

SURVEY REPORT

**DIGITALLY ENHANCED LEARNING
AND TEACHING IN EUROPEAN
HIGHER EDUCATION INSTITUTIONS**

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5. Learning environments	31
5.1. Support for staff	34
5.2. Technological innovation	36
6. Institutional strategies and governance	37
6.1. Strategy	37
6.2. Trends towards centralised and shared responsibilities	38
6.3. Policies, participation and funding for digitally enhanced learning and teaching	39
7. Benefits and impacts of digitally enhanced learning and teaching	42
7.1. Perceived benefits and impacts to date	42
7.2. Transformation of provision and of external collaboration	45
7.3. Widening access and outreach	46
8. Enablers, barriers and measures for enhancement	47
8.1. People	47
8.2. External funding, national regulations and external QA	49
8.3. Measures for enhancement	51
9. Conclusions	52
References	53
Annexes	56
List of figures and tables	56
Survey questionnaire	57
List of institutions	57

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The report is one of the main deliverables of DIGI-HE, an EUA-led Erasmus+ project (January 2020 to December 2022) aiming to enhance universities' digitally enhanced learning and teaching strategies through self-reflection and peer learning.

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List of abbreviations

Artificial Intelligence	AI
Bologna Follow up Group	BFUG
Digitally enhanced learning and teaching	DELTA
European Association for Quality Assurance	ENQA
European Association of Institutions in Higher Education	EURASHE
European Higher Education Area	EHEA
Emergency Remote Teaching	ERT
European Students Union	ESU
European University Association	EUA
General Data Protection Regulation	GDPR
Higher Education Institutions	HEIs
Irish Universities Association	IUA
Massive Open Online Course	MOOC
Quality Assurance	QA
Standards and Guidelines for Quality Assurance in the European Higher Education Area	ESG
Virtual Learning Environment	VLE

Glossary

Artificial intelligence (AI): The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings (Encyclopaedia Britannica, 2020).

Augmented reality (AR): A process of combining or “augmenting” video or photographic displays by overlaying the images with useful computer-generated data.

Big data: Extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions (Oxford, 2020).

Blended learning: A model combining face-to-face classroom teaching and the innovative use of ICT technologies. Experts often associate blended learning with the redesign of the educational environment and the learning experience, thus contributing to the creation of a “community of inquiry”.

Blockchain: A distributed ledger that provides a way for information to be recorded and shared by a community. In this community, each member maintains his or her own copy of the information and all members must validate any updates collectively (Grech & Camilleri, 2017).

Digital assessment: Written assessment, which is done not on paper, but digitally.

Digital badges (ebadges): A validated indicator of accomplishment, skill, quality or interest that can be earned in various learning environments (Carey, 2012).

Digitalisation: “Digitalisation is the transformation of all sectors of our economy, government and society based on the large-scale adoption of existing and emerging digital technologies” (Randall et al., 2018).

Digitally enhanced learning and teaching (DELT): Any type of learning or teaching that is accompanied or supported by technology.

Digitally signed credentials: An electronic document (generally referred to as ‘digital certificates’) which is issued by awarding bodies to individuals to confirm and provide proof of their learning outcomes.

Emergency remote teaching (ERT): Emergency remote teaching is a temporary shift to fully remote solutions for teaching due to crisis circumstances that would otherwise be delivered face-to-face or as blended or hybrid courses.¹

¹ This definition is based on *The difference between emergency remote teaching and online learning* (Hodges et al., 2020).

Hybrid learning and teaching: The term is currently used with different connotations. In some languages, as for example in French “apprentissage hybride”, it means blended learning. In this report, it implies physical classroom learning in combination with online attendance: whereas some students attend in the classroom, others attend at the same time remotely online, out of choice, or a condition preventing them from physical attendance. During the Covid-19 pandemic, this has also been a means to reduce class-sizes as a sanitary precaution. However, hybrid learning is also increasingly used as a more sophisticated and complex approach combining different learning approaches, such as “on-line and off-line, on-site and off-site, synchronous and a-synchronous, formal and informal, vocational and recreational and more” [...] beyond the locus of learning” (Cohen, Nørgård & Mor, 2020, p.1), as a flexible combination of different learning modes to enhance the learning experience, to better serve students and give them choice.²

Internet of things (IoT): The interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data (Oxford, 2020).

Machine learning: Discipline concerned with the implementation of computer software that can learn autonomously (Encyclopaedia Britannica, 2020).

Micro-credentials: A micro-credential is a proof of the learning outcomes that a learner has acquired following a short learning experience. These learning outcomes have been assessed against transparent standards (European Commission, 2020a, p. 10).

MOOCs: MOOCs stands for massive open online courses. Massive, as there is generally no participation limit, thousands can enrol for the same course. Open, as they are accessible to a large public of learners: institutions usually do not require any formal entry requirement for registration, and they are free of charge. The whole course is delivered online, including assessment and additional services (even though personal contact with other participants or tutors is a possibility).

Online degree programmes: A degree programme, which the student attends fully or predominantly online.

Recognised higher education institution: The institution that is recognised by the country in which it is based.

Virtual mobility: Refers to students and teachers in higher education who study or teach for a short period at another institution outside their own country, without physically leaving their home.

Virtual reality (VR): Computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment.

² Brian Beatty provides an overview of different attempts (with different nominations) that emerged over the past 15 years, to enable what he and others call Hybrid-Flexible “Hyflex” learning, and the consequences not only for learning design, but also for campus planning in: Hybrid-Flexible Course Design. Available at: <https://edtechbooks.org/hyflex>

1 Executive summary

About the report and the survey

The present report maps the situation regarding digitally enhanced learning and teaching (DELT) at European higher education institutions. The report is mainly based on data from a survey conducted between April and June 2020 via an online questionnaire to institutional leadership. Apart from a few questions on the impact of the Covid-19 crisis, respondents were asked to report the situation before April 2020. Comparison with the results of a similar [study](#) carried out by the European University Association (EUA) in 2014, allows to assess the change and provides some longitudinal data.

Responses were received from 368 higher education institutions from — at the time — all 48 countries of the European Higher Education Area (EHEA). For some questions, convergence of responses permits conclusions on the situation in individual national higher education systems and even groups of systems in certain geographic regions.

The report is an outcome of the Erasmus+ co-funded [DIGI-HE](#) project (January 2020–December 2022), conducted by EUA in partnership with Dublin City University (Ireland), Baden-Wuerttemberg Cooperative State University (Germany), Vytautas Magnus University (Lithuania) and the University of Jyväskylä (Finland). The project aims at supporting universities to develop strategic approaches towards DELT.

Main findings

Since [EUA's E-learning Study](#) in 2014, DELT has been further embraced by higher education institutions across Europe. General acceptance has grown and institutions widely acknowledge the benefits it brings to the student experience, but also the challenges.

Covid-19 response

Launched in April 2020, the survey asked institutions to distinguish between before and since the crisis – which was relatively easy for factual questions, but more difficult when it comes to future plans and expectations.

Practically all institutions managed to pivot to blended and online learning, which may not have been the case in 2014. But resources, while available, were in many regards insufficient for the sudden enhanced use. A good example are online library services; while 90% had such services in place before, 65% want to enhance them as an immediate reaction to the crisis. Generally, three-quarters of the respondents indicate that they had concrete plans to boost digital capacity beyond the crisis. The situation has frequently been characterised as emergency remote teaching (ERT), to underline that it may not always match the usual quality of pedagogics and services, but also as institutions are likely to return to more on-site based forms of provision, once the crisis is over.

The following reports — unless mentioned differently — are about the situation before the Covid-19 crisis.

Uptake of DELT and delivery modes

Compared to 2014, DELT is much more widely accepted and used across the EHEA. All responding institutions use it, about half of them widely (57% throughout the institution).

Blended learning continues to be the most popular delivery mode, and increasingly mainstreamed: on average, it is used in 75% of institutions across the EHEA, either in some faculties or throughout the institution. Mostly in response to Covid-19, some institutions also started to provide hybrid learning and teaching, i.e., provision of courses which can be attended both physically and virtually.

While blended and hybrid learning address regular students, online learning is provided for a variety of purposes and target groups. For example, mature learners are the main target for online programmes, with online degree programmes being provided by one-third of institutions (36%), no increase compared to 2014. By contrast, the number of higher education institutions (36%) that offer MOOCs has increased, and recognition seems to be

more commonplace than in 2014. MOOCs continue to serve a variety of purposes, most importantly international promotion and the development of innovative learning and teaching methods but also – much more emphasised than in 2014 – reaching out to new learner groups.

Compared to degree programmes and MOOCs, short courses are much more frequent regarding numbers of institutions (50%) and tend to be offered in larger quantities. Such courses tend to have diverse purposes: they are non-degree courses, which earn certificates, micro-credentials or badges. They may address lifelong learners, people in the workforce, but also actual students, or university staff, for example for staff enhancement courses. Obviously a rather flexible form of provision, such courses did not receive much attention in European higher education until recently.

Compared to 2014, higher education institutions seem to be much clearer about the actual purpose and advantages of different modes of delivery, as they place, for example, more attention on widening access and lifelong learning in their digital provision. Adult and mature students are now the main target of online learning at 65% of institutions, and an impressive 81% of institutions are considering widening access through digitalisation as a strategic development priority.

A growing but still moderate trend can be observed towards digital assessments in both conventional and online learning, with some increases since 2014. By contrast, the number of higher education institutions using digital credentials and digital badges is still relatively low. But this might change if the European Union provides support, as announced in its [2018 Digital Education Action Plan](#) (European Commission, 2018).

A quarter of the institutions also offers virtual mobility for its students (25%), and the vast majority of institutions include training for generic and sector-specific digital skills as well as ethical and data literacy and safety skills into their curricula. However, digital skills are often only included in some study programmes or as a voluntary offer.

For internal quality assurance for DELT, a positive trend has been observed with a rise of 22 percentage points compared to 2014. However, this still leaves about half of higher education institutions without internal quality assurance processes, of which, however, 41% are considering it. This seems to be mainly a problem in certain parts of Europe, in particular in Southern Europe and the Balkans, and may also have its cause in system-level restrictions and ambiguous regulations regarding the use of DELT.

Learning environments

The survey also tried to explore learning environments, which are of course an important condition for the success of DELT. Most of the infrastructures and services which were already readily available in 2014 remain so today. Virtual Learning Environments (VLE) and online labs could be strengthened as could several online services for prospective students.

- Services, such as online library access, are available to students in the vast majority of institutions, but they may not be sufficient, as also highlighted during the pandemic.
- Over three-quarters of institutions provide staff support services, but the impact of such services remains to be explored.

- Generally, institutions were found to be quite open to exploring other emerging technologies such as artificial intelligence and machine learning.

Strategies and people

Institutional approaches towards DELT tend to be more systematic and strategic: compared to 63% in 2014, in 2020, 88% have a strategy for DELT, usually integrated into a wider strategy for the entire institution. In a related move, a shift towards more institutionalised structures, centralised and shared responsibilities for DELT has been confirmed. By illustration, in 2014, some institutions, albeit a small number, left the responsibility for DELT to an individual staff member. These days are gone. The value and crucial importance of an institutional strategy is widely recognised, as it is seen as one of the top three enablers of DELT. Institutions which have more centralised and shared responsibilities for DELT are also more likely to report that DELT has contributed to major transformation at their institution. Some institutions provide examples of how strategies and action plans for DELT (in some cases only recently developed) enabled them to pivot to online provision at the start of the Covid-19 crisis. But respondents also point out that the development and implementation of strategic approaches for the entire institution can be a major challenge.

Asked about their strategic preparedness, over 60% of institutions indicate that they include staff and students in the governance of DELT, have a dedicated budget to support digital transformation and establish clear policies and processes for deciding on new technologies. However, about every second institution also points to the need

to enhance or develop horizontal policies on data protection, cyber security, prevention of plagiarism, ethics, intellectual property and examinations and testing. The latter is becoming a more common feature of examination practices across the EHEA, but requires improved digital examination policies.

Perceived benefits and impacts

Generally, as already in 2014, the vast majority of institutions is confidently positive about the benefits DELT brings to students and, generally, the transformation of learning and teaching. The revision of teaching methods and the flexibility of learning and teaching are seen as the top two impacts, while for the next five years, 95% of institutions see digitalisation as a strategic priority. Over three-quarters of institutions predict substantial growth of their external collaboration at international and national levels, with other universities, but also with industry (73%).

There is a clear agreement on the top enablers of and barriers to DELT, and also on measures to address them (Figure 1): proactive participation of staff and students turns out to be the number one enabler, followed by professional development support to staff and strategy, and funding. By and large these factors (or the lack of them) are also identified as the top barriers to DELT at European higher education institutions. Notably, in some individual systems, national regulation and external quality assurance are mentioned as barriers to DELT.

Hence there is strong emphasis on strategic development, governance and staff enhancement, to be addressed by the institutions themselves. However, as lack of staff resources is selected as the biggest challenge by 75% of institutions, and lack of external funding opportunities by 40%, this clearly points to resource issues that cannot be tackled by the institutions alone.

MAIN ENABLERS, BARRIERS AND USEFUL MEASURES

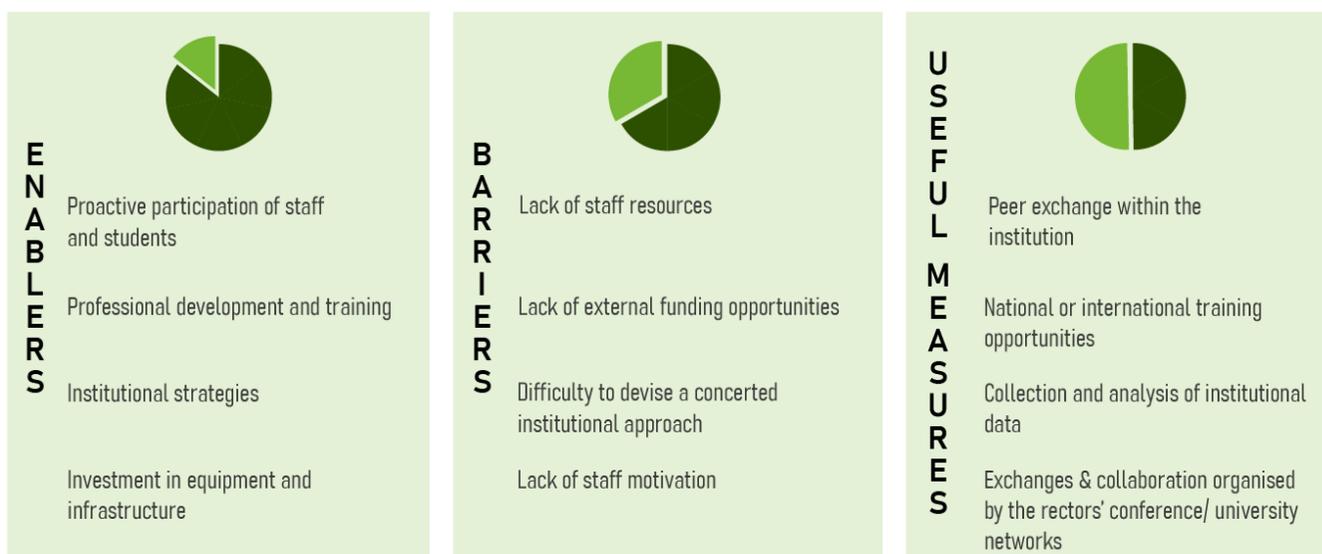


Figure 1 Q13 What are the top 3 enablers of digitally enhanced learning and teaching at your institution?; Q14: What are the top 3 barriers to digitally enhanced learning and teaching at your institution?; Q35: What measures have been useful for improving digitally enhanced learning and teaching at your institution? n=368

Asked how further progress could be made for enhancing DELT, institutions pointed to peer exchange, followed by international and national training opportunities for staff in charge of digital transformation, and the collection and analysis of data. In some systems, elimination of regulatory uncertainties and obstacles could pave the way for institutions to embrace DELT in a more systematic and strategic fashion.

Although it is challenging to provide conclusions for the entire EHEA, there does seem to be a strong demand for institutional capacity building through institutional approaches which include staff and students in a meaningful way, and also through appropriate external support at national systems and European levels, e.g., in the forms of funding, elimination of regularity obstacles and measures

that support exchange and collaboration between higher education institutions. It would be important also to seize the opportunities presented by the recently published policies under the Bologna Process and by the European Union, all of which emphasise digitalisation, namely the [Rome Ministerial Communiqué](#) (Bologna Process, 2020), the [European Education Area Communication](#) (European Commission, 2020b) and the [Digital Education Action Plan 2021-2027](#) (European Commission, 2020c). These policies should provide opportunities for joint action, exchange and collaboration.

This is also important in order to sustain and enhance some of the progress in DELT made at higher education institutions during the pandemic.

2 Introduction

The purpose of this survey was to provide a snapshot of where the digital transformation in learning and teaching at European higher education institutions stands, and assess change and progress since 2014, when EUA conducted a similar [survey](#). It provided comparable data from universities across Europe for the first time, about what was then called “e-learning”, and which in this report will be named digitally enhanced learning and teaching (DELT).

Back then, its results were important in the overall context: The emergence of Massive Open Online Courses (MOOCs) from 2012 on had brought attention to DELT in the university community, among policy makers, and the general public. Discussions on the future of higher education emphasised the disruption caused by digital transformation in a speculative fashion.

For some, digitalisation was predicted to bring a bright future, with education for all, of better quality and at lower costs. Visibly this was fuelled by major technology and publishing industries, which depicted contemporary educational approaches and institutions as outdated, broken and to be replaced by new types of delivery, based on industry-developed solutions. On the other hand, there were strong concerns regarding the potential negative impact of digital technologies on learning and pedagogies, the dehumanisation of learning, the elimination of cultural diversity, enhancement of social inequality, and generally, the ushering in of commercialisation of education. Protagonists on both sides talked about the end of universities —

some as a fear, others as an inevitable consequence of technical, social, economic and pedagogical innovation.

In this situation, the [2014 survey](#) was very helpful, as its results brought an idea of the realities at higher education institutions: They showed a much more widespread use of blended learning and of online degree courses than one would have predicted. Interestingly, European university leadership — while acknowledging challenges and the concerns of staff — were relatively positive towards these future changes that digital use would entail. This was probably because they had gained some certainty that “e-learning” — the term commonly used at that time — was feasible beyond the niches in which it had existed for years. But while their responses could not mirror the wider concerns mentioned above, they also could not confirm all its alleged benefits. These were early days. At most institutions, more systematic and strategic approaches were just emerging, and the shape things would take in the future also depended on developments of higher education systems, and public funding.

In 2019, when preparation of the research for this report was starting, the situation already appeared to have changed somewhat: EUA Trends reports in [2015](#) and [2018](#) had already suggested that the question was no longer about whether or not to use DELT, but rather on how and to what extent. As a consequence, the 2020 survey had to give up many of the old questions, and include new ones.

But there is another unmistakable factor that complicates the interpretation of the resulting data: the launch of the survey in April 2020 coincided with the outbreak of the Covid-19 pandemic in Europe, and universities were among the institutions that had to or had decided to impose a lockdown. Consequently, there are actually two different storylines emerging:

Until the crisis, the storyline could have read: gradual gains regarding uptake and mainstreaming of DELT, resulting in more hands-on experience throughout the institution, underpinned by enhanced strategies and preparedness of governance and management, with a definitely better traceable impact compared to 2014.

But the crisis provides a slightly different tale: rapid pivoting to online learning and teaching, and in the meantime to blended and hybrid provision. It implied a massive upscaling and enhancement of digital capacities and resources, and enforcement of governance and management structures. This resulted in many students and staff struggling with technologies that were insufficient and often hitherto unknown, ad hoc adaptation of pedagogics, physical distancing resulting in communication and collaboration gaps, social isolation, work overload and psychological pressure.

This was clearly a stress test for the institutions and their members. On the other hand, it was also a matter of joining the dots, with individual institutions confirming through the 2020 survey that “more progress had been made in four months than

in four years”, and witnessing “colleagues doing things they would have declared as impossible a few weeks before”. Representatives from some universities even used the term “a good crisis” to describe the impact that it had on enhancing and mainstreaming DELT.

As the survey invited institutions to report the situation before the crisis, and offered additional questions on changes due to the crisis, these two tales can be easily distinguished in terms of data. However, it may have been difficult in the middle of the crisis to turn the calendar back to “normal times” when asked for attitudes of students and staff, and to indicate expectations and priorities for a future that has already been labelled as the “new normal”.

As everything is still in flow, it would be pretentious to speculate, beyond the question of “crisis resilience”, on how the current practices will be carried beyond the crisis, and to what extent strategic intentions for more continuous transformation that emerged at many institutions, will be implemented, particularly as most institutions still operate on budgets that were allocated pre-crisis.

However, if the crisis helped universities to better understand one thing, then it is probably the crucial role people and the entire social environment play for the learning experience. The importance of proactive engagement of staff and students, collegial solidarity and exchange of good practice

that emerged in many places, is highlighted by the vast majority of respondents. Months of involuntary remote learning and teaching have brought a clear demonstration that all that is technically possible is not socially desirable. These, rather than questions of technology and more or less online or blended learning, are the issues that will have to drive the discussions on the transformation of higher education.

There should be ample opportunity for discussion, at least at the European level. In the autumn, the European Commission launched several major communications: on the [European Education Area](#) (European Commission, 2020b), the [Digital Education Action Plan](#) (European Commission, 2020c) and the [European Research Area](#) (European Commission, 2020d). They all relate to higher education and also emphasise digital developments. The [Digital Education Action Plan](#) is also a horizontal priority in the new 2021-2027 budget of the EU. The EU also announced a Transformation Agenda for higher education for the end of 2021, in which DELT is likely to feature prominently. Meanwhile, under the Bologna Process, a new working phase is about to start, which would have to consider the growing role of digital development with regard to several of its working areas. In addition, EUA is taking forward its vision for [Universities 2030](#), with a publication being launched in February 2021. Hence, the report may have arrived in good time to contribute to all of these.

3 About the survey

3.1. Survey goals and structure

- Conducted between April and June 2020
- 368 valid responses from 48 European countries, at that time the entire EHEA
- Majority of answers from comprehensive (multidisciplinary) universities and colleges

The report focusses on DELT at European higher education institutions. Rather than exploring the situation of actual curricula and pedagogies, it approaches the topic from an institutional perspective, regarding predominant and emerging formats of provision, support structures and services provided, institutional strategies and governance, and importantly, on how this impacts learning and teaching, students and teachers.

In addition, it provides some longitudinal data, as some questions from a similar [study](#) conducted in 2014, and from EUA's Trends [2015](#) and [2018](#) reports have been included in the survey. The report is — as far as we can see — the only report that provides comparative data for the entire EHEA.³ Its intention is twofold: it provides colleagues at higher education institutions, and in particular leadership, an

³ EHEA comprised at the time 48 countries. With the accession of San Marino on 19 November 2020, it is 49.

opportunity to compare identified European trends with the developments at their own institutions. But its intention is also to inform European policy discussions, both in the Bologna Process, which has started to address digital developments, and in the European Union, which puts a strong emphasis on digital developments in its [European Education Area Communication](#) (European Commission, 2020b), and the renewed [Digital Education Action Plan](#) (European Commission, 2020c), both launched in September 2020.

As universities across the EHEA closed their campuses and switched mainly to fully online teaching, often to ERT, it was extremely important to hear their views on how the pandemic and the dramatic increase in digital uptake would mould their future digital learning and teaching strategies. Therefore, although this survey was drafted before the onset of the Covid-19 outbreak, it was decided to add several questions directly related to the pandemic. The results are referenced throughout the report. Nonetheless, as the goal of this survey was to find out how things stood before Covid-19 took hold, the survey respondents were asked to answer all questions based on their universities' situation **prior to the pandemic**, to ensure that the findings would be a true reflection of their state of play in early 2020.

3.2. Survey structure

This survey was divided into six sections:

1. Institutional strategy & governance
2. Curricula & modes of delivery
3. Assessment & recognition
4. MOOCs & open learning
5. Staff support & professional development
6. Infrastructure & resources

It also asked some questions about the impact of the ongoing pandemic, and repeated questions from previous EUA studies (E-learning Study 2014, Trends 2015 and 2018). The full list of questions can be found in the annexes.

3.3. Survey dissemination and sample

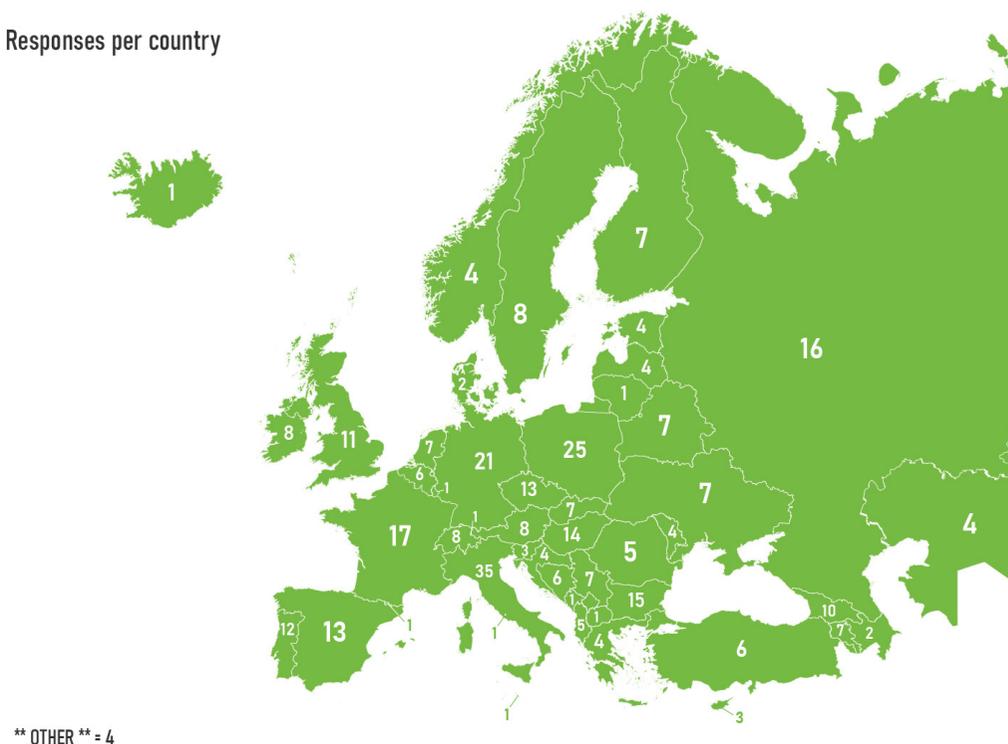
The survey was conducted online from April to June 2020 and was disseminated via the [DIGI-HE project website](#), EUA's monthly newsletter and direct mailings to members. The survey was also promoted actively on social media throughout the dissemination campaign by the entire project consortium. In addition, interviews carried out on the pandemic as part of EUA's general work on learning and teaching have been considered in this report.

A total of 368 valid responses were recorded from higher education institutions from 48 countries, representing the entire EHEA in 2020, and in addition some institutions from Kosovo and Northern Cyprus (Figure 2). Italian higher education institutions showed a great deal of interest in the survey with responses from 35 institutions, followed by Poland with 25 and Germany with 21. Compared to 2014, there was also a particularly high response rate from some of the Eastern European countries, for example Russia with 16, Bulgaria with 15 and the Czech Republic with 13 responses. This increased participation is certainly an indication of the growing interest in and engagement with digital education — which seems to be the case in most, probably even all countries. It is also the result of targeted emails to individual institutions from under-represented countries to ensure geographical balance, supported in many cases also by National Rectors' Conferences and ministries, National Erasmus Offices, etc.

For some questions, the “national responses” have been compared. Country breakdowns were only calculated for countries with more than five responses, as fewer than five responses could not be considered representative of a country's higher education sector. Nevertheless, this was still done with caution, as the data collection may not be big enough to be representative. For example, while seven responses in the case of the Netherlands is solid, for a large system such as the Ukraine, it cannot provide the same certainty. In addition, devolved systems (Belgium, Germany, Spain, the UK) were not differentiated in the analysis, also as some of these would have been too small, and even for larger ones, there was no indication that belonging to a different subsystem had a major influence on DELT.

With similar caution, an attempt to group the responses to facilitate analysis by region has been undertaken (Table 1):

Responses per country



** OTHER ** = 4

Figure 2 Q2 Please select your country and institution from the drop-down menu. n=368

CATEGORISATION OF COUNTRIES PER REGION

Northern Europe	Western Europe	Southern Europe	Eastern EU	Eastern Europe/Central Asia	Balkans
Denmark	Austria	Andorra	Bulgaria	Armenia	Albania
Estonia	Belgium	Cyprus	Croatia	Azerbaijan	Bosnia and Herzegovina
Finland	France	Greece	Czech Republic	Belarus	Montenegro
Iceland	Germany	Italy	Hungary	Georgia	North Macedonia
Latvia	Ireland	Malta	Poland	Kazakhstan	Serbia
Lithuania	Liechtenstein	Portugal	Romania	Republic of Moldova	
Norway	Luxembourg	Spain	Slovakia	Russian Federation	
Sweden	The Netherlands	Vatican City State (Holy See)	Slovenia	Turkey	
	Switzerland			Ukraine	
	United Kingdom				

Table 1 Categorisation of countries per region

Hence, data differentiated by country and by region should not be seen as an absolute statement of how the situation is, but rather as an additional way to discuss and explore the needs and opportunities of higher education institutions across Europe. This may have to do with the system characteristics in the region, such as national regulation, predominant governance and funding models, or may be more environmental, such as the overall economic situation, or the general acceptance of DELT. It is important to stress that such factors may play a role, but are usually not fully determinant, in that not all countries and institutions in the region tend to align. To give an example: national regulation is seen as an obstacle at less than 10% of institutions in Western and Northern Europe, but in more than 20% in all other regions.

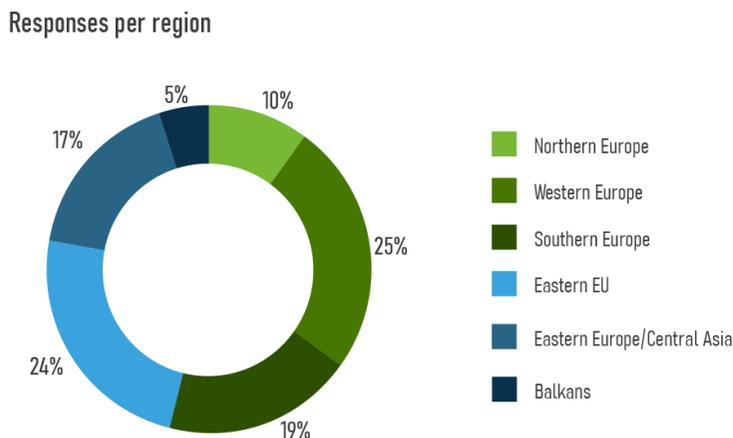


Figure 3 Regional breakdown of responses n=368

3.4. Institutional profiles

The survey was open to all higher education institutions in the EHEA, resulting in a diverse sample (Figure 4) with a majority of comprehensive/multidisciplinary universities (62%), in addition to specialised universities (17%), and technical universities (11%), and some universities of applied sciences and university colleges (9%). Examples of specialised institutions include police and military academies, art schools, academies of music, medical universities, religious schools, schools of civil aviation, research universities, and colleges of teacher education. Four responses (1%) came from “open universities” which provide the policy of open admissions, distance and online learning programmes.

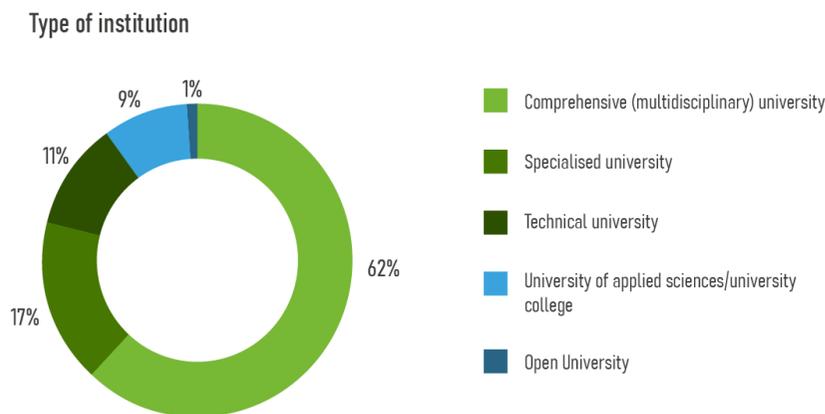


Figure 4 Q3: Please indicate the type of institution. n=361

Overall, it has to be recalled that the classification of institutions in this sample is a self-declaratory one, with several respondents pointing out that their type of institution did not fully belong to any of the categorisations below. In addition, there are definitely some system-related differences between the different profiles. In particular, universities of applied sciences/ colleges are very diverse across European countries (Figure 5).

While comprehensive universities and specialised universities enjoy quite a balanced regional representation, the majority of responses from universities of applied sciences/university colleges are from Western Europe and over two-thirds of responses from technical universities were from Eastern EU and Eastern Europe/Central Asia (Figure 5). This limits comparability, and in some cases leaves it open, whether a recognisable trend is specific for the type of institution, or rather for the system and regional situation.

Type of institution per region

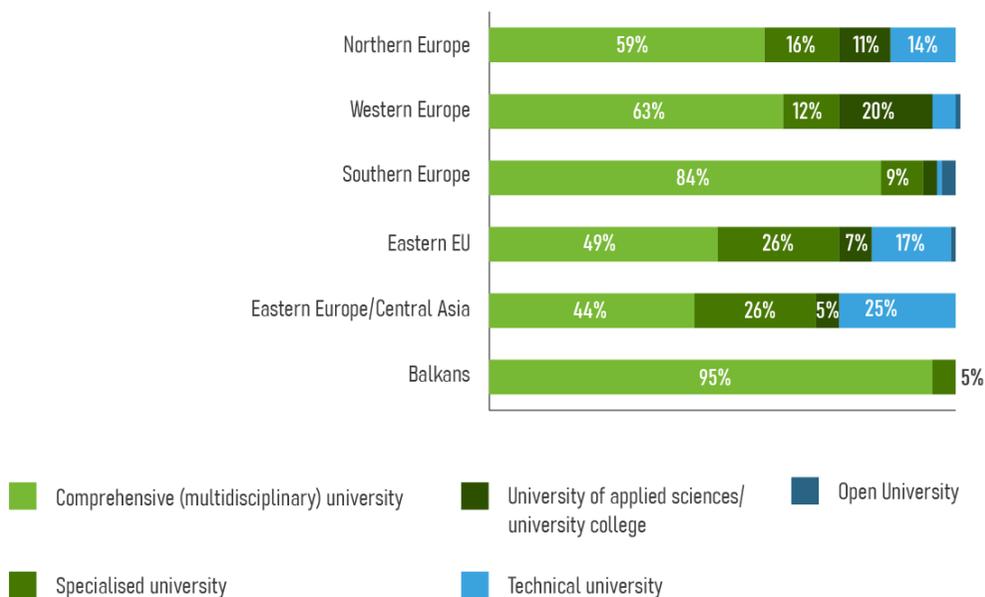


Figure 5 Type of HEI per region n=361

4 Embracing digitally enhanced learning and teaching

■ In 2020, 57% of institutions indicated that DELT is widely used, mainly through blended learning, but also through a range of online formats.

The [2014 E-learning Study](#), and other reports that followed ([Trends 2015](#); [Trends 2018](#); Henderikx & Jansen, 2018) already confirmed that DELT had become common practice.

Predictably, in the self-selected sample of the present topical survey, all institutions indicate that they provide it. But they do so at different levels of systematic integration and mainstreaming: 57% reported that it is widely used throughout their institution in 2020, which is slightly higher than in 2014 (53% in [E-learning Study](#), 2014, p. 25). It has become particularly common in Northern Europe (84%) and especially at technical universities (72%) and unsurprisingly, in open universities (100%).

The following section provides a closer look at specific modes and types of provision (Figure 6):

For blended learning and online degree programmes, there is no dramatic change regarding the numbers of institutions, which was already quite elevated six years ago, but certainly regarding rollout and strategic use.

The purposes of Massive Open Online Courses (MOOCs) have been confirmed: to provide open education opportunities at a global level. But in addition, widening access seems to play a more important role than it used to.

Short non-degree courses are in use at many institutions across Europe. They seem to respond to diverse demands, such as additional skills provision for students, internal staff development courses, and a broad range of lifelong learning purposes, including continued professional development. Increasing demand for such courses has already been confirmed in the “Trends” studies, but so far, their existence has been rather low

key. This seems to change due to industry and policy interest in some parts of Europe, and the high priority the European Commission currently allocates to them. They appear as an untapped potential.

Virtual mobility was confirmed by just a quarter of institutions, with, however, many indicating that they would look into its further exploration. While not replacing physical mobility, virtual mobility could complement it, and develop its own dynamic as “virtual exchange” with formats and purposes still to be confirmed.

Delivery modes

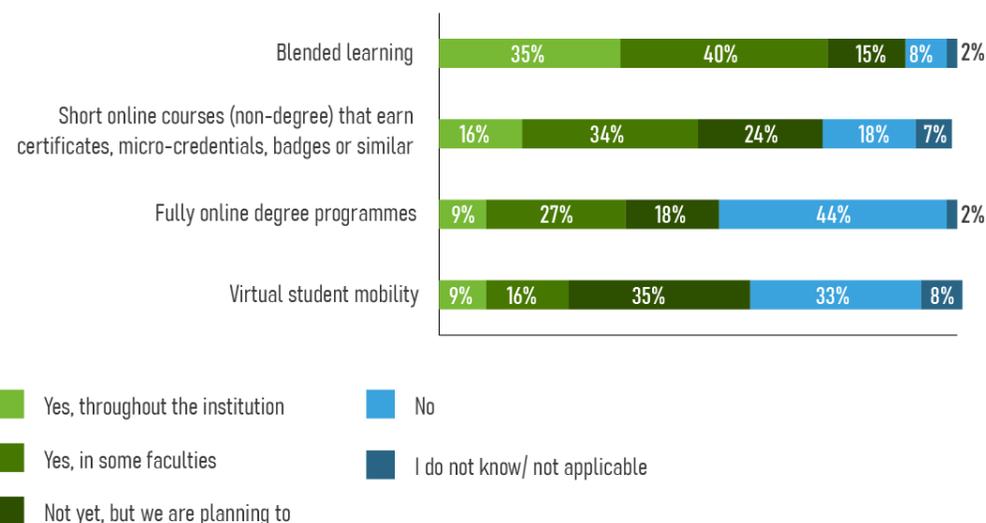


Figure 6 Q19: Does your institution offer the following delivery modes? (please select one option for each item) n= 363

Different types of digital skills training for students is provided at all institutions, but not to all students, and not always embedded into the curriculum.

But DELT is not only about different types of provision, it also has consequences for assessment, recognition and quality assurance.

- Blended learning continues to be the most popular digital delivery mode and has become mainstreamed within institutions.
- On average, it is used in 75% of institutions across the EHEA, either in some faculties or throughout the institution.
- In some systems, elimination of regulatory uncertainties and obstacles could help further development.

4.1. Blended learning

Blended learning is a model combining face-to-face classroom teaching and the innovative use of ICT technologies (Glossary, p.7). As often remarked, “blended” may include a broad range of different approaches, that may differ considerably between institutions and disciplines. Levels of sophistication may also differ, regarding learning design and its underlying didactic approaches, ranging from recorded lectures providing flexibility for students, and teachers, to a thoroughly designed curriculum, balancing not only physical and virtual presence, but also synchronous and asynchronous work, with aligned assessments. As technologies improve and become more accessible, and institutional experience and capacity is growing and more

Blended learning

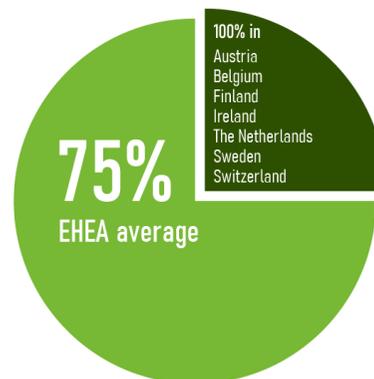


Figure 7 Q19: Does your institution offer the following delivery modes? (please select one option for each item) n= 363

widespread, this is likely to generate new and more differentiated formats and concepts. For example, over the past months, hybrid learning has gained popularity, as formats offered simultaneously to on-site and distance learners, and beyond a flexible combination of different learning approaches and modes, enhancing students’ choice, learning quality and organisational options. Interinstitutional exchange and collaboration, and more in-depth interest at policy levels will contribute to establishing more commonly shared terminologies.

The 2020 survey confirms the results of the 2014 [E-learning Study](#) (E-learning Study, 2014, p. 26), and other reports conducted in the meanwhile (Trends 2018, p. 59). Blended learning continues to be by far the most common delivery mode across the EHEA and is also frequently stated by university leadership and staff as the preferred approach towards digital provision, that best aligns with university culture and organisational structures (Figure 6).

On average in the EHEA, it is offered by three-quarters of the responding institutions, particularly common in Northern (92%) and Western Europe (85%), where in some countries it is used by all institutions. A further 15% are considering bringing in blended learning in the future. Blended learning provision in the European higher education sector would appear to be on a par with other countries, such as Canada, where a recent national survey revealed that blended or hybrid provision was provided by 76% of higher education institutions (Johnson, 2019, p. 17).

Although the 2020 figure actually appears to be lower than in the [2014 survey](#) (91%), it is slightly more mainstreamed, as 35% provide it throughout the institution, compared to 27% in 2014 (E-learning Study, 2014, p. 26), and in a number of countries, all institutions use it. In addition, already the [2015 Trends report](#) confirmed 74% of institutions used blended learning (Trends 2015, p. 74). Therefore, the lower total percentage is unlikely to indicate a rollback. Instead, it could be explained by the composition of the sample which, compared to 2014, comprises more institutions from systems, in particular in Eastern Europe, where DELT is not yet fully endorsed by the legal framework. In a regional breakdown, 60% of institutions in the Balkans indicate that they offer blended learning, with a further 20% planning to in the future.

Compared to 2014, the 2020 figures do not confirm an increase in the numbers of institutions that provide blended learning. But it is slightly more mainstreamed throughout the institution, and has become a standard in some systems. In others, it is likely to increase, provided the legal and financial barriers can be overcome.

4.2. Varied forms and purposes of online learning provision

Of the 368 institutions, 228 indicated that they offered different forms of online learning either throughout their institution or in some faculties: online degree courses, short courses and MOOCs. Just under 20% of the entire sample offered all three modes of provision.

Asked for specific types, short non-degree courses (50%) are the most commonly offered online provision, in terms of the numbers of institutions that offer them, but also regarding the number of courses offered, followed by forms of open learning (48%), including MOOCs (36%) and online degree programmes (36%).

Most institutions indicate adult learners as the main target group of their online education provision, (65%), followed by professionals seeking further development (52%). Another main target, although to a lesser extent, are international students, and learners with restricted mobility (23%) – so learners who may not be in the position to attend regular on-site study. They are usually served by open universities, which make for only 1% of the survey sample. They do not exist in all countries and importantly, for all languages, which is why regular universities may take up the task, for example in Finland where universities tend to have a department for distance-learning students.

4.2.1. Online degree programmes

In the [2014 survey](#), 39% of higher education institutions indicated that they provided online degree programmes (E-learning Study, 2014, p. 26), and this has been confirmed by the [Trends report](#) in 2015 (36% in Trends 2015, p.74). At a time, when institutions were accused of being either incapable of or resistant to embracing innovative learning

technologies,⁴ this was a bit of a surprise. Online degree programmes were not very visible and tended to be offered in just a selection of faculties. This confirmed that for most institutions, with the notable exception of open universities, they were just a complementary provision for experimentation targeting a specific learner group, that was linked to a project or external collaboration.

In 2020, while no dramatic increase in online degrees was to be expected, the overall number of institutions that offer online degree appears to have actually decreased: just over a third of the responding institutions offer fully online degrees with a further 18% planning to do so (Figure 6). It is possible that some institutions may have discontinued their relatively low number of online courses. But the main cause for the lower total numbers compared to 2014 may be the significant regional differences: whereas for the Balkans, for example, just a quarter of institutions reported offering fully online degrees, in Northern Europe it is almost 60%. Hence, at least in some institutions and systems, there may actually have been an increase. But this does not alter the key finding that in percentage of total provision, online degree programmes play a minor role: in 2020, out of those who offer some form of online learning,⁵ only 15% of institutions – and this includes open universities – offer more than 10 fully online degree programmes.

Moreover, before the pandemic, at 90% of the responding institutions, over 50% of their students studied primarily in physical presence (Figure 8). All this confirms that pre Covid-19, most European universities continued to focus on students on-site.

⁴ A fairly common attitude, among some policy makers, and popular in the media. See for example: [An avalanche is coming](#), by Michael Barber, Katelyn Donnelly & Saad Rizvi (2013).

⁵ 228 out of 368 institutions indicated that they offered some form of open learning.

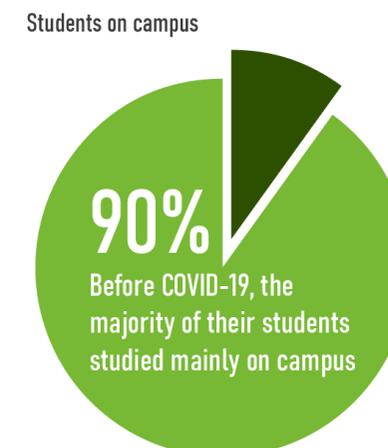


Figure 8 Q6: Before the Covid crisis, what was the estimated number of students that studied in the following modes? (Mainly on campus) n=368

4.2.2. MOOCs and open learning

Just under one half of institutions reported offering some form of open learning (48%), including MOOCs (36%). Among those which stated that they have no current open learning offer, 21% intend to offer MOOCs in the future, and a small number indicated that they discontinued them (4%). Very similar to online degrees, larger numbers of MOOCs are only offered by a few institutions (17% more than 10 MOOCs, whereas 44% offer less than 10).⁶

A few years ago, MOOCs stirred considerable debate on the future of higher education. While their transformative impact may have been less radical than assumed at the time, they have established their place as the second most frequently used online provision mode, after short courses and before online degree programmes.

⁶ Data based on responses from a subset of 228 institutions.

Individual comments from the respondents explain why MOOCs⁷ are not more frequent: they would require a significant amount of time and funding to implement, are often not part of the institution's or faculty's strategy, but implemented upon the initiative of individual staff.

Of the institutions who offered MOOCs or other forms of open learning, 61% also recognise them.⁸ This is a significant increase compared to 2014, when only 12% of the sample offered MOOCs, and about just one-third of these awarded credits for their own MOOCs — they were still very new (E-learning Study, 2014, p.11). But in 2020 recognition takes place under specific conditions (41%) or is limited to optional courses (14%). Limitations of or no recognition can have different reasons, either within the institution — some only recognised their own MOOCs and only within certain programmes — or externally, such as legal obstacles.

Compared to 2014, the motivation for providing MOOCs has not significantly changed (Figure 9): increasing the international visibility and reputation (78%) and developing innovative learning and teaching methods (56%) are clearly confirmed among the top-three motivations.⁹ “Reaching out to new learner groups” (49%), is now ranked third, previously only ranked fifth and replacing “boosting student recruitment and pre-selection”. Institutions may have needed time to explore how exactly MOOCs can be used. Generally increased awareness and prioritisation for access, inclusion, and diversification of participation, but also the growing importance of the third mission, services to society, may have played a role. Overall, responses suggest that institutions use MOOCs for

Motivation for offering MOOCs and open learning

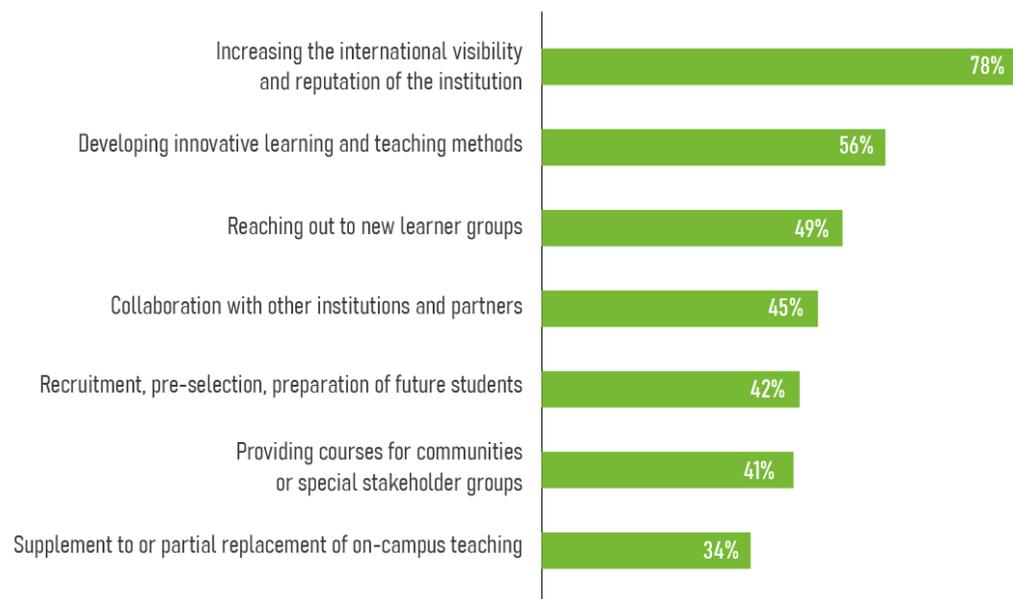


Figure 9 Q32: What is the main motivation for your institution in offering MOOCs and open learning? (please select your top three choices) n= 175

rather different purposes, which confirms them as a versatile form of provision. Legal regulations could explain why “supplementing or replacing on-campus teaching” did not feature among the top three motivations for offering MOOCs and open learning. Some systems limit the use of online, off-campus learning as part of degree programmes, or require special accreditation for it. In some countries, institutions cannot even demand their students to access their own MOOCs when hosted on platforms abroad, usually in the US, for data protection reasons. Despite its reputation, online learning is not so easily provided, and not automatically borderless.

Universities need to expand the network of MOOCs in various fields. This expands the knowledge of both students and teachers.

- survey respondent, Ukraine

⁷ The question actually asked about MOOCs and other forms of open learning.

⁸ The survey question did not ask whether this concerned recognition for all MOOCs or just the institution's own MOOCs.

⁹ The 2014 survey referred to MOOCs only.

4.2.3. Short non-degree courses

Every second institution confirms that it provides short online courses, and a further quarter are planning to. Unlike for online degree programmes, which individual institutions usually provide in low quantity, 38% indicate that they offer more than 10 short online courses, 20% among them even more than 30 courses.

In 2018, just over half of the institutions indicated a growing demand for online learning for non-degree purposes that earn certificates, micro-credentials or badges (Trends 2018, p. 60), which was confirmed in 2020 (53%). An even higher number of institutions expect a growing demand for short courses, but even more so in blended mode (65%) and also through conventional provision (44%) (Figure 10).

Short courses are seen by more than half of the institutions as a flexible way to provide lifelong learning (55%), which aligns with the fact that those that mainly target mature and adult students are more likely to offer short online courses (80%) (Figure 10). At just under half of the institutions, the resulting certificates can also be recognised for further degree study, and 43% affirmed that for some students, they were an alternative to studying for a master's degree.

Is this a growing trend, or just a new fashion? Reference is sometimes made to MOOCs. But short courses are also quite different, as they have existed at some European universities for quite some time, along with conventionally provided courses, and seem to respond to the actual demands of the identifiable target groups. This also makes it easier for institutions to assess the investment-benefit ratio.

Demand for short courses (non-degree) that earn certificates, micro-credentials or badges

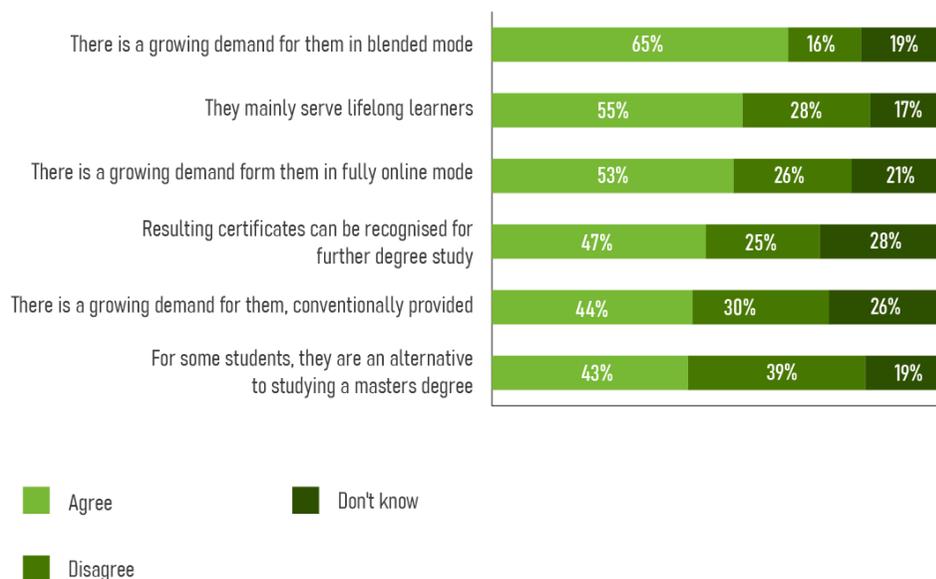


Figure 10 Q22: How would you describe the demand for short courses (non-degree) that earn certificates, micro-credentials or badges at your institution? (please select one option for each item) n= 362

Short courses, or “micro-credentials”, currently enjoy a relatively high priority on a European and some national policy levels. For example, the European Commission set up a Micro-Credentials Consultation Group to develop a more common definition, also regarding workload, learning outcomes and ECTS range, and improve their recognition for further studies and employment. Micro-credentials and other “smaller, flexible units” of learning are also referenced in the [2020 EHEA Communiqué](#) (Bologna Process, 2020), with a commitment to explore how they can be supported by EHEA tools. These issues are to some extent

explored in EUA's [MICROBOL report](#) (2020, pp. 18-19). Hence, is it quite likely that micro-credentials and other non-degree short online provision will become a more universal feature of the European higher education landscape, provided this doesn't suffocate a flexible format that has proven itself useful for learners and feasible for institutions, as underlined by the [MICROBOL report](#). This would then be yet another difference to MOOCs: they became a useful format in the wider education landscape, once they had been stripped of overrated expectations and unsubstantiated predictions.

4.3. Virtual mobility

- 25% of institutions currently offer virtual mobility exchanges.

Much like blended learning, virtual mobility is a broad concept, sometimes including the delivery of joint courses and international recognition and accreditation of study achievements (Teresevičienė et al., 2011, pp. 1-20). For the purpose of this survey, virtual mobility referred to “students and teachers in higher education who study or teach for a short period at another institution outside their own country, without physically leaving their home” (Glossary, p. 7).

Before the pandemic, a quarter of the responding institutions offered virtual student mobility (Figure 6), with particularly strong uptake in Northern Europe (38%). A further 35% of institutions stated that they were planning to introduce it in the future. It cannot be excluded that this was also triggered by the pandemic, which leaves prospects for unrestricted physical mobility in the unknown, and virtual mobility as a replacement in force majeure situations. This is confirmed by an IAU survey which revealed that “60% of HEIs also reported that Covid-19 has increased virtual mobility and/or collaborative online learning as alternatives to physical student mobility” (Marinoni & Jensen, 2020, p. 12). Similarly, a global survey of college and university leadership demonstrated that 63% of higher education institution leadership worldwide was planning to engage in more virtual mobility post Covid-19 (International Association of University Presidents & Santander Universidades, 2020, p. 54). But the general impression during the first months of the crisis was that mobility exchanges had been cancelled, or where possible,

deferred and that autumn 2020 would bring a return to some kind of normality. If the pandemic continues to restrict international travel, virtual mobility might indeed become an alternative. But this would be temporary, as there is a strong consensus that virtual mobility cannot replace the profound social and cultural learning that physical mobility is to provide. That being said, there might be organisational, economic, and importantly ecologic reasons for more carbon-neutral forms of mobility, including a stronger focus on virtual mobility at all levels.

However, beyond emergency provision, there seems to be growing interest in and openness towards blended mobility approaches, consisting of a physical and a virtual mobility period; this could help to overcome differences in the academic year, and generally provide more flexibility for students. Virtual mobility could also become a complementary instrument, which would allow additional flexible “study stays abroad” at a relatively low cost for time and resources. This could also extend to forms of “mobilities” which border with virtual exchanges, such as the Collaborative Online International Learning (COIL), or even shared modules and courses. The European Commission’s [European Universities Initiative](#) is likely to have an impact and provide evidence, given its insistence on 50% mobility of the institutions’ students, either physically or virtually. A total of 280 universities are currently involved, and a considerable number of them contributed to the survey.

4.4. Digital skills

Although almost all institutions address general digital literacy and study-field-specific skills, these are not fully embedded everywhere throughout the compulsory learning offer.

The survey results confirm that practically all institutions address general digital literacy (91%) and study-field-specific skills (94%) (Figure 11). But they may not be fully embedded in the compulsory learning offer throughout higher education institutions, and are often provided for only in certain disciplines and courses, or on a voluntary basis. Slightly lower are the responses for data literacy and safety, addressed in some capacity in 83% and 81% of institutions respectively.

The lack of digital skills is often cited as the main obstacle to student success in DELT. Contradicting the claim that most of today's students are digital natives, it is pointed out that many students use digital technologies and services in daily life, of course, but never or rarely in their subject fields, and might also not have received instruction on ethics, etiquette and safety regarding communications and data exchanges. With a more systematic use of DELT, this would have to be considered in curricula and learning outcomes.

Digital skills

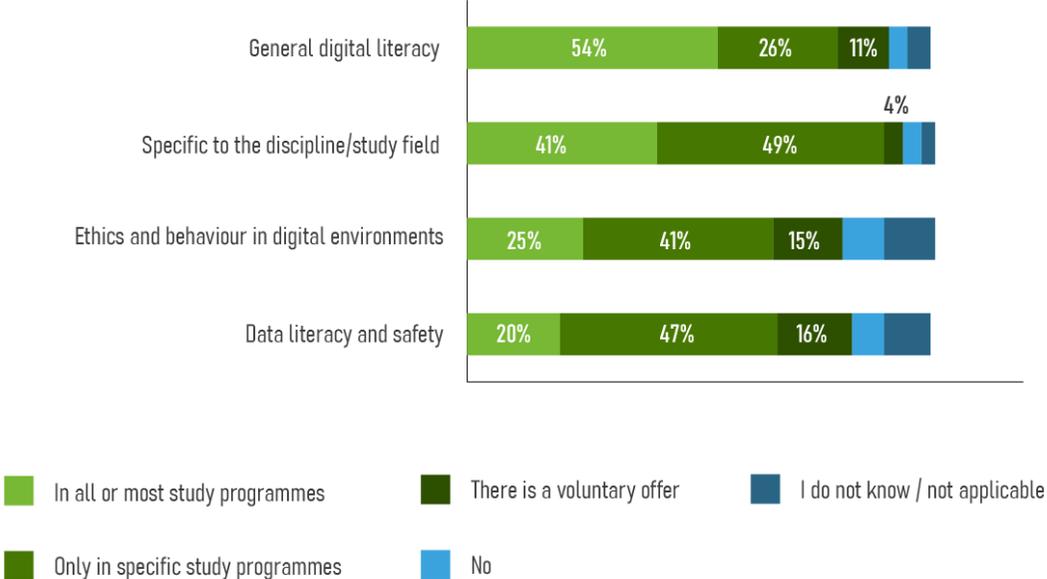


Figure 11 Q23: Does your educational offer comprise digital skills? (please select one option for each item) n=367

4.5. Assessment and recognition

- A growing trend, albeit moderate, has been observed towards digital assessments since 2014.
- A small proportion of higher education institutions use digital credentials, and even fewer use digital badges.

As heightened student numbers make for a heavy workload for teachers and teaching assistances, digital assessment has long been tipped as a potential game changer in higher education, regardless of whether courses are provided online or in blended or conventional mode. It would free up teachers' and teaching assistants' quality time and also comes with the promise of prevention of any bias and discrimination. The 2020 figures are slightly higher compared to 2014 (Table 2): two-thirds have observed a growing trend towards digital assessment within their institution,¹⁰ and 12% are planning to bring in digital assessment in the future.¹¹ A general trend toward digital assessment for all types of courses has been observed in all of the responding institutions from Finland, Netherlands, Sweden, and Ukraine as well as over 85% of those in the UK (90%), Switzerland (88%) Lithuania and Bulgaria (86%).

Almost 70% of institutions take DELT into consideration in their policies and measures for examination and testing, with over half of these

¹⁰ Interestingly, the results show not much difference between the trend towards digital assessment for "all types of courses" and "specifically for online courses".

¹¹ As not all institutions offer online courses, for them the numbers are slightly lower than for all courses.

DIGITAL ASSESSMENT IN 2014 & 2020		
	2014 Which of the following information technology (IT)-related systems does your institution use or provide for students?	2020 Have you witnessed a growing trend towards digital assessment at your institution?
Throughout the institution	24%	33%
Some faculties	39%	35%
No	32%	28%

Table 2 2014 E-learning Study- Q17: Which of the following information technology (IT)-related systems does your institution use or provide for students? (option- Online examinations n= 241) and 2020 Survey on Digitally Enhanced Learning and Teaching in European Higher Education Institutions- Q26: Have you witnessed a growing trend towards digital assessment at your institution? (generally, for all types of courses) n= 364

acknowledging a need for further development. A further 25% of institutions indicated that policies for digital examination and testing were under development, a trend that was particularly strong (42%) among institutions who planned to introduce digital assessment. No doubt that the experience during the pandemic provoked this self-critical reaction as many institutions struggled to ensure fair and reliable testing and examinations remotely. Interviews and focus groups that EUA carried out on the issue confirm that most institutions were not well prepared and found themselves confronted with a choice of commercial services

for proctored examinations. These usually could not cater for larger cohorts, and were therefore insufficient, and also subject to heavy criticism due to intrusive surveillance methods and risks of sensitive student data in commercial servers. Alternatives were self-made approaches, which had to be run without major testing, and — where in line with regulations — calling students back to campus, which bore health risks, or calling off exams, replacing them by other means or just trusting their students. The survey confirms that individual respondents developed their own in-house digital tools for online assessment, leaving

it open whether or not this is related to the crisis. By contrast, institutions with greater focus on continuous, formative assessment based on project or problem-based learning and oral examinations faced considerably fewer problems. All this provoked, in some places, a much more principled discussion on the sense and usefulness of an education that requires summative high-stakes end-of-the-year examinations.

As many institutions are currently undergoing a rather unpredictable academic year, this suggests that we will see an accelerated push for more mature institutional approaches for digital testing and examinations, both from the point of view of processes, but also regarding the overall didactical concepts. Indeed, such observations were made by several of the survey respondents when asked about the changes that were brought on as a result of the Covid-19 crisis.

We pay particular attention to the use of assessment tools like Respondus Monitor, Safe Exam Browser. But in technology-enhanced learning & teaching, we place particular emphasis on relaunching the Open Books approach, which allows for the development of higher-level analytical and critical thinking, and the development of an argument-based decision-making path, not just the reproduction of memorised facts.

- survey respondent, Latvia

4.5.1. Badges and digitally signed credentials

New types and modes of digital learning certification have been emerging, and are starting to be taken up in higher education.

Digital badges have been around for several years, mainly offered by commercial providers. In a higher education context, badges recognise formal and informal learning as a skill or an achievement of students, but also of staff, and generally, of lifelong learners. About a quarter of institutions indicated that they use them, with relatively equal shares to motivate students' curricular learning, and as an add-on, to recognise their extra-curricular learning, in- and outside the institution. While 77% do not use digital badges, several individual respondents indicated that they were planning to introduce them in the future, for example, to develop their staff's soft skills and to recognise micro modules.

Ireland stands out as the country with the highest level of digital badge use (Figure 12): half of the responding higher education institutions use them to recognise extra-curricular learning and 38% offer them as a learning opportunity for learners in and outside the institution. This showcases the impact of a national initiative, which promoted badges not only for student learning, but also for

The delivery of digital badges directly addresses the university's strategic goal of 'delivering research inspired teaching and learning with a world class student experience'. These badges can be issued to staff and students.

- survey respondent, Ireland

USE OF DIGITAL BADGES TO RECOGNISE EXTRA CURRICULAR LEARNING

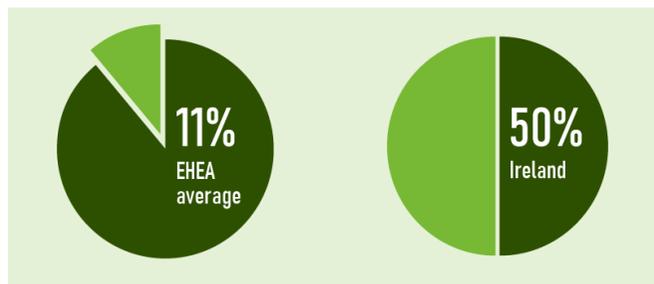


Figure 12 Country-specific data Q28: Does your institution use digital badges? (please select all the applicable options) "yes, for recognition of extracurricular learning" n= 368

USE OF DIGITALLY SIGNED CREDENTIALS

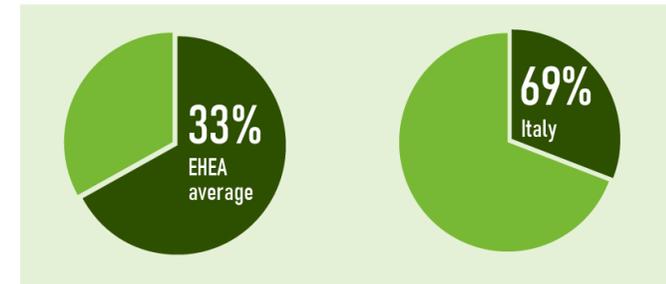


Figure 13 Country-specific data Q27: Does your institution use digitally signed credentials? (please select just one option) n= 366

staff development (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020).

Digitally signed credentials are electronic documents which are issued by awarding bodies to individuals to confirm and provide proof of their learning outcomes (Glossary, p. 7). One-third of institutions reported using digitally signed credentials, whereas 53% reported not using them and 14% were uncertain. Approximately 50% of those who use digital badges, reported also using digitally signed credentials (Figure 13).

Digitally signed credentials are particularly prominent in Southern Europe (61%), where Italy stood out as the country that used digitally signed credentials the most (69%) (Figure 13).

As digitally-signed credentials are one of the key actions of the [2018 Digital Education Action Plan](#) (European Commission, 2018), their use could become more widespread in the future.

4.5.2. Quality assurance

Despite a rise of 22 percentage points compared to 2014, only every second higher education institution includes DELT in its quality assurance processes, with significant regional differences.

Over the past years, there has been a growing consensus among sector organisations that the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) also extend to DELT. This is inherently confirmed in the [2015 ESG](#), which mentions digital learning and new forms of delivery, among other changes, and clarifies that “the role of quality assurance is crucial in supporting higher education systems and institutions in responding to these changes while ensuring the qualifications achieved by students and their experience of higher education remain at the forefront of institutional missions” (ESG 2015, p. 6).

In order to ease the application of the ESG, in its 2018 publication, ENQA outlined “how quality assurance methods with new indicators can be developed” for DELT (Huertas et al., 2018, p. 21). However, the fact that European sector representative organisations responsible for the ESG published a statement on the issue – in the middle of the pandemic¹² – seems to be motivated by continued uncertainty on the matter of QA.

The survey results indicated that indeed, at institutional and also at some national levels, QA remains an open issue, if not a challenge. Only about every second institution (51%) indicates that DELT is considered in its QA approach (Figure 14). If one wants to look at this positively, this is an

Digitalisation and internal quality assurance processes

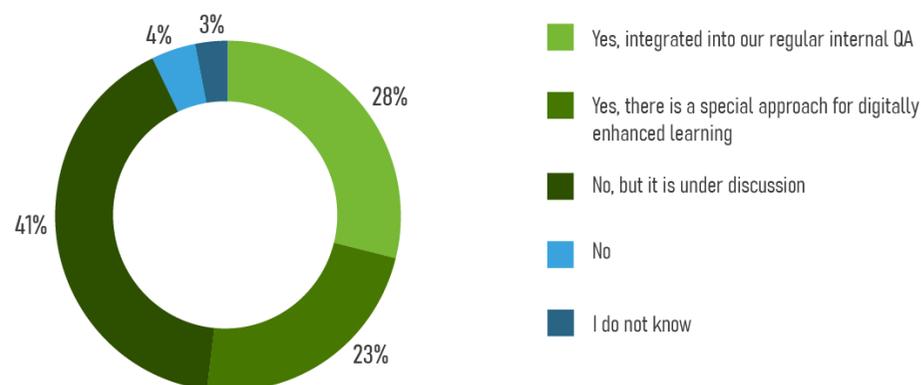


Figure 14 Q12: Is digitally enhanced learning considered in the internal quality assurance process at your institution? (please select just one option) n=366

DIGITALISATION AND INTERNAL QUALITY ASSURANCE PROCESSES IN 2014 & 2020		
	2014 Has there been any special consideration of e-learning for internal quality assurance procedures at your institution?	2020 Is digitally enhanced learning considered in the internal quality assurance processes at your institution?
Yes (included in regular QA processes or special approach)	29%	51%
It is under development	35%	41%
No	28%	4%

Table 3 Comparison of data on internal quality assurance from 2014 E-learning Study (Q13: Has there been any special consideration of e-learning for internal quality assurance procedures at your institution? n=245) and from 2020 Survey on Digitally Enhanced Learning and Teaching in European Higher Education Institutions (Q12: Is digitally enhanced learning considered in the internal quality assurance processes at your institution? n=366)

¹² The E4 – ENQA, EUA, EURASHE and ESU confirmed the relevance of the ESG in a [statement](#) of 27 August 2020.

increase of 22 percentage points compared to a similar question raised in 2014, and may indicate a development trend (Table 3). Also noteworthy is that among those institutions with no QA approach, only 4% responded with “no”, and 41% with a “no-but it is under discussion” (Figure 14).

This could be explained by a sporadic use of DELT, either only in certain parts of an institution, or at a low intensity across the institution – to an extent that it may not require the immediate development of an institutional QA approach. In 2014, this was the main explanation for non-consideration by QA. In 2020, the survey results confirm that those institutions who consider DELT in their regular internal QA processes reported higher provision rates of blended learning, fully online degrees, short online courses and virtual mobility than the EHEA average. There are also some differences between types of institutions, in that open universities obviously all have DELT included in their QA processes, and interestingly for technical universities to a higher extent (62%). Overall, there are quite pronounced regional differences: in Northern Europe, 68% of institutions consider digital learning in their internal QA processes compared to 40% of institutions in Southern Europe and 35% from the Balkans. This could indicate restrictions set by the regulatory frameworks of the respective higher education systems. For example, almost a third of responding institutions from Spain and two-thirds of responding institutions from Albania reported external QA issues as a major barrier to DELT in their institution (Figure 27).

Individual academics emphasised that in their national systems, low-key use of DELT was somehow tolerated, but not officially allowed. The Bologna Follow-Up Group (BFUG) also discussed such concerns when addressing recognition of digital learning in the [2018 Ministerial Communiqué](#) (see quotation): only the explicit mentioning that, like all learning, DELT would fall under the ESG

and has to be quality assured, brought some reassurance that this would not open the door for all kinds of low quality and even bogus provision.

The fact that 41% of institutions are currently discussing internal QA for DELT (Figure 14), may be due to an ongoing trend – but it is also likely to be motivated by the current crisis. This could be a prime opportunity to foster hands-on practice for both internal and external QA, enshrined in national systems, and developed by institutions. European-level peer exchange and

policy processes could support this, also to prevent undesired developments, such as overregulation and bureaucratisation.

Among institutions that have QA for DELT in place, integrating it into the regular internal quality assurance (28%) is slightly more common than establishing a specific approach for digitally enhanced learning (23%) (Figure 14). The former appeared to be particularly frequent in the UK (90%) and in Sweden (50%), the latter in Turkey (50%), Ukraine (43%) and Slovakia (43%).

We will enable our education systems to make better use of digital and blended education, with appropriate quality assurance, in order to enhance lifelong and flexible learning, foster digital skills and competences, improve data analysis, educational research and foresight, and remove regulatory obstacles to the provision of open and digital education.

- 2018 Paris Communiqué of the Bologna Process Ministerial Meeting

5 Learning environments

- Most of the infrastructures and services which were already readily available in 2014 remain so today. VLE and online labs could be strengthened as could several online services for prospective students.
- Despite certain services, such as online library access, being available to students in the vast majority of institutions, the pandemic highlighted that they were not necessarily fit for purpose.

The quality of the student experience does not only depend on the programmes, and the ability of teachers to teach, and students to learn, but also on the overall learning environment. Student services are confirmed to be vital in study success, and mitigation of drop-out. At the same time, staff development opportunities, but generally supportive conditions and environments are also crucial.

This has been confirmed for conventionally provided learning. In DELT, it is even more obvious, as a lack of support often results in immediate failure and drop-out. The related services and infrastructures require skilled and dedicated human resources within but also outside of the institution. Data security in a MOOC would depend on a platform based in the US, and IT support for the functioning of an online seminar could be located in the institution, or on the other side of the world.

A university is more than just a space for teaching and research. The Covid-19 crisis provided a clear picture of how important it is for social interaction, beyond the scheduled learning and teaching. While the university is continuously transformed by its “users”, in the first instance by staff and students, it also guides and shapes their action and interaction. For example, architecture inspires, underpins and enables, or limits learning and teaching. Edwards refers to university buildings as “silent teachers” (Edwards, 2000, p. vii).

Some of the universities' infrastructures that have been in place for decades, if not for centuries, may no longer be in line with the requirements of today's learning and teaching. For instance, in 2018, only 26% of institutions confirmed that, throughout the institution, they had classrooms where chairs and tables could be moved, indicating the limits for some of the innovative pedagogics (Trends 2018, p. 61). While this is true for conventional provision, it is also, and maybe even more so, the case for the emerging, usually less well-known and often changing infrastructure for DELT. About 40% of the responding institutions ranked investing in equipment and infrastructure as the fourth most impactful enabler of DELT (Figure 26).

The 2020 findings confirm those of earlier surveys, suggesting that some standard infrastructures have been available to students for a number of years now. For example, as in 2014 and 2015, in over 90% of institutions, students can avail of wireless internet and open library access (Figure 15). Likewise, approximately 80% of institutions have online repositories for educational material in 2020 and over 70% have campus licenses for software that students need for their studies, much like what was reported in 2014 and 2015 (Figure 15).

But other infrastructures have been significantly enhanced, which may well be a general trend:

In 2020 over three quarters of the institutions surveyed had personalised study portals allowing students to register and access their transcripts and grades etc., a rise from 66% in 2015 and 56% in 2014 (Trends 2015, p. 73; E-learning Study, 2014, p. 36). Almost 80% of the responding institutions also reported having an online student admission system either throughout the institution or in some faculties.

However, other services and infrastructures were less ubiquitous. For example, VLE and online labs are available to students in under 60% of the responding institutions, with considerable regional differences between Northern Europe (84%) and Eastern EU countries (34%) and the Balkans (as opposed to 35%).

Infrastructures in place from 2014-2020

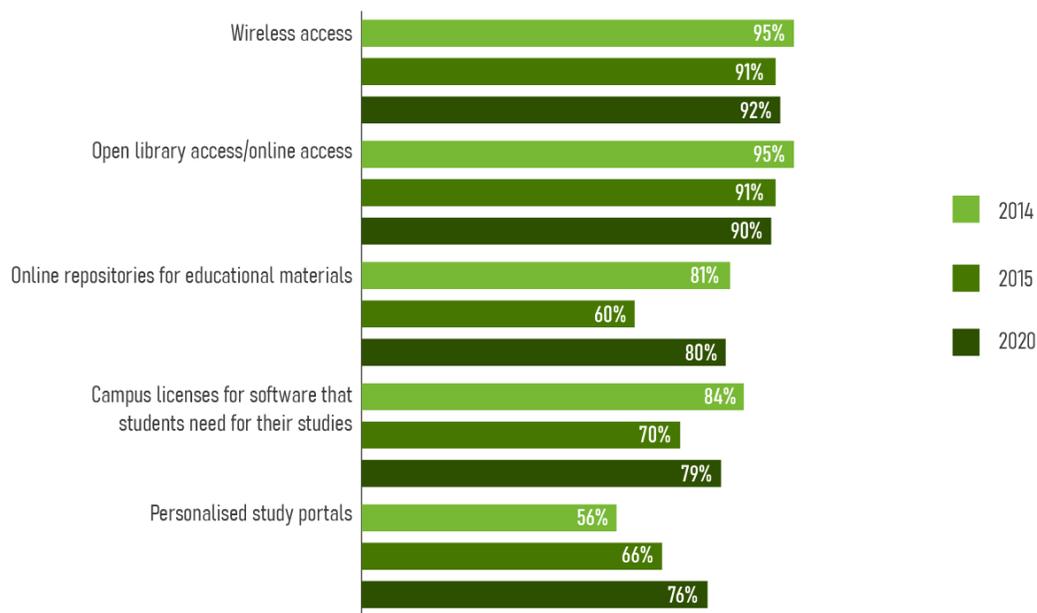


Figure 15 2014 E-learning Study - Q15: Does your institution use any of the following types of educational resources? (online repositories for educational material) n= 242 & Q17: Which of the following information technology (IT)-related systems does your institution use or provide? n=220; Trends 2015- Q42: Which of the following information technology (IT) systems or tools does your institution use or provide for its students? n= 432; 2020 Survey on Digitally Enhanced Learning and Teaching in European Higher Education Institutions- Q38: Which of the following infrastructures can students access at your institution? n= 364

Roughly 40% of institutions had online bridging courses and online facilities for study preparation for prospective students either throughout the institution or in some faculties. Approximately 25% plan such measures in the future, in Eastern Europe/Central Asia even as many as about 34%. Of the responding institutions about 34% use online self-assessment for prospective students, either throughout the institution or in some faculties (Figure 16). And again, over 25% are planning to bring in such a measure in the future. In Eastern Europe/Central Asia as many as 40% of their institutions have indicated their intention to introduce this measure shortly. As mentioned above, during the Covid-19 crisis, these digital services and infrastructures suddenly received additional importance and value, and while enabling the remote continuation of learning and teaching during lockdown, they also showed the need for further capacity building. For example, although open library access is available in 90% of the respondents' institutions, 65% affirmed that they enhanced it as a result of Covid-19. Beyond these more functional structures and services linked to formal learning, one would also have to consider spaces for social contacts, spontaneous meetings and the formation of groups outside classes. The lack of spaces for social interaction, the lack of peer exchange and peer support, that often results from casual meetings in corridors, cafes and parks on and around the campus has been identified as a major problem for students during the pandemic.

Online services for students

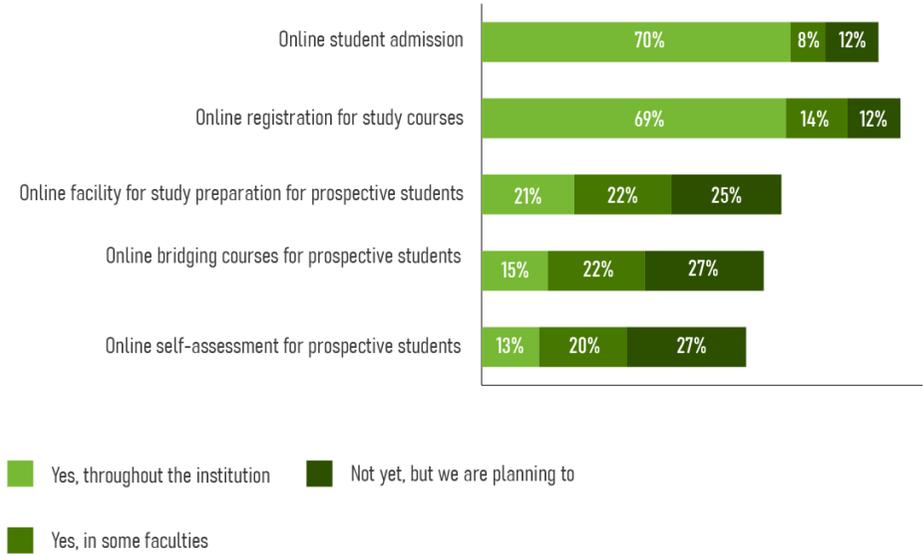


Figure 16 Q37: Which of the following online services does your institution provide for students? (please select one option for each item) n=364

5.1. Support for staff

- Over three-quarters of institutions provide staff support services, but the impact of such services remains to be explored.

In line with the general importance attributed to staff, most institutions indicated that they offered a significant amount of support to them (Figure 17). For example, 80% or more, offered digital skills training, had a centre or unit which supported teaching staff with technical issues, a centre or unit which addressed digital learning and teaching issues and opportunities and online repositories for educational materials.

The least frequent support mechanism, although still provided by three-quarters of the institutions surveyed, were online platforms for exchange and collaboration among teachers. In addition, and beyond the institutional level, during the pandemic, online fora and groups emerged, and webinars organised, at national and European levels, sometimes with the support of university networks and associations, or just bottom-up, through the likes of Facebook groups. But for both, the intra- and interinstitutional platforms, the question is whether they reach out to a significant number of teachers or, very likely, mainly gather those who are already engaged and involved in DELT.

While these figures may suggest a relatively widespread and decent level of support, the survey cannot demonstrate in detail how useful and widely used these measures and structures actually are, assessing which is probably also difficult for institutions.

Support for teaching staff

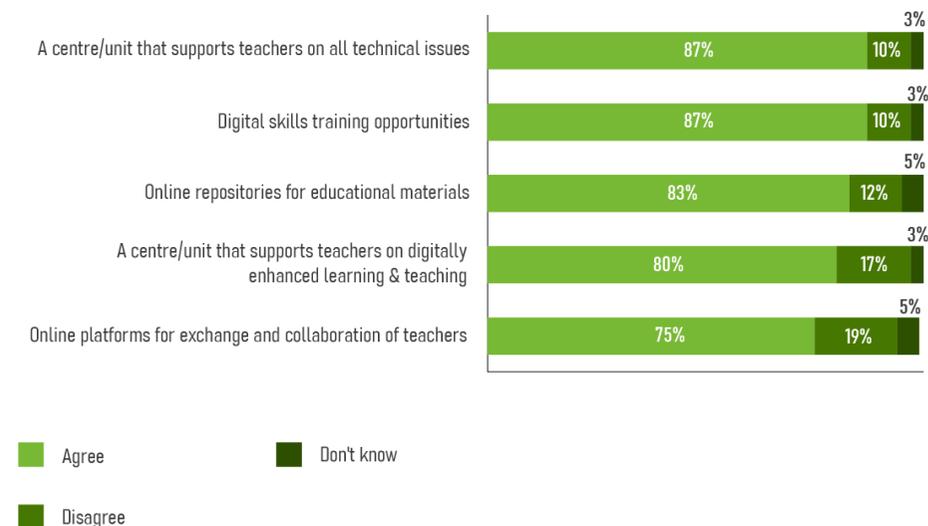


Figure 17 Q34: Does your institution support teaching staff with: (please select one option for each item) n=366

In the public discussion on DELT, there is commonly a strong emphasis on digital skills training for staff, as for example in the [2020 Digital Education Action Plan](#) (European Commission, 2020c). In a survey question on enablers for DELT (see section 8.1), staff training achieved the second highest rating (Figure 26). However, while some institutions may still face a lack of training opportunities and materials, overall, the problem is a conceptual issue. Individual respondents pointed to the need to enhance digital skills training and professional development opportunities by identifying approaches that are useful and that can be integrated and accepted by staff. Several also pointed to the need to develop a more systematic human resources policy to enhance digital teaching competencies, more tailor-made development opportunities and a shared vision of leadership to make this a success. As for concrete challenges

faced by institutions, respondents referred to the continued pressure on research achievement in recruitment and career development, and also the lack of protection from overly high workload resulting from digitalisation. The former is not a new finding, and not limited to digital skills: In Trends 2018, it was identified as a major obstacle to teaching enhancement (Trends 2018, p. 69). The latter has to do with the fact that digital provision creates a new working situation for which rules, but also a working culture, may still have to be developed. In particular during the pandemic, many staff were given new tasks and extra work, often with insufficient institutional support. Anecdotal evidence suggests that this resulted among others in deferment, if not cancellation of some of the more ambitious plans for curriculum reform and staff development.

Another fairly common insight during the Covid-19 crisis was that while the availability of such resources was of immense value for kick-starting remote provision, they may not have been sufficient for the increased demand, nor may they have been commonly known to many staff and students. For example, the [Irish National Digital Experience](#) (INDEX) Survey indicates that 70% of academics had never taught online pre-crisis, with similar figures in the UK (National Forum for the Enhancement of Teaching and Learning in Higher Education, 2020c). As pointed out by Gaebel, “there is no reason to believe that experience levels were different in other European higher education systems” (International Association of Universities, 2020, p. 10).

The most effective measures for improving technology enhanced learning are direct support activities for academics: tailor-made learning activities on how to work with students using digital tools and regular peer-learning activities that help sharing experience including experienced academics and beginners.

- survey respondent, Latvia

5.2. Technological innovation

The findings also point to strategic interest and curiosity as regards the current use and further development of technologies in the respondents' institutions (Figure 18). For example, collecting and analysing data on the state of development and needs in different parts of the institution was classified among the top three most useful measures for improving DELT in the respondents' institutions (Figure 29- see section 8.3). Big data are already in use in 38% of institutions compared to 40% for learning analytics.¹³ Interestingly, about half of the institutions see both as a strategic development priority (Figure 18). And this also seems to be the case for other emerging technologies, such as artificial intelligence, augmented and virtual realities, machine learning, and internet of things, which are already in use by about one-third of institutions, with another 40-50% confirming them to be a strategic development priority for the future. Hence only between one-tenth to approximately one quarter of the institutions do not feel concerned by these technologies, with the sole exception of Blockchain (38%), which is only used by 17% of institutions.

Unless there is mounting pressure, or major incentives are provided, change on these issues may not be faster than elsewhere in society. As longitudinal data from the 2014 report showed in this section: take-up seems to take time, also as it has to assess the usefulness of approaches in a responsible fashion, considering the needs and also the attitudes of staff and students. But some institutions also point to reasons for low or delayed take up, such as data protection concerns, restrictions emerging from the GDPR regulation and other legal aspects, which were for example mentioned by German higher education institutions. There has also been anecdotal evidence of a general fear among higher education institutions concerning the risk of commercial AI companies harvesting very sensitive student and staff data.

¹³ The findings of the SHEILA report seem to indicate that learning analytics are emerging (Tsai et al., 2018, p. 14). However, also regarding the results of the present study, their understanding of what learning analytics comprises, is likely to be quite diverse.

Digital technologies

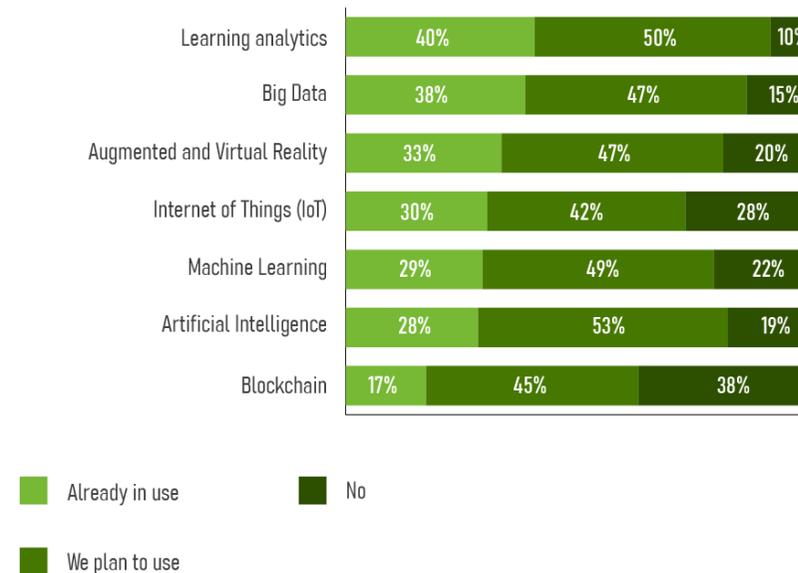


Figure 18 Q39: Which of the following technologies do you see as a development priority for your institution? (please select one option for each item) n= 340

6 Institutional strategies and governance

- Compared to 63% in 2014, in 2020, 88% have a strategy for DELT, usually integrated into a wider strategy for the entire institution.

6.1. Strategy

The key importance being accorded to digitalisation in learning and teaching has been made evident by this survey, with over three quarters of institutions indicating it as a strategic priority, and 88% considering it in a strategy. This is a steep increase, compared to 2014, when 63% had a strategy (Table 4). This leaves 12% of institutions without a formal strategy or policy on the issue, with a notably high absence of such strategies in Belgium (40%), Romania (40%), Bosnia and Herzegovina (33%) and Czech Republic (31%), but for the rest quite well disseminated across Europe.¹⁴

But there is another interesting development: at almost 80% of institutions, this is an institutional strategy, i.e., for the entire institution, either as a dedicated strategy (16%), or more commonly integrated into a broader strategy (63%).¹⁵ This confirms more recent predictions that digitalisation was becoming part of institutional strategies (85% in Trends 2018, p. 60), and generally growing attention was paid to learning and teaching (Trends 2018). In 2014, just under half of the institutions had an institutional strategy (E-learning Study, 2014, p. 22). However, the existence of strategies at faculty

¹⁴ Northern Europe (11%), Western Europe (10%), Southern Europe (9%), Eastern Europe/Central Asia (11%), Eastern EU (15%), and Balkans (10%).

¹⁵ The question left the purpose of this overall strategy open; it could be a strategy for learning and teaching, or just the general strategy of the institution.

STRATEGIES FOR DELT IN 2014 & 2020		
	2014 Does your institution have a strategy or policy regarding e-learning?	2020 Does your institution have a strategy for the digitalisation of learning and teaching?
Yes, we have an institutional strategy in place	49%	63%
Yes, standalone strategy	N/A	16%
No, but policies/strategies at department/faculty level	14%	9%
No, but it is under development	26%	N/A
No	5%	12%
Other	5%	N/A

Table 4 2014 E-learning Study- Q4: Does your institution have a strategy or policy regarding e-learning? n=246; 2020 Survey on Digitally Enhanced Learning and Teaching in European Higher Education Institutions- Q7: Does your institution have a strategy for the digitalisation of learning and teaching? n=360

and departmental level at 9%, five percentage points lower than in 2014, should not be read as a lack of commitment or lower priority allocated to the issue, but rather as a consequence of the institutions' governance model and related funding methods. This also explains their high frequency in systems, with a high autonomy of faculties, as

for example in the Balkans (25%), where only 65% have an institutional strategy, compared to 86% in Northern Europe.¹⁶

¹⁶ This answer was chosen almost exclusively by institutions from Eastern Europe, for example, Czech Republic (15%), Poland and Romania (20%), Slovakia (29%), Bosnia and Herzegovina (33%), and Serbia (43%).

6.2. Trends towards centralised and shared responsibilities

- Responsibility has become slightly more centralised since 2014.

Quite in line with the findings on strategy, the survey results also confirm a further increase of centralised or shared responsibilities for digital learning, compared to 2014 (Table 5). Notably, this seems to be organised differently from institution to institution, with certain models more frequent or even dominating in some countries.

This seems to confirm a trend towards strategies, and more institutionalised approaches for digitalisation, that was already recognisable in 2014:

“The clear trend towards centralised or shared-responsibility institutional approaches is remarkable, given that faculties or individual teachers often drive e-learning activities. It may be attributable to many of the concerns linked to e-learning. For example, investment in costly technology, legal aspects (e.g. licensing and intellectual property rights) and the validation of learning (in the award of credits and degrees) require coordination by institutions and decisions taken by their leaders. The trend is consistent with the general one towards more central guidance and oversight in institutions and the shift from faculty- and teacher-driven activities to institutional strategies initiated by their leaders. This has been especially apparent over the past decade in the internationalisation of institutions.” (E-learning Study, 2014, p. 40)

RESPONSIBILITY FOR DELT IN 2014 & 2020		
	2014 How is e-learning managed and organised at your institution?	2020 How does your institution support the development of digitally enhanced learning?
Shared between central and faculty-based digital learning units	40%	EHEA Average 48% Sweden 88% Switzerland 86 % Slovakia 86% Romania 80%
Central unit	35%	EHEA Average 45% Austria 88% Turkey 80% Germany 67%
Faculty or departmental level only	12%	EHEA Average 7% Georgia 30% Czech Republic 23%

Table 5 2014 E-learning Study- Q9: How is e-learning managed and organised at your institution? n=247; 2020 Survey on Digitally Enhanced Learning and Teaching in European Higher Education Institutions- Q9: How does your institution support the development of digitally enhanced learning? n=363

This is probably not just a matter of organising tasks and logistics, but also enhancing intra-institutional communication and cooperation, resulting either in more impact and better quality of digital learning, or at least more awareness of the institutional processes. Compared to those with “faculty or departmental level support only”, institutions with “central” or “shared” responsibility are more likely to report digital transformation gains over the past five years, for example regarding learning and teaching methods and provision, collaboration with higher education institutions at national level and uptake of online meetings and virtual mobility.

We lead through a central unit but also use faculty champions.

- survey respondent, United Kingdom

6.3. Policies, participation and funding for digitally enhanced learning and teaching

- Over 60% of institutions indicate that they include staff and students in the governance of DELT, have a dedicated budget to support digital transformation and clear policies and processes for deciding on new technologies.
- About every second institution points to the need to enhance or develop horizontal policies on data protection, cyber security, prevention of plagiarism, ethics, intellectual property and examinations and testing.

More than 60% of institutions indicate that they have clear policies and processes for deciding on new technologies, involve staff and external stakeholders in decision-making and also have a budget to support digital transformation (Figure 19). Approximately 70% of institutions in Northern Europe and Southern Europe indicate that they have a dedicated budget for digital transformation. The fact that one-third (34%) combines all three options could indicate focus and priority setting, and even a certain level of maturity in their approaches.

Policies, participation and funding for DELT

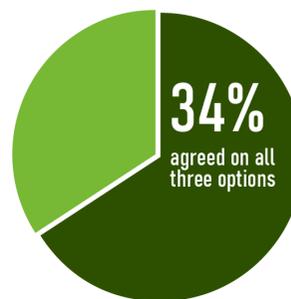
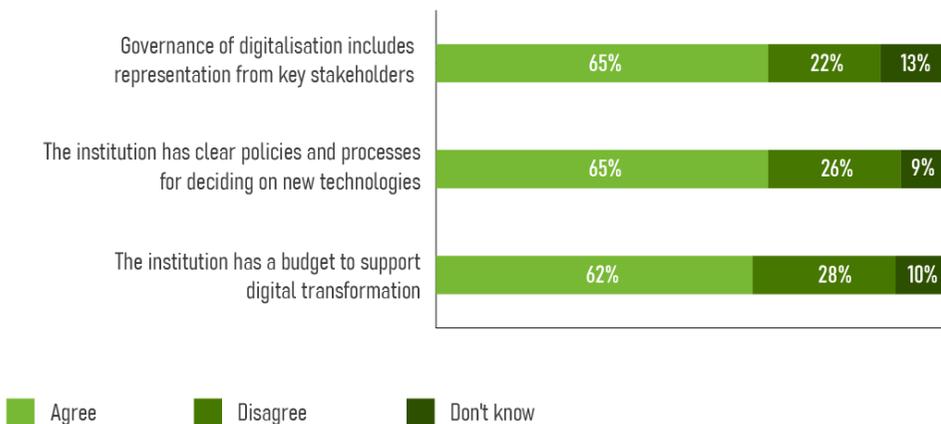


Figure 19 Q10: Do you agree or disagree with the following statements? (please select one option for each item) n=368

EUA's earlier work on learning and teaching identified the active contribution of the institutions' members and involvement of their external stakeholder as key for the development and implementation of strategies for learning and teaching in general, e.g., as summarised in the [European Principles for the Enhancement of Learning and Teaching](#), (European University Association, 2017) and also pointed to the delicate balance of pairing leadership and bottom-up activity. Unsurprisingly, in the survey, proactive participation of staff and students, and generally of stakeholders, is also identified as one of the top three enablers of DELT (Figure 26).

The majority of institutions confirms also that they have more specific institutional policies and measures on data protection (85%), ethics and integrity (72%), intellectual property (72%), cyber security (79%), plagiarism detection (85%) and examination and testing (69%) in place (Figure 20). However, about one-third of the total respondents acknowledged that these approaches could be improved.

Adding the responses from institutions with no policies and policies under development, between 48% (data protection) and 68% (examination and testing) require enhancement. The fact that policies for intellectual property require improvement, might also be caused by prevailing uncertainties in the national and European legislation in view of changing production modes, formats, and media use.¹⁷ Anecdotal evidence confirms uncertainty of copyright issues, and reservations or even resistance against creative commons licencing and Open Education Resources approaches. Development needs for examinations and testing policies have probably also been influenced by the Covid-19 crisis, which made limits and insufficiencies of existing policies and measures more visible and pressing.

¹⁷ The [EU Copy Right Directive](#) was to improve the situation, but was adopted in 2019 only, and is yet to be transposed in national law. While it holds exceptions for the not-for-profit education sector, it will have to be seen on whether these are sufficient for the open and shared use of digitally enhanced learning provision.

Embedding digitally enhanced learning in policies and measures

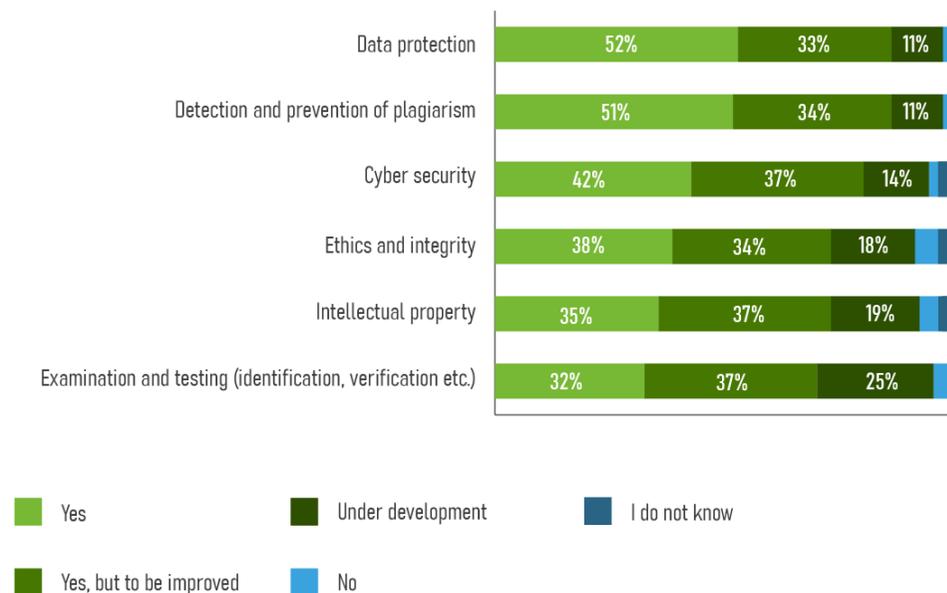


Figure 20 Q11: Is digitally enhanced learning taken into account in your policies and measures for: (please select one option for each item) n=366

7 Benefits and impacts of digitally enhanced learning and teaching

- The vast majority of institutions is confidently positive about the benefits DELT brings to students and, generally, the transformation of learning and teaching. The revision of teaching methods and the flexibility of learning and teaching are seen as the top two impacts.
- However, it will be important to ensure a positive attitude of students, and in particular of staff.

7.1. Perceived benefits and impacts to date

In Europe today, practically every higher education institution uses DELT. With increased take-up and resulting practical experience gained over the recent years, the controversies on the matter have been less a question of whether or not, but rather to what extent, in what mode, and what the expected impacts and benefits are. The vast majority of survey respondents consider digital learning and teaching not only to be a feasible endeavour, but also a highly valuable one and a powerful change driver. In fact, the majority of respondents agreed that, over the past five years, digitalisation has contributed to a major transformation in learning and teaching methods and provision, collaboration with other higher education institutions at national and international level, outreach and provision for international students and open learning opportunities (Figure 21).

Transformation over the past five years

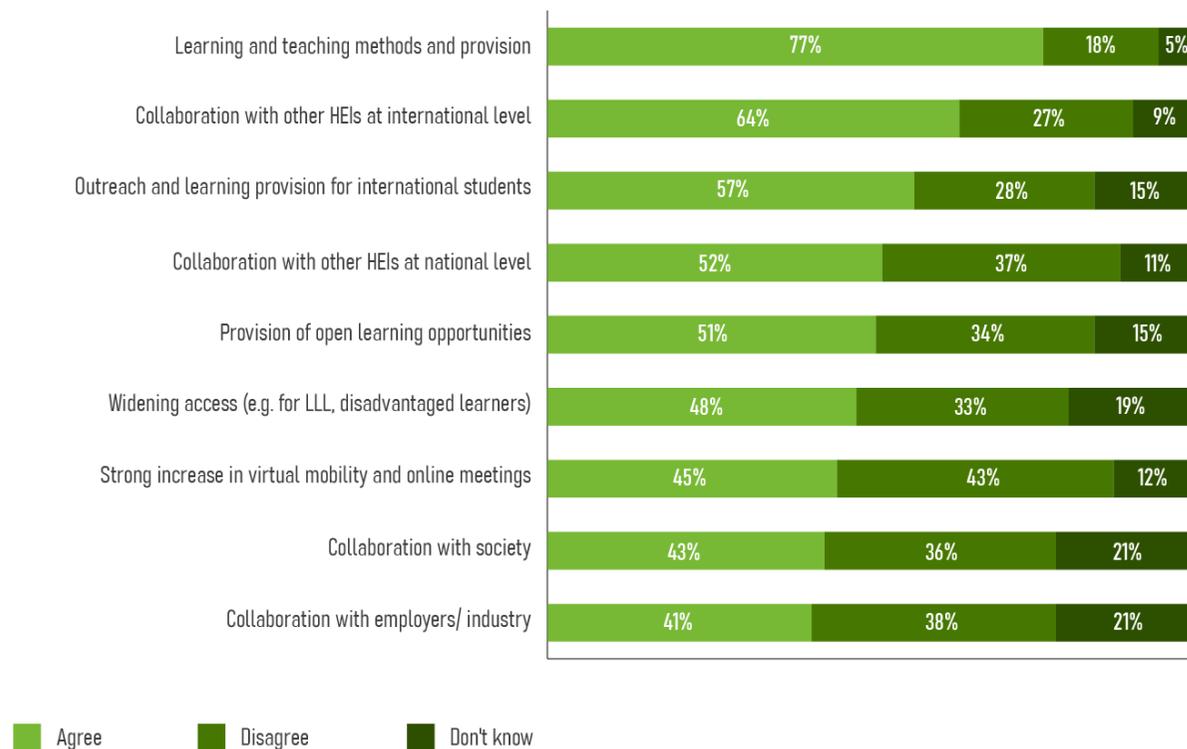


Figure 21 Q15: Over the past five years, has digitalisation at your institution contributed to major transformation? n=364

The positive transformative impact that digitalisation can have on learning and teaching was already uncontested in 2014, when literally none of the responding universities assumed that there were no benefits, and only 8% admitted being uncertain (E-learning Study, 2014, p. 44). But at the time, digitally enhanced education as an institutional approach was relatively recent, levels of hands-on experience relatively low, and expectations somehow speculatively high, also due to the emerging MOOCs. Therefore, it is reassuring to see that some of the 2014 expectations have turned into realities.

As relatively high positive response rates had already been received in 2014, institutions were now asked to select the three most transformative impacts (Figure 22):

- For almost 90% of institutions, this was the revision of teaching methods, chosen already in 2014 as a perceived benefit by 87% (E-learning Study, 2014, p. 45) and as an institutional trend in 2018 by 90% of the respondents (Trends 2018, p. 60).
- Flexibility of provision was chosen by 75%, confirming 2014 and 2015 results on e-learning development objectives (E-learning Study, 2014, p. 47; Trends 2015, p. 73).

Monitoring student learning was seen as a top three impact by more than one-third of respondents, and all other options were chosen by at least one-fifth: collaboration among teachers, flipped classroom approaches, provision for larger numbers of students, and interactive collaboration among students. The sole exception was foreign language learning (7%).

This sounds all very positive and encouraging, and 80% of respondents confirmed that it brings benefits to the student experience (Figure 23). But these perceptions are not necessarily shared by all members of the institution: While 73% still felt confident stating that students had a positive attitude towards DELT, only 62% reiterated this for their staff. Individual respondents explained that staff may not feel confident using digital learning and teaching technology or simply may not have enough time to learn how to use it.

Top three impacts of digitally enhanced learning and teaching

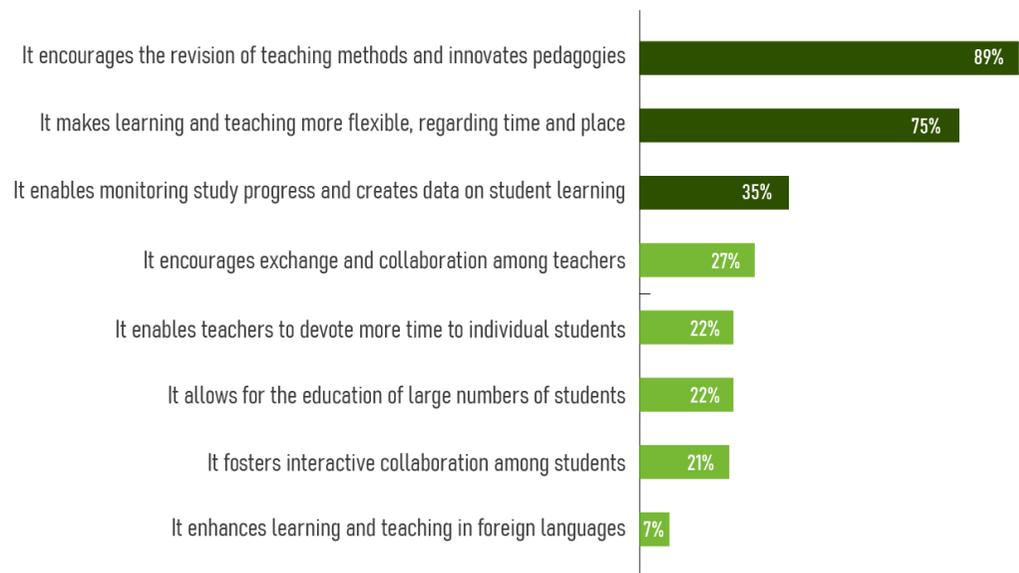


Figure 22 Q24: What are the main impacts of digitally enhanced learning and teaching that have been observed at your institution? (please select your top three choices) n= 368

Position towards digitally enhanced learning and teaching

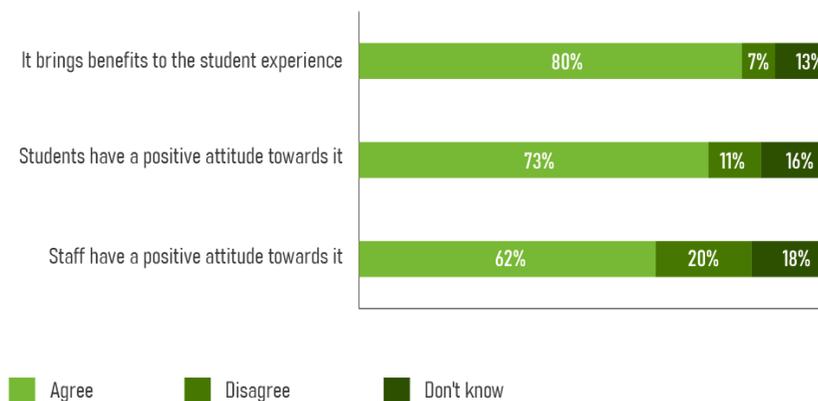


Figure 23 Q8: How would you describe your institution's position towards digitally enhanced learning and teaching? n=364

Again, as for other questions, the ad-hoc shift to online teaching during the pandemic with the considerable stress and the resulting additional workload has influenced this perception. But it also underlines the need for consideration on how to enable acceptance and buy-in of the institutional members, and participatory approaches could help to enhance these. Given that staff may enjoy relatively long careers in higher education, it would be important to enable a positive and proactive attitude towards DELT. For example, top-down quality assurance and curriculum reforms conducted as part of the Bologna Reforms, still provoke negative reactions in some quarters. On the other hand, anecdotal evidence during the pandemic suggests that swift communication with and active involvement of students and staff led to higher levels of acceptance for the measures that had to be taken. In this regard, higher education is not so different from other sectors of profession and life.

Our university is specialised in medical training. Thus a cautious approach with regards to the clinical disciplines is mandatory, since face-to-face interaction with the patient is compulsory.

- survey respondent, Republic of Moldova

Covid has changed the collective attitude towards online learning. We have a more positive view towards it.

- survey respondent, Malta

7.2. Transformation of provision and of external collaboration

- For the next five years, 95% of institutions see digitalisation as a strategic priority for their teaching methods and provision of learning and teaching.
- Over three-quarters also see digitalisation as a strategic priority for their external collaboration at international and national level.

Asked about the future, the majority of institutions reveal that the current state of play is just a point of transition towards enhanced and broadened use of digital formats, to enhance teaching methods and provision, but also mobility and collaboration at national and international level – with higher education and other partners, for example, industry (Figure 24). There is a high level of positive agreement on all questions, with only 2-10% disagreeing and 8-20% being in doubt. Where comparable data is available, it shows an increase compared to 2014.

While respondents were asked to report on the situation before April 2020, the influence of the crisis can hardly be excluded in a question asking about future expectations. As many as 92% indicated that they had explored new ways of teaching – with only the open universities seeming to have been unaffected. Practically all the institutions emphasise digitalisation as a strategic development priority for their learning and teaching methods and provision (95%) (Figure 24).

Digitalisation is also expected to enable collaboration with higher education institutions at national level, but also with employers and industry, and generally with society, all with rates over 70% (Figure 24), and where data is available, at higher rates compared to 2014. For example, in 2014, just over half of the institutions anticipated an increase of inter-university collaboration, and only one-third with industry (E-learning Study, 2014, p.48). The expectation that digitalisation would boost international higher education cooperation was already high in 2014 (70% in E-learning Study, 2014, p. 48), and has even increased (85%), which could be due to a host of different factors, including institutional policies to reduce their carbon footprint and the European Commission's European Universities Initiative, obliging beneficiary institutions to make 50% of their students mobile (European Commission, 2020e).

Digitalisation as a strategic development priority over the next five years

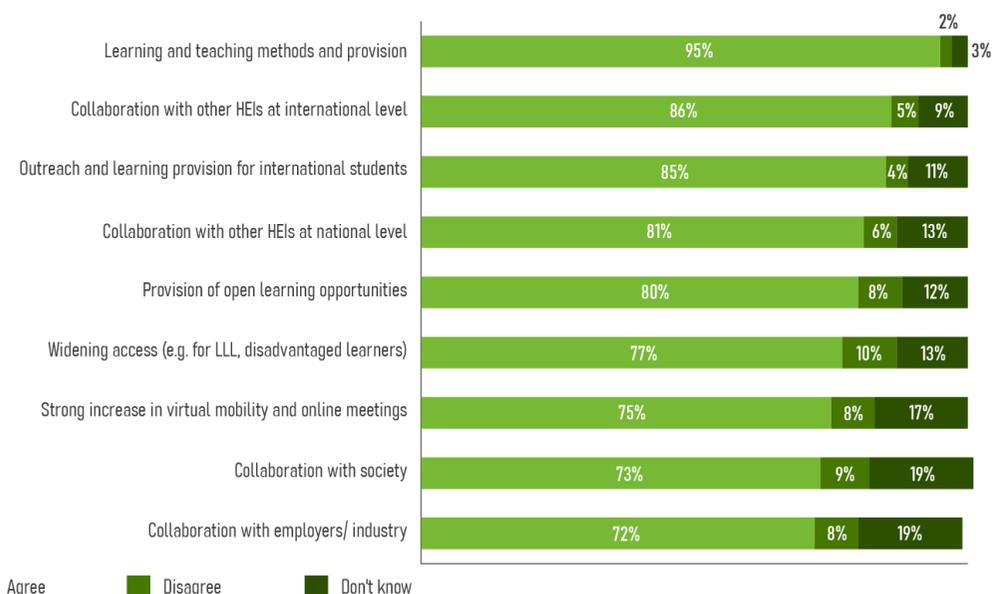


Figure 24 Over the next five years, will your institutions emphasise digitalisation as a strategic development priority in: (please select one option for each item) n= 363

This may also explain the relatively high score for the “replacement of physical mobility with virtual mobility and online meetings” (77%), which could indicate a more strategic approach to replacing short trips for meetings and events, and to complement classic physical mobility schemes for students and staff, rather than replace them (Figure 24). As a matter of fact, currently only one quarter of the respondents indicated that virtual student mobility is in place in their institution. Also, outreach to and learning provision for international students (86%) is high on the agenda, and could have been influenced by the crisis, given the wide concerns of a drop in the international student population.

Respondents from the Balkans showed a particularly strong interest in exchanges, with 90% of the institutions from this region agreeing that they would emphasise digitalisation as a strategic priority in collaboration with higher education institutions at international level, with employers and with society over the next five years. This suggests that the region's low uptake of DELT, which has been frequently referenced throughout the report, must have other reasons than lack of readiness to innovate and embrace technology.

7.3. Widening access and outreach

- Around 80% of institutions see widening access and outreach as a priority for DELT, among others through MOOCs and short online courses.

Another strategic development priority for DELT is widening access (81%) and providing open learning opportunities to a wider range of learners (80%), which confirms the growing importance of the topic for institutions and their societies. Indeed, when asked about the transformative impact of digitalisation on their institution over the past years, about half of the respondents felt that digitalisation had significantly boosted access for groups such as disadvantaged and lifelong learners (Figure 25). This is further underpinned by the relatively high number of institutions targeting mature and adult students (65%) through online learning, compared to approximately 30% in 2014 (E-learning Study, 2014, p. 28), as well as 55% observing a growth in demand for and popularity of short online courses, which mainly serve lifelong learners. Likewise, while in 2018, the Trends report revealed that over a third of the institutions surveyed offered open online courses and/or MOOCs for lifelong learners (Trends 2018, p. 51), reaching out to new learner groups is now considered to be among the top three motivations for offering MOOCs. Thus, the survey results clearly point to an upward trajectory in terms of inclusive digital learning and teaching, notably for lifelong and adult learners (Figure 25).

Widening access through digitally enhanced learning and teaching

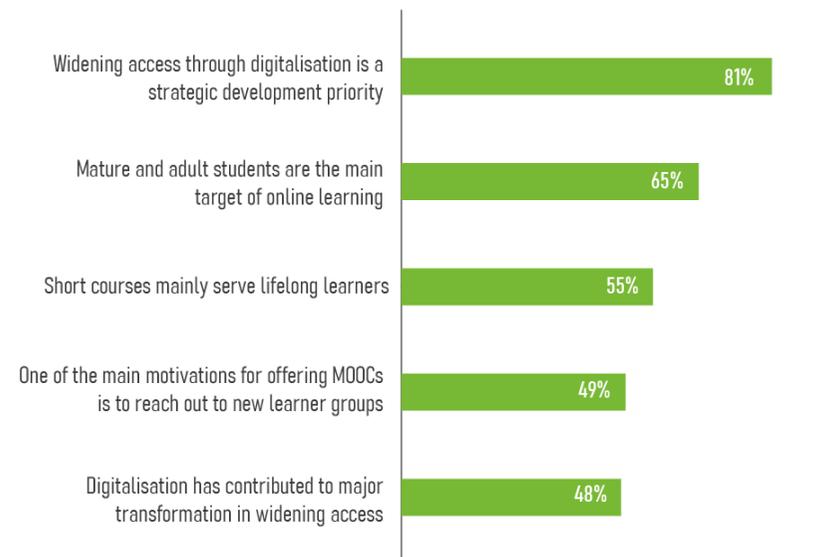


Figure 25 Q15: Over the past five years, has digitalisation at your institution contributed to major transformation- n=364; Q32: What is the main motivation for your institution in offering MOOCs and open learning? n= 175; Q22: How would you describe the demand for short courses (non-degree) that earn certificates, micro-credentials, badges or similar, at your institution? n= 362; Q21: Which student group does your institution target through online learning? n= 229; Q16: Over the next five years, will your institution emphasise digitalisation as a strategic development priority in: n=363

8 Enablers, barriers and measures for enhancement

- The importance of having proactive and well supported staff and students as well as a robust strategy is reflected in the main enablers of and barriers to DELT in European higher education institutions.

While the situation of individual institutions and systems is quite diverse, there is a strong alignment between what leadership identifies as top enablers and barriers across Europe: This is about the implementation of strategic approaches throughout the entire institution, requiring the proactive participation of staff and students, staff development, and funding for building the necessary resources. What is striking is that these key enablers and barriers are not particularly unique to DELT, and also that with the important exception of funding, they seem to be in the remit of institutions themselves. Other external problems, such as regulation and external quality assurance, were found challenging by larger numbers of institutions only in some countries.

8.1. People

Those who think digital transformation is mainly about pushing technologies, may reconsider: the survey findings confirm the crucial role that people play in digital learning and teaching, and also that many institutions are aware of it. Asked about the top enablers for digitally enhanced

education, three-quarters of respondents point to the proactive participation of staff and students, followed by professional development and training, and in considerable distance, by strategy and investments in equipment and infrastructure (Figure 26). But in order to be motivated and engaged, staff need to feel supported by their institution, through provision of impactful training and support.

Top three enablers of digitally enhanced learning and teaching

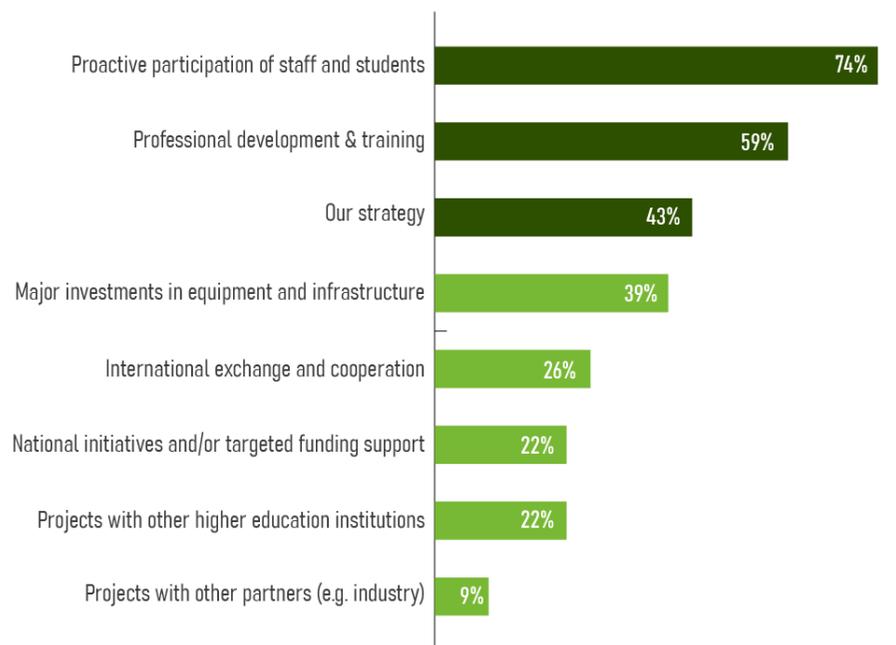


Figure 26 What are the top 3 enablers of digitally enhanced learning and teaching at your institution? (please select your top three choices) *n* = 368

Unsurprisingly, the enablers are mirrored in the top barriers (Figure 27): lack of staff resources came first (51%), followed by lack of external funding opportunities (40%). The difficulty to devise a concerted approach for the entire institution (36%), which turned positively would read “strategy and proactive participation of staff and students”, and the lack of staff motivation, were supported by over one-third (34%) of the institutions. This gives an impression of the challenges when it comes to providing leadership and institutional planning on learning and teaching, impacted by diverse disciplinary and departmental cultures, and also individual teachers’ approaches.

While responses were limited to the top three barriers, still about one-fifth of institutions selected “lack of support for professional development”. Its mention as a barrier and enabler confirms the importance of the issue, but leaves open whether this is caused at individual institutions by a lack of training resources, or rather by the fact that, generally, pedagogic staff development is not fully recognised as part of academic career development, as pointed out earlier in the report. One-fifth also identified digital infrastructure and its maintenance as a barrier, with some individual respondents clarifying that the lack of digital infrastructure was in fact a problem on the students’ rather than the staff’s side.

Top three barriers to digitally enhanced learning and teaching

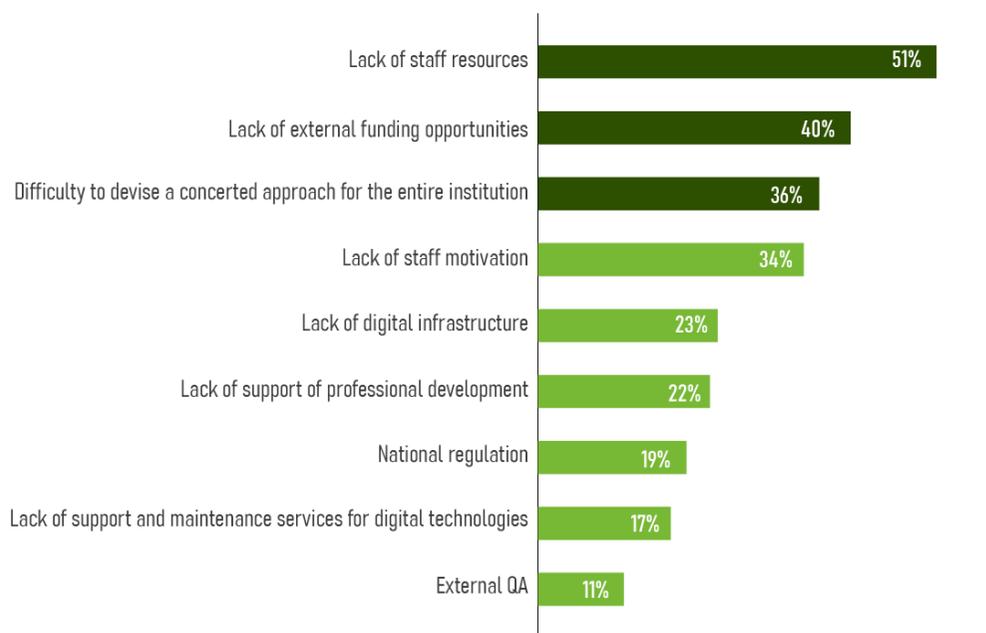


Figure 27 Q14: What are the top 3 barriers to digitally enhanced learning and teaching at your institution? (please select your top three choices) n= 368

8.2. External funding, national regulations and external QA

- While 40% of institutions consider a lack of external funding opportunities as a major obstacle, this is disproportionately high in some countries and regions.
- Similarly, national regulations and external quality assurance is a problem only in some countries.

A lack of external funding opportunities is mentioned as the second biggest obstacle to DELT by 40% of the institutions surveyed (Figure 27). This appears to be particularly problematic for higher education institutions in Ukraine (86%), Bosnia and Herzegovina (83%), Albania (80%), Bulgaria (73%) Armenia (71%), Slovakia (71%), Russia (69%), and Portugal (67%). On a regional level, lack of external funding opportunities is considered to be a bigger barrier in the Balkans (60%) than in Northern (24%) and Western Europe (22%). Generally, it can be assumed that in systems where universities enjoy a greater degree of financial autonomy, combined with sufficient amounts of funding, they have the margin for manoeuvre to make strategic investments, for instance in DELT. As stated in section 6.3, 62% of respondents indicated that they have a dedicated budget for digital transformation. Funding is important as digitalisation requires investment in infrastructure, equipment, software & licenses, as well as in organisational structures and planning, not to mention people. As lack of staff resources is mentioned as the biggest obstacle, lack of funding is likely to be one of its causes. All this is to be kept in mind in view of the increasing pressure on universities to embark on hybrid provision, which would likely imply more human and material resources, and considerable investment in the development of virtual learning environments and the redesign of physical ones.

Likewise, responses show that in some higher education systems, problems emerge from national regulation and external QA. While on average about every fifth institution mentioned national regulations (19%) as a top three barrier (Figure 27), this response is particularly frequent in Albania (60%),

EXTERNAL QA AS ONE OF THE TOP THREE BARRIERS TO DIGITALLY ENHANCED LEARNING AND TEACHING

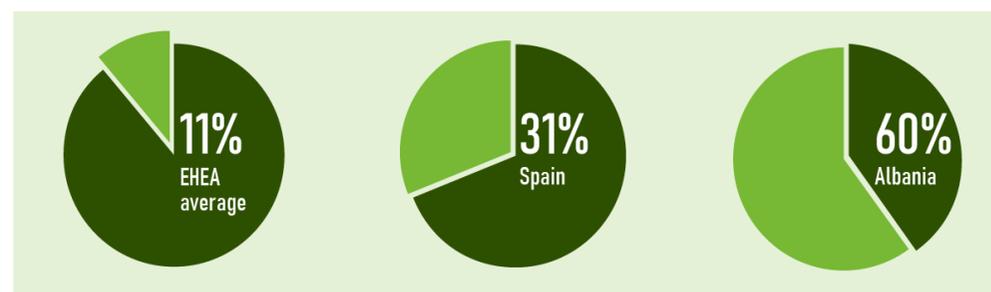


Figure 28 Country-specific data- Q14: What are the top three barriers to digitally enhanced learning and teaching at your institution? (option- External QA) n= 368

Ukraine (43%), Belarus (43%), Bulgaria (40%), Georgia (40%), Spain (39%) and Czech Republic (39%), and in the Balkans (30%). By comparison, only a small number of institutions in Northern (8%) and Western Europe (6%) pointed to this. In a follow-up survey¹⁸ gathering responses from 39 systems across the EHEA, 19 respondents confirmed that they have no national or state-level strategies for DELT in place, but some nevertheless had measures to support institutions in developing DELT. The same survey revealed that since the pandemic, higher education regulations had been changed or changes were under discussion in 16 of the respondents' systems across the EHEA. Moreover, 28 of the respondents' systems had equally enhanced measures to support higher education institutions in their provision of DELT since the pandemic.

¹⁸ This survey was circulated among members of the Bologna Follow up Group from October to November 2020. Questions were asked about national/state-level strategies for DELT pre and post Covid-19. 43 responses from the following 39 countries: Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium (2), Bosnia and Herzegovina, Bulgaria (2), Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Kazakhstan, Latvia, Liechtenstein, Malta (2), Netherlands, North Macedonia, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Turkey, UK (2), Ukraine. N=43

External QA (Figure 28) was mentioned by every tenth institution (11%) including 60% of the responding institutions in Albania and almost a third in Spain (31%). And again, this was more of a problem in the Balkans (25%) and less of a concern in Western Europe (5%).

It is not entirely surprising that DELT is not or not fully recognised by national systems. By way of illustration, the [Bologna Process Implementation report](#) (European Commission/ EACEA/Eurydice, 2018, p. 77) pointed out that few countries prioritise adapting programmes to digital provision and related certification processes. In practice this can mean that use of blended learning is tolerated as long as it remains a marginal component of the course. If digitally enhanced provision exceeds a certain percentage, the course would have to be reaccredited under different rules. Another point mentioned as an obstacle encountered during the Covid-19 crisis, is that national regulations and external QA require the physical presence of staff and students at the university.

Hence, while 8.1 pointed towards issues to be addressed at the level of institutions, strategy implementation, and engagement of staff and students, in addition to the financial limitations, for a number of countries, these external obstacles resulting from external QA and national regulations would have to be eliminated.

We face a major difficulty concerning the national legislation that is not prepared to accept the growth of blended learning models.

- survey respondent, Portugal

8.3. Measures for enhancement

- Peer exchange is considered to be the most useful measure for enhancing DELT, followed by international and national training opportunities for staff in charge of digital transformation, and the collection and analysis of data.

Due to the pandemic, higher education institutions have had to ensure and enhance fitness for purpose of their digitalisation policies and approaches for an unforeseeable period of time. But apart from this pressure, and regulatory obstacles in some systems, as the previous section showed, most institutions see themselves in a continued inner institutional process for further enhancement of their DELT provision, regarding the development and implementation of strategic approaches, better engagement of staff and students, sufficient funding and appropriate infrastructure.

Fully in line with this finding, proposed measures for enhancement emphasise exchange, collaboration and capacity building (Figure 29): Peer exchange within the institution (67%) scores the very highest. Almost every second institution (47%) confirms also the value of national or international training opportunities for staff in charge of digitalisation, a particularly popular measure among institutions in Ukraine (86%), Belarus (71%), Bulgaria (67%) and France (65%), and also the collection and analysis of data to inform enhancement and transformation (44%). Other measures seemed to enjoy less interest: only a relatively small numbers of institutions chose audit-like approaches as one of the most useful measures (19%), and only 12% affirmed that they had already used a self-assessment or benchmarking tool for digitalisation, again, with a varied popularity between the regions (22% in Northern Europe, 4% in Southern Europe).

Most useful measures for improving digitally enhanced learning and teaching

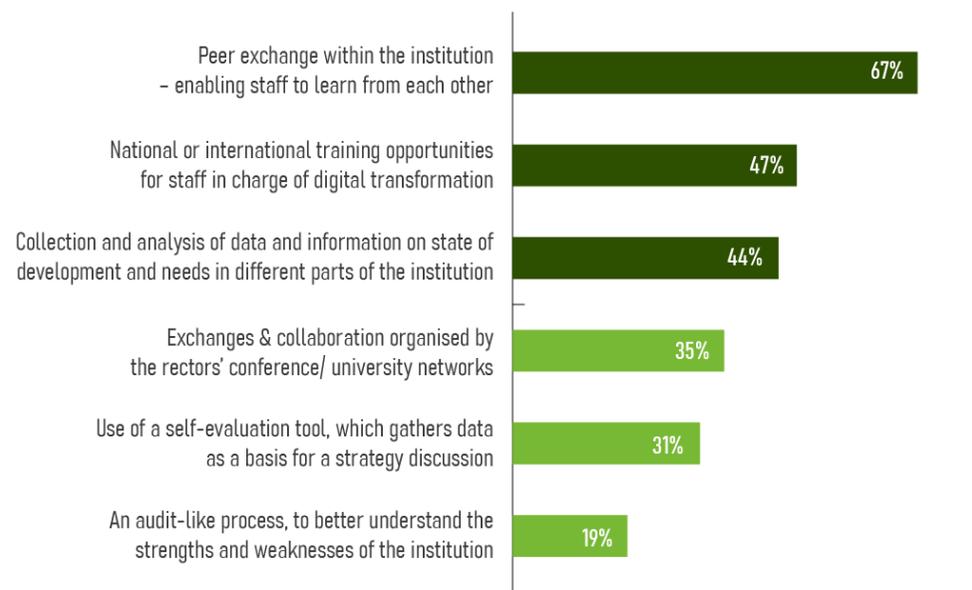


Figure 29 Q35: What measures have been useful for improving digitally enhanced learning and teaching at your institution? (please select your top three choices) n= 368

9 Conclusions

Since [EUA's study in 2014](#), both strategies and the actual use of DELT, and also its general acceptance, have increased at higher education institutions across Europe. The benefits it brings to the student experience, at the time more assumed than proven, are widely acknowledged.

This could set the course for a continuation of the gradual transformation, which higher education experienced over the past five years: marginal gains, rather than fast disruption. This appears to be a much more feasible and appropriate modus operandi for change, in view of the responsibility that institutions have for students and staff, the lack of resources and funding that a more systematic roll-out would have required, and prevalence of institutional and system level uncertainties and obstacles.

But the pandemic has provided an urgent reason for acceleration. Most institutions were able to respond rather rapidly, often by applying and extending already existing strategies and policies for DELT, and mainstreaming and upscaling practices that were to some extent already in use.

At this moment, it is actually very difficult to assess to what extent this change can and should be sustained or even further developed, for a number of reasons. The pandemic still continues, leaving it open how much online and blended learning will be required and for how long, and when and to what extent physical presence will be possible again. As often remarked, also due to economic and social change, the post-pandemic environment might look different from what it was before.

It would also need a critical assessment of what sort of changes with regard to DELT are actually needed and socially desirable. Even if one wants to emphasise the more positive aspects, the use of DELT during the crisis has not been a matter of choice. The directions that institutions have taken during the crisis were aimed at managing the health crisis, but not to provide better learning and teaching, and most likely not linked to their mission. Hence, it might be safe to predict that many of them will be dysfunctional in a post-Covid-19 environment, and once choices can be made again, naturally, there will be strong pressure — as in other sectors — to return to “normality”, meaning physical face-to-face on-campus provision. But in this situation, it would be strategic to ensure that DELT does not get marked as an emergency mode, to go back into the box until the next pandemic, but rather to maintain the momentum, and seek to sustain and further develop the elements and aspects that worked well, and could provide benefits beyond the crisis.

Importantly this is also, but not only, a discussion about technologies and how they can and should be used in a socially and ethically acceptable manner. In the first instance this is a discussion on learning and teaching. This discussion could explore more sophisticated approaches towards “blended learning”, be they named hybrid or Hyflex learning, aiming to overcome the fixation on face-to-face physical learning versus face-to-face online learning, but also operationalise a wider range of learning opportunities and modes. It could also consider the feasibility of more shared and networked approaches within and between

institutions, and include lifelong learning, through whatever other formats are feasible and beneficial, micro-credentials being possibly one of them.

But this would require policy and funding support, both for institutional strategy development and capacity building, as well as for European and international exchange and collaboration, a factor that emerges from the survey as almost unanimously supported as a means for staff enhancement and institutional development.

As innovation continues to emerge bottom up, and in rather unpredictable ways, and as there is no blueprint for the higher education that Europe needs in the future, it will be important to ensure exchange and cooperation on DELT, and its various aspects. The innovative ideas will likely come from students and staff, not from institutional leadership, and not from the ministries. But institutional, national and European level measures could provide an important contribution through strategies, elimination of obstacles and provision of services and infrastructures. Beyond what takes place already at institutional and national levels, the ongoing policy processes of the European Education Area and the European Higher Education Area can be expected to provide good opportunities for short-cuts in aligning policies and institutional practice, and provide a more even level playing field across Europe.

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²¹ This is referred to as ESG 2015 in the text of the report.

²² This is referred to as "Trends 2015" in the text of the report.

Annexes

List of figures and tables

Figure 1	Top enablers, barriers and most useful measures	11
Figure 2	Responses per country	15
Figure 3	Responses per region	17
Figure 4	Type of institution	17
Figure 5	Type of institution per region	18
Figure 6	Delivery modes	19
Figure 7	Blended learning	20
Figure 8	Students on campus	21
Figure 9	Motivation for offering MOOCs and open learning	22
Figure 10	Demand for short courses (non-degree) that earn certificates, micro-credentials or badges	23
Figure 11	Digital skills	25
Figure 12	Use of digital badges to recognise extracurricular learning	28
Figure 13	Use of digitally signed credentials	28
Figure 14	Digitalisation and internal quality assurance processes	29
Figure 15	Infrastructures in place from 2014-2020	32
Figure 16	Online services for students	33
Figure 17	Support for teaching staff	34
Figure 18	Digital technologies	36
Figure 19	Policies, participation and funding for DELT	40
Figure 20	Embedding digitally enhanced learning in policies and measures	41
Figure 21	Transformation over the past five years	42
Figure 22	Top three impacts of digitally enhanced learning and teaching	43
Figure 23	Position towards digitally enhanced learning and teaching	43
Figure 24	Digitalisation as a strategic development priority over the next five years	45
Figure 25	Widening access through digitally enhanced learning and teaching	46
Figure 26	Top three enablers of digitally enhanced learning and teaching	47
Figure 27	Top three barriers to digitally enhanced learning and teaching	48
Figure 28	External QA as one of the top three barriers to digitally enhanced learning and teaching	49
Figure 29	Most useful measures for improving digitally enhanced learning and teaching	51
Table 1	Categorisation of countries per region	16
Table 2	Digital assessment in 2014 & 2020	26
Table 3	Digitalisation and internal quality assurance processes in 2014 & 2020	29
Table 4	Strategy for DELT in 2014 & 2020	37
Table 5	Responsibility for DELT in 2014 & 2020	38

Survey questionnaire

The survey questionnaire can be found [here](#).

List of institutions

The following is a list of institutions who participated in the survey and who agreed to be named as a contributor in the report.

Name of institution	Country
Catholic University Our Lady of Good Counsel	Albania
Epoka University	
POLIS University	
University of New York Tirana	
University of Tirana	
University of Andorra	Andorra
European University Armenia	Armenia
Goris State University	
International Scientific-Educational Center (National Academy of Sciences of the Republic of Armenia)	
National Polytechnic University of Armenia	
Public Administration Academy of the Republic of Armenia	
Yerevan Komitas State Conservatory	

Name of institution	Country
KPH Graz	Austria
MCI Management Center Innsbruck	
Medical University of Graz	
Pedagogical University College Upper Austria	
PH Burgenland	
University of Innsbruck	
University of Natural Resources and Life Sciences, Vienna	
University of Vienna	
Azerbaijan State Economic University	

Name of institution	Country
Belarusian-Russian University	Belarus
Belarusian State Academy of Aviation	
Belarusian State Pedagogical University named after Maxim Tank	
Belarusian State Technological University	
Brest State University named after A.S. Pushkin	
Polotsk State University	
Catholic University of Louvain	Belgium
Ghent University	
Saint-Louis University	
University of Antwerp	
Université libre de Bruxelles (ULB)	
University of Bihac	Bosnia and Herzegovina
University of East Sarajevo	
University of Mostar	
University of Sarajevo	
University of Tuzla	
University of Zenica	

Name of institution	Country
“Angel Kanchev” University of Rousse	Bulgaria
Burgas Free University	
Medical University - Sofia	
National Academy for Theatre and Film Arts	
National Sports Academy “Vassil Levski”	
Plovdiv University	
Rakovski National Defence College	
Technical University of Gabrovo	
Technical University of Sofia	
University of Food Technologies-Plovdiv	
University of Library Studies and Information Technologies	
University of National and World Economy	
University of Telecommunications and Posts	
Varna Free University	
Zlatarov University	
Faculty of Humanities and Social Sciences	Croatia
School of Dental Medicine, University of Zagreb	
University of Rijeka	

Name of institution	Country
Open University of Cyprus	Cyprus
University of Cyprus	
University of Nicosia	
Czech University of Life Sciences Prague	Czech Republic
Jan Evangelista Purkyně University in Ústí nad Labem	
Masaryk University	
Mendel University in Brno	
Metropolitan University Prague	
Palacký University, Olomouc	
Technical University of Liberec	
Tomas Bata University in Zlín	
University of Chemistry and Technology, Prague (UCT)	
University College of International and Public Relations Prague	
University of Pardubice	
University of Veterinary and Pharmaceutical Sciences Brno (UVPS Brno)	
VŠB – Technical University of Ostrava	

Name of institution	Country
Aarhus University	Denmark
Copenhagen Business School	
Estonian University of Life Sciences	Estonia
Tallinn University	
Tallinn University of Technology	
University of Tartu	
Aalto University	Finland
Tampere University	
University of Jyväskylä	
University of Lapland	
University of Vaasa	

Name of institution	Country
CY Cergy Paris Université	France
ESCP Europe	
Lumière University Lyon 2	
Sciences Po (Paris)	
Sorbonne University	
University of Bordeaux	
University of Corsica	
Université Gustave Eiffel	
Université de La Réunion	
University of Lille	
University of Lorraine	
University of Nantes	
University of Montpellier	
Université Paris Sciences et Lettres PSL	
University Paris 8 Vincennes-Saint Denis	
University of Rennes 1	

Name of institution	Country
Batumi Shota Rustaveli State University	Georgia
Business and Technology University, Tbilisi	
Caucasus University	
David Tvildiani Medical University	
Georgian American University	
Guram Tavartkiladze Tbilisi Teaching University	
Petre Shotadze Tbilisi Medical Academy	
Sokhumi State University	
Tbilisi State University	
The Shota Rustaveli Theatre and Film Georgia State University	

Name of institution	Country
Alice Salomon University of Applied Sciences (ASH Berlin)	Germany
Bonn-Rhine-Sieg University of Applied Sciences	
Carl von Ossietzky University of Oldenburg	
Deggendorf Institute of Technology	
Hamburg University of Technology	
Hochschule Mainz - University of Applied Sciences	
Johannes Gutenberg University of Mainz	
Julius-Maximilians University of Würzburg	
Karlsruhe University of Applied Sciences	
Mannheim University of Applied Sciences	
Ruhr University Bochum	
Technical University Munich	
TH Köln - University of Applied Sciences	
University of Applied Sciences Bremen	
University of Greifswald	
University of Konstanz	
Viadrina European University	

Name of institution	Country
Athens University of Economics & Business	Greece
Aristotle University of Thessaloniki	
Democritus University of Thrace	
Hellenic Open University (HOU)	
Pontifical University	Holy See Vatican City State
Budapest University of Technology & Economics	Hungary
Dharma Gate Buddhist College	
Edutus University	
Eötvös Loránd University	
National University of Public Service (NUPS)	
Obuda University	
Pázmány Peter Catholic University	
Semmelweis University	
Széchenyi István University	
University of Debrecen	
University of Pécs	
University of Szeged	

Name of institution	Country
University of Iceland	Iceland
Dublin City University (DCU)	Ireland
National University of Ireland Galway (NUI Galway)	
National University of Ireland, Maynooth	
The University of Dublin - Trinity College	
University College Cork	
University College Dublin	
University of Limerick	

Name of institution	Country
European University Institute	Italy
Free University of Bozen	
IMT School for Advanced Studies Lucca	
International University of Languages and Communication	
LUISS Guido Carli University	
Marche Polytechnic University	
Sapienza University of Rome	
The Tuscia University	
Università Maria SS. Assunta	
Università degli Studi Suor Orsola Benincasa di Napoli	
University of Bergamo	
University of Bologna	
University of Brescia	
University of Eastern Piedmont	
University of Enna	
University of Foggia	
University of G.D'Annunzio Chieti Pescara	
University of Genova	
University of L'Aquila	

Name of institution	Country
University of Lumsa-Libera	Italy
University of Macerata	
University of Milan	
University of Milano-Bicocca	
University of Modena and Reggio Emilia	
University of Molise	
University of Naples-L'orientale	
University of Parma	
University of Pisa	
University of Salento	
University of Teramo	
University of Trento	
University of Turin	
University of Verona	
University of Valle 'Aosta	
Kostanay Engineering and Economics University named after M. Dulatov	Kazakhstan
Manash Kozybayev North Kazakhstan University	
S. Ualikhanov Kokshetau State University	
West Kazakhstan Agrarian-Technical University named after Zhangir Khan	

Name of institution	Country
Latvian Christian Academy	Latvia
Riga Stradins University	
Riga Technical University	
University of Latvia	
University of Liechtenstein	Liechtenstein
Kaunas University of Technology (KTU)	Lithuania
Klaipeda University	
Lithuanian University of Health Sciences	
Mykolas Romeris University	
Vilniaus Kolegija University of Applied Sciences	
Vilnius Gediminas Technical University	
Vytautas Magnus University (VMU)	
University of Luxembourg	Luxembourg
University of Malta	Malta

Name of institution	Country
Eindhoven University of Technology	The Netherlands
Nyenrode Business University	
Saxion University of Applied Sciences	
University of Groningen	
University of Maastricht	
University of Twente	
Vrije Universiteit Amsterdam	
South East European University	North Macedonia
Inland Norway University of Applied Sciences (INN)	Norway
Kristiania University College	
University of Agder	
VID Specialized University	
Academy of Physical Education in Katowice	Poland
Adam Mickiewicz University	
Collegium Civitas	
Cracow University of Technology	
Gdansk University of Physical Education and Sport	
Koszalin University of Technology	
Kozminski University	

Name of institution	Country
Lodz University of Technology	Poland
Medical University of Bialystok	
Medical University of Warsaw	
Nicolaus Copernicus University	
Police Academy in Szczytno	
Poznan University of Economics and Business	
Poznan University of Technology	
The John Paul II Catholic University of Lublin	
University of Agriculture in Krakow	
University of the Arts Poznan	
University of Gdansk	
University of Lower Silesia	
University School of Physical Education in Wroclaw	
University of Warmia and Mazury	
University of Wroclaw	
Wrocław University of Science and Technology	
WSB University	

Name of institution	Country
Autonomous University of Lisbon	Portugal
NOVA University of Lisbon	
Portuguese Military Academy	
Universidade Portucalense	
University of Aveiro	
University of the Algarve	
University of Beira Interior (UBI)	
University of Coimbra	
University of Évora	
University of Madeira	
University of Minho	
University of Porto	
Ion Creangă State Pedagogical University	
Nicolae Testemitanu State University of Medicine and Pharmacy	
State Agrarian University of Moldova	
Technical University of Moldova	

Name of institution	Country
“Gheorghe Asachi” Technical University of Iasi	Romania
Ovidius University of Constantza	
Politehnica University of Timisoara	
The Transylvania University of Brasov	
University Politehnica of Bucharest	
Don State Technical University	Russian Federation
FSBEI HE Arctic State Agrotechnological University	
ITMO University	
Kazan Federal University	
Moscow City University	
Moscow State Linguistic University	
Moscow Technical University of Communications and Informatics	
North-West Institute of Management (RANEPA, Saint Petersburg)	
Peoples’ Friendship University of Russia	
Saint Petersburg State University of Economics	
Volgograd State Technical University	
Yaroslav-the-Wise Novgorod State University	
Yury Gagarin State Technical University of Saratov	

Name of institution	Country
Alfa University, Faculty of Trade and Banking	Serbia
Educons Univeristy	
Singidunum University	
University of Belgrade	
University of Novi Sad	
University "Union - Nikola Tesla"	
University of Criminal Investigation and Police Studies	
J. Selye University	Slovakia
Matej Bel University in Banská Bystrica	
Slovak University of Technology in Bratislava	
University of Economics in Bratislava	
University of Presov	
University of Zilina	
University of Ljubljana	Slovenia
University of Maribor	
University of Primorska	

Name of institution	Country
Cádiz University	Spain
Cordoba University	
Deusto University	
La Laguna University	
Open University of Catalonia	
Pompeu Fabra University, Barcelona	
Rey Juan Carlos University	
Rovira i Virgili University	
University of Alicante	
University of Almería	
University of La Rioja	
Chalmers University of Technology	Sweden
Dalarna University	
Lund University	
University of Gothenburg	
University West	
Uppsala University	

Name of institution	Country
ETH Zurich	Switzerland
University of Applied Sciences and Arts Northwestern Switzerland FHNW	
University of Applied Sciences and Arts Western Switzerland	
University of Geneva	
University of Lausanne	
University of St. Gallen	
University of Zurich	
Zurich University of the Arts	
Istanbul University	
Namik Kemal University	
Ozyegin University	
Süleyman Demirel University	
Zonguldak Bülent Ecevit University	

Name of institution	Country
Borys Grinchenko Kyiv University	Ukraine
Bukovinian State Medical University	
Lviv Polytechnic National University	
Odessa National Polytechnic University	
Ternopil Ivan Puluj National Technical University	
Ukrainian Medical Stomatological Academy	
Ukrainian State University of Railway Transport	
Anglia Ruskin University (England)	United Kingdom
Coventry University (England)	
Queen's University Belfast (Northern Ireland)	
Swansea University (Wales)	
The Open University	
University of Sheffield (England)	
University of St. Andrews (Scotland)	
University of Stirling (Scotland)	Other
Near East University (North Cyprus)	
University of Gjakova "Fehmi Agani" (Kosovo)	
University of Mitrovica (Kosovo)	
University of Prishtina (Kosovo)	

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