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ENHANCED LEARNING AND TEACHING IN INTERNATIONAL VIRTUAL ENVIRONMENTS

VIRTUAL LEARNING EXPERIENCES AND PRACTICES

Recommendations on how the COVID-19 emergency affected teaching and learning methods and approaches in Higher Education Institutions in Europe

Co-funded by the Erasmus+ Programme of the European Union

Intellectual Outputs 2: Progressive sets of course modules to be able to exploit the full potential of virtual learning

Task A3: Desk research

Task description: *Supplementing the picture of the existing experiences and practices with desk research on solutions to the issues identified from outside the partnership*

Contents

1. Policy decisions made on national or regional level

1.1. Digital Education Action Plan

The European Commission (EC) launched the new *Digital Education Action Plan for the year 2021 to 2027 during the Covid-19* [1]. Digital Education Action Plan present the plan for resetting education and training for the digital age. Digital education is one of the top priority on the agenda of EC [1]. The big importance of e-learning in the teaching process of the Higher Education Institutions supports the digital transformation of these institutions [1]. Previous evidence from the OECD's PISA exercise in 2018 showed that many low-income homes had no access to computers [2]. Eurostat figures from 2019 indicated that access to broadband internet varies significantly across the EU, ranging from 74% of households in the lowest-income quartile to 97% in the highest-income quartile [2]. On teacher preparedness, the OECD Teaching and Learning International Survey in 2018 showed that only 39% of educators in the EU felt well or very well prepared for using digital technologies in their daily work, with significant differences between the EU countries [2]. As announced in the European Skills Agenda and in the European Education Area Communication, the new Action Plan presents a vision for improving digital literacy, skills, and capacity at all levels of education and training and for all levels of digital skills (from basic to advanced) [1]. The Action Plan will support the objective of the Skills Agenda of ensuring that 70% of 16 to 74-year-olds should have at least basic digital skills by 2025 [1]. On the other hand, the COVID-19 crisis, which has heavily affected education and training, has accelerated the change and provided a learning experience. On the other hand, the COVID-19 crisis has heavily affected education and training and boosted the digital transformation of Higher Education Institutions [1]. Evidence from the Survey in 2020 under the Erasmus+ project DIGI-HE shows the new overview of the Higher Education Strategy which supports e-learning [3]. The key factors being accorded to the digital transformation of the learning process show that three-quarters of Higher Education Institutions indicate e-learning as a strategic priority and 88% considering it in a strategy [3]. According to the research from 2014, only 64% of Higher Education Institutions consider e-learning as a strategy. The growth is 24% for the six years. The highest absence of e-learning strategies in Higher Education Institutions is in the Czech Republic (31%), Bosnia and Herzegovina (33%), Romania (40%), and Belgium (40%) [1]. Also, the previous research that in about 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%) [3]. This also explains their high frequency in Higher Education Institutions, with a high autonomy of faculties, as for example in the Balkans where only 65% have an institutional strategy, compared to 86% in Northern Europe [3]. The Figure 1 present a strategy or policy regarding e-learning in Higher Education Institutions.

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

Figure 1. Strategy for digitally enhanced learning and teaching in Higher Education Institutions [3]

Moreover, findings show that more than 60% Higher Education Institutions t indicate that they have clear policies and processes for deciding on new technologies, involve staff and external stakeholders in decision-making and have a budget to support digital transformation. Approximately 70% of institutions in Northern Europe and Southern Europe indicate that they have a dedicated budget for digital transformation of learning processes. 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 [3].

1.2. SELFIE for work-based learning

The first priority in EC Digital Education Action Plan is the development of a high-performing digital education ecosystem. To achieve this, effective digital capacity planning and development is underlined as vital for education and training systems [1]. Education and training systems need the right tools and processes to plan and develop their digital capacity. SELFIE for work-based learning (SELFIE WBL) provides one such tool. A self-reflection tool for vocational schools that use WBL in their programs, it is designed to assess digital readiness, to encourage a practice of collective reflection on the use of digital technologies for teaching and learning, and to use this

reflection to make informed and collective decisions about strategy and practices at all levels. Using anonymized aggregated data, it also has a system-wide dimension, helping policymakers take action towards developing the digital capacity of education and training systems, taking into account the views and needs of school leaders, teachers, students and in-company trainers [4].

SELFIE is designed for any school and company. It doesn't matter how big or small it is. It doesn't matter either how advanced or not it is in the use of technologies for teaching and learning. Figure 2 depicts eight areas covered by the SELFIE tool.

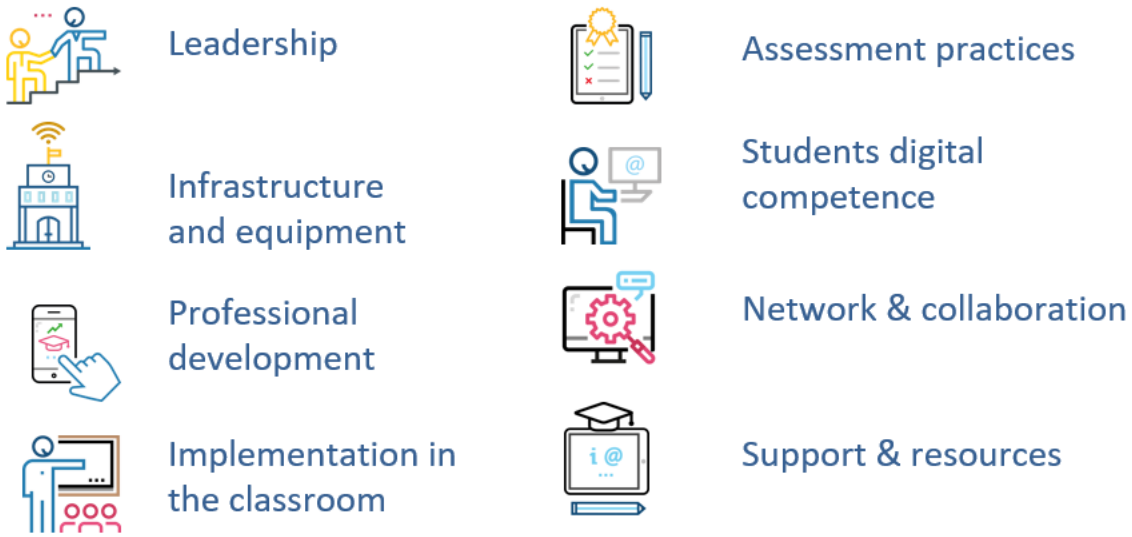

Figure 2. SELFIE areas

1.3. Whole-school approach to Online and Blended Teaching and Learning

Another notable policy document is the *Whole-school approach to Online and Blended Teaching and Learning*, an education policy and practice recommendation paper prepared by the Education Reform Initiative of South-Eastern Europe [5]. Paper discuss the potential of digital technologies for the overall improvement of the quality of education and provides practical recommendation for the utilization of educational technologies for education actors. All subjects within educational institution should work hard to gain digital competencies, spend more time in self-reflection, focus on long-term planning and development, engage in discussion with peers, students, and available experts. Digital transformation requires organizational, pedagogical, and technological changes that should often be discussed and properly understood by all stakeholders. Also, digital transformation bears certain risks, particularly in relation to the issues of safety, that should be recognized and addressed on time and continually. The COVID-19 crisis reinforced such needs and opened new questions for educational actors. The Whole school approach to Online and Blended Teaching and Learning: Recommendations for ERI SEE member

states to support policymakers, practitioners, researchers, and other educational actors to discuss approaches and solutions that emerged from the last twenty years of practice in online teaching and learning, boosted by the current COVID-19 pandemic.

This approach is providing solution from the perspective of four stakeholders: university level, university leadership, teachers and students. As a result, the following framework was developed:

University-level

- The university installed a single School Learning Management System platform (e.g., Moodle) and it is used by all teachers and students to support asynchronous teaching and learning, and asynchronous communication among teachers and students;
- The university uses a video-conferencing tool (e.g., MS Teams, Google Meet, Zoom) to support synchronous communication among teachers and students;
- There is a university staff member responsible for the administration of the university's LMS and for the IT technical support;
- The university assures data protection for teachers and students;
- The university has a sufficient number of digital devices available for teachers to use from home during the online teaching;
- The university has a sufficient number of digital devices available for disadvantaged students to use from home during the online teaching;
- The weekly working plan should fully reflect a flexible nature of blended and online learning with deadlines included;
- The weekly plan of activities includes a schedule of synchronous students-teacher meetings and knowledge tests;
- The university delivers a weekly plan of activities to students at the end of the current or at the beginning of the next academic week;
- The university reviews the success of the online and blended education and introduces corrective measures in time intervals that depend on the individual needs and competencies of teachers, as well as the duration of distance learning (e.g., once every two weeks);
- The university cooperates with local self-government units, crisis headquarters, and centers for social work;
- The university conducts SELFIE[1] assessments at least once a year to self-reflect and evaluate its digital capacity.

[1] https://ec.europa.eu/education/schools-go-digital_en

University leaders

- □ University leaders encourage teachers to exchange experiences on the application of digital technologies in teaching at time intervals that depend on the individual needs and competencies of teachers, as well as the duration of distance learning (e.g., every ten days);
- □ University leaders provide support to teachers for the implementation of online and blended education;
- □ University leaders organize regular online meetings with team members (Teachers' Council, Study program Council);
- □ University leaders monitor the implementation of online and blended education, and report to the regional educational offices;
- □ University leaders promote blended learning in the post-COVID-19 pandemic since it can offer more personalized and highly efficient learning experiences for students.

Teachers

- □ Teachers have access to digital devices for the realization of online teaching;
- □ Teachers have internet access;
- □ Teachers create teaching materials and learning activities and share them via the University LMS platform;
- □ Teachers communicate with students predominantly asynchronously, in written form, via the University LMS platform;
- □ Teachers inform their students about the rules and channels for synchronous communication;
- □ Teachers have a medium or high level of digital competencies according to the Digital Competence Framework for Teachers[2];
- □ Teachers apply digital technologies to encourage collaboration among students;
- □ Teachers encourage students to apply digital technologies in interdisciplinary projects;
- □ Teachers create activities in the digital environment that, in students, encourage the development of self-regulation in learning;
- □ Teachers use digital technologies to enable students to practice peer assessment and provide meaningful feedback;
- □ Teachers apply digital technologies to enable students to reflect on their learning (students' e-portfolio);
- □ Teachers apply digital technologies for an individualized approach to students' educational needs;

[2] https://ec.europa.eu/jrc/en/digcompedu

- □ Teachers are aware that teaching materials and learning activities from the university's LMS platform will have their meaningful place in traditional teaching
- □ Teachers organize online homeroom classes;
- □ Teachers have regular meetings with their colleagues to discuss the weekly workload, ways to assess student's knowledge, to share what they've noticed while mentoring students, etc.;
- □ Teachers have the basic knowledge needed for psycho-social support to students in crisis situations.

Students

- □ Students have access to a digital device;
- □ Students have internet access;
- □ Students are informed about the learning support sources;
- □ Students are involved in online teaching and actively learn within the University's LMS platform;
- □ Students can communicate with teachers and peers asynchronously via the University LMS platform and synchronously via video-conferencing tools;
- □ Students are participating in the peer assessment activities;
- □ For students who do not have access to a digital device and the Internet, materials for testing knowledge in paper form and teacher feedback are provided.
- □ Students from vulnerable groups are provided with additional support for over bridging the digital gap.

2. Needs of emergency and new learning resources in distance education – Covid-19 impact on the Higher Education Institutions

The spread of COVID-19 has posed serious challenges to national education systems, their schools, universities, colleges, childcare and social care providers. More than before, digital resources are becoming essential and are widely used by national authorities to cope with this situation [6]. In Table 1, we present information on the learning platforms adopted by national educational authorities to deal with the COVID-19 crisis.

Table 1. The platforms adopted by national educational authorities during Covid-19

Country	*Learning platforms*
Albania	Platform Akademi.al MoESY channel on YouTube Virtual University Platform (RASH) Elektronic u-Library (RASH)

	Albanian TV Education Channel (RTSH - Shkollë)
Belgium	KlasCement
Croatia	https://skolazazivot.hr/english/
Cyprus	https://elearning.schools.ac.cy/index.php/el/
Estonia	Facebook group "Homeschooling with technology" https://www.hitsa.ee/e-ope-korduma-kippuvad-kusimused
France	https://france-edu-num.projets.app/discover https://www.education.gouv.fr/ https://primabord.eduscol.education.fr/
Georgia	https://elibrary.emis.ge/ge/
Greece	http://ebooks.edu.gr/new/ http://photodentro.edu.gr/aggregator/ http://aesop.iep.edu.gr/
Iceland	https://fraedslugatt.is/
Italy	https://www.indire.it/la-rete-di-avanguardie-educative-a-supporto-dellemergenza-sanitaria/
Luxembourg	https://schouldoheem.lu/lu https://www.snj.public.lu/
Malta	https://eieinstitute.com/
Romania	https://www.manuale.edu.ro/ Teleșcoala (Tele-school)
Switzerland	www.eduport.ch https://www.swissuniversities.ch/en/?r=1

Table 1 show different platforms and tools which support the learning process during the pandemic. Many of these tools are developed during the pandemic period as a solution for Higher Education Institutions [6]. The findings also point to strategic interest and curiosity as regards the current use and further development of technologies in the Higher Education Institutions [3]. For example, collecting and analyzing 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 digitally enhanced learning and teachingin the Higher Education Institutions [3]. Big data are already in use in 38% of institutions compared to 40% for learning analytics. Interestingly, about half of the institutions see both as a strategic development priority [3]. In addition, this 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 [3]. Quite in line with the findings on strategy, the survey results also confirm a further increase of centralized or shared responsibilities for digital learning, compared

to 2014 [3]. Figure 3 presents a managing and organization of e-learning in Higher Education Institutions.

RESPONSABILITY 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 learing 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%

Figure 3. Managing and organization of e-learning in Higher Education Institutions [3]

The needs for emergency and new learning resources in distance education probably are not just a matter of organizing, 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.

3. Building new digital ecosystem of e-learning in Learning Management System

Academic institutions, such as schools, colleges, universities, and private tutorials, are included in this segment [8]. Academic end-users in the market facilitate the process of learning and teaching through the sharing of data, voice, and video over Learning Management Systems (LMS) platforms. This helps streamline the education process by allowing mobility, interaction, and real-time teaching. The use of mobile phones and smart devices has become extremely popular among the younger generation [9]. This is expected to boost the LMS market for academic users. Usage of LMS in the academic sector opens up new opportunities for the sharing of knowledge without boundaries of time and distance. The academic end-user segment is further segmented into two broad sections: K-12 and higher education [8]. Figure 4 shows the LMS market by region.

Figure 4. LMS market by region [7]

The figure shows the different shares of the LMS market between regions. The institutions from North America, Europe, and the Asia-Pacific region have a high level of share in the market. On the other side institutions from Latin America, the Middle East and Africa have only a few percent of the total market share. Furthermore, the previous survey from the DIGI-HE show the use of digitally enhanced learning and teaching methods in the Higher Education Institutions in Europe. The purposes of Massive Open Online Courses 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. Figure 5 portraits the delivery models of the learning and teaching materials.

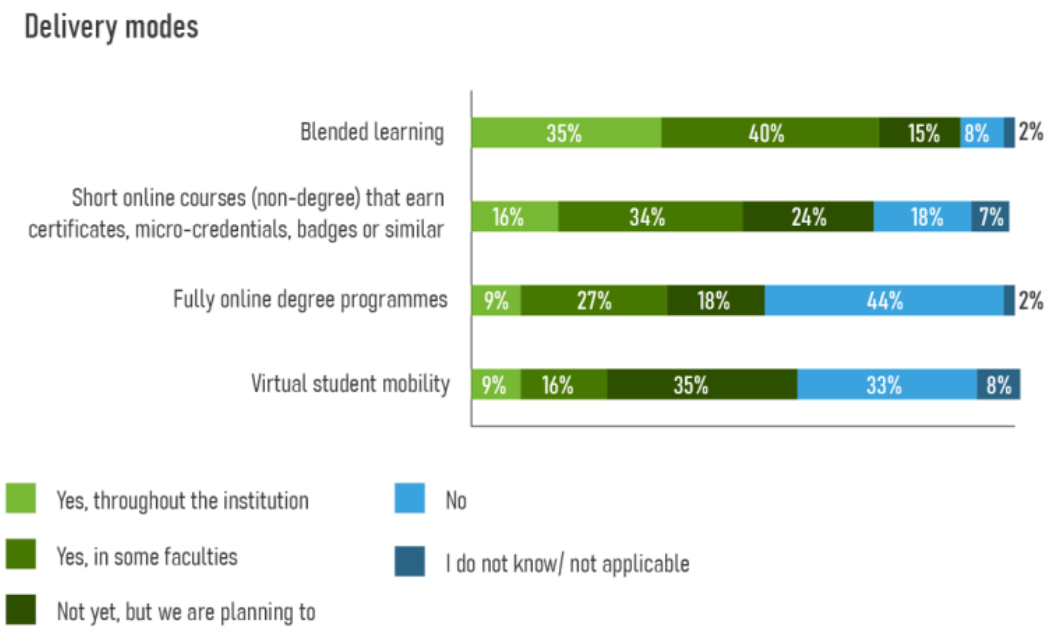

Figure 5. Delivery models of learning and teaching materials [3]

The previous survey confirms the earlier results of the E-learning Study that shows the Blended learning continues to be by far the most common delivery model across the Higher Education Institutions. Moreover, the leadership staff from the University frequently preferred this approach towards digital learning provision [3]. Similar like blended learning; virtual mobility is a broad concept, sometimes including the delivery of joint courses and international recognition and accreditation of study achievements. Before the pandemic, a quarter of the responding institutions offered virtual student mobility, with particularly strong uptake in Northern Europe (38%) [3]. 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 [3]. The building of a new digital ecosystem for Higher Education Institutions requires support for staff and students from the administration [4]. In line with the general importance attributed to staff, most institutions indicated that they offered a significant amount of support to them. For example, 80% or more, offered digital skills training, had a center or unit which supported teaching staff with technical issues, a center or unit which addressed digital learning and teaching issues and opportunities and online repositories for educational materials [3]. From the student, perspective results confirm that practically all institutions address general digital literacy (91%) and study-field-specific skills (94%) [3].

4. Changes in assessment practices and related regulations during (emergency) distance education

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 [3]. It would free up teachers' and teaching assistants' quality time and also comes with the promise of prevention of any bias and discrimination. 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 digitally enhanced learning and teaching into consideration in their policies and measures for examination and testing, with over half of these 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 [3]. Figure 6 presents digital assessment practice in Higher Education Institutions in 2014 and 2018.

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%

Figure 6. Digital assessment practice in Higher Education Institutions [3]

Figure 6 shows that two-thirds of Higher Education Institutions have observed a growing trend towards digital assessment within their institution, and 12% are planning to bring in digital assessment in the future.

5. Recommendations for one video and at least 4 broadcast for a podcast serial

Based on the desk research following content for the e-courses can be developed:

- Digital Competence Framework for Educators (DigCompEdu)
- SELFIE tool
- Whole-school approach to Online and Blended Teaching and Learning
- Digital platforms – Learning Management Systems, Communivation tools, Engagements tools
- Online vs. Blended vs. Traditional teaching and learning
- Assessment practices – formative and summative
- Flipped classroom
- Instructional design

Literature

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