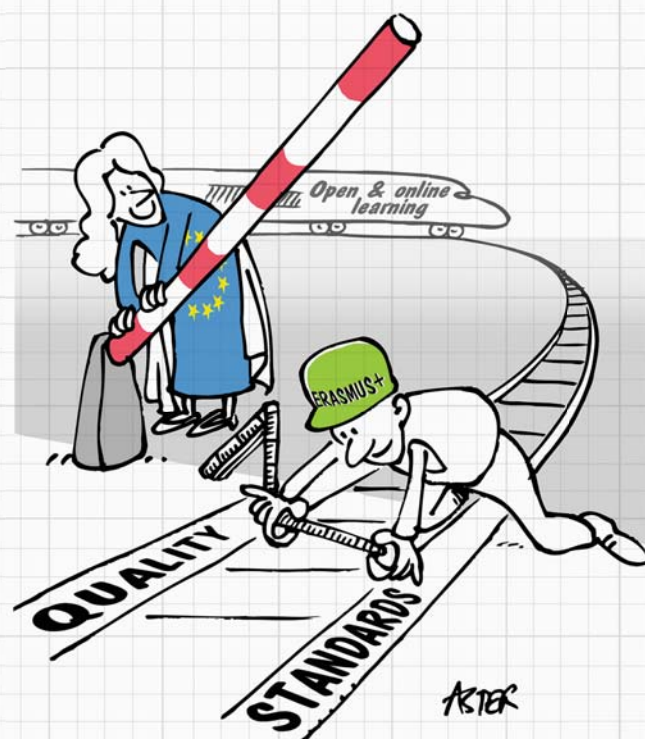
► EADTU, in collaboration with ENQA and EFQUEL, is undertaking a project in “supporting quality in e-learning” which is seeking to promote excellence in the use of ICT in higher education. The project will examine various QA approaches for open and flexible learning.

► The University of London (International Programmes) has developed a formal quality assurance process for future MOOC developments. The approval element of the quality assurance process will be considered by the Learning, Teaching and Assessment Sub-Committee.



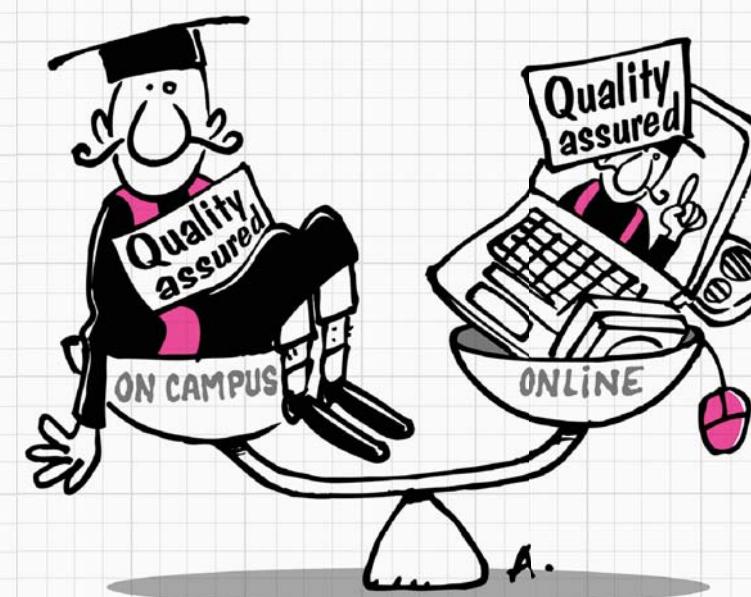
RECOMMENDATION 10

The European Commission should support cross-border initiatives to develop quality standards for open and online learning under the Erasmus+ programme.



RECOMMENDATION 11

Higher education institutions should ensure that quality assurance arrangements apply to all forms of credit-awarding provision in the institution. Institutions should use the quality assurance system to monitor retention rates and inform the development of appropriate supports.



Certification, credit and recognition

There are established mechanisms for certifying, crediting and recognising traditional higher education qualifications – not just across Europe but worldwide. Tools developed within the Bologna Process such as the three-cycle degree structure, qualifications frameworks and ECTS have given an even greater momentum to the harmonisation and recognition of qualifications across the EHEA. However, despite the massive growth in new types of online courses and online learners, there has been little attention given to developing processes to formally recognise the skills and knowledge acquired from these new forms of learning. This is essential to give these forms of learning credibility, instil confidence in the quality of the learning outcomes, and transform them from the current informal “hobby-type” provision into meaningful qualifications. For learners, it would give an added incentive for undertaking this kind of learning; for employers it would provide clarity and visibility on prospective employees’ skills and abilities; and for higher education institutions it would provide a streamlined mechanism for recognising this form of learning for further studies.

This is an area where Europe can become a leader. European Credit Transfer and Accumulation System (ECTS) already provides an established European framework for the recognition of learning outcomes in higher education. It provides a transparent and easily understood mechanism for comparing student attainment and performance in higher education institutions across Europe, and can easily be applied to these newer forms of provision. While originally initiated to facilitate physical student mobility, ECTS has the potential to provide an underpinning framework for this type of learning mobility. It would allow learners to undertake a range of short courses and re-bundle these into a portfolio of recognised learning experiences or a more formal qualification.

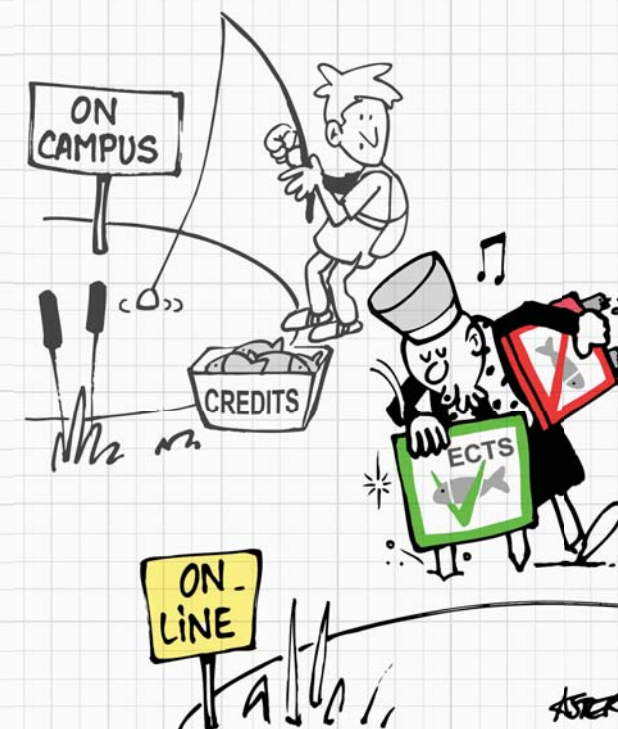
In order to award credit, higher education providers must have robust arrangements in place to assess learning outcomes. This is inherently difficult in an online environment as it requires trustworthy mechanisms for the verification of online participants’ identities. New forms of authentication such as webcam identification, typing pattern recognition and online proctored exams with simultaneous online supervision are helping to develop credibility. A range of specialist companies are experimenting in this area and a new market for assessment services is developing.

There are opportunities for experimentation in this area under the Erasmus+ programme, which has specifically earmarked actions in the area of validation and recognition of skills. The Group also welcomes the Commission’s initiative to develop a European Area for Skills and Qualifications, which will give momentum to efforts to overcome these recognition challenges.



RECOMMENDATION 12

The European Commission and national authorities should encourage and incentivise higher education providers to award and recognise credits under the European Credit Transfer and Accumulation System for all forms of online courses. The current revision of the ECTS Guide should incorporate these principles.



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- ▶ Iversity, a German-based MOOC platform, held its first MOOC exams in January 2014 leading to the award of ECTS credits by the partner HEI.

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- ▶ OpenupEd offers ECTS credit opportunities for more than half of its MOOCs, at the hosting university (for a fee).

Abstract

- ▶ There are a number of companies providing open badges, such as Mozilla. Open badges are digital indicators of skills learned inside or outside the classroom, and can be issued by traditional educational institutions, professional bodies, community learning organisations, after-school programmes, or online initiatives (including MOOCs).

[illegible]

- ▶ Coursera is partnering with LinkedIn in the development of badges for students who complete MOOC courses. It is intended that these badges will become immediately visible via LinkedIn. Coursera is also offering a fee-based signature track, based on biometric identification, which allows the awarding of certificates to MOOC participants.

[illegible]

- ▶ Coursera has started to use online proctoring. Students enrolled on five MOOCs sit online exams with live supervision. These MOOCs have been approved for credit recommendation by the American Council on Education (Ace).

Abstract

Content licensing

Since the beginning of the millennium, the use of ICT and the internet has penetrated European universities. Almost all European universities use central electronic learning environments, giving access to course documents, multimedia material, simulations, assessment tools, discussion fora and learning communities. There are still questions, multiple barriers and legal uncertainties concerning open access policies and open educational resources, in relation to their use, modification and re-use. "The arrival and rapid growth of the internet ... took the copyright system unawares. Up until the 1990s, the copyright system was designed for a world which communicated in certain predictable ways – on paper, on television, and on established radio frequencies. Digital media created an unprecedented problem¹⁵".

A similar analysis was given by the European Commission in its communication Opening up Education: “The absence of clear information on authorised uses of specific online learning material deters users. Similarly, it is difficult for authors of new content to define the usage rights and/or limitations they wish to associate with a certain resource. Promoting open licenses among both communities of teachers and policy-makers, as well as developing technical tools to integrate metadata in each resource available on the web, will increase transparency¹⁶”. As a consequence the European Commission ensures that all educational materials supported by the Erasmus+ programme are available to the public under open licences and promotes similar practices under EU programmes such as Horizon 2020.

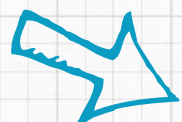
The Group fully supports the Commission's efforts in this regard. All public funders of education and research should follow this good practice to further promote a culture of openness in the worlds of research and education. This is vital to ensuring that high quality materials are accessible to all, and can be adapted and customised to learners' needs and specific circumstances. It also allows the translation of these materials into other languages, enhancing the educational capacity in emerging economies and the preservation of minority languages.

There are different ways in which this can be approached. For instance, Creative Commons licenses provide a simple, standardised way to arrange copyright by giving public permission to share and use educational material on conditions that can be tailored to specific needs. There are a number of easy-to-use tool kits¹⁷ that support users and creators of educational content. The different approaches being applied to copyright and licensing by different OER and MOOC platforms call for a mainstreamed European approach.

Copyright and Open Educational Resources, Commonwealth of Learning, Vancouver 2010

16
Communication from the
Commission Opening up
Education: Innovative
teaching and learning for
all through new technolo-
gies and open educational
resources, COM (2013)
654 final

<http://www.oerafrica.org/copyright-and-licensing-toolkit>; <http://open.conted.ox.ac.uk/information/licensing/where-can-i-find-out-more-about-oer-copyright-and-licensing>



RECOMMENDATION 13

Governments and higher education institutions should work towards full open access of educational resources.

In public tenders open licences should be a mandatory condition, so that content can be altered, reproduced and used elsewhere.

In publicly (co-)funded educational resources, the drive should be to make materials as widely available as possible.



Data protection and privacy issues

Under EU law, personal data can only be gathered legally under strict conditions, for a legitimate purpose. Furthermore, persons or organisations which collect and manage personal information must protect it from misuse and must respect certain rights of the data owners which are guaranteed by EU law.

Every day within the EU, businesses, public authorities and individuals transfer vast amounts of personal data across borders. Conflicting data protection rules in different countries can disrupt international exchanges. Individuals might also be unwilling to transfer personal data abroad if they were uncertain about the level of protection in other countries.

As a result, common EU rules have been established to ensure that personal data enjoys a high standard of protection everywhere in the EU. EU citizens have the right to complain and obtain redress if data is misused anywhere within the EU.

Since the internet and especially educational platforms work globally, the EU's Data Protection Directive also foresees specific rules for the transfer of personal data outside the EU to ensure the best possible protection of EU citizens' data when it is exported abroad.

While respecting these legal safeguards for data protection and privacy, the advances in big data and data analytics are also creating opportunities for institutions to better understand the needs of students and develop more personalised learning pathways. These developing capabilities have the potential to transform the learning experience and enhance completion rates.

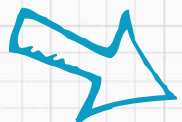
We are conscious about different perceptions, cultures and legal traditions concerning data protection and privacy issues. The way Member States and higher education institutions use data for learning analytics will vary across the European Union and globally. We encourage the European Union and Member States to ensure that legal frameworks allow higher education institutions to make best use of these new possibilities for improving the quality of their offerings in full consent with their students¹⁸. Ensuring that data is only used for educational purposes should be fundamental to these frameworks.

18

The Ecole Polytechnique Federal Lausanne, for example, offers MOOCs via the Coursera platform. In order to protect student identities, each student is allocated an ID number and this is used in all communications with Coursera. Student names are never released, unless they choose to do so themselves.

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RECOMMENDATION 14

Member States should ensure that legal frameworks allow higher education institutions to collect and analyse learning data. The full and informed consent of students must be a requirement and the data should only be used for educational purposes.



RECOMMENDATION 15

Online platforms should inform users about their privacy and data protection policy in a clear and understandable way. Individuals should always have the choice to anonymise their data.



Policy recommendations overview



4. Policy recommendations overview

Recommendation 1



The European Commission should support Member States in developing and implementing comprehensive national frameworks for diversifying provision and integrating new modes of learning and teaching across the higher education system. It should promote mutual learning on key aspects including skills development, infrastructures, legal frameworks, quality assurance, and funding, in particular by exploiting the potential of the Erasmus+ programme.

Recommendation 2



The European Commission should prioritise support to higher education institutions under the Erasmus+ programme, to enhance digital capacity and mainstream new modes of learning and teaching within the institution. Erasmus+ funding should also be made available to promote experimental partnering with specialist service providers.

Recommendation 3



The integration of digital technologies and pedagogies should form an integral element of higher education institutions' strategies for teaching and learning. Clear goals and objectives should be defined and necessary organisational support structures (such as the European Academy of Teaching and Learning) established to drive implementation.

Recommendation 4



National authorities should facilitate the development of a national competency framework for digital skills. This should be integrated into national professional development frameworks for higher education teachers.

Recommendation 5



All staff teaching in higher education institutions should receive training in relevant digital technologies and pedagogies as part of initial training and continuous professional development.

Recommendation 6



National funding frameworks should create incentives, especially in the context of new forms of performance-based funding, for higher education institutions to open up education, develop more flexible modes of delivery and diversify their student population.

Recommendation 7



National authorities should introduce dedicated funding to support efforts to integrate new modes of learning and teaching across higher education provision. Funding should encourage collaborative responses to infrastructural needs, pedagogical training and programme delivery.

Recommendation 8



National and regional authorities should utilise opportunities under the European Structural and Investment Funds programme to support the development of necessary supporting infrastructures, technologies and repositories.

Recommendation 9



Public authorities should develop guidelines for ensuring quality in open and online learning, and to promote excellence in the use of ICT in higher education provision.

Recommendation 10



The European Commission should support cross-border initiatives to develop quality standards for open and online learning under the Erasmus+ programme.

Recommendation 11



Higher education institutions should ensure that quality assurance arrangements apply to all forms of credit-awarding provision in the institution. Institutions should use the quality assurance system to monitor retention rates and inform the development of appropriate supports.

Recommendation 12



The European Commission and national authorities should encourage and incentivise higher education providers to award and recognise credits under the European Credit Transfer and Accumulation System for all forms of online courses. The current revision of the ECTS Guide should incorporate these principles.

Recommendation 13



Governments and higher education institutions should work towards full open access of educational resources.

In public tenders open licences should be a mandatory condition, so that content can be altered, reproduced and used elsewhere.

In publicly (co-)funded educational resources, the drive should be to make materials as widely available as possible.

Recommendation 14



Member States should ensure that legal frameworks allow higher education institutions to collect and analyse learning data. The full and informed consent of students must be a requirement and the data should only be used for educational purposes.

Recommendation 15



Online platforms should inform users about their privacy and data protection policy in a clear and understandable way. Individuals should always have the choice to anonymise their data.

Selective glossary of terminology

5. Selective glossary of terminology

Adaptive learning - an educational process that adapts teaching materials and methods to each student's individual needs. Several software solutions use learning analytics to provide an adapted learning path to users.

Badges - flexible mechanism for recognising achievements as an informal alternative to accreditation.

Blended learning - a teaching approach that combines online and in-person learning, allowing a higher degree of personalisation and learner autonomy.

E-learning - learning conducted via electronic media, typically on the internet.

Flipped classroom - a teaching model in which students access directed teaching at home, for example by watching video lectures, and then using class time to apply new knowledge in a collaborative and interactive space.

Learning analytics - collection, analysis and reporting of large datasets relating to learners and their contexts.

MOOC - Massive Open Online Course. An online course that is freely accessible to anyone and often includes open course materials and opportunities for interaction and collaboration between students.

SPOC - Small Private Online Course. Similar to a MOOC, but used as a blending learning, on-campus experience. It was first coined by Professor Armando Fox.

DOCC - Distributed Open Collaborative Courses. A course format first piloted in September 2013 at 15 colleges in the USA, where professors at each institution teach their own version of the course based on the same core materials. Each professor can develop additional materials for their students, and students can collaborate across the network.

Open - A piece of data or content is open if anyone is free to use, reuse, and redistribute it — subject only, at most, to the requirement to attribute and/or share-alike.

Open Educational Resources (OER) - any online material that is freely accessible and openly licensed for anyone to reuse and repurpose for teaching, learning, and researching.

Open source software (OSS) - software with a free source code that is often developed through peer-production. Anyone can use or modify the code for their own purposes.

Open access - a publishing model whereby authors make their content freely available, albeit often with partial copyright restrictions or low copyright barriers.

Acknowledgements and ways of working

6. Acknowledgements and ways of working

The High Level Group, as in its first year, worked on the basis of the latest research on the subject of new modes of learning and teaching.

We thank **Yves Punie** from the Joint Research Centre and its Institute for Prospective Technological Studies for giving us a concise overview of recent developments and their projections of possible future developments in the field.

In order to get a global overview of activities in the area of new modes of learning and teaching, we are grateful to **Zeynep Varoglu** from the ICT in Education, Knowledge Societies Division at UNESCO, who informed us about UNESCO's work in this area and the global trends they have identified.

We also heard from governments about their national strategies and approaches concerning new modes of learning and teaching. We would like to thank **Mišela Mavric**, Director General for higher education in the Slovenian Ministry of Education and **Berit Johnson**, Deputy Director General in the Norwegian Ministry of Education, for sharing with us their respective experiences of designing and implementing their national strategies.

Since there are already many relevant activities within higher education institutions, we invited several universities known to be active in the field to present their approaches, strategies and future plans in the application of new forms of learning and teaching. We are grateful to **Siân Bayne** from the University of Edinburgh; **Pierre Dillenbourg** from the Center for Digital Education at the Swiss Federal Institute of Technology in Lausanne; **Helmut Hoyer**, Rector of the Fernuniversität Hagen and **Gesche Joost** from the University of the Arts in Berlin for giving us valuable insights into the different ways in which institutions can integrate new forms of learning and teaching into their daily practice.

We thank **Cable Green**, Director of Global Learning (Creative Commons), for his valuable input into our work, giving us first-hand information on the issues of copyright and licensing of educational resources.

After we produced a first draft of the report, we organised a “reality check” discussion with stakeholders in higher education to listen to their reactions, their ideas for improvements and their comments on the feasibility of our draft recommendations.

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Members of the High Level Group on the modernisation of higher education



Mary McAleese (Chair)

Mary McAleese was President of Ireland from 1997–2011. She graduated in law from Queen's University, Belfast, in 1973 and was called to the Northern Ireland Bar in 1974. In 1975, she was appointed Reid Professor of criminal law, criminology and penology at Trinity College Dublin and in 1987, she returned to Queen's to become director of the institute of professional legal studies. In 1994, she became the first female pro-vice chancellor of Queen's University.



Agneta Bladh

Dr Bladh chairs the governing board of the Jönköping School of Health Sciences and Stockholm University library board. She is also a member of Uppsala University governing board, the board of Oslo and Akershus College of Applied Science (Norway) and a board preparing the merger between two universities in Norway. Dr Bladh is a member of the Danish Accreditation Council and the advisory board of the Swedish Higher Education Authority. Dr Bladh was rector of the University of Kalmar, Sweden, from February 2004 to December 2009. From 1998 to 2004, she served as state secretary at the Swedish Ministry of Education and Science, responsible for higher education and research, and from 1995 to 1998, was director general at the National Agency for Higher Education. Agneta Bladh holds a PhD in political science from Stockholm University (1988).



Vincent Berger

Since 2013, Vincent Berger has served as special advisor for higher education to President François Hollande. Previously, he he was president of the University Paris Diderot. From 1990 to 2001, worked at the Laboratoire Central de Recherches for aerospace multinational Thales (ex Thomson CSF). In 2001 he joined the University Paris Diderot - Paris 7 as a professor, and until 2006 was head of the quantum phenomena and materials laboratory. He received the Fabry-De Gramont award and the MIT Young Innovator award in 2002. He has published around 150 papers in international journals, and holds 16 patents. In 2012 he was nominated general rapporteur of the national assizes on higher education and research in France by Education Minister Genevieve Fioraso.



Christian Bode

Christian Bode was secretary general of the German Academic Exchange Service for 20 years (1990–2010). He was educated in law and received his PhD from the University of Bonn in 1971. Between 1972 and 1982, he held different senior positions in the federal Ministry of Education and Science. From 1982 to 1990 he was secretary general of the German Rectors' Conference. He was one of the founders of the Academic Cooperation Association in Brussels and served as its vice president several times.

Christian Bode has published widely on all aspects of higher education policy, with a focus on international cooperation between universities. He is a member of several administrative boards of universities in Germany and abroad (Munich, Berlin, Muscat, Shanghai) and professional societies.



Jan Muehlfeit

Jan Muehlfeit is chairman of Microsoft Corporation in Europe. Over nearly 20 years with Microsoft, he has served in various positions, including in its Czech/Slovak subsidiary from 1993 to 2000, and was responsible for central and eastern Europe in 2000–05. He served as vice president of Microsoft's public sector team in 2005 and vice president of Corporate & Government Strategy in 2006, for Europe, the Middle East and Africa. Mr Muehlfeit is a vice-chair of the Academy of Business in Society, a board member of Junior Achievement, co-chairman of the European e-Skills Association and a member of the board of the student organisation AIESEC (Association Internationale des Etudiants en Sciences Economiques et Commerciales) and the advisory body of Ovum, a company that specialises in analysis and consulting on technology. He has served on various advisory boards for several European governments on information technology, national competitiveness and education. He also represents Microsoft on the Transatlantic Business Dialogue and is an advisor on different projects for the World Economic Forum, the Organisation for Economic Cooperation and Development (OECD) and European Policy Centre. He is also a board member of the Czech National Museum and member of the Leaders' Council of the International Business Leaders Forum. He graduated from the Czech Technical University and later completed executive development programs at Wharton, the London School of Economics and Harvard.



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