

How digitalization will change the face of the higher education landscape in Europe

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Ladies and gentlemen, dear colleagues,

I am very happy to be here today and I am grateful to speak the keynote for the opening of this conference. When I was first asked, I thought it a real challenge to answer the question: “How will digitalization change the face of the Higher Education Landscape in Europe”? I still think it is a challenge, but since that time, I have been reflecting upon it and I would like to share the results of my reflections, which are, in fact, a simple introduction to what will be at the heart of our discussions and our work today.

When talking about the Higher Education landscape in Europe, the main subject remains, of course, the Bologna Process. The story begins in 1998 with four countries, Italy, France, Germany and the United Kingdom signing the Sorbonne declaration, and goes on the following year with 29 education ministers agreeing to pursue the convergence of their systems in order to facilitate institutional student exchanges and the mutual recognition of degrees and periods of study in Europe.

Today, the European Higher Education Area (EHEA) involves 48 states. What lies exactly in the Bologna process? Mainly, its three key commitments concern the implementation of the three-cycle degree structure (Bachelor, Master, and Doctorate), the recognition of qualifications and the quality assurance.

Without reminding the whole history, I would like to go back to 2015 and the Yerevan communiqué. In addition to the implementation of these commitments, the priorities of the Bologna Process thus set out are learning and teaching, social inclusion and employability. Ministers also pledged to continue to foster mobility and internationalization, and called for attention to the values of the EHEA.

In May 2018, the Education Ministers met in Paris and adopted a 'Communiqué ' on their priorities for the coming years. The Paris Communiqué outlines the joint vision of the 48 ministers for a more ambitious European Higher Education Area beyond 2020, calling for:

- an inclusive and innovative approach to learning and teaching;
- integrated transnational cooperation in higher education, research and innovation;
- securing a sustainable future for our planet through higher education.

The Communiqué calls for stronger, better support for under-represented and vulnerable groups to access to and excel in higher education.

It is of course fully consistent with the aims of the European Commission which works with the EU countries to strengthen the 'key competences' needed by all for personal fulfillment and development, employability, social inclusion and active citizenship.

Furthermore, life-long learning is a must that needs ever more digital competences. In 2006 the European Parliament and the Council adopted the Recommendation on Key Competences for learning. It provided a common European reference framework on key competences for policymakers, education and training providers, the social partners and learners themselves. In June 2016, the Commission launched the Review of the 2006 Recommendation on Key Competences for Life-long Learning with the aim to update it and further support key competences development across Europe. The thus given and revised definition of digital competence is both useful and interesting for today's works and reflections.

2006 Definition: Digital competence involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet.

2016 Definition: Digital competence involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), and problem solving.

The reorientation of the definition is trend-setting with regard to the focal points: life-long learning, participation in society and creating digital content. And maybe, today's conclusions will give a glimpse at what will be 2026 definition, although I'm rather convinced that we aren't able to imagine it yet.

What has to underpin today's discussions are the objectives set for 2025 by the Commissioner for Education, Culture, Youth and Sport Tibor Navracsic :

- "a Europe in which learning, studying and doing research will not be hampered by borders"
- A more inclusive higher education system

- Recognition procedures that ensure mobility
- Increase the relevance of higher education for “a labor market in permanent transformation”

And we have to find ways to unlock the full potential of the EHEA and reach the following objectives for 2018-2020 as set in the Paris communiqué

- A three cycle system compatible with the overarching framework of qualifications of the EHEA and first and second cycle degrees scaled by ECTS.
- Compliance with the Lisbon convention of the qualifications recognition
- Quality assurance in compliance with the standards and guidelines for Quality assurance in the EHEA European Higher education area.

And while aiming at these goals, one has to keep in mind the complementary objectives of the other summits related on the one hand to education (as The first European Education Summit that took place in Brussels on January 25. 2018), because before coming to higher education, young people have to be educated first, and related on the other hand, to the labor market and the needed skills (as a follow-up to the Social Summit in Gothenburg 2017), because that’s what they will have to join in fine.

Of course, these topics are not independent but wholly intertwined and interconnected.

Digitalization is of course a wonderful and powerful tool to help achieving these goals. We only have now to determine how digitalization can help to achieve the objectives of the Bologna Process

When speaking about digitalization, one of the first things we think of today are MOOCs. Launched in 2011 at the Stanford University, the MOOCs, Massive Online Open Courses, “gave the impression that they would become the most important revolution in the university history since its creation in 1810 in Berlin”, according to Antoine Compagnon.

The publication of the first MOOC was perceived in the USA as an opportunity to tackle the crisis of Higher Education, due to rising teaching costs and to stagnant incomes of the middle class. Platforms were quickly launched, such as Udacity in the USA in 2011 and in Europe, Coursera in 2012 and EdX in 2013. Some MOOCs are free, some aren’t. All certifications are paying ones, but the fees remain rather low.

On the one hand, MOOCs can respond to a democratic ideal by making possible education, higher education and life-long education for anyone, at any time and everywhere, thus meeting with some of the Bologna process commitments.

On the other hand, learning thanks to a MOOC requires a computer, high-speed internet, and good learning methods. One can thus consider MOOCs as a way to make significant profits thanks to an intensified competition among students and universities, and thus MOOCs could also strengthen

worldwide educational inequalities. Indeed, a study led by the University of Pennsylvania in 2013 shows that 80% of the subscribers to its online teaching offer were already graduated students.

A few disappointments later, opinions had evolved: the revolution would be slower and probably not as inclusive as first imagined.

The FUN platform (France Université Numérique) was launched in France in 2014. Its operating principle is to offer free training to users. FUN's economic model is mainly based on the financing of the state as well as on the contributions of its members and the additional services it offers (certification, exam monitoring). Since then, numerous French universities have created MOOCs available on this platform.

But in Europe, the Polytechnic School in Lausanne (EPFL) has become the main MOOC provider and has reached more than 2 Million subscribers to its online offer since 2012. The EPFL created about 100 online courses, published on Coursera and EdX, mainly targeting an external audience, 100 000 students succeeded in getting at least one course certificate.

A single MOOC corresponds to a course at a university. Currently, in Europe, there is no program or degree offered that is based on MOOCs.

But this may be one of the challenges of the digitalization in the EHEA and what will change its face.

Indeed, MOOCs can contribute to strengthen the mobility in several ways. When taken in a university of a foreign country, it gives an international experience with regard to the language or the way of teaching. Thus, it is a virtual mobility for students who cannot travel. Furthermore, it can be used as preparation for a real mobility, thus facilitating the success of the stay abroad. The preparation can consist in language training courses (Erasmus created the Online Language Support platform) and / or in specific subjects, in accordance with the chosen curriculum. Let's also cite here the example of "MOOCs for credits", the virtual exchange between the EPFL and its partner universities in France, Australia, the Netherlands and China.

With offers that are flexible in space and time, universities can reach those who want to study part-time, those who are less mobile, for example because they are single parents or care for someone; people who want to further qualify themselves in addition to their profession. So far, digital education has tended to benefit those from parental homes with an affinity for education. It should not remain that way.

Considering social inclusion, the emergence of fab labs, learning labs and virtual labs can contribute to a more outward-looking university, and to share competences and knowledge with society in general.

Moreover, digital contents could also be a mean for a better gender equality. It is well known, for example, that some scientific or technical subjects don't seem very tempting to girls. The reasons

are numerous, and lie in the societal messages as well as in a misrepresentation of them. Digital tools could be a mean to get girls acquainted with these subjects in a less intimidating manner and let them discover that such subjects can be very interesting, even fascinating, and that girls are able to succeed in them. It is well known too that careers in education of young children and childcare do not attract so many boys. It lies in prejudices on these jobs and on how men are supposed to contribute to society. Let's hope that digitalization will allow information on these careers beyond their traditional target groups, and thus enhance gender diversity in these professions too.

I spoke of enhancing the student mobility and its success: it is then a chosen mobility. But digital tools can also help the forced mobility, and help the integration of refugees in terms of language, level evaluation etc...

Another major issue of the Bologna process is the recognition of qualification and periods of study.

The Diploma Supplement (DS) is a document accompanying a higher education diploma, providing a standardized description of the nature, level, context, content and status of the studies completed by its holder. It is produced by the higher education institutions according to standards agreed by the European Commission, the Council of Europe and UNESCO. The Diploma Supplement is also part of the Europass framework transparency tools.

The map shows the stage of implementation of the Diploma Supplement, in the year 2016-2017. Four criteria are considered: if the diploma supplement is delivered automatically, to all students, free of charge, and in a widely spoken European language. As a conclusion, the implementation is pretty good in all the countries of the EHEA except Belarus, a fact which was an issue and a topic of discussion in the latest conference in Paris.

It is then obvious that the next step should be the digitalization of the Diploma Supplement. A digital development of the Diploma Supplement could help solve the current implementation issues across the EHEA. According to a recent study, the DS could be digitalized incrementally, building upon already existing and widely accepted solutions, so that EHEA countries could apply the digital DS solutions at their own pace. The digitalization could reduce recruitment process costs for jobs, could foster accreditation and validation of the documents in recognition and increase security standards for student data.

At this point, what could change? The colors on the map: we should look forward a monochrome map, in a fifth color for the implementation of digital DS. Digitalization of the diploma supplement would also contribute to the quality assurance within the EHEA, which is a key commitment of the Bologna Process.

As a matter of fact, Quality assurance should ensure a learning environment in which the content of programs, learning opportunities and facilities are fit for purpose. At the heart of all quality assurance activities are the twin purposes of accountability and enhancement. Taken together, these create trust in the higher education institution's performance.

A successfully implemented quality assurance system will provide information to assure the higher education institution and the public of the quality of the higher education institution's activities (accountability) as well as provide advice and recommendations on how it might improve what it is doing (enhancement).

Quality assurance and quality enhancement are thus inter-related and belong to a quality culture, which is a matter of all actors: from the students and academic staff to the institutional governance.

They support mutual trust, thus facilitating recognition and mobility within and across national borders; they provide information on quality assurance in the EHEA.

After such statements, and given that quality monitoring is a continuous process, I would think that it is completely obvious to all that digitalization will help increasing the quality assurance: it will contribute to the transparency of the processes, the internal as well as the external ones, it will help comparisons and sharing experiences.

The standards and guidelines for quality assurance also state that *“Higher education aims to fulfil multiple purposes; including preparing students for active citizenship, for their future careers (e.g. contributing to their employability), supporting their personal development, creating a broad advanced knowledge base and stimulating research and innovation”*.

Digitalization also has applications and consequences in all these fields and points of views. Whether it is for the best or for the worst remains to be determined, and that is what I propose to discuss now.

Digital technology is a lever for rethinking and renewing pedagogy, in line with the overall transformation of society and the economy. It challenges the verticality of knowledge transmission in favor of transversality and implies rethinking content in favor of the student's profile and needs, which constitute the entry point of the pedagogical approach.

One can individualize training pathways on a large scale, i.e. to enable all groups in training (initial and continuing training, foreigners, those prevented from attending, beneficiaries of specific schemes), to organize more easily entries, refresher courses or to mobilize additional resources and give the possibility of tailor-made courses.

It can also allow the composition of micro-curricula and certificates as part of national diplomas or of institutions. Increasing online offers also provides to student a chance to better match their studies with the demand of the labor market.

Some universities have chosen a “hybridization” form, which means that the registration in training can be carried out in various time periods and according to the path chosen by the learner thanks to the combination of the distant and the face-to-face learnings. The validation of the modules of training and skills can then be anticipated. It is also likely to be accelerated with a capitalization that

also allows for additional certifications, or even facilitating double graduation. It can also be extended under the life-long learning.

Among pedagogical innovations, flipped classrooms are made easier by online contents and can enhance the pedagogical monitoring quality. Grenoble Alpes University, among others, has introduced with success flipped classrooms in the first two semesters of Medicine studies to tackle the problem of over-crowded rooms. But flipped classrooms, where the lectures are replaced by video and online contents, and where students have the opportunity to ask questions about these contents and to take part to a course devoted to a specific part of the lecture that they do not master, have also given good results to tackle the problem of low attendance rate and high drop-out rate in other subjects, enabling thus the university to face the increasing number of applicants without increasing its budget in the same proportion. The success of flipped class rooms or of Small Private Online Classes (SPOCs) shows that online contents cannot be a systematic substitute for teachers. Online teaching should not deprive students of mediation, learning methods, educational support in any case

Online pedagogics have been challenged by the public opinion as well as in universities. Opponents claim that there is a risk of a two-speed higher education system with face to face teaching in a few well-off institutions and online teaching in universities meeting budgetary difficulties or having low student population.

It must also be clear that going digital has a financial cost, but is also a chance to improve the quality of our higher education systems.

The digital transformation of universities implies a new organization of learning and teaching, new facilities, other competences, to increase some expenditure and to reduce others. For these reasons, it is necessary to anticipate the budgetary management of universities at the digital area and on the long term, and to rethink a way towards budgetary sustainability. Such a reconsideration of universities economic models should allow more ambitious objectives in terms of digital transformation and pedagogic innovations.

To be efficient, the development of Digital Educational Innovations should correspond to a strategy of the institution, clearly described and supported by a plan, as in Australia, instead of the dilution of responsibilities observed in France, for example.

Since the digital transformation has not been taken into account early enough and as a whole by the budgetary policies of many universities in Europe, many different tools have been developed or implemented one after another, such as moodle, online enrolment platforms, shared agenda etc resulting in an abundance of online services and a useless redundancy in their functionalities.

The promise was that digitalization would make campus life easier. And the result is... that improvement in the matter is necessary.

As a matter of fact, rethinking the economic model of universities should allow the financing of a comprehensive, efficient and online platform for services and to students, staff, researchers and teachers.

Change in management requires significant support from both teaching teams and students. Therefore it is likely to question the teaching profession itself: The notions of coaching and mentoring tend to replace the notion of teaching. The need to produce fully open educational contents is sometimes experienced as a strong constraint, a form of imposed quality assurance. The individual dimension of the act of teaching is erased in favor of pedagogical teams.

Another important aspect is to take the student's needs into account. Students should be more strongly and systematically involved in the implementation of the digital transformation of institutions.

E-Learning is an integral part of teaching at the Freie Universität Berlin for example. The university supports the use of digital media and technologies with, among others, an e-learning support program, extensive training and consulting offers, and a central and modern technical infrastructure.

And the digital transformation must not forget the administration part. It must include measures for the management of the administrative staff.

So, Universities have to make job descriptions more flexible by integrating new professions and allowing versatility, to take into account the need for new skills in the management of employment and skills and to set up a training program enabling existing staff to acquire and update the skills required by the digital transformation. The European project IMOTION supported this kind of initiative.

But too often, the lack of an institution strategy results in a lack of financial resources for costly IT-projects, as well as a lack of manpower to build its digital future.

Furthermore, digital literacy has to be taught at every level and be part of the strategy. An often cited obstacle is that the current staff of the universities doesn't belong to the generation of digital natives and thus the digital university doesn't come naturally to them. But digital literacy doesn't only consist in being comfortable with digital tools and reaches far beyond that notion. Digital natives are not systematically digital literates, and this is also a challenge for a digital university.

Taking into account all the financial resources and measures that should be taken, a fundamental question remains how to organize the distribution on the meta-level, in other words not only within the university, but within a state or the European Union, for example. Indeed, the French approach of "Call for projects" has surely been a success to enhance experimentations in France, but it led to

an unequal repartition of financial resources, and failed to create a global digital transformation. This incentive policy has probably reached its own limits, in so far as there are no general objectives and guidelines.

When considering management, the management of the enrollment of students first entering the university has become an issue in the countries where their number is increasing every year. And since digitalization makes data transmissions easier, one should consider this as an opportunity to match the demand and the availabilities. In 2018, the French government set up the new admissions system "Parcoursup". This system is built to better match students to programs in order to cut France's university dropout rate. Furthermore the government decided to publish the "open source" code and its comments, for a total transparency of the process. Its early publication, carried out in agreement with the Ethics and Scientific Committee of the Parcoursup platform, is a first in the administrative sphere.

The system promotes a full understanding of the mechanisms of the new procedure for entry into the higher education: no hierarchy of wishes, absence of constraints, response time which allows, when each candidate makes his choice, to free places that are immediately offered to other candidates. As Parcoursup makes it also easier to apply for high-demand courses across France, students might begin to travel further afield. So, this is an example of how the technical possibilities may make the selecting processes more transparent and more open for mobility: both goals sought within the Bologna process.

The contribution of digital technology is decisive here to enable students in the final year of high school to be fully informed when they make their registration wishes. The aim here is to support the orientation with adapted digital tools and data processing techniques.

Furthermore, a lot of individual member states have tracking systems (like for example the Alumniportal Deutschland, a cooperation project promoted by the German federal government, the DAAD and other organisms), but the goal for the future should be to bring together the data and to have more comparable data on the jobs students go into, and how well their degrees prepared them.

This could be completed by data on the social engagement and what sectors the graduates enter. If universities knew which sectors graduates of certain subjects were entering they could update their curricula to ensure students were well equipped for these workplaces and transfer this information to students, parents and policymakers, thereby improving student decision-making. Such tools change the face of the higher education landscape in each country.

Could such enrollment tools also be developed to help the mobility within the EHEA? It seems very complex, but within the range of algorithm designers and me an aim for the future European Universities.

On the other hand, coupled with the learning analytics of the students, one could imagine a digital system that would be able to decide of the best curriculum for a student in taking into account all the former degrees and academic results, training periods, what graduate students with the same profile became and the demand of the labor market.

This could lead to wonderful opportunities for the students, or on the contrary lead to total mistakes, locking up students in pathways that don't correspond to their intrinsic possibilities. We also meet here the issue of the protection of the personal data thus generated.

As for the society, this could prove efficient, at least, for a certain kind of society. Dangers and traps lie in such a process, especially with regard to the individual liberty. Caution is more than ever necessary before completely entrusting algorithms with the determination of a person's future.

Another problem we face with student enrollment is when the student goes abroad. If you were already confronted with the enrollment of a student in a foreign university, then you will understand my dream, or one of my dreams.

Indeed, one the best achievements of the digitalization in the EHEA would be a fully digital student file, with all the grades, diploma attestations, diploma supplements, and its digital transmission from one institution to another, secured thanks to block chains or other smart contracts, depending on the choices of the student for mobility targets. No more papers nor translations nor copy certifications. A simple sequence of clicks! Don't you think this would change one face of the EHEA? Will you allow me to dream further?

As a researcher, I also dream of a unique model of convention ruling the co-supervision of a thesis within the EHEA. Well, I am aware I am dreaming, but, why not?

Eventually, The Bologna Process has achieved a lot:

- The 3-cycle Bachelor-Master-Doctorate system is a given for the European higher education landscape and beyond;
- The ECTS (European Credit Transfer and Accumulation System) are used in most of the countries; qualifications are rather well recognized, and common standards for quality assurance are known and used in most of the EHEA. Mobility and internationalization are a matter of course... in the minds.

We know it in our everyday university lives. And because we're in the middle of it, we're also aware that there remains a lot to do.

As we have seen, digitalization can change the face of the Bologna Process and the Higher education in Europe in many ways, and among them, a broad access to knowledge and data.

And I believe that thanks to digitalization the EHEA is undergoing a transformation that may result in what we wish for: making of the EHEA an identified region of university excellence, with

university networks closely bound and students, academics, researchers and staffs circulating from one to another institution, a world region able to keep its specificities and have its own brand, and able to challenge the United States or Asia on these grounds.

Seeds for it are initiatives such as, because we are in Germany I have to cite it, the French-German university, EUCOR, the university of the great region, the French Italian university, and coming soon, the European universities wished by president Macron.

And I am sure that today's discussions and works will be a step further into that direction. I am eager to participate to them and I wish you and us all very productive meetings.