EUROPEAN UNIVERSITY ASSOCIATION

The Digital Transformation and Europe's universities

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1. Institutional perspectives: opportunities and challenges of digital education

a) Strategies for learning and teaching approaches

i. More blended and hybrid approaches

The digital transformation has been a development goal for Europe's higher education institutions for a number of years. Well before Covid, Digitalisation of services and developing digitally enhanced learning and teaching were important priorities. But its take-up was gradual, and it may not have led to major changes regarding modes of education provision nor the didactic and pedagogical approaches, which received some criticism, by the institutions themselves, but also at policy levels. In this regards the pandemic brought a major boost, with its rapid and sudden change from on-site to online of education delivery, including the necessary resources (labs, libraries, services), and also of practically all or most institutional courses and processes, including administration and management. This has further fuelled discussions on innovating the education provision, but also about the institution of the university as such. Currently, digitally enhanced learning is provided at all universities, but at different degrees of mainstreaming. In addition, forms and formats are still under exploration.

After the end of the Covid-19 pandemic, there has been a big "back to campus" move, but some changes remained. For instance, there is more blended learning and teleworking, as well as more digitally enhanced and online facilities and services. The vast majority of higher education institutions seems to continue offering the classical degree programmes as campus-based education, possibly including some blended, hybrid and online learning elements.

But there are several challenges are delaying or impeding the take-up and mainstreamed use of digital learning, most importantly costs, given also rising prices and a relatively short half-time of digital technology, problems with digital safety, interoperability and technical sovereignty. An additional factor is recent and emerging legislation, creating some uncertainty what this would entail for the use of certain digital tools in higher education. There are also still some resistances and cultural discomfort among staff and students, also as digital is now associated with the Covid 19 experience.

There is some agreement that the digital transformation requires an institutional approach, which is participatory, in that it encourages staff and students to engage and co-create; it needs to be values based and anthropocentric; it should explore and pilot new approaches, assesses achievement and failure, and lead within the institutions through successful examples to gradual transformation. Some institutions have taken up such an approach.

ii. Online learning provision – who is the target?

While there is broad agreement that there is a growing need for flexible provision, this has not resulted into a steep rise of online provision. Survey data suggest that in 2020, about one-third of the European higher education institutions provided online degree programmes (i.e. at least one), which suggests that there has been hardly any increase since 2014, when a similar survey has been conducted[1]. But compared to 2014, in 2020 more higher education institutions seemed to have taken up MOOCs, and a higher percentage also provided recognition of credits for them. This is probably not so surprising, as MOOCs in Europe started only in 2012/3. However, despite this upwards trend, the number of institutions offering MOOCs in 2023 has actually slightly decreased – possibly due to the emergence of alternative formats, in particular micro-credentials.

iii. Lifelong learning – also through non-degree education (certificates, micro-credentials)

In 2020, about half of the higher education institutions (53%) confirmed an increased need for micro-credentials in full online mode, but 65% also saw a need for their blended provision[2].

The main target for these credentials are lifelong learners. Both the Bologna Process Implementation Process[3] and Trends 2024[4] confirm growing numbers of mature learners (which could be in degree or non-degree programmes). But some micro-credentials are also used by the members of the institution, staff and students, and 43% of higher education institutions also saw micro-credentials as a possible alternative to Master's programmes[5].

The European Union has been emphasising micro-credentials as a priority[6]. This has led to Europe-wide discussions, and the start of projects and in some countries, national platforms (Ireland[7], Finland[8]).

1 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 19
2 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 23
3 European Commission/EACEA/Eurydice, 2024, The European Higher Education Area in 2024: Bologna Process Implementation Report, p. 36
4 EUA, Trends 2024, p. 51
5 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 23
6 See, "A European approach to micro-credentials": https://education.ec.europa.eu/education-levels/higher-education/micro-credentials
7 See Microcreds.ie: https://microcreds.ie/
8 See Digivisio2030: https://digivisio2030.fi/en/publications/modularity-and-micro-credentials-preliminary-study/#:~:text=The%20objective%20of%20the%20Digivisio,opportunity%20to%20earn%20micro%2Dcredentials

Related to the Bologna Process, the use of established Bologna Process instruments for QA and Recognition has been explored and confirmed.

iv. AI in learning and teaching

While AI has been an object of research and study, it has not been a major issue for learning and teaching until fairly recently.

Analytic AI, discovering patterns and learning from big datasets, has been more closely related to the innovation mission of higher education institutions, for example through start-ups using that technology. Particularly in STEM fields, where AI is used in the research process (for example astronomy and materials science), machine learning is becoming part of the curriculum. There is debate about the potential for learning analytics or campus management. However, there is little evidence of a European wide application[9].

Since OpenAI made ChatGPT widely available in late 2022[10], the availability and fast development of generative AI tools brought additional new and deep challenges and questions, on whether and how it can be used appropriately by students and staff, how it impacts education and research, and generally the ways of how our societies function, in the immediate and in the longer term. Most, if not all higher education institutions in Europe are experimenting with generative AI in teaching and learning; many are upscaling the more successful cases, and also develop institutional strategies and guidelines, on how students, but also staff may use AI.

b) How to ensure that students are able to learn in digital environments?

The rise of generative AI also gives enhanced importance to digital skills provision and training. But given fast moving and changing technology development and uses, this also becomes a challenge. For example, writing prompts had been underlined as an important skill, only to see models appearing that do not need intricate prompt engineering anymore.

The EUA 2020 study on digitally enhanced learning and teaching found: "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[11]."

9 Komljenovic, Janja e.a. 2024, Edtech in Higher Education, p. 82
10 EUA, 2024, Digital Transformation Map, Artificial Intelligence: https://eua-dtm.eu/repository-of-resources/ai/
11 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 20

There is growing agreement that digital skills training should be included and embedded into the study programmes. The Covid-19 pandemic hopefully helped to overcome the perception that students and generally the younger generation are digital natives and that they would achieve digital competences intuitively and would not require support. While most students are familiar with some digital technology, they may have to learn how to use it in an academic, disciplinary or professional context, and in a responsible and ethical manner. A key point is also to gradually enhance learner autonomy, build self-learning abilities and also the necessary resilience, which is also key for the success of student-centred learning.

c) How to assess student learning

There has been increasing interest in and use of e-assessment over the past decade, also at institutions which did not specifically prioritise digital learning. For example, even though learning and teaching might take place in conventional provision, tests and examinations are conducted online, or in other ways digitally assisted. While not excluding a genuine interest in pedagogical innovation as a driver, rationalisation is certainly an important motive, in particular when dealing with large student cohorts.

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

Figure 1 Digital assessment in 2014 & 2020 (source at bottom of graphic)

From 2020 on, due to the pandemic, the topic has gained in importance on how to develop meaningful, but also reliable testing and examinations. A further push came then with the launch of ChatGPT at the end of 2022. Currently, some teachers are experimenting with using generative AI for grading and giving comments to assignments. While this can be more efficient, it carries serious ethical risks in terms of privacy and bias. There is a search for technical solutions - during the Covid-19 proctoring and e-surveillance were tried out, but also discussed quite controversially, as they posed ethical and cultural problems.

Access to generative AI tools nullified many of the classic assessment schemes. Higher education institutions try to use plagiarism detection software, but this is a challenge regarding their technical quality, costs, time, ethics, and potentially also data protection rules. In some places, there were attempts or at least consideration of banning AI. But overall, the trend goes towards teaching students its responsible use.

Apart from looking for safe technical solutions, it also enhanced an already ongoing discussion on forms of assessment that are better aligned with learning outcomes, such as open book examination, consideration of course work, problem-based, authentic learning etc. In addition, institutions also put stronger emphasis on academic integrity, as an institutional culture.

d) Quality assurance

The 2020 study on digitally enhanced learning and teaching showed that about 50% of higher education institutions considered digital learning in their QA[12]. While this is a considerable increase compared to 2014, it nevertheless raises the question what the other 50% do. An assumption is that digitally enhanced learning did not play a major role hitherto, as it was used only in parts of the learning and teaching, probably also because the national system did not allow its use. This is confirmed by the fact that at the start of the Covid-19 pandemic, in some countries, institutions were granted exceptions allowing for teaching to take place online. After the end of the pandemic, this gave reason to legal reform in some, but not all countries.

A more general trend is the shift to "institutional self-accreditation", i.e. QA approaches that would evaluate or accredit the institution and its ability to quality assure its learning provision. This puts more responsibility on the institution but allows for more flexibility in the development of study programmes compared to programme accreditation.

12 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 29

e) Capacity building: How do institutions support their staff

i. Training

An Irish study carried out in 2019-2020 (before the pandemic) concluded that the vast majority of academics had no hands-on teaching experience in a live online environment[13]. Elsewhere in Europe, the situation was probably similar.

In the 2020 study on digitally enhanced learning and teaching, most higher education institutions indicate that they offer digital skills training opportunities to staff[14]. However, the issue is not just about skills for teaching online and in a blended format, but about general teaching skills. Teaching in an higher education institution requires an academic degree, and commonly prior teaching experience, but no formal pedagogic training. This is gradually changing, but is still hampered by the fact that so far academic assessment approaches still focus predominantly on research achievement.

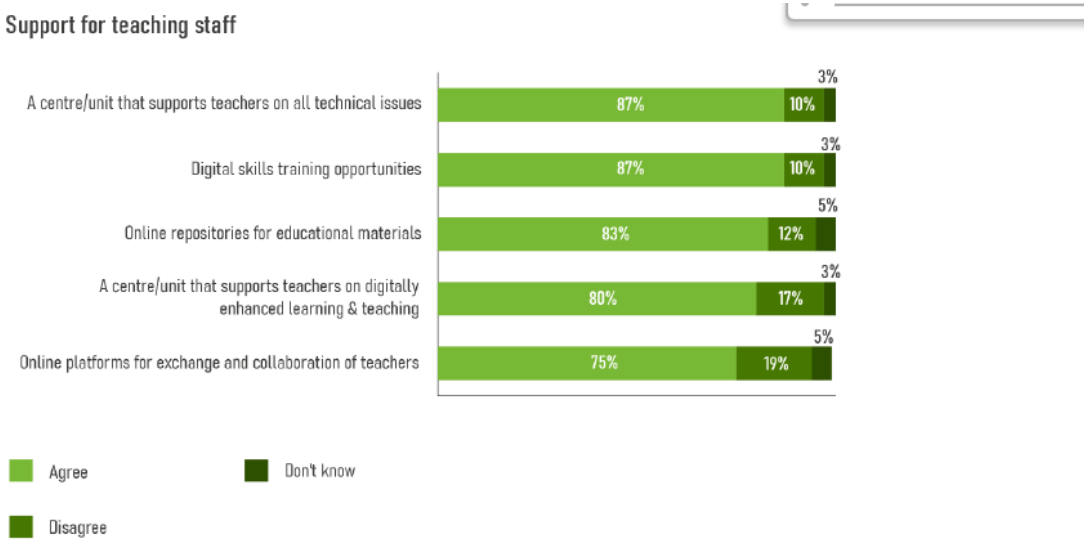

Figure 17 Q34: Does your institution support teaching staff with: (please select one option for each item) n=366

Figure 2 Support for teaching staff. Source = EUA's 2021 report "Digitally enhanced learning and teaching in European higher education institutions", p. 34.

ii. Technical support & equipment

Most higher education institutions have established centres for technical support, and to a lesser extent for learning and teaching centres[15]. The centres have grown in importance over the years. Diversity in equipment obviously creates costs and work, and potentially also interoperability and security issues. This is one of the reasons why in terms of purchases, there is a reliance on large technology companies, in particular Microsoft, and also for cloud solutions. Higher

13 National Forum for the Enhancement of Teaching and Learning in Higher Education (2020), Index findings from students and staff who teach in higher education, p.12
14 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p.34
15 Trends 2024, p. 39

education institutions prefer these also in order to mitigate cybersecurity threats, which to counter would otherwise require considerable resources. Some studies point towards a trend of software as a service.

But there are also examples, for instance Sweden[16] or Finland[17], of higher education institutions developing national Student Information Systems. Compared to the standard commercial solutions, these are found to be more tailored to the needs of higher education institutions and also more cost-effective.

2. Implications for governance and campus development trends of digital education

In Europe, the digital transformation in higher education institutions has been closely linked to larger change management trends. As a consequence, digital technology has moved from being the remit of technical staff to a higher priority for university leadership. This is partly due to the long-term connection between digital strategies and change management, and growing dependency of institutions on digitalisation, but it is also – more concretely – due to the threats posed to it, in particular by cyberattacks towards higher education institutions and the need to have an institutional approach.

The visions, priorities and values of a higher education institution, but also rules, regulations, funding conditions and methods it is subjected to in the national system, can impact its approach to digital transformation. Some institutions may put a strong emphasis on improving efficiency and quality of learning and teaching, but also of their administration. Others might focus on inclusion and widening access and participation in learning teaching, digital skills provision for the labour market, or, more recently on transborder interinstitutional collaboration. These goals and priorities – while quite differently or even contradictory, often coexist within one institution.

Depending on their specific goals and the system-level opportunities, higher education institutions might engage platforms for sharing data and instruments, or develop their own. A major effort are the digitalisation of student services and administration, as this requires an institution-wide approach.

16 See the Ladok system: https://ladokkonsortiet.se/in-english/about-us/the-ladok-system
17 See about Sisu https://www.funidata.fi/en/services/sisu

a) Legal frameworks

The European Union has been a global frontrunner on privacy regulation through the General Data Protection Regulation (GDPR). The implementation of this regulation has been a large task for higher education institutions managing large amounts of personal data (detailed later in this report), and it continues to be a challenge when sharing data with partners.

The last years have seen a surge in digital regulation, aiming at reining in monopolies, regulating platforms and artificial intelligence as well as setting standards for cyber security. All this has had or is having an impact on processes within higher education institutions, from the management of open access repositories to cyber security[18]. The recently approved AI Act[19] will also have a consequences for education, which is classified among 'high risk uses'.

b) Quality assurance

The 2015 Bologna Process Ministerial Conference in Yerevan, adopted the revised Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)[20], developed by sector organisations, representing students, staff, HEI, QA agencies and employers. The ESG are meant to apply to all forms of education at higher education level, including digital provision. But already in the following year, the European Association for Quality Assurance in Higher Education established a working group on digital learning, which resulted in 2018 into "Considerations for quality assurance of e-learning provision"[21]. It explains how the ESG can be applied on digitally enhance learning provision. Despite the existence of such guidelines, the 2020 survey on digitally enhanced learning and teaching revealed that only 51% of European higher education institutions included digitally enhanced learning and teaching in their internal QA processes[22]. One explanation for this is that while digitally enhanced learning exists at practically all higher education institutions, it's use is far from being mainstreamed, and therefore is not reflected in internal and external QA approaches.

18 See, EUA Digital Transformation Map, European Digital Regulation and Regulatory Frameworks: https://eua-dtm.eu/framework-conditions/european-digital-regulation/
19 See EU AI Act: https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence
20 See ENQA, ESG (2015): https://www.enqa.eu/esg-standards-and-guidelines-for-quality-assurance-in-the-european-higher-education-area/
21 https://www.enqa.eu/wp-content/uploads/Considerations-for-QA-of-e-learning-provision.pdf
22 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 29. By contrast, across Europe, there are open universities, usually public institutions, which provide distance learning and are fully accredited and quality assured

The 2020 survey also confirmed that at 41% of HEI, QA for digital education was under discussion. In addition, most of the national-level QA agencies, have recently updated their guidelines to incorporate blended and online learning, see for example Quality & Qualifications Ireland (QQI)[23]. In addition, the ESG are currently undergoing a revision, to be relaunched in 2027, which among others is expected to give a more explicit consideration to digitally enhanced provision.

Accreditation and national rules may also restrict the institutions' modes of provision: In some higher education systems, institutions may decide on the use of blended or online learning, whereas in others they are more restricted, or have to undergo specific accreditation processes for online learning. In the 2020 study, across Europe in average 11% of HEI indicated external QA as an obstacle for digital learning; but it were 31% in Spain, and even 60% in Albania[24].

The Covid 19 crisis revealed these differences, as in some countries, system level regulations required students and teachers to be on campus, which of course was no longer possible. As a consequence, in some countries regulations have been changed permanently, but in others only for the period of the pandemic.

c) Credentialing

Digital credentials are in use or under development in several European countries, usually in the framework of, or linked to larger national initiatives. In addition, the European Union is developing a common framework for an electronic identity, which will facilitate the use of digital credentials. Several institutional or European pilots of implementing this are underway.

d) Infrastructure: shared protocols and tools

Hybrid delivery and digitalisation of services have led to an increasing use of cloud services at European higher education institutions. Some higher education institutions use self-hosted solutions with for example Big Blue Button or Nextcloud;

23 See QQI's Topic Specific Statutory Quality Assurance Guidelines for Providers of Blended and Fully Online Programmes: https://www.qqi.ie/sites/default/files/2023-10/statutory-qa-guidelines-for-providers-of-blended-and-online-programmes-2023.pdf

24 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 49

but most institutions rely on large technology companies, in particular Microsoft. Often they use both: important data that they do not intend to share is on their own servers, but for other data they use commercial solutions, also to be able to exchange and cooperate with others.

The use of blockchain is in a testing phase, for the identification of learners and graduates, and to verify and protect their credentials. However, blockchain technology is just a small part of the much bigger puzzle of establishing a common European digital ID infrastructure (eIDAS regulation)[25], and ensuring interoperability between the offers of different institutions across Europe, so that learners can identify themselves and have access to learning resources. Interoperability of university systems, including course catalogues, is being discussed broadly and experiments are on-going in the European Universities Initiative, which brings together higher education institutions in different countries in deep, strategic cooperation. This has not yet matured into well-working, scalable models.

e) Governmental support

Government support is diverse across the continent. Some countries have national plans for the digital transformation[26], at times supported through EU funding. These plans include building interoperable systems across countries, facilitating sharing of experiences or generally promoting digitally enhanced learning and teaching.

The EU has established the Digital Education Action Plan (2021-2027) and also the Digital Education Hub, a platform to enable exchange and collaboration among different sectors and stakeholders.

Many of the European national and EU plans and initiatives have broader target, but would also impact HEI: For example fast internet for all citizens and access to edge cloud infrastructure are part of the EU's overall digital strategy[27]. As an another interesting example, the European Union has recently worked to give SMEs and start-ups access to high performing computers in order to boost the development of AI[28].

25 See eiDAS Regulation: https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence
26 Examples include: Finland's Digivisio 2030, Austria's Digital University Hub, Ireland's Enhancing Digital Teaching and Learning Project, and Romania's Strategic Initiative for Digitization of Education SMART-Edu 2021-2027
27 See Europe's Digital Decade: digital targets for 2030
28 See Political agreement on the use of supercomputing for AI development: https://www.consilium.europa.eu/en/press/press-releases/2024/05/23/ai-council-reaches-political-agreement-on-the-use-of-super-computing-for-ai-development/

f) Relations with the IT industry

Europe's digital transformation is connected to a larger debate about digital sovereignty, in order to mitigate the EU's dependence on external parties, whether governmental or non-governmental. This also concerns the ability of organisations, including higher education institutions, to make choices regarding the digital transformation based on their own values[29]. This discussion is partly related to a growing role of large technology companies in higher education as providers of cloud services, collaboration platforms and office software. The worry is that higher education institutions will be locked into specific companies and their offerings and – among other things – lose control of their data. This is even more important as increasingly, software is provided as a service, and updated remotely, with features added and removed without the approval of the client. So far, only very few higher education institutions believe that they can gain and maintain their sovereignty by developing their own services. This would require too many resources both in terms of the developer communities that can develop and maintain solutions as well as for safeguarding security – far too much for an individual HEI. But in some countries, higher education institutions are pooling resources and developing national solutions in areas where this would be required.

As mentioned above, another worry has been privacy and compliance with European regulation. During a first phase, right after its emergence, the use of ChatGPT by individual staff and students has been tolerated at many institutions, certainly not uncontested. But presently, due to the European data privacy rules, this is no longer possible, if no guarantee for the privacy of the data used in generating texts and images can be provided. However, some national and institutional models for the use of ChatGPT's API have been established that allow keeping data separate from the outside world and external use, and thereby comply with GDPR. These models also try to enable quality outputs for AI use in smaller, less frequently used languages.

g) Privacy and security

As stated earlier in this report, data protection has been addressed in the European Union through the General Data Protection Regulation (GDPR), which came into effect in 2018. Its implementation requires the establishment of structures and resources at European and national levels, and in all public and private organisation. Every HEI has to establish and document data protection, safety resources and safety measures, and to inform all stakeholders in consideration of

29 EUA, 2024, Digital Transformation Map, Digital Sovereignty

their uses and needs. For example, students writing an assignment will have different needs than administrators working with alumni data.

In addition, the question is whether service providers, in particular from outside the EU, always and fully comply with European legislation. Assessing this with certainty can be challenging for a HEI, partly because regulations are still relatively recent and still under implementation, but also due to the rapidly changing technology.

The large amounts of data held by higher education institutions also pose risks such as data sales by technology companies, data theft and system attacks by cybercriminals. To minimise risk and prevent as much as possible non-secure practices, institutional policies are important, and training for students and staff, to raise awareness and build competences, develop good practice. As this can be quite resource-intensive, some higher education institutions pool their resources, as for example through **SURF** in the Netherlands.

h) Equitable access, inclusion, digital divide and digital poverty

By international comparison, Europe and its citizens are relatively wealthy, however, there are major differences between countries, and of course also between individuals. While digital poverty certainly exists in Europe, it is probably not very common among the members of higher education institutions. During the Covid-19 pandemic, there was a shortage of digital devices throughout the population, and possibly to some extent also among university staff and students. However, some higher education institutions reported that laptops they offered to students were met with little demand. However, when activities had to be pivoted online most institutions realised that the digital equipment and infrastructure at higher education institutions required enhancement. However, 40% pointed to insufficient funding as a major obstacle for digitalisation, again, with big country differences[30] . There have been voices dismissing the concept of digital poverty, and demanding technical approaches that are more low-cost. But this has not become a common trend or strategy.

Regarding the promise that digitisation makes education more inclusive, the experience during pandemic brought a clear proof that this is not necessarily the case, but subject to conditions. Generally it has been observed that the shift to online provision enhances existing disadvantages and makes study and lives of disadvantaged students more difficult, from an economic and social perspective, and also with regards to mental health and wellbeing. In particular students with weak socio-economic backgrounds and learning difficulties have become more vulnerable, and would have

30 EUA, 2021, Digitally enhanced learning and teaching in European higher education institutions, p. 49

required additional support. But for some students, online brought advantages: working students and those with caring responsibilities did no longer need to commute; auditive and visually impaired students, for once, were not an exception, as all students had to follow classes via the computer. Experimentation with virtual learning environments showcases the potential of a more integrated and equal learning situation for students with different physical conditions. Therefore, digital can bring major benefits for inclusion and participation; but this does not come automatically, as a consequence of the technology use, but requires design and the appropriate resources.

3. Prospects of international cooperation in higher education in the digital era

For many years, the benefits that digitalisation can bring to higher education internationalisation have quoted, but not systematically explored in higher education institutions. Internationalisation remained heavily built on physical mobility. But the combination of greening, increased pressure for international exchange (also under European programmes such as the European Universities Initiative) and access to improved technology in the course of the pandemic opened the gate for a more systematic use of virtual exchanges, and either replaced or complemented some of the staff and student travel and physical mobility. The shared digital classroom, Collaborative Online International Learning (COIL), and internationalisation at home have been existing already for almost two decades, but remained within higher education institutions rather singular activities. They tend to become more mainstreamed. An immediate consequence has been less international staff short-term travel, but also an increase in "blended mobility" (periods of physical mobility combined with period of online exchanges) – which has become an eligible activity under the Erasmus+ programme.

Moreover, many European higher education institutions take part in the **European Universities Initiative**, which since its launch in 2019, has established 64 alliances, bringing together more than 560 institutions. The alliances promote deep institutional cooperation, such as the creation of inter-university virtual campuses, where they offer virtual mobility experiences and joint online courses, among other things. One example of this is the **EPICUR Inter-University Campus**, described at the end of the report.

4. Examples of best practices at the institutional level and at the national or regional level

Institutional-level examples

ETH Zurich's AI Center

ETH Zurich (Switzerland) boasts an AI center, which brings together researchers of AI foundations, applications, and implications across all departments. This center fosters research excellence, industry innovation, and AI entrepreneurship with a view to promoting trustworthy, accessible, and inclusive AI systems. It strives to be impact oriented, by addressing ethical, societal, and policy implications, engaging with the general public on AI topics, and supporting AI start-ups & industry collaborations. More information available here: https://ai.ethz.ch/

UC Louvain's Digital Strategy

An example of a strategy with training opportunities for staff and students at its core can be found at UCLouvain in Belgium. Part of the strategy is to support the controlled use of digital technology to promote the creation, dissemination and acquisition of knowledge. The objective is to fight the digital divide by enabling everyone to use digital technology for educational purposes by ensuring that teachers and students feel comfortable with digital technology.

University of Lille's Digital Credential Project

The objective of the University of Lille's (France) Digital Credential Project is to create a digital version of all diplomas and attestations in the form of tamper-proof, bilingual, and lifelong-valid digital credentials. For this purpose, blockchain technology was chosen. The project is "user-oriented", aiming to provide better service to students, while making the work of academic services more reliable and automated. More information available here: https://www.bcdiploma.com/en/blog/verifiable-credentials-uses-cases

National-level examples

Sweden's national student records system "Ladok"

Ladok is a system that supports universities in educational administrative processes, making it easier for them to comply with the regulations and requirements for monitoring, set by the government and central authorities. More

concretely, it documents students' participation, results, and degrees within higher education and is used for studies at all levels, including preparatory level, undergraduate level, advanced level, and doctoral level. The platform is used by approximately 27,000 teachers and administrators, as well as approximately 350,000 students. Additionally, the system contains data for 3.2 million students. More information available here: https://www.lunduniversity.lu.se/student-services-and-support/grades-credits-and-certificates/transcript-records-ladok#:~:text=Ladok%20is%20a%20national%20student,an%20official%20transcript%20of%20records.

Ireland's Enhancing Digital Teaching and Learning Project

In Ireland, the Enhancing Digital Teaching and Learning project (2019-2022) worked to mainstream digital in teaching and learning activities in Irish Universities by addressing the professional development of all who teach or support teaching and learning. Outputs include a webinar on diverse topics related to supporting the development of staff/ student digital skills in Irish higher education and advice for staff who want to use digital approaches in their teaching.

Dutch Security Programme, "SURFsoc"

SURFsoc monitors cyber threats and possible attacks on higher education institutions' infrastructure. It collects log data from various sources in the institution's infrastructure and analyses it to identify attacks and suspicious behaviour so that institutions can take targeted action. It also monitors all systems in conjunction: suspicious traffic in one system is therefore more easily recognised in another, allowing institutions to increase their detection capacity. Furthermore, it works across institutional boundaries with a central security operations centre, allowing it to detect threats even more efficiently. More information here: https://www.surf.nl/en/services/surfsoc

European-level examples

Digital Education Action Plan

European Commission's Digital Education Action Plan 2021-2027 - a renewed EU policy initiative that sets out a common vision of high-quality, inclusive and accessible digital education in Europe, and aims to support the adaptation of the education and training systems of Member States to the digital age.

European Digital Education Hub

One of the key actions of the European Commission Digital Education Action Plan (2021-2027), the European Digital Education Hub is an online collaborative community for digital education enthusiasts in Europe and beyond. Its mission is to overcome the current fragmentation of digital education policy, research, and implementation practices at European

level, through peer learning, best practise sharing and collaboration across education and training sectors. Since its start in June 2022, the Hub has already reached over 4 500 members (such as school educators, teacher trainers, policy makers, and school representatives), issued more than 90 publications (on topics such as funding opportunities and interoperability frameworks) and organised more than 200 activities, namely webinars and workshops on topics such as interoperability challenges and ethics in using AI. More information available here: https://education.ec.europa.eu/focus-topics/digital-education/action-plan/european-digital-education-hub

European Framework for the Digital Competence of Educators (DigCompEdu)

Published in 2017, the European Commission's European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound framework describing what it means for educators, including higher education educators, to be digitally competent. DigCompEdu describes 22 competences organised in six Areas: professional engagement, digital resources, teaching and learning, assessment, empowering learners and facilitating learners' digital competence. More information available here: https://joint-research-centre.ec.europa.eu/digcompedu_en

The EPICUR Inter-university Campus

As part of the European Universities Initiative, the EPICUR Interuniversity Campus (involving nine European higher education institutions from seven different countries) is an online gateway designed to support virtual, physical and hybrid mobility of students in the alliance. Its main goal is to fully digitize the admission, selection and mobility monitoring process by offering a secure, scalable and transparent solution. In addition, the EPICUR interuniversity campus strives to offer innovative features to track and recognize mobility, to minimize manual administrative work, and to be interoperable and scalable in order to support inter-alliance mobility. More information available here: https://archive.epicur.education/fr/our-alliance/

EUA is gathering resources on the topic through its Digital Transformation Map.

5. Short description of major publications issued by EUA on the issue (reports, studies, policy statements, tools/ instruments

- Survey report on digitally enhanced learning and teaching in European higher education institutions. A 2021 mapping of the situation regarding digitally enhanced learning and teaching at European higher education institutions over the past seven years, mainly based on data from a survey conducted between April and June 2020 via an online questionnaire to institutional leadership. It was part of the EU co-funded DIGI-HE project, coordinated by EUA.
- E-Learning in European Higher Education Institutions - Results of a Mapping Survey conducted in October-December 2013. This has been the first ever study gathering comparative institutional data on digital learning across the European Higher Education Area
- EUA Statement on AI use in L&T - in March 2023, just a few weeks after the launch of ChatGPT. It calls upon universities to analyse and explore the matter, and not to penalise students, but rather educate them for responsible use.
- The Digital Transformation Map (web resource). A living resource for universities undertaking transformation in the digital space. It addresses major themes that present under three core pillars of the digital transformation – Institutional Culture, Digital Architecture and Framework conditions – and gathers the experiences of Europe's university community in seizing opportunities and tackling challenges in this process.
- Developing a high performance digital education ecosystem - Institutional self-assessment - Instruments. An analysis of more than 20 online instruments for institutional self-assessment on digitalisation, as part of the DIGI-HE project.
- EUA Policy input on improving the provision of digital skills (2022) has been a reaction to the renewed "The Digital Europe Programme" of the European Commission. It underlines the importance of universities in the provision and further development of digital skills, and provides three recommendations.
- Trends 2024 – provides an institutional perspective on the development of, and in, the European Higher Education Area and explores how higher education institutions relate to policy actions and priorities, as well as to other major political, societal and economic developments.