DECriS

Digital Education for Crisis Situations: Times when there is no alternative (DECriS)

Erasmus+

JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK
FACULTY OF HUMANITIES AND SOCIAL SCIENCES

State-of-the-play of the use of OERs at European higher education institutions in the field of Library and Information Science during the COVID-19 pandemic

Prepared by:

Milijana Mičunović

Sabina Rako

Kristina Feldvari

With the support by:

colleagues from Osijek team (Tatjana Aparac-Jelušić, Boris Badurina, Boris Bosančić, Sanjica Faletar Tanacković)

colleagues from Barcelona team (Cristóbal Urbano, Gemma Santos-Hermosa, Juan José Boté Vericad, Sílvia Argudo Plans)

colleagues from Sofia team (Tania Todorova, Eugenia Kovatcheva)

colleagues from Zagreb team (Sandra Kučina Softić, Irena Jandrić)

colleagues from Hildesheim team (Thomas Mandl, Lea Wöbbekind)

July the 1st 2021 – September the 1st 2021

Table of Contents

List of abbreviations

AI – artificial intelligence

AR – augmented reality

DE – digital education

HE – higher education

HEI – higher education institutions

LIS – library and information sciences, including different institutional models ranging from Library, Information Science, Library and Information Science/s, Information Management, etc.

LMS – learning management system

OERs – open educational resources

VR – virtual reality

Glossary

Adaptive or personalized learning: personalized learning through learning paths that are efficiently and effectively customized to each student's skills, interests, strengths and needs.

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

Augmented reality (AR): a technology that combines computer-generated images on a screen with the real object or scene that you are looking at (Oxford Learner's Dictionary).

Blended learning: a way of studying a subject that combines being taught in class with the use of different technologies, including learning over the internet (Oxford Learner's Dictionary).

Digital credentials: a digital credential system, equivalent of paper certificate and traditional degrees, that recognizes person's academic accomplishments and confirms a completion or achievement of a certain level of education.

Digital education: the innovative use of digital tools and technologies during teaching and learning, and is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technologies allows educators to design engaging learning opportunities in the courses they teach, and these can take the form of blended or fully online courses and programmes (Institute for Academic Development, The University of Edinburgh).

Digitally enhanced learning and teaching (DELT): refers to the use of a variety of digital technologies to enrich learning environments and experiences beyond what was possible through non-digital means; the emphasis is on how the technology is used to support teaching and learning and it, thus, represents the pedagogy of the application of technology (The Critical Thinking Consortium).

Gamification: approach to education based on incorporating game design elements such as badges to increase motivation and engagement.

Hybrid learning and teaching: a learning and teaching that happens both in a classroom (or other physical space) and online; it overlaps with blended learning and teaching, but while blended learning and teaching is tactical and describes a process or practice, hybrid pedagogy is strategic and represents a methodological approach that helps define a series of varied processes and practices (Hybrid Pedagogy 2012).

Open educational practice: the practice and culture that draws upon open technologies and high-quality OERs to facilitate collaborative and flexible learning. It may involve student participation in online peer production communities within activities intended to support learning, or more broadly, any context where access to educational opportunities through freely available online content and services is the norm (Osiannilsson 2015).

Open educational resources (OERs): teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. OERs form part of 'Open Solutions', alongside Free and Open Source software (FOSS), Open Access (OA), Open Data (OD) and crowdsourcing platforms (UNESCO).

Problem based learning: a student-centred approach to learning with groups of students working together to solve an open-ended problem thus supporting self-directed learning and strengthening of their communication and teamwork, research skills, information literacy, problem-solving skills and critical thinking.

Project based learning: a teaching method and a dynamic approach in which students actively engage in exploring real-world problems through personally meaningful projects while acquiring a deeper knowledge in the field.

Virtual reality (VR): images and sounds created by a computer that seem almost real to the user, who can interact with them by using sensors (Oxford Learner's Dictionary).

1. Executive summary

Introductory notes

This research is a part of Erasmus+ project *Digital Education for Crisis Situations: Times when there is no alternative* (DECriS). The project is focused on innovative digital practices implemented in higher education institutions (HEI) in the field of LIS during COVID-19 pandemic and it has several aims: to create a framework for proper adoption of Open Educational Resources (OERs) and digital education (DE) in general, and in crisis situations in particular; to promote, enrich and improve the use of OERs and DE in crisis situations and beyond; to contribute to further advocacy and capacity-building in regards to OERs and open education movement; and to take full advantage of DE and OERs in achieving accessible and quality education for all. Project aims to produce 6 intellectual outputs (IOs), design and produce 2 tutorials regarding DE and OERs, and organize 4 multiplier events (MEs) and 2 Summer Schools. Project's main coordinator is Faculty of Humanities and Social Sciences, University of Osijek, Croatia, along with 4 partners, Stiftung Universität Hildesheim (Germany), Universitat de Barcelona (Spain), Universitet po bibliotekoznanie i informacionni tehnologii (Bulgaria), University Computing Centre, University of Zagreb (Croatia), and 4 associate partners, University of Sarajevo (Bosnia and Herzegovina), University of Mostar (Bosnia and Herzegovina), Victoria University of Wellington (New Zealand), and St. Petersburg State University of Culture (Russia).

The aim of IO1 was to investigate state-of-the-play of the use of DE and OERs at European HEI in the field of library and information sciences (LIS) during the pandemic. Thus we conducted a questionnaire-based exploratory research aimed at heads and directors of LIS schools and departments who could provide us with an insight into their institutional practices and policies. With librarians and information science specialists being one of the leading advocates for OERs, we were also interested to see how do LIS schools and departments perceive and adopt the use of OERs. As a result of this research we created a comprehensive report consisting of 8 parts – Executive summary, Introduction, Methodology, Results, Discussion, Conclusion, Literature, and Appendices.

For the purpose of this study we used an online survey in English. The survey was created using Lime Survey and it was active from June the 1st till September the 1st.

The questionnaire was designed to be answered by heads/directors of LIS schools/departments and it consisted of three parts (38 questions in total) referring to the issues of: a) the

implementation of DE during COVID-19 pandemic; b) the implementation and modes of use of OERs during COVID-19 pandemic; and c) institutional support provided within faculties/universities in regards to both DE and OERs during COVID-19 pandemic.

We applied convenience (accidental) sampling. Statistical analysis was performed with R and descriptive statistics was used to quantitatively describe the data sets.

Main findings

The main findings in this research are listed below:

- During COVID-19 pandemic different aspects of DE were almost equally implemented except digital credentials which only some of the LIS schools/departments used. The two most dominant aspects of digital education that were implemented during COVID-19 pandemic were live teaching sessions via video conferencing tools and online communication with students.
- Blended learning has proven to be the most used teaching method, along with project based learning and problem based learning that were also significantly represented.
- All LIS schools/departments used video conferencing tools while the majority also used learning management systems (LMS) and online anti-plagiarism systems. Repositories, online quizzes and social media were also significantly represented.
- All LIS schools/departments used digital learning materials while about 50% of them use digital OERs.
- Almost all of the LIS schools/departments implemented new didactics, i.e. new teaching and learning modalities in their teaching.
- Most of LIS schools/departments successfully found the ways to address students' problems and issues regarding DE, either through regular consultations and live online Q&A sessions or by providing technical support to students.
- Digital platforms and tools used during COVID-19 pandemic fostered the adaptation of current or even the development of new curricula in more than half of LIS schools/departments.
- Most of the teaching staff at LIS schools/departments had the option of customization of the teaching and learning process.

- In regards to the software used, many of the LIS schools/department used proprietary software, especially Zoom and MS Teams, but many of them also used open source software, especially Moodle. Almost ¼ of respondents (21%) used locally developed software.
- Most of LIS schools/departments used existing systems, tools and practices during COVID-19 pandemic, but in some cases they were proven to be in mutual discrepancy or inadequate all together.
- Academic libraries had a crucial role during COVID-19 pandemic either as providers of necessary teaching and learning materials (in libraries or repositories) or as providers of virtual information services.
- In most cases the implementation of DE was ensured at institution level, but in more than 1/3 of the cases it was also a decision and responsibility of an individual teacher.
- Most of LIS schools/departments carried out monitoring and evaluation procedures of DE.
- Majority of LIS schools/departments stated that either there is no national repository of OERs in their country or they are not familiar with the information. The same applies to repositories of LIS OERs. The situation is a bit different with institutional repositories containing collections of OERs where almost half of LIS schools/departments state that they have such repositories.
- Creating and implementing OERs was often the result of an engaged individual, though in some cases there were specific governmental measures and incentives or projects with public funding.
- More than half (54%) of LIS schools/departments didn't use OERs during COVID-19 pandemic!
- There are different ways to motivate LIS school/department and their teachers/trainers, to adopt, design and author OERs.
- In general, a small number of LIS schools/departments used OERs during the pandemic. Existing teaching materials were often used as OERs, especially those that were already a part of Moodle courses, but LIS schools/departments also used OERs developed and

created by others at national and international level, and OERs that were personally designed, developed and created by their staff.

- When developing/creating and/or adapting OERs the staff usually did it independently and within their own department/school, i.e. without the support from their faculty or university. More than 2/3 of LIS schools/departments have no institutional policy regarding OERs.
- Flexible teaching and learning, open education and knowledge sharing, distance education and resource-based learning, effective and quality teaching and learning were amongst some of the most common reasons for developing, creating, adapting and/or implementing OERs during COVID-19 pandemic.
- There was still a number of LIS schools/departments that don't ensure peer-review for OERs.
- The curation and management of OERs was usually done by the teacher(s) who created it/them or by the academic library.
- More than a half of the OERs created within the institution (LIS school/department) were created using open source software.
- Most of the OERs created within the institution (LIS school/department) were published under open license.
- The role of the academic library in the creation and use of OERs during COVID-19 pandemic refered mostly to providing library materials for planning, designing and creating OERs and, in some cases, providing infrastructure or having library staff involved in the creation of OERs.
- Only half of LIS schools/departments using OERs also promoted and shared them, while most of them did not monitor and evaluate the use of OERs.
- Institutional support during COVID-19 pandemic was mostly provided through different recommendations and policy documents and procedure frameworks.
- Practical support for the teaching staff during COVID-19 pandemic came mostly in the form of online training, technical support and provided access to software and digital tools.

Benefits and impact of the survey

The results of this research helped identify mostly positive trends regarding DE, but they've also pointed out to some challenging trends regarding OERs. First of all, they have helped identify not just the insufficient use of OERs in LIS education and their insufficient monitoring and evaluation, but overall lack of awareness of the role and importance OERs have for HE, both in crisis situations and beyond. A lack of understanding of certain terms and concepts, like open licensing, open source, even OERs themselves was also identified. Thus the results confirmed some of the earlier studies' conclusions regarding DE and OERs, mainly that they have been a positive disruptive force for HE, and that COVID-19 pandemic upscaled existing educational practices and brought shift in the use of digital tools. However, as previous studies have shown, COVID-19 pandemic didn't encourage HEIs to a large scale adoption of OERs, but it has certainly instigated conversations, studies and initiatives around OERs. The results of this research will also provide basis, context and support for carrying out the following five IOs within this project, especially IO2 whose aim is to use interviews and focus groups to get insights about the students' and teachers/trainers' attitudes towards DE, in particular towards OERs, mainly during the COVID-19 crisis and in contrast with their pre-pandemic experiences. Finally, the results may provide basis for further policy making and decision making regarding OERs in HE.

2. Introduction

Digital education (DE) refers to the innovative use of digital tools and technologies for teaching, learning and training and it can take the form of either fully online or blended teaching/learning/training.

Open educational resources (OERs) refer to digital and other materials used for teaching, learning, research and training that are a part of public domain or have been published under open license that provides their free and open use (with no or limited restrictions).

Although DE and OERs are not new concepts and have been with us for some time now, they have offered a great support and created substantial framework for online and distant teaching and learning during the pandemic whilst creating, what some may call, one of the biggest disruptions in education worldwide. Both students and teaching/training staff had to adapt very fast. Some of the outcomes of that process were the increase in the use of digital tools, online resources and open educational resources, and modification of both didactics and methodology which were now more oriented towards open education.

The disruption brought by the pandemic altered the educational landscape in ways that challenged the existing higher education institutions' (HEI) infrastructure, programme curricula, teaching and learning process and administration. Along with the challenges, this pandemic also created an opportunity for HEI to incorporate and make greater use of DE, OERs and open education in general.

The growing body of research as well as different examples of case studies and best practices suggest that there are great benefits and opportunities when using DE tools and OERs in higher education (HE), especially during crisis situations such as COVID-19 pandemic. These benefits apply to both students and teachers/trainers, and in terms of cost-effectiveness to the institutions themselves.

In order to investigate state-of-the-play of the use of DE and OERs at European HEI in the field of library and information sciences (LIS) during the pandemic, we conducted a questionnaire-based exploratory research aimed at heads and directors of LIS schools and departments who could provide us with an insight into their institutional practices and policies. With librarians and information science specialists being one of the leading advocates for OERs, we were also interested to see how do LIS schools and departments perceive and adopt the use of OERs.

Our research is a part of Erasmus+ project Digital Education for Crisis Situations: Times when there is no alternative (DECriS) whose aim is to create a framework for proper adoption of OERs and DE in general, and in crisis situations in particular; to promote, enrich and improve the use of OERs and DE in crisis situations and beyond; to contribute to further advocacy and capacity-building in regards to OERs and open education movement; and to take full advantage of DE and OERs in achieving accessible and quality education for all.

This report consists of several parts – Introduction, Methodology, Results, Discussion, and Conclusion.

It also contains three appendices:

- Appendix 1: List of LIS schools/departments participated in this questionnaire;
- Appendix 2: List of repositories URL reported by participants;
- Appendix 3: List of URLs to policy documents or procedure frameworks for DE or OERs reported by participants;
- Appendix 4: Survey questionnaire.

3. Methodology

In order to investigate state of the play of the implementation and use of DE and OERs during COVID-19 pandemic we used an online survey in English.

Before the survey was designed, an integrative literature review was performed in order to advance the theoretical framework around the issues of DE and OERs and to build a firm theoretical foundation for advancing knowledge on DE and OERs in the context of crisis situations, i.e. COVID-19 pandemic. First part of the literature review was related to seeking and reviewing distance learning instructions and recommendations for higher education institutions at the time of the Covid-19 pandemic given by the European Commission and the European Union. After that, all recommendations to higher education institutions related to teaching in Croatia were reviewed. More precisely, the documents published on the web pages of the Croatian Ministry of Science and Education, universities where LIS schools are located and faculties / LIS departments were collected. An additional summary in English was made for each document Second part of literature review was focused on critical approach to and synthesis of the body of knowledge on DE and OERs presented in: a) books related to digital education, online education, and educational technologies; b) books related to open education

and OERs; c) reports and case studies on DE implementation; d) reports and case studies on OERs implementation; e) reports on DE policies; f) reports on OERs policies.

The survey was created using Lime Survey and it was active from June the 1st till September the 1st. Questionnaire was developed by IO1 team and it was comprised of 3 sets of questions (38 questions in total) referring to the issues of: a) the implementation of DE during COVID-19 pandemic; b) the implementation and modes of use of OERs during COVID-19 pandemic; and c) institutional support provided to LIS schools/departments in regards to both DE and OERs during COVID-19 pandemic.

The questionnaire was designed to be answered by heads/directors of LIS schools/departments.

Responses were received from 56 LIS schools/department from 23 countries. In some cases there were more respondents coming from one country which could influence the final results when analysed per region.

Statistical analysis was performed with R and descriptive statistics was used to quantitatively describe the data sets.

3.1.Survey design

Goals and structure

Questionnaire State-of-the-play of the use of OERs at European HEIs during the COVID-19 pandemic was conducted as a part of the DECriS project, i.e. as a result of IO1: Survey of the state-of-the-play on the use and policy making documents on OERs at European HEIs during the COVID-19 crisis.

The aim was to identify state of play regarding the implementation of digital education and open educational resources in the context of COVID-19 pandemic, specifically in the field of library and information sciences (LIS). In addition, its aims were to: a) expand the awareness of the role and importance of OERs in HE; b) incentivize the creation of HE policies and strategies that support the development and use of OERs, during crisis situations and in general; c) incentivize the adoption of OERs in LIS subject areas in which they are mostly overlooked; d) gain insight into different ways for enhancing the opportunities to create high-quality OERs in places and areas they have already been used and the opportunities to increase their availability; e) contribute to the future of HE in crisis situations in general.

The questionnaire consisted of three parts. The first part referred to the issue of digital education; the second part investigated the degree of implementation and modes of use of open educational resources; and the third part explored the issue of institutional support provided to LIS schools and departments regarding digital education and open educational resources.

Survey implementation & dissemination

Survey was designed by IO1 team through 6 stages that included drafting the survey questions, proofreading the survey by all the partners, re-adjusting the survey in accordance to given comments and suggestions, doing the final proofreading, pretesting the survey and doing the final re-adjustment of the survey.

Survey was uploaded on LimeSurvey on 25th May 2021. To check for any content or technical errors and issues, and to ensure comprehension, logic and flow, we pretested the survey with a small test group.

We contacted heads/directors of LIS schools/departments and invited them to participate in the research. In some cases, when possible, we used our professional network to invite the participants. We addressed them using personalized cover letters (invitation emails).

Survey was active from 1st June 2021 till 1st September 2021.

Sampling strategy & Institutional profiles

In this research we applied convenience (accidental) sampling. The questionnaire was designed to be answered by heads/directors of LIS schools/departments.

The questionnaire was completed by 56 LIS schools/ departments representatives. Additional incomplete survey responses (68) were not included in this report.

In total, answers from 23 countries were collected. LIS schools and departments representatives provided information about number of teachers and students at their school or department, as well as number of study programmes covering undergraduate, graduate and postgraduate studies. In total, 1 839 teachers, 25 978 students and 305 study programmes were reported.

Table 1: General information about LIS schools/departments by country

Country	Number of LIS schools/ departments	Number of teachers	Number of students	Number of study programmes[1]
Austria	1	4	2000	5
Belarus	1	51	254	3
Bosnia and Herzegovina	2	39	490	6
Bulgaria	3	167	4950	36
Croatia	2	39	315	8
Estonia	1	9	120	3
Finland	2	10	300	6
France	2	24	820	17
Germany	6	66	2740	18
Greece	1	31	700	4
Hungary	2	18	80	7
Ireland	1	14	200	8
Italy	1	82	785	2
Poland	3	74	1131	10
Portugal	3	515	4214	27
Russia	6	262	2903	82
Slovakia	1	9	89	3
Slovenia	1	10	300	6
Spain	10	316	2704	36
Sweden	1	27	150	3
Turkey	2	19	346	3
Ukraine	3	48	332	10
United Kingdom	1	5	55	2
Total	**56**	**1819**	**25978**	**269**

[1] undergraduate, graduate and postgraduate combined

4. Results

The survey has gathered data on the implementation and use of DE and OERs as well as institutional support provided during COVID-19 pandemic at LIS schools/departments in 23 European countries. Data provide the insight into context, conditions and practices undertaken by LIS schools/departments during COVID-9 pandemic.

Part 1 – Digital Education (DE) during COVID-19 pandemic

First set of questions was related to the issues of digital education (DE). In the context of the DECriS project, DE is considered as "the innovative use of digital tools and technologies during teaching and learning, and is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technologies gives educators the opportunity to design engaging learning opportunities in the courses they teach, and these can take the form of blended or fully online courses and programmes" (Institute for Academic Development, The University of Edinburg).

In order to provide common understanding of terms, this definition is provided to the participants at the beginning of the questionnaire.

As can be seen from the first question, at the LIS schools/departments two dominant aspects of digital education were implemented during COVID-19 pandemic. Those are: live teaching sessions via video conferencing tools (96%) and online communication with students (95%).

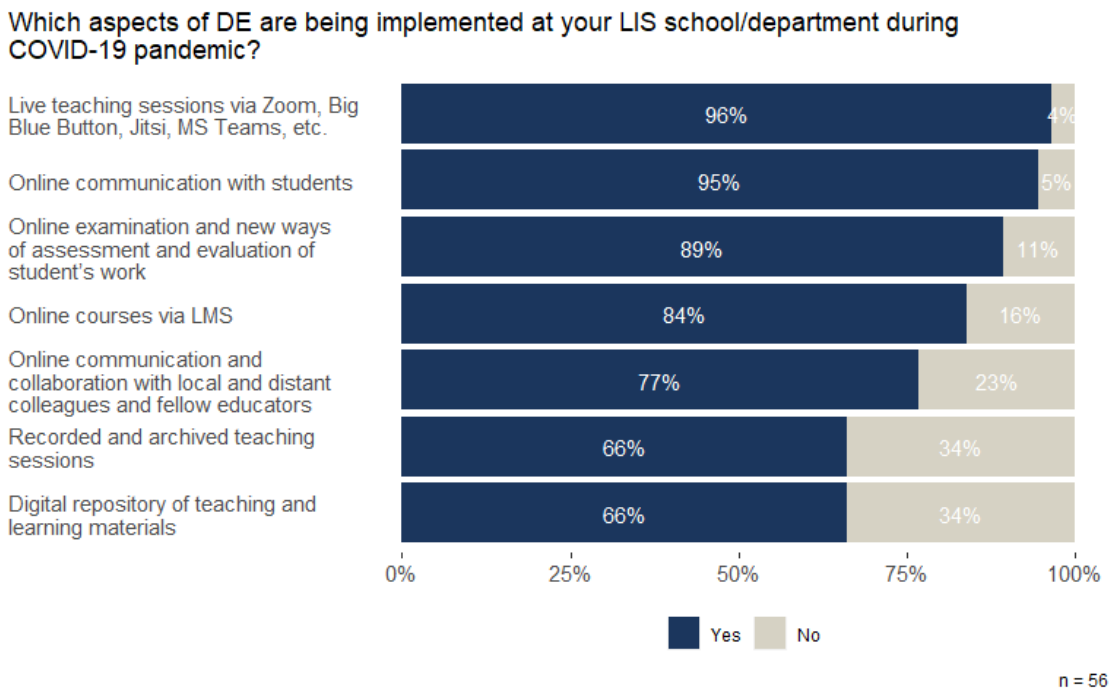

Chart 1: Main implemented aspects of DE

Participants also recognized other aspects of DE that were implemented during COVID-19 pandemic.

Table 2: Other implemented aspects of DE

ID	Other
1	online students projects, online practicing in the libraries
2	our university is fully online
3	digital portfolios, learning analytics, individual learning paths
4	digital internship

When considering DE techniques or strategies implemented during COVID-19 pandemic, the most dominant was blended learning approach (80%). It is also noticeable that project based learning and problem based learning were also significantly represented (73% and 71%, respectively).

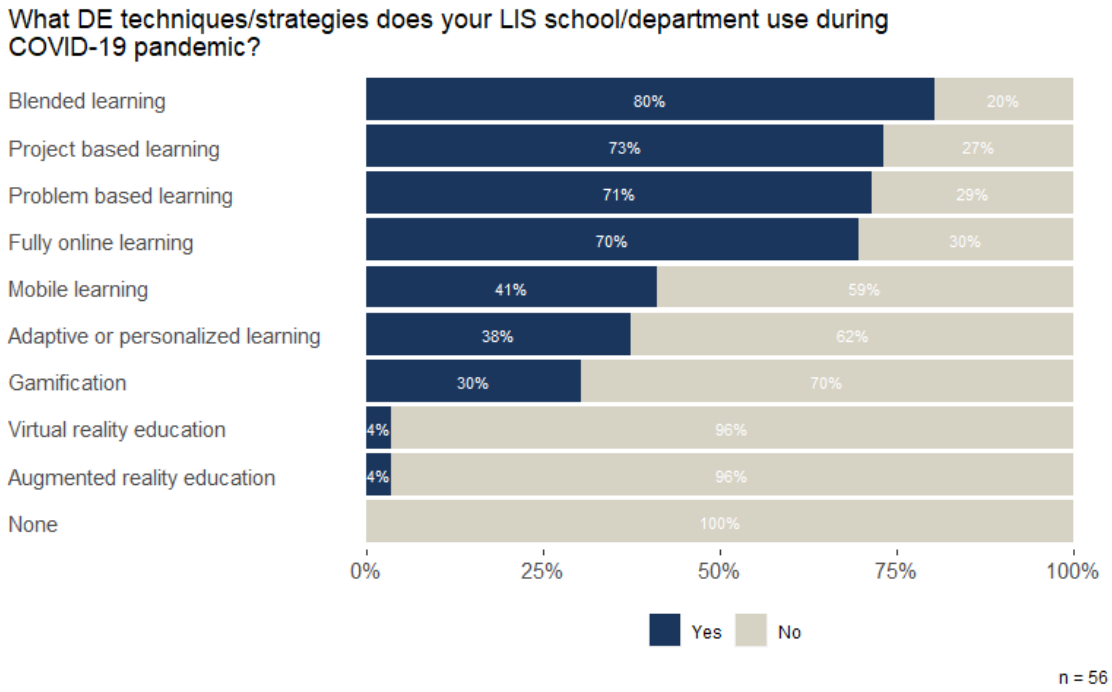

Chart 2: Main DE techniques and strategies used during COVID-19 pandemic

Participants also recognized other techniques and strategies being used during COVID-19 pandemic.

Table 3: Other DE techniques and strategies used during COVID-19 pandemic

ID	Other
1	Videoconferencing system TrueConf with autorization ActiveDirectory
2	flipped classroom, portfolio-based approach, microcredentialing, personal learning paths based on learning analytics.
3	Projects results: nugget education or micro education, which responds to the learning style of new generation - results from IoTNuggets: Internet of Things security nuggets Erasmus+ Project; ERASMUS+ NAVIGATE Project Information Literacy a Game-based Learning Approach for Avoiding Fake Content and others projects, available at: https://www.unibit.bg/research/projects/projects-external-finansing#36

During the pandemic institutions strongly relied on digital tools. It can be seen that LIS schools/departments mostly used video conferencing tools and learning management systems (LMS).

Surprisingly, antiplagiarism software was also used many participants (80%).

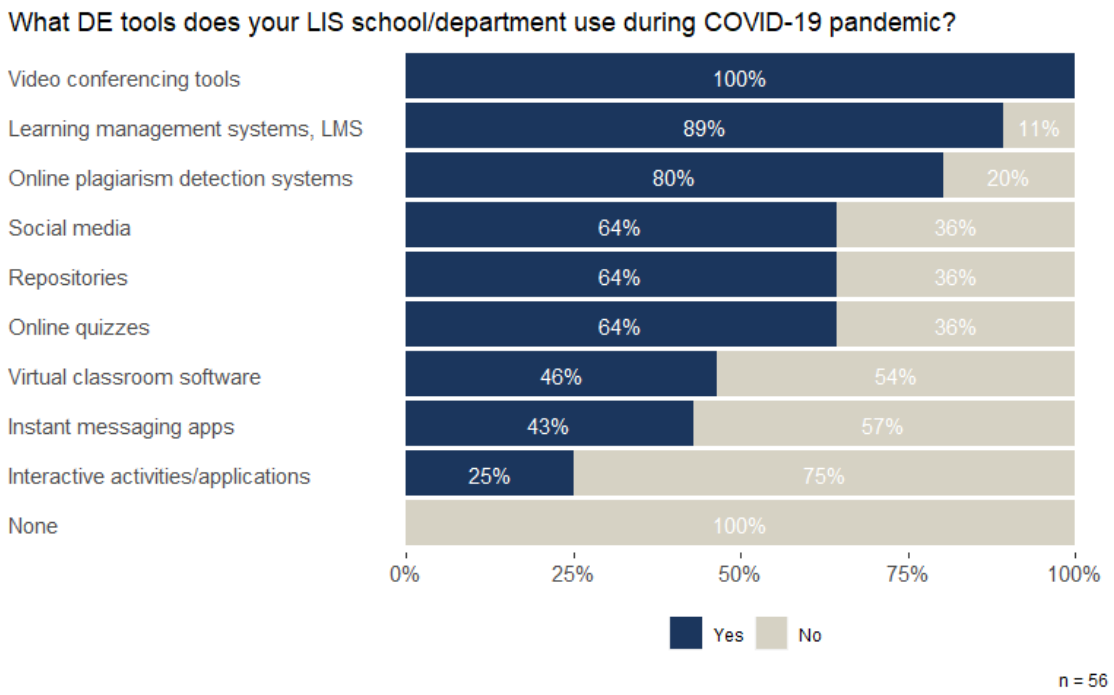

Chart 3: Main DE tools used during COVID-19 pandemic

Participants also shared some other digital tools used during COVID-19 pandemic.

Table 4: Other DE tools used during COVID-19 pandemic

ID	Other
1	online surveying (jamboard, google forms etc.)
2	Email
3	Slack, Trello, Miro, Slido, Padlet, Mentimeter, eXeLearning, various concept map/mindmapping tools (Bubbl, Cacoo, Spiderscribe, Flowchart, Coggle, Mindmup), Camtasia, Panopto.
4	Stoyboard creator, vocaroo – voice recording.
5	Zoom
6	tools like Jamboard
7	MyApps

Digital learning materials were used as a digital education resource by all 56 participants (100%). The least used were wikibooks (14%). It is encouraging that 52% of LIS schools/departments used digital OERs.

In order to explain the meaning of the term "Open Educational Resources (OERs)" we used commonly accepted UNESCO definition – *"OERs are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. OERs form part of 'Open Solutions', alongside Free and Open Source software (FOSS), Open Access (OA), Open Data (OD) and crowdsourcing platforms".*

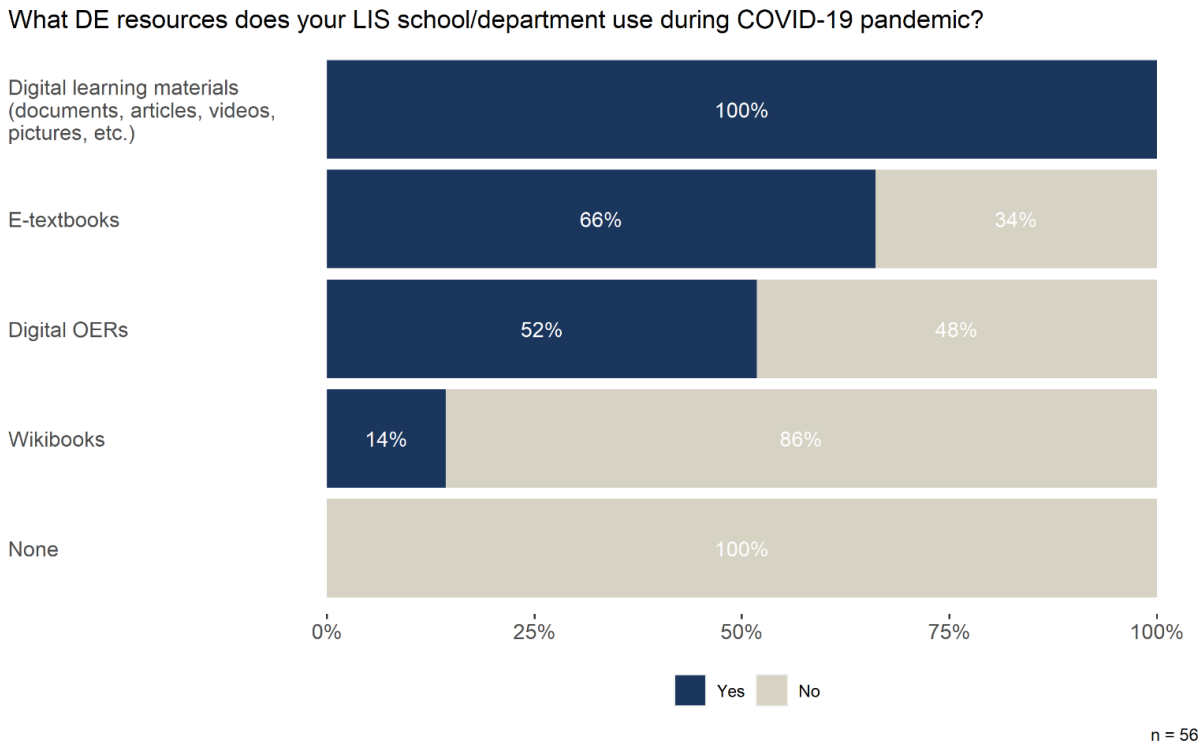

Chart 4: Main DE resources used during COVID-19 pandemic

Participant also recognized other DE resources that wanted to share.

Table 5: Other DE resources used during COVID-19 pandemic

ID	Other
1	websites, IR systems, catalogs, digital libraries etc.
2	commercial databases, scholarly reporitories etc..
3	Materials created by the teachers
4	MOOCs to complement courses. NOTE: our unit has produced approx. 40 OERs during the last decade
5	presentation slides

Closely related to the use of digital resources is the issue of implementing new didactics, i.e. new teaching and learning modalities. 53 out of 56 LIS schools/departments implemented new didactics in their teaching.

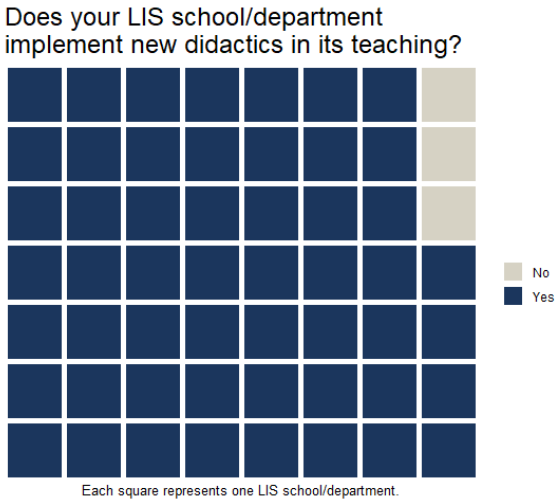

Chart 5: Implementing new didactics

The most dominant way of implementing new teaching and learning modalities was the increase of interaction with live online sessions (79%), followed by use of platforms to share knowledge (75%).

Only 14% of institutions implemented transparency through learning analytics.

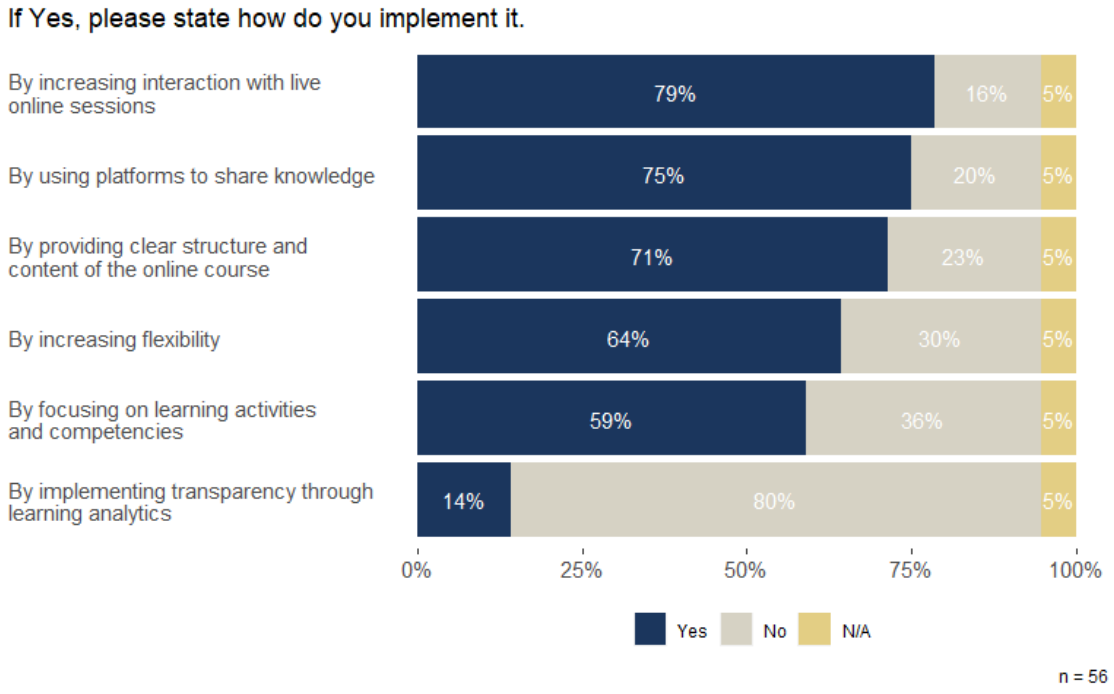

Chart 6: Most common ways of implementing new didactics

Participants listed also other ways of implementing new teaching and learning modalities.

Table 6: Other ways of implementing new didactics

ID	Other ways of implementing new didactics
1	Gamification, Competence and Nugget-based education are new didactic approaches implemented in our training.
2	by arranging / initiating interactivity and collaboration among students in a digital environment / by using digital tools

Participants could also express their reasons for not implementing new teaching and learning modalities.

Table 7: Most common reasons for not implementing new didactics

ID	Expressed reasons for not implementing new didactics
1	our university is fully online and could handle the COVID-19 crisis as usual
2	The university offers didactic education and various programmes enablig digital teaching. Digital teaching is applied at our faculty.
3	Mostly because we had to act immediately so there was no time to think it through strategically.

Students needed additional attention during pandemic. Top approach among LIS schools/departments was providing regular consultations and live online Q&A sessions (88%). Providing technical support to students was also frequent approach (73%). The least used approach was opening up pass-fail option (16%).

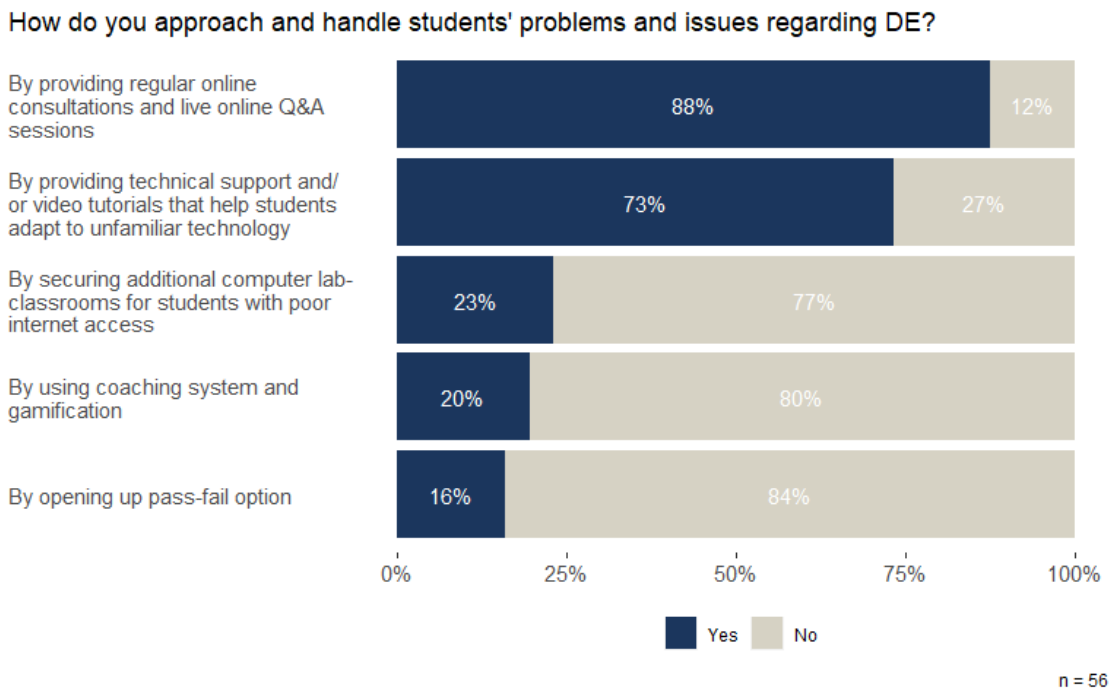

Chart 7: Ways of approaching and handling students' problems and issues

Student's challenges were also addressed on other ways, as expressed by participants.

Table 8: Other approaches to problems and issues regarding DE

ID	Other approaches to problems and issues regarding DE
1	by offering advise groups, tutoring etc. to strengthen their self-esteem
2	By mentoring students all way through DE and having regular group sessions
3	By involving classmates to motivate students motivation and participation
4	Most problems were dealt with via email correspondence or a zoom call
5	We are working on real cases and there is a pool of learning activities related to them and the inquiry-based approach is supported by teachers as mentors.
6	Our ICT department supports well both students and teachers
7	collaborating with professional associations

Curricula was adapted or changed driven by digital platform or digital tools at 36 institutions (out of 56).

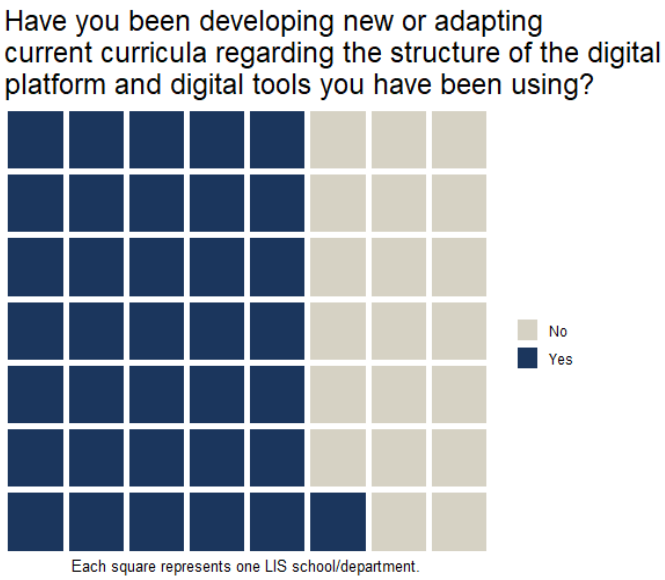

Chart 8: Developing new or adapting current curricula

47 institutions (out of 56) provided their teaching staff with the possibility to customize their teaching process, i.e. to personalize their teaching and to adapt their work according to new teaching and research conditions.

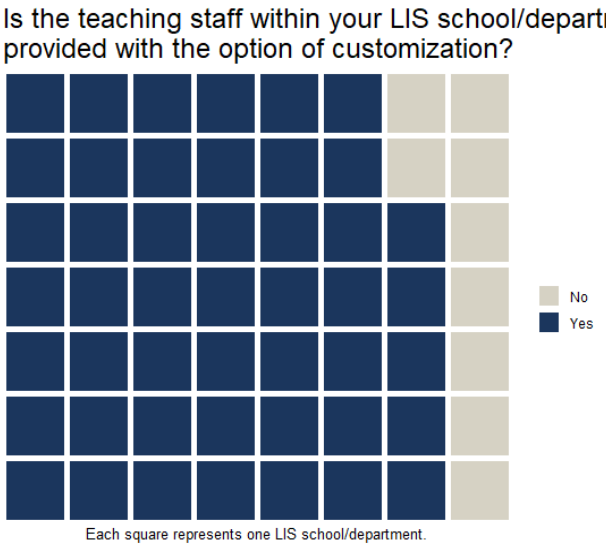

Chart 9: Providing the option of customization for the teaching staff

Many of the LIS school/department staff were able to apply flexibility in the course content (73%) or allow students different opportunities to show and demonstrate their knowledge (71%).

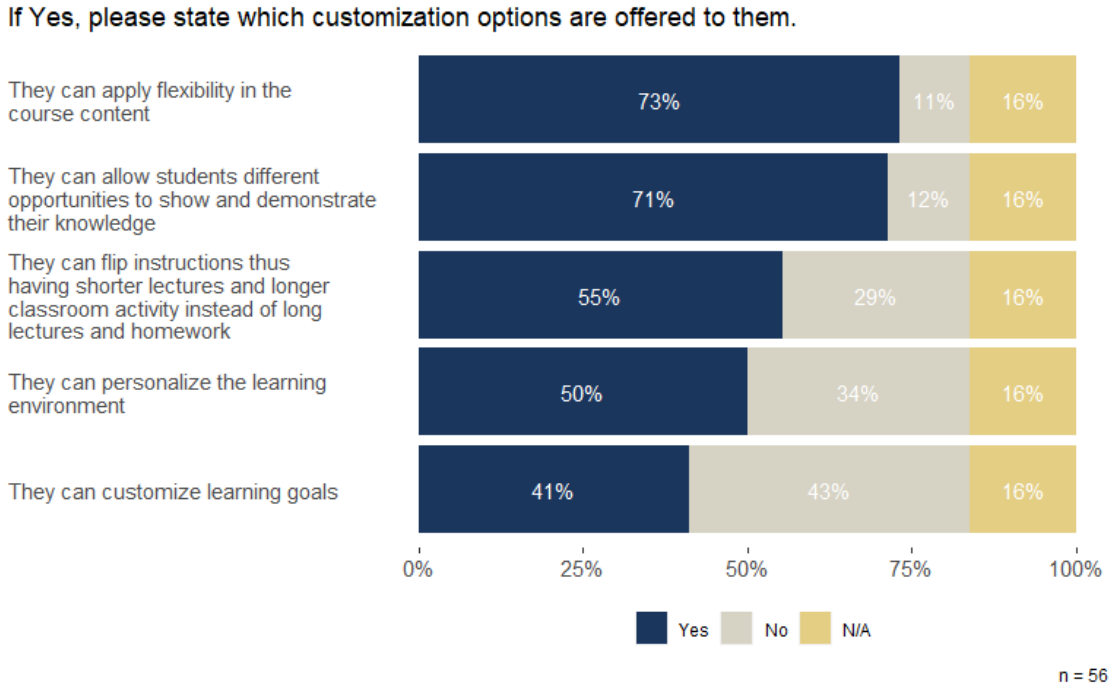

Chart 10: Customization options offered

Participants added other customization options.

Table 9: Other customization options used

ID	Other customization options
1	combining with other colleagues and courses to make contents more sensible and useful
2	The students can choose different learning paths(profiles) in several courses according to their previous knowledge and skills and preferences/interests. We have made diagnostic analysis since 2007 and now use extensively learning analytics possibilities.
3	We are working on real cases and there is a pool of learning activities related to them and the inquiry-based approach is supported by teachers as mentors.

For digital education, mostly proprietary software is used (77%), but free and open source software is also highly represented (70%).

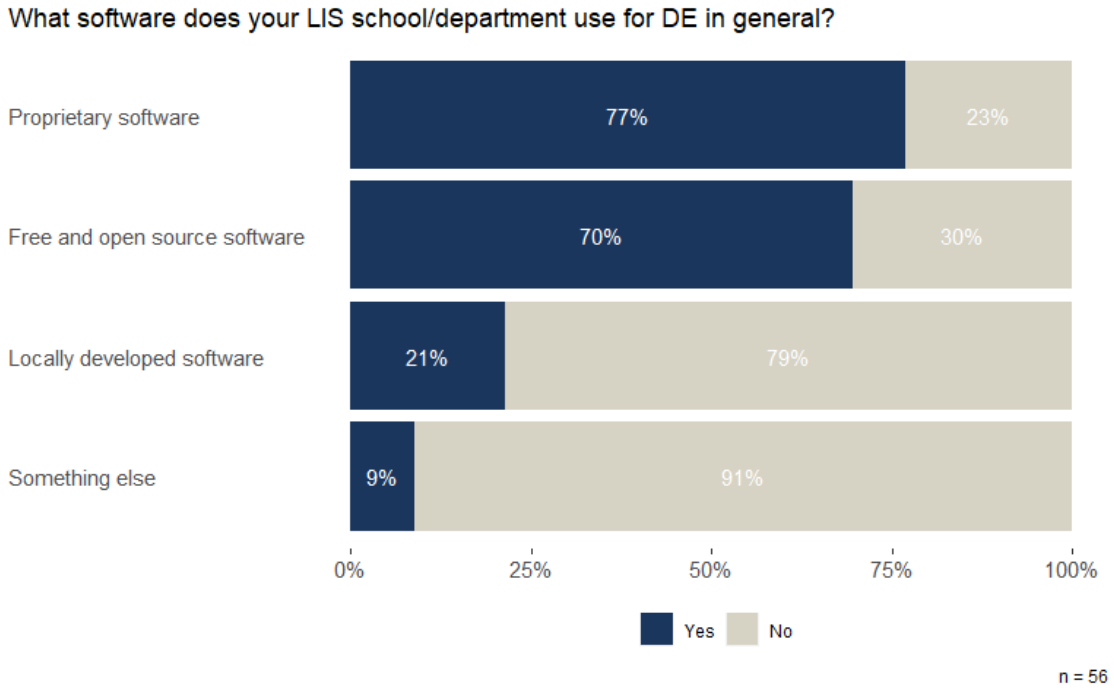

Chart 11: DE software used

Zoom, MS Teams and Blackboard are most commonly used proprietary software.

Table 10: Proprietary software used for DE

ID	Proprietary software used	Cases	Category
1	Zoom	23	video conferencing & streaming tools
2	MS Teams	12	
3	Google Meet	6	
4	Skype	3	
5	Adobe Connect	1	
6	Blackboard Collaborate	6	virtual classroom software
7	Google Clasroom	1	
8	Turnitin	1	antiplagiarism software
9	Kahoot!	1	online quizzes
10	Office 365	3	other
11	Camtasia	4	
12	Other software (Google Drive, Kaltura, Microsoft Office, Mentimenter, Padlet, TrueConf, Webinar.ru, АнтиплагиатВуз, Panopto, Miro, Google Docs, Cisco Webex, Screencast-O-Matic, Colibri, Videocast, Educast, NAU, e Filesender, My Apps, Perculus)	1	

On the other side, Moodle is dominant open source software used. Note should be made that many participants had problems differentiating open source software and proprietary software, as seen in Table 11. Brackets were used (in this and following tables) to mark the "wrong" answers.

Table 11: Free and open source software used for DE

ID	Free and open source software used	Cases	Category
1	Moodle	23	learning management systems (LMS)
2	Ilias	1	
3	Open Broadcaster Software	1	
4	(Skype)	2	
5	(Google Meet)	1	video conferencing & streaming tools
6	Arnes videoconferencing	1	
7	(MS Teams)	2	
8	(Zoom)	4	
9	Big Blue Button	3	
10	(Google Classroom)	1	virtual classroom software
11	(Jamboard)	1	
12	eClass	1	
13	(Viber)	1	
14	(WhatsApp)	1	cross-platform voice over IP, instant messaging & communication
15	Telegram	1	
16	Slack (free version)	1	
17	Inkscape	1	vector graphics editor
18	Libre Office	1	
19	(Goodle Docs)	1	document editor
20	(Google-формы)	1	
21	(Kahoot!)	1	online quizzes
22	eXeLearning	1	publishing web content
23	WordPress	1	other

ID	Free and open source software used	Cases	Category
24	Discrete Fracture Network	1	other
25	(MS Outlook)	1	
26	(MS Access)	1	

Institutions use also specific, locally developed software.

Table 12: Locally developed software used for DE

ID	Locally (at the institutional level) developed software
1	UBYS (Üniversite Bilgi Yönetimi Sistemi)
2	USOS
3	UniTUBE (live streaming)
4	UniSHARE (filesharing of large files)
5	library systems and tools
6	ARL
7	SWOP
8	UC Student, UC Teacher, Infordocente, Inforestudante
9	My Apps
10	UPV
11	Sumarum

Participants shared also other DE tools used at their institution. Note should be made that some participants had problems differentiating software tools from other systems and tools available and/or provided by their institution, as seen in Table 13.

Table 13: Other software used for DE

ID	Other software used by LIS schools/departments for general DE
1	(Personal accounts and portfolios on the Universitys web site)
2	specialized software appropriate for teaching different aspects of information management
3	Adobe tools and software
4	database systems
5	(WoS)
6	WIN /IBW (PICA Cataloguing)

Effectiveness of systems, tools and practices is an important aspect to be considered in this context and should be further explored. As can be seen, during COVID-19 pandemic, all the systems, tolls and practices used worked as an integrated system at 66% of institutions.

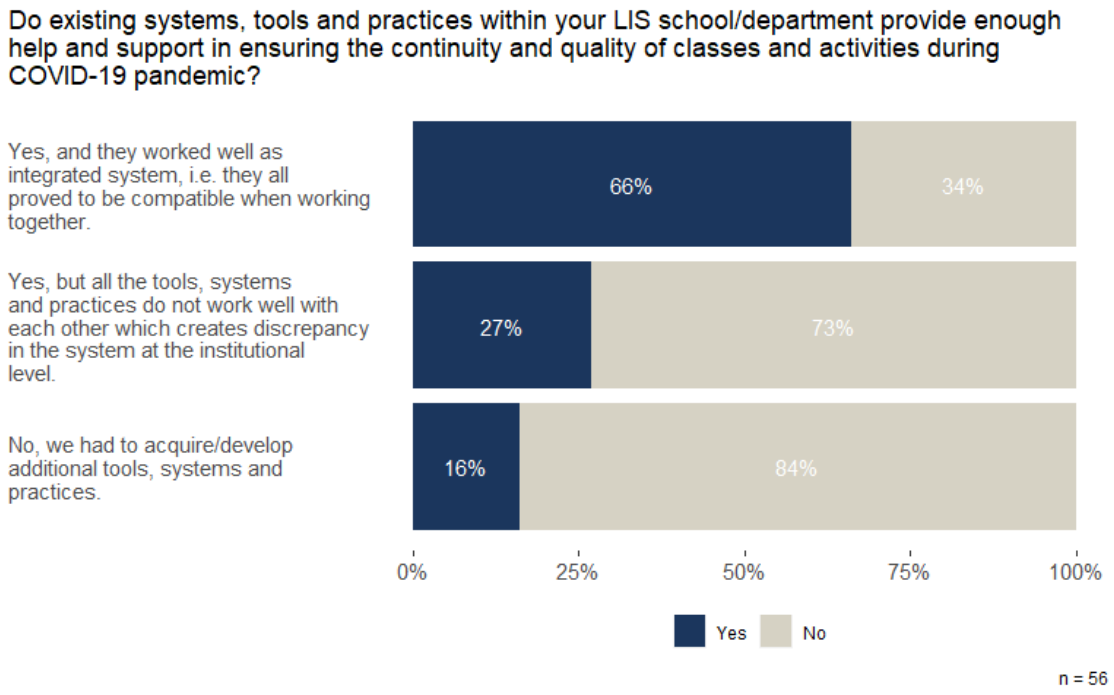

Chart 12: Ensuring continuity and quality of education during COVID-19 pandemic with existing systems, tools and practices

COVID-19 pandemic required close collaboration of all stakeholders at HEIs. At 80% of institutions, students were able to obtain necessary library materials, meaning that libraries didn't stop to provide core service to the students. At 59% of institutions, students were able to obtain library materials during closures.

In addition, libraries provided virtual information services at 64% of institutions.

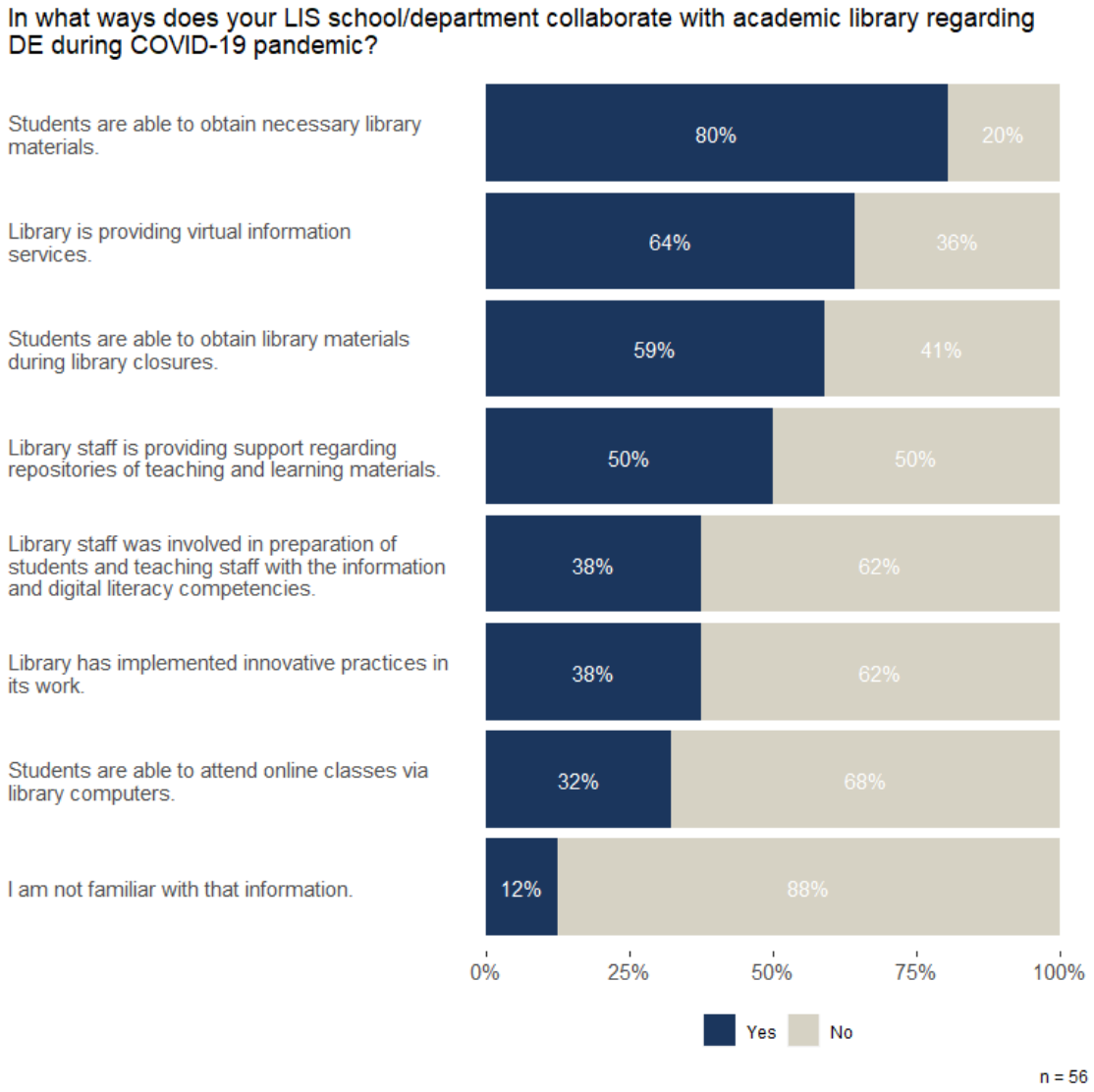

Chart 13: Main ways of collaboration with academic libraries regarding DE during COVID-19 pandemic

Participants shared also other ways of collaboration.

Table 14: Other ways of collaboration with academic libraries regarding DE during COVID-19 pandemic

ID	Other ways of collaboration between LIS school/department and academic library regarding DE during COVID-19 pandemic
1	Our library is a content creation center of ER
2	our faculty library offers book-o-mate
3	The library functions autonomously from my school and so we had no say in their opening/closing hours, the students had to just follow their rules and the hours dictated by govt rules and regulations about restrictions
4	Providing access to data bases of scientific journals
5	Bibiocar (personal delivery of books by Bibliocar in Sofia city); Virtual Room every Friday for consultations and discussions with students and lecturers.

Since institutional support in implementation of DE is essential, it is encouraging to notice that 73% of institution ensured implementation of DE at institutional level.

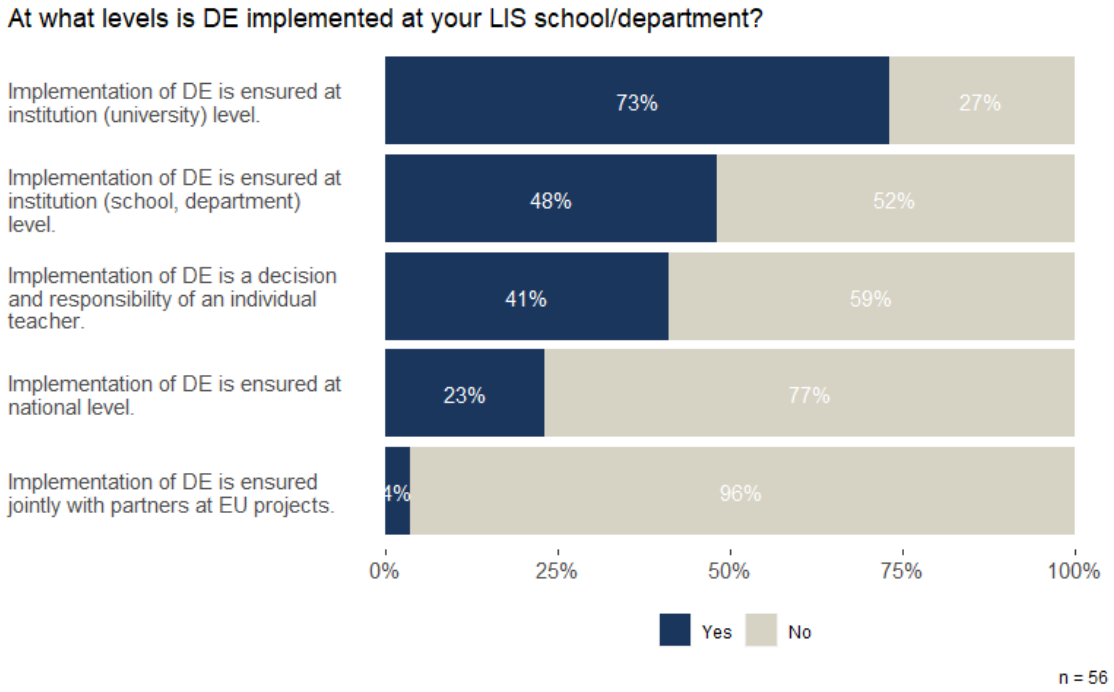

Chart 14: Main levels of DE implementation

Participants listed one note about other ways of DE implementation.

Table 15: Other ways of DE implementation

ID	Others ways of implementation
1	required at the institutional level, but a responsibility of each individual teacher

48 institutions (out of 56) carried out monitoring and evaluation procedures of DE.

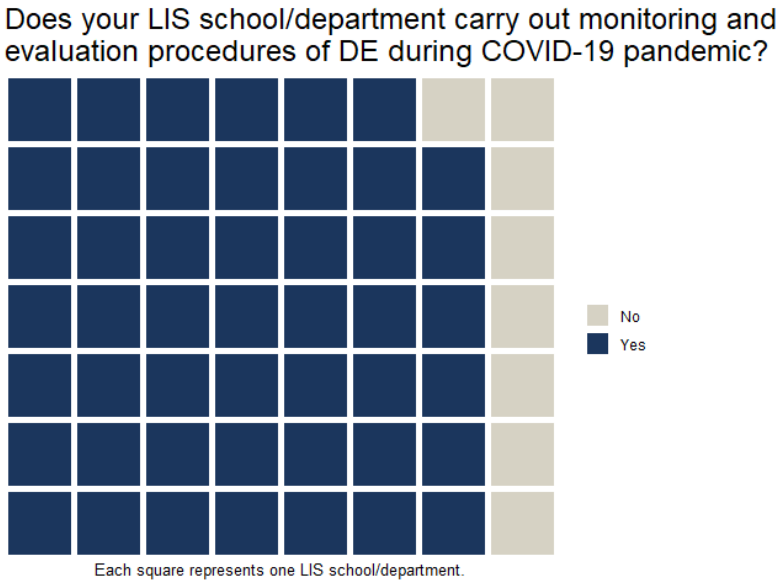

Chart 15: Monitoring and evaluation of DE during COVID-19 pandemic

Online teaching and learning was the most monitored and evaluated process (at 62% of institutions), following by student's learning outcomes (57%) and participation (54%). While pedagogy, didactics and methodology were monitored on by 43% and level of communication only by 30% of LIS schools/departments.

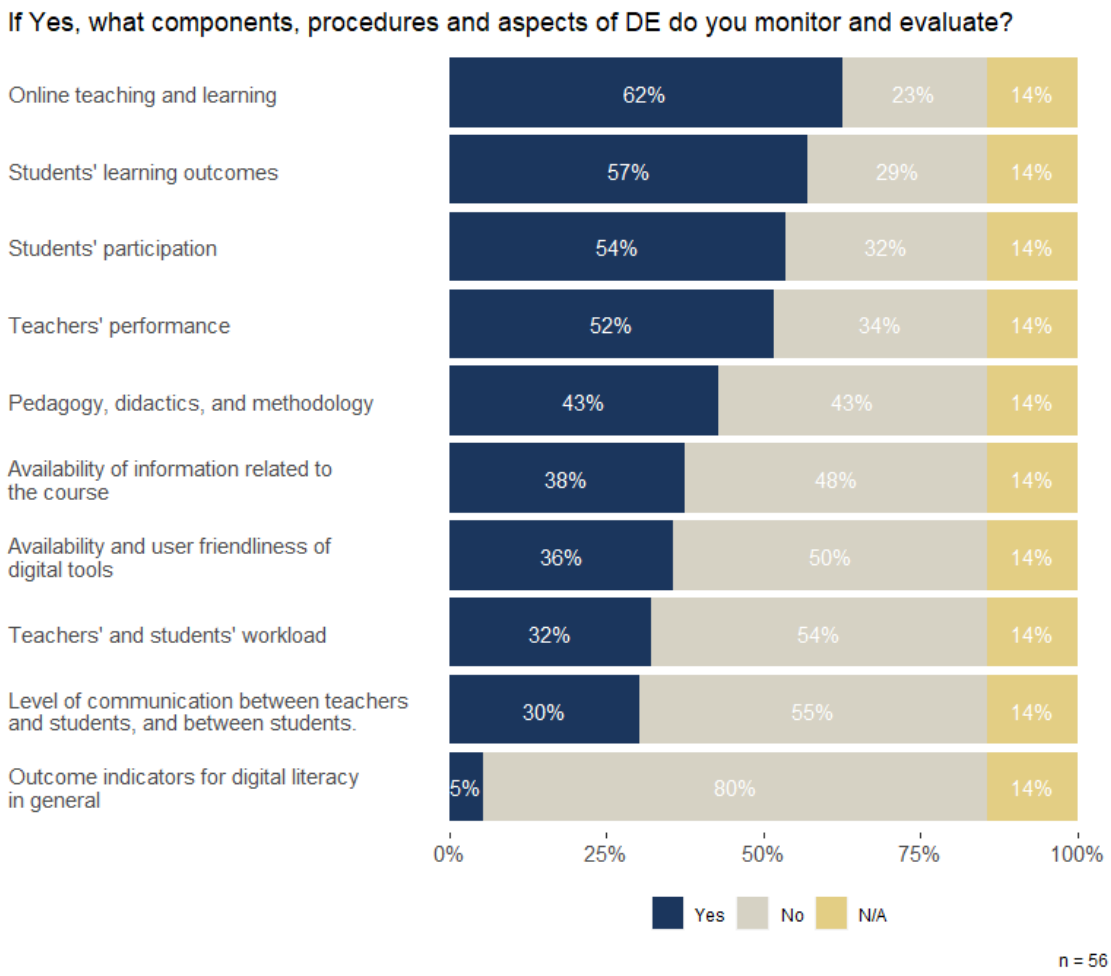

Chart 16: Main components, procedures and aspects of DE monitored and evaluated

Participants shared other aspects that have been monitored and evaluated.

Table 16: Other components, procedures and aspects of DE monitored and evaluated

ID	Other components, procedures and aspects of DE that are monitored and evaluated
1	Some of the online sessions were recorded by lecturer.
2	standardized evaluation of courses at end of semester included questions on DE

Some participants elaborated reasons for not monitoring and evaluating of DE aspects.

Table 17: Reasons for not monitoring and evaluating components, procedures and aspects of DE

ID	Expressed reasons for not monitoring and evaluating components, procedures and aspects of DE
1	It is embedded in othe forms of evaluation. I do not think this is evaluated separately
2	This is a responsability of university
3	Our university made a survey concerning experiences of DE during the Covid-19 pandemic
4	Because lock of time.
5	We were overwhelmed with organisation, administration and adjusting to the new system of work so we had no time to do additional monitoring and evaluation.
6	Its not a department responsability, its a school responsability

Part 2 – The use of OERs during COVID-19 pandemic

OERs repositories are considered to be a valuable resource. 45% of LIS schools/departments' institutional repositories have a collection of OERs. As can be seen, LIS OERs are underrepresented and 41% of institution representative are not familiar with the information on the existence of LIS OERs repositories, while 46% of them state there is no such repository.

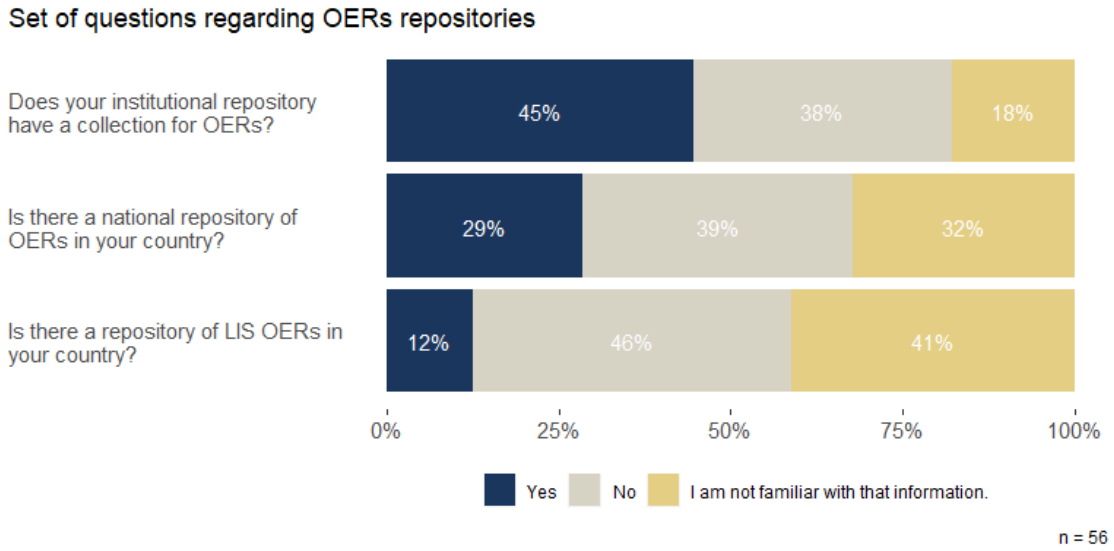

Chart 17: Existing OERs repositories

Detailed list of URLs to specific repositories is available in Appendix 2.

At 52% of institutions the production and usage of OERs is the result of the work of an engaged individual. There is a visible necessity for the creation of institutional initiatives that would address this issue.

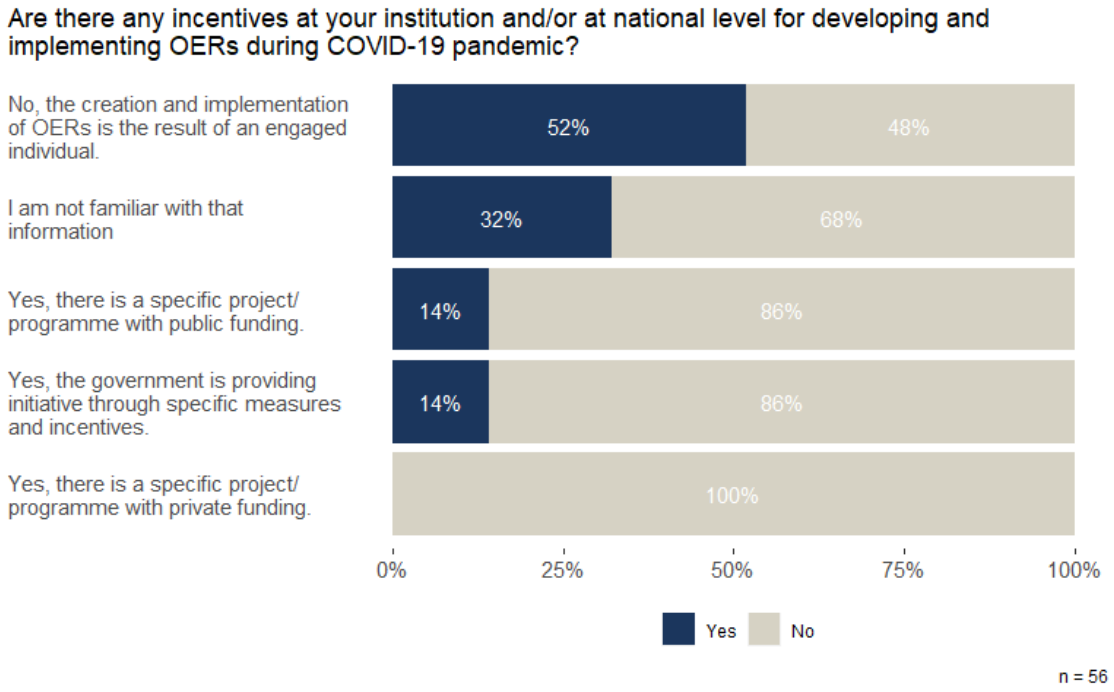

Chart 18: Availability of incentives for OERs implementation during COVID-19 pandemic

OERs was used during COVID-19 pandemic at 26 institutions (out of 56). This shows that basis for more broader use of OERs at LIS schools/departments is needed.

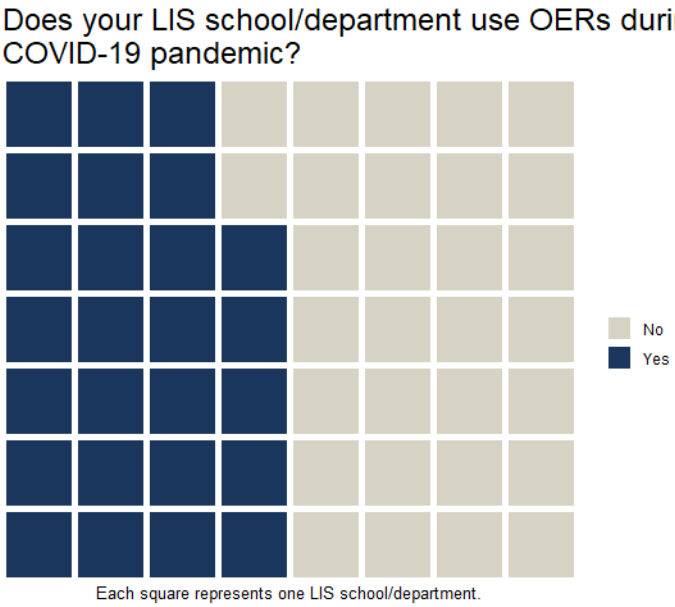

Chart 19: Using OERs during COVID-19 pandemic

46% (n = 26) LIS school/department representatives responded to the question "In how many courses are OERs implemented?". In total, 6 511 courses with OERs implementation have been detected through this questionnaire.

Participants shared their point of view on reasons for not using OERs.

Table 18: Reasons for not using OERs during COVID-19 pandemic

ID	Expressed reasons for not using OERs
1	There is not a repository
2	As a fully online university, contents and ER are created for every subject usually
3	It is an invidividual decission made by the professor
4	I am not familiar with that information.
5	I am not familiar with the definition
6	unaware of any; time/speed needed to pivot online initially
7	lack of technical resources
8	No need
9	There is no information about OERs in LIS

ID	Expressed reasons for not using OERs
10	There is no institutional pressure to use OERs and as far as I know, the country is not developing them, although there is a platform for online courses (FUN: France Université Numérique) but no one's obliged to go there, to use them or to produce OERs.
11	We did not find available to fit into our course plans which we have to stick with.
12	Because that is a personal engage
13	At Faculty of Library Studies and Cultural Heritage (ULSIT, Sofia) we did not use OERss up to now. The main reason is that there are not LIS OERs in Bulgarian up to now. Since March 2021 we are partner at DECriS Project and it is opportunity to develop and implement LIS OERs in the near future. Partially, in the learning process of specialties at Faculty of Information Sciences we used 10 OERss courses, developed under the Erasmus+ projects, jointly with partners at EU projects, available at: https://projects.unibit.bg/ (Enter as a guest).
14	NA
15	materials are available in moodle
16	I am not familiar with that information I am not familiar with that information
17	lack of integration, coordination, motivation
18	Unknown
19	I cannot give a binding answer to this question for the entire institute.
20	Because we have not OERs.
21	I have no data to answer that question.
22	Mostly because the HE community is not aware enough of the opportunities and possibilities of using OERss.
23	There is no repository with specific materials
24	we hace used our materials
25	in fact i am not familiar with this information
26	Not familiar
27	unsure if usable resources exist, licensing/conditions are unclear
28	The use of OERss is the result of an engaged individual.
29	they are not visible enough
30	Teacher are expected to create their own, but no incentives are provided, with a few exeptions.

Participants also shared what would be top motivators for OERs usage at LIS schools/departments.

Table 19: Possible motives and incentives for using OERs at institutional level

ID	What would motivate and incentivize your institution (LIS school/department) to start using OERs?
1	A easy-to-access platform
2	open access policy
3	Institutional recognition
4	I am not familiar with that information.
5	I am not familiar with the definition
6	Time, availability of relevant materials
7	Students request
8	If there would be an explicit need, if OERs that would directly fit the curriculum would be available.
9	Availability of a clearly structured list of available OERs for specific areas of training
10	Until there is some form of institutional or legislative constraint, I believe HE in France will remain massively traditional
11	We need a possibility to be more flexible in course plans, but in general, we are very motivated.
12	if there was any kind of recognition or reward
13	We are motivated to start developing and using OERss, especially after COVID-19 pandemic period, and now we are partner at EU project on that direction - DECriS.
14	NA
15	the process started 5 years ago, but progress is slow
16	I think first of all we must solve the follows questions: .But how do we use these materials effectively? How can we roll out this content in the most effective manner? Who is evaluating these materials for quality? These are common questions about OERs and they point to an evolutionary history of OERs: creation, repositories, evaluation, assessment, and implementation
17	funding, special project, common digital space
18	An LIS-specific OERs platform.
19	The first step should be: to create an OERs.

ID	What would motivate and incentivize your institution (LIS school/department) to start using OERs?
20	I have no data to answer that question.
21	To become aware of all the benfits of open education and open science.
22	Public image
23	may be a project, resources and time
24	better knowledge of OERs in French and where to find them
25	I do not know
26	no idea
27	Nothing
28	I cant tell it
29	Specific projects and ad-hoc funding.

Motivating teachers to start using OERs is also important. Participants expressed their main motivators for teachers as shown in Table 17.

Table 20: Possible motives and incentives for using OERs at personal level

ID	What would motivate and incentivise the teaching staff within your LIS school/department to start using OERs?
1	A easy-to-access platform
2	open access policy
3	Institutional recognition
4	I am not familiar with that information.
5	I am not familiar with the definition
6	Save time, achieve something that we can’t do on our own
7	Institute authority order
8	If there would be an explicit need, if OERs that would directly fit the curriculum would be available.
9	Availability of a clearly structured list of available OERs for specific areas of training
10	Bonuses, recognition in one’s career for producing and using them

ID	What would motivate and incentivise the teaching staff within your LIS school/department to start using OERs?
11	I believe that we are all very motivate but we need a possibility to be more flexible in course plans.
12	if there was any kind of recognition or reward
13	The teaching staff are motivated to start developing and using OERs, especially after COVID-19 pandemic period. Since March 2021 we are partner at EU project on that direction - DECriS.
14	NA
15	they would be used if it available
16	More information about the using of OERs
17	funding, special projects, available digital tools
18	An LIS-specific OERs platform.
19	The same.
20	I have no data to answer that question.
21	To provide them with extra (enough) time to work on and develop OERs, if it would become an obligation at governemntal level, and if creating, developing and using OERs would be a factor in the teaching staff scientific and professional adavncement.
22	Improve teaching
23	The same
24	better knowledge of OERs in French and where to find them
25	I do not know
26	no idea
27	i dont know
28	I cant tell it
30	Flexibility in expected face-to-face teaching hours, support in the implementation of OERs, availability of tutors.

At 20% of institutions alternative to OERs is used.

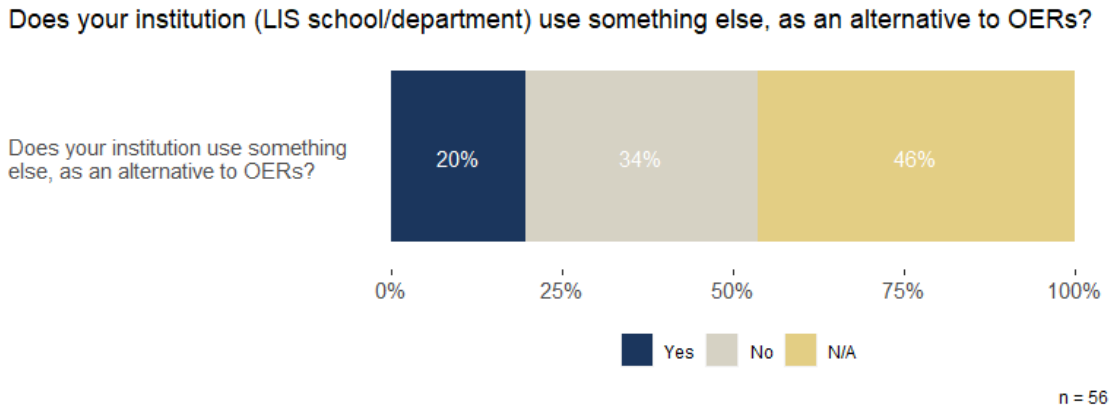

Chart 20: Using alternatives to OERs

Participants elaborated their view on OERs alternatives.

Table 21: Types of OERs alternatives used

ID	Alternatives to OERs
1	Spocs
2	The definition of OERs is not clear to me
3	Open available resources, information.
4	At the moment, the university has begun work on the creation of a bank of the teachers video lectures, a digital library of educational, methodological and scientific publications is being formed
5	Learning materials (documents, articles, videos, pictures, etc.), based on learning management systems ILIAS and Moodle; recorded and archived teaching sessions; video conferencing tools (e.g. Big Blue Button, Zoom, Google Meet; institutional e-library repository; online subject repositories; National Library St. St. Cyril and Methodius digital collections; social media (e.g. Facebook, Twitter, YouTube available materials); learning materials in OERs – partially in English; Bulgarian Portal for Open Access: https://bpos.bg/en/about-portal.
6	own materials
7	http://digitar.uni-eger.hu
8	digital materials developed by individual teachers, digital sources and portal of academic libraries, especially CVTI SR
9	free teaching / learning resources (documents, videos, pictures)
10	digital curriculum database

ID	Alternatives to OERs
11	The presentations of the teachers adapted to the new context

At 25% of LIS schools/departments existing teaching materials were used as OERs.

In general, a small number of LIS schools/departments used OERs during pandemic.

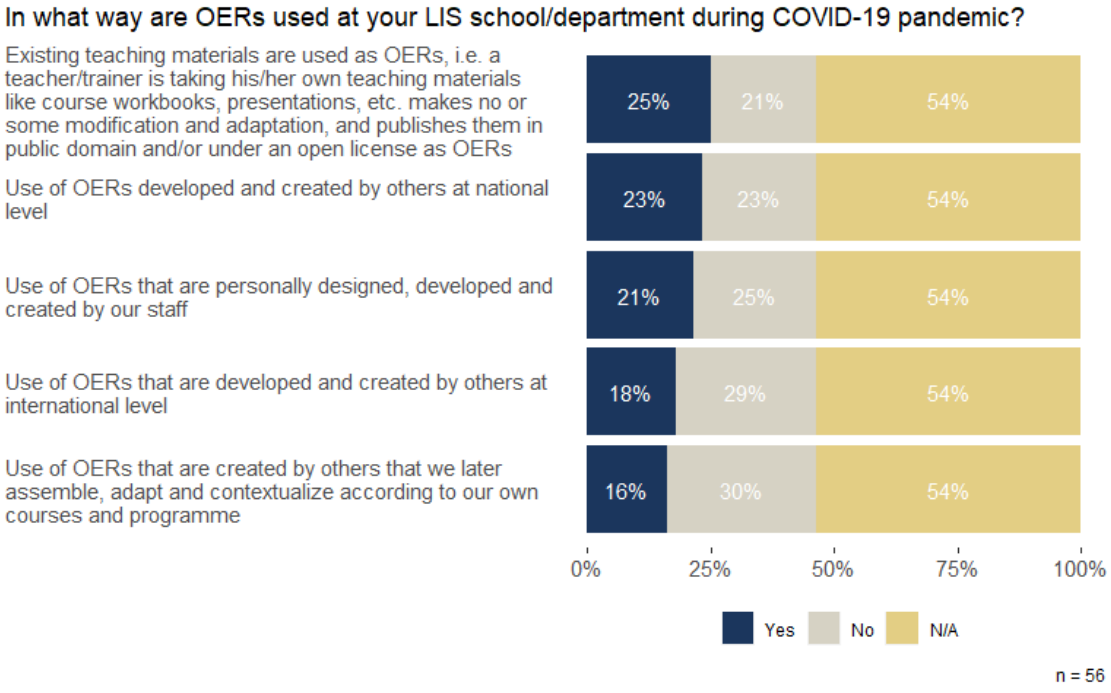

Chart 21: Ways of using OERs during COVID-19 pandemic

Teachers and trainers at LIS schools/departments find OERs mostly in OERs repositories (29%) or directory sites (23%). A number of them (16%) find OERs through specialised OERs search engines.

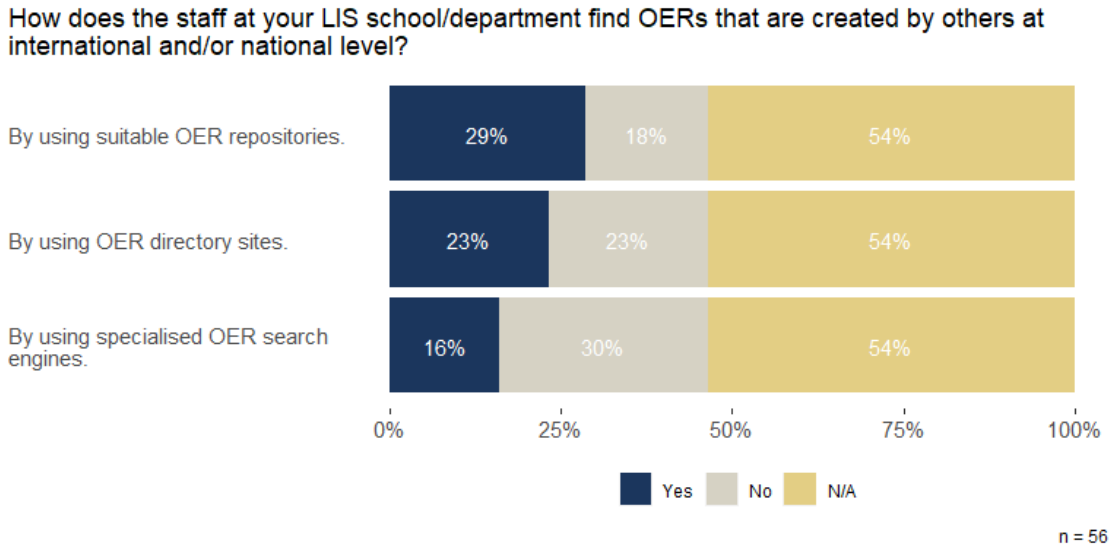

Chart 22: Ways of finding OERs created by other parties at international and/or national level

Participants recognized other possible ways of finding OERs.

Table 22: Other ways of finding OERs created by other parties at international and/or national level

ID	Ways of finding OERs that are created by others at international and/or national level
1	through contacts with colleagues
2	search engines
3	Internet Searching Engines
4	Using search engines
5	searching at other institutions directly

Dominant way of developing or adopting of OERs at LIS schools/departments is independently (as a faculty), at 38% of institutions.

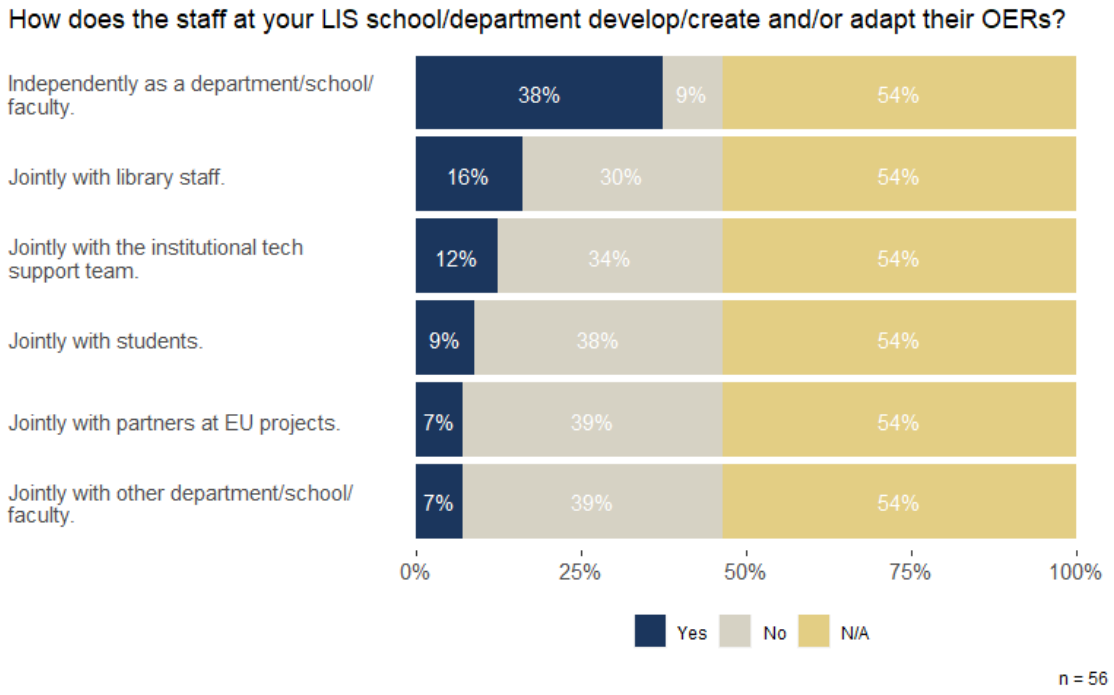

Chart 23: Main ways of developing/creating and/or adapting OERs

Participants noted other ways for development and adoption of OERs.

Table 23: Other ways of developing/creating and/or adapting OERs

ID	Other ways of developing and adopting of OERs
1	Various OERs have been developed differently, some individually, some in collaboration with other schools, library of EU projects.

Only 7 institutions (out of 26 that are using OERs during the pandemic) have institutional policy regarding OERs.

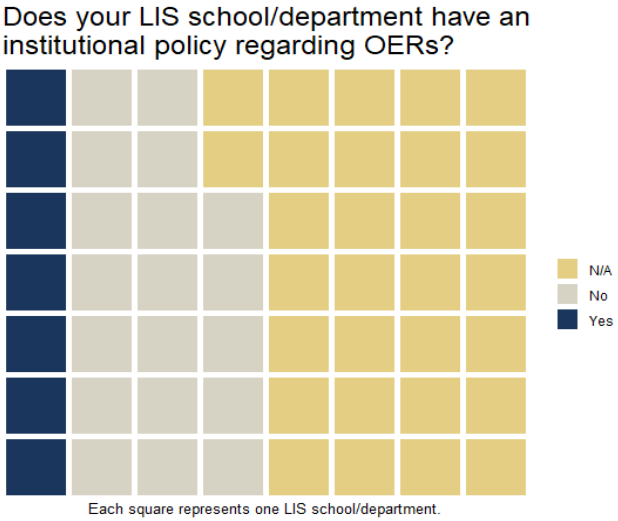

Chart 24: Existing institutional policies regarding OERs

Among those institutions that have an institutional policy about OERs, top reason for such document is "OERs supports adaptive and flexible teaching and learning".

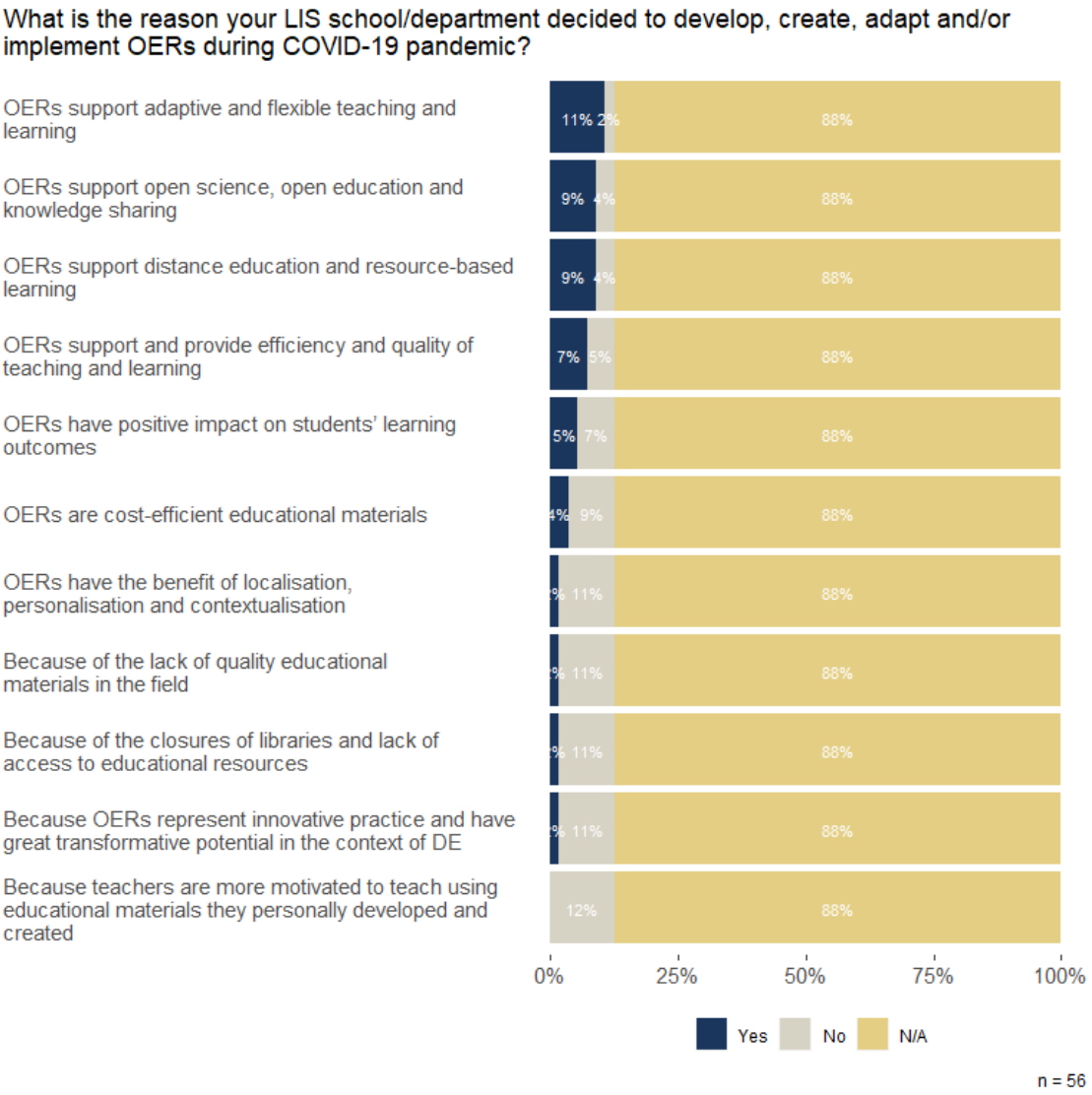

Chart 25: Reasons for developing, creating, adapting and/or implementing OERs during COVID-19 pandemic

OERs are rarely peer-reviewed. Only at few institutions does the pre-publication or post-publication review exist.

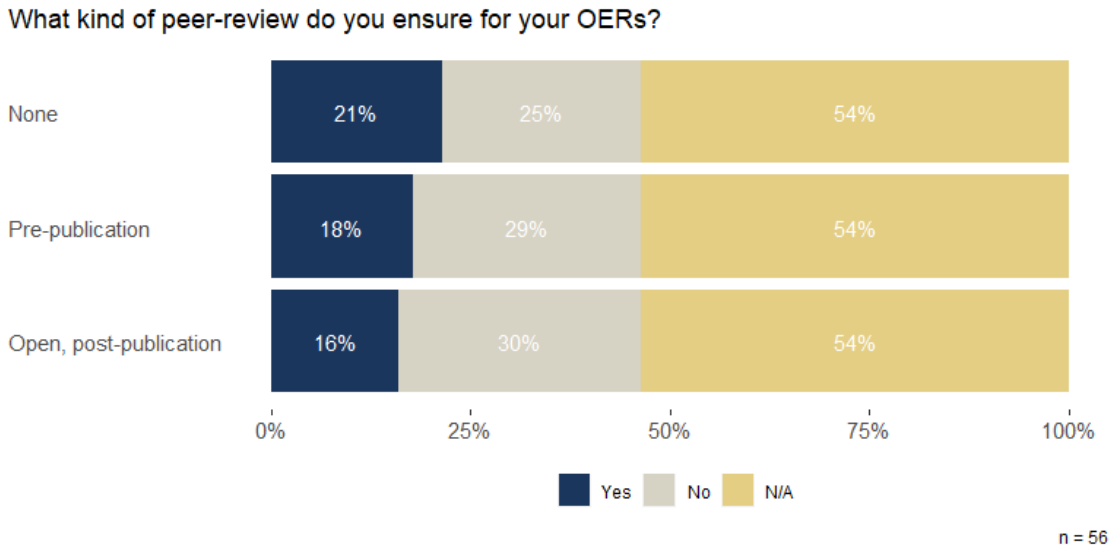

Chart 26: Ensuring peer-review for OERs

Another confirmation that institutional support regarding OERs curation is needed is shown in the Chart 27. Teachers are mostly responsible for the curation and management of OERs that they created.

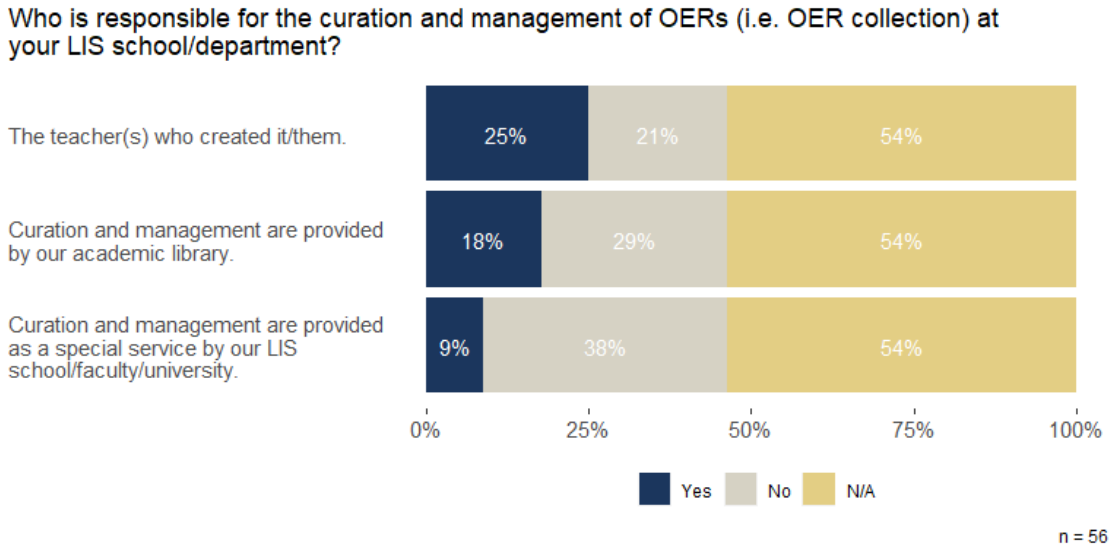

Chart 27: Main parties responsible for curation and management of OERs

Participants stated that there are also other roles/departments responsible for OERs curation.

Table 24: Other parties responsible for curation and management of OERs

ID	Who is responsible for the curation and management of OERs (i.e. OERs collection) at your LIS school/department?
1	Methodical Department
2	Other teachers besides the ones that created OERs

Free and open source software is used for developing of OERs at 30% of institutions.

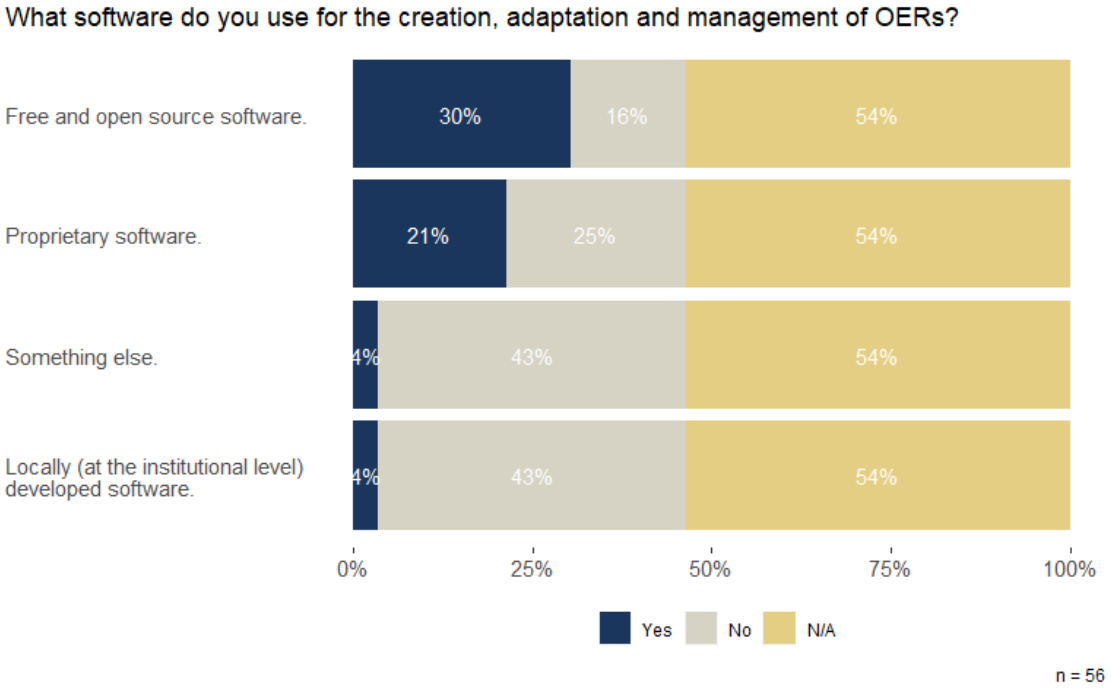

Chart 28: Software used for creation, adaptation and management of OERs

Table 25: Open source software used for creation, adaptation and management of OERs

ID	Open source software used.	Cases	Category
1	(DSPACE)	2	repository software package
2	(Moodle)	4	learning management system (LMS)
3	Canvas LMS	1	
4	onlinetestpad.com	1	test case management tool
5	eClass	1	virtual classroom software
6	Microsoft Azure	1	cloud computing platform
7	eXeLearning	1	authoring application for publishing web content
8	(OpenEdX)	1	MOOCs provider
9	Open Broadcaster Software	1	video conferencing & streaming tools
10	XnView	1	image organizer and file manager
11	Brackets	1	source code editor
12	H5P	1	content collaboration framework
13	Xerte	1	software for authoring learning objects
14	WordPress	1	content management system

As seen in Table 25. (and Table 26.) some participants do not differentiate between software used for creating OERs and for archiving, preserving and distributing them (e.g. participants mentioning DSpace which is not software for creating OERs, but software for creating open access repositories; or participants mentioning Google Meet which is a tool for video conferencing and meeting).

Table 26: Proprietary software used for creation, adaptation and management of OERs

ID	Proprietary software used.	Cases	Category
1	Adobe Acrobat	1	a family of application software
2	Microsoft tools	1	
3	Google tools	1	
4	Adobe PageMaker	1	desktop publishing program
5	Ms Office	8	document editor
6	Panopto	1	lecture recording, screencasting, video streaming, and video content management software
7	Screencast-O-Matic	1	
8	Camstasia	1	
9	YouTube	1	online video sharing and social media platform
10	(Zoom)	2	video conferencing & streaming tools
11	(Google Meet)	1	
12	MS Teams	1	

Table 27: Locally developed software used for creation, adaptation and management of OERs

ID	Locally (at the institutional level) developed software used.
1	Mentor (LMS Moodle)

ID	Something else used.
1	depends on the resource, its topic, the creation process and the team involved

Out of 46% of institutions using OERs, 21% of institutions publish OERs under an open license, and just 7% as a part of public domain.

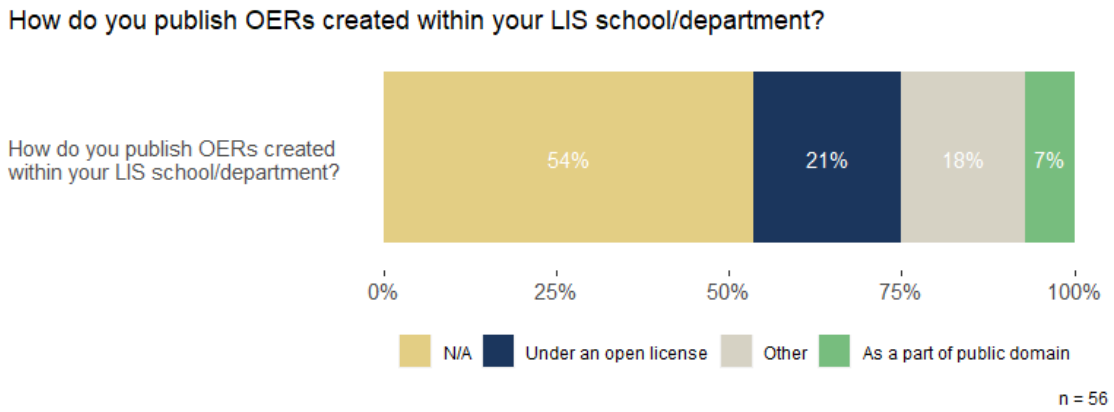

Chart 29: Main ways of publishing OERs

Participants stated other ways of publishing OERs.

Table 28: Other ways of publishing OERs

ID	Other ways of publishing OERs created within LIS school/department
1	We have some published materials and our academic library download their digital copies to the open access digital library in cases when the university has copyright; also the library pay for access to some proprietary digital full-texts databases. A big complex of digital unpublished OERs created by the university teachers are downloaded to the local information system and available only for students/teachers in the University
2	within Unis Mentor (LMS Moodle)
3	In the college local information system: available after authorization
4	within Moodle
5	Creative Commons
7	Creative Commons Licenses

As can be noticed from the Table 28., participants don't recognise Creative Commons as an open license. Those responses show the importance of further discussions about open licences among LIS schools/departments representatives.

At 34% institutions library materials were used for planning, designing and creating OERs.

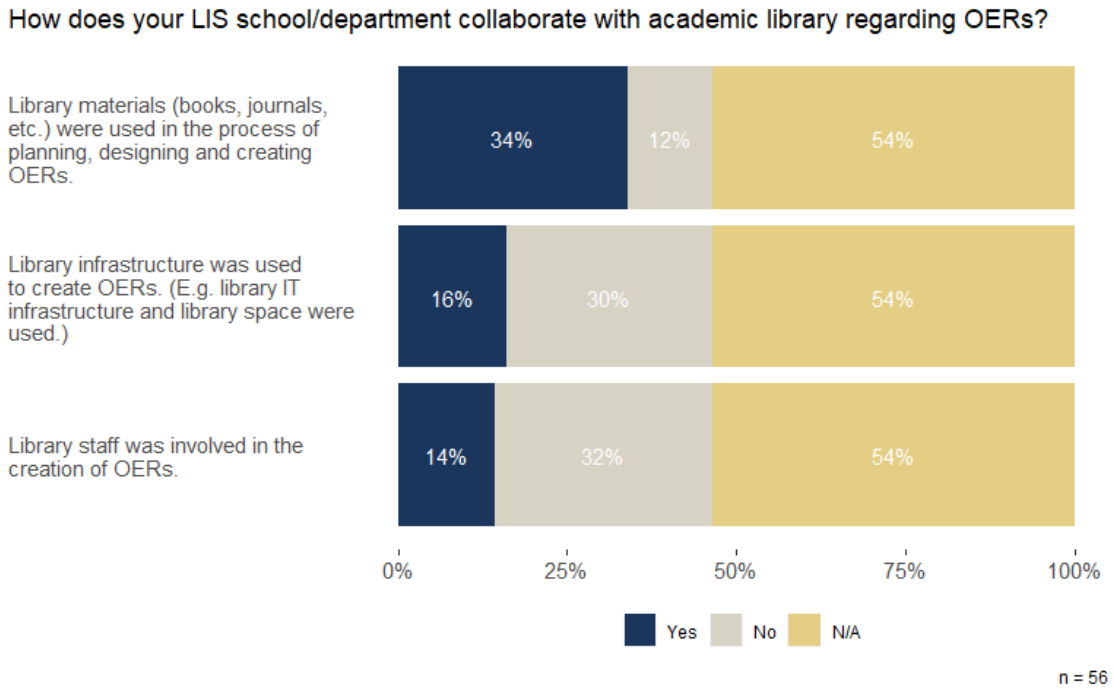

Chart 30: Main ways of collaboration with academic libraries regarding OERs

Existing OERs are promoted and shared (23%), but rarely monitored and evaluated (7%).

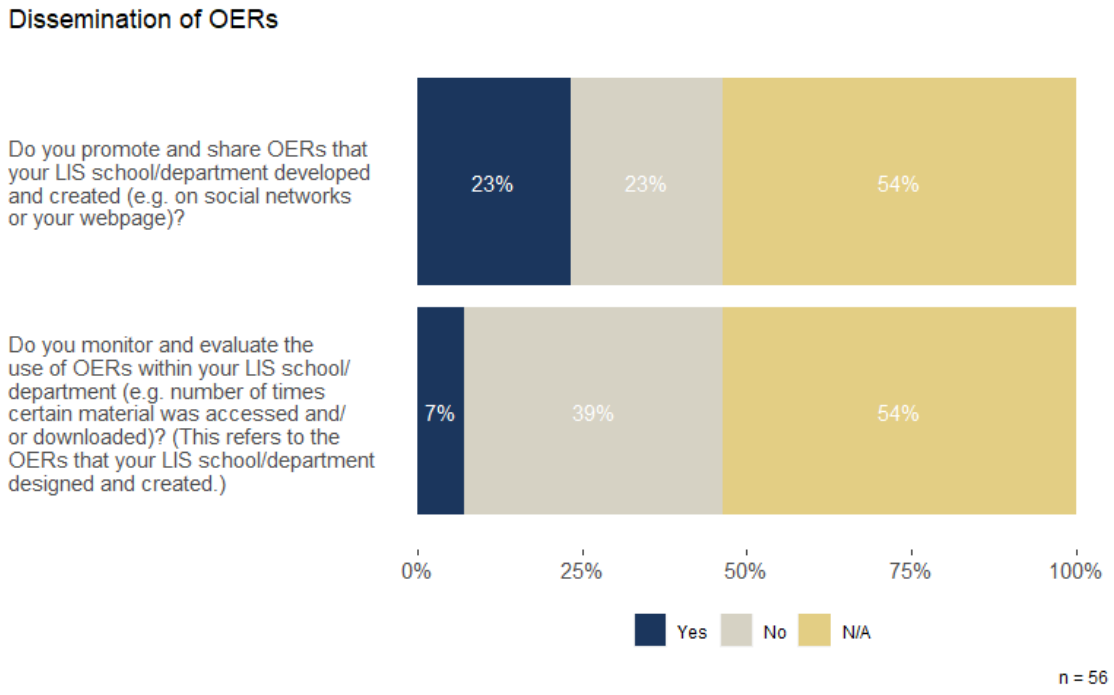

Chart 31: Dissemination, monitoring and evaluation of OERs

Part 3 – Institutional support regarding DE and OERs during COVID-19 pandemic

68% of LIS schools/department have institutional recommendations regarding the continued conducting of activities during COVID-19 pandemic, but only 5% of LIS schools/departments have national policy documents or procedure frameworks for OERs in regards to COVID-19 pandemic.

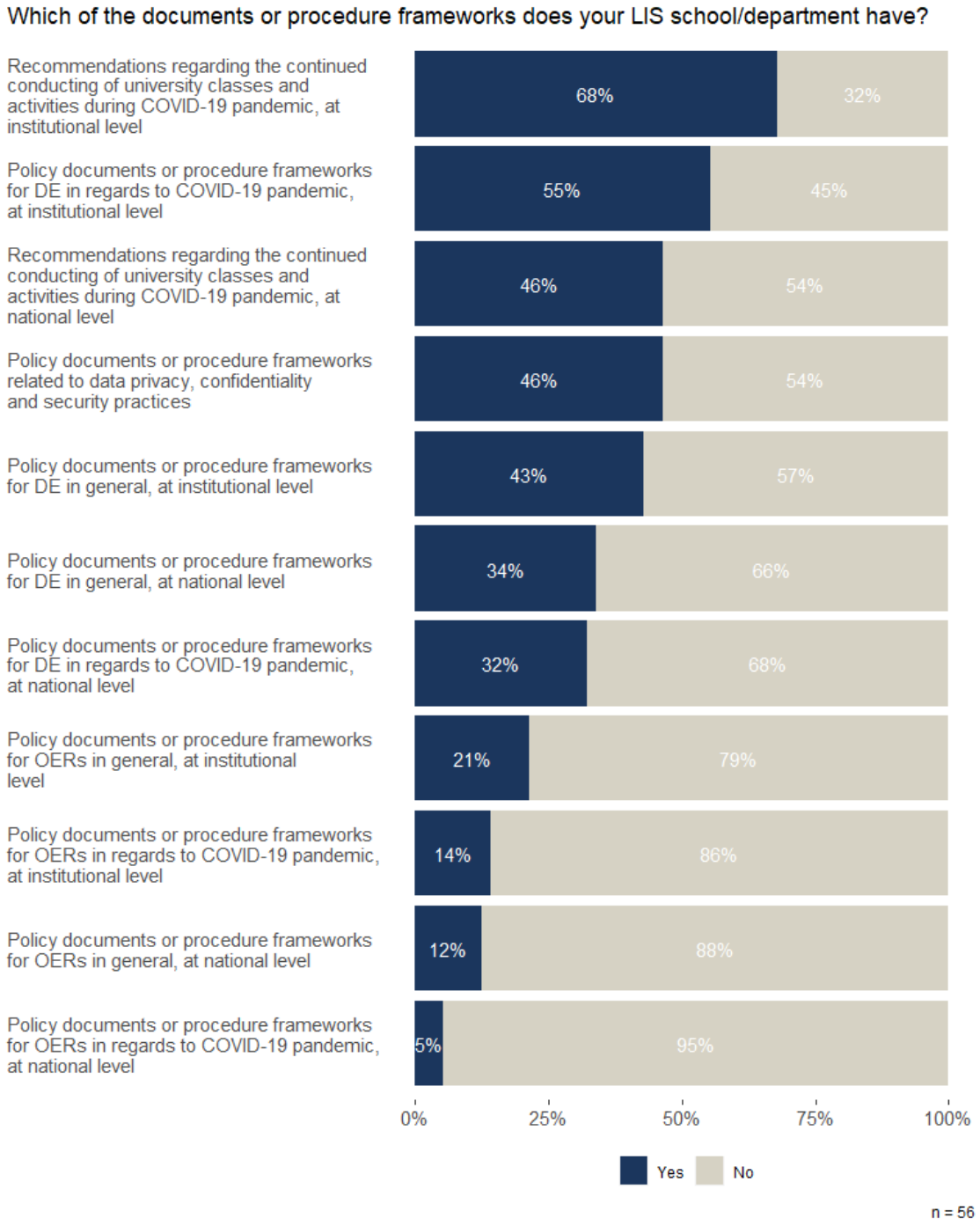

Chart 32: Existing documents and procedure frameworks within LIS school/department

Most of institutions (93%) provided digital skills online training for teaching staff during COVID-19 pandemic. Only 20% of institutions provided financial incentives.

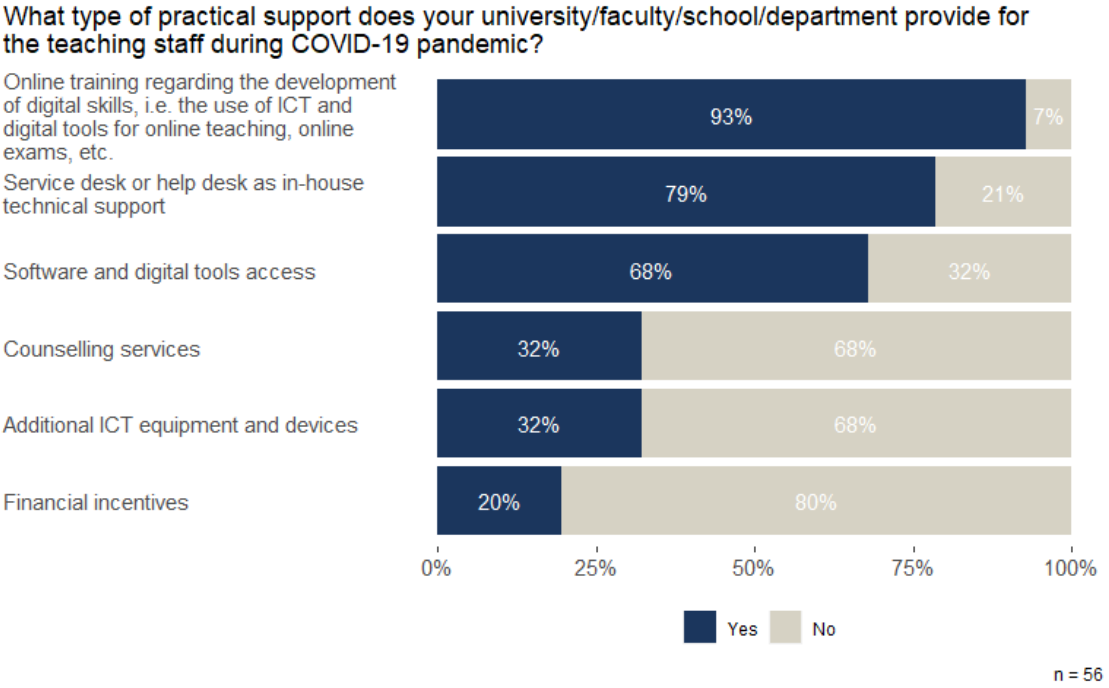

Chart 32: Main types of practical support provided by the university/faculty/department during COVID-19 pandemic

Participants shared few examples of practical support.

Table 29: Other types of practical support provided by the university/faculty/department during COVID-19 pandemic

ID	Other practical support
1	Specific web page with information, help and support regarding e-learning https://elearning.umk.pl
2	ULSIT Library provides access to Web of Science, SCOPUS and other scientific data bases.

5. Discussion

As stated earlier, survey results provide insight into current practices and policies regarding digital education and OERs during COVID-19 pandemic. They also help define rules and procedures needed for successful implementation of DE and OERs during crisis situations. Some of the key findings regarding digital education, OERs and institutional support during the pandemic are as follows.

DIGITAL EDUCATION

During COVID-19 pandemic different aspects of DE were almost equally implemented except digital credentials which only some of the LIS schools/departments used. The two most dominant aspects of digital education that were implemented during COVID-19 pandemic were live teaching sessions via video conferencing tools and online communication with students. The reason for this may be the fact that DE wasn't just the immediate necessity born out of COVID-19 pandemic but educational strategy that is already present in the greater part of educational ecosystem. Although some teachers may have reservations towards online communication with students because of the possible informality[2] of online communication and prefer 'traditional' face-to-face communication, applying different communication strategies and techniques can ensure the quality, professionalism, respectful and supportive character of such communication while having a positive impact on the teacher-student communication, students' motivation, understanding and productivity. It can also help students by decreasing the feeling of being isolated and on their own. Finally, since digital education and training systems will be further fostered and developed, especially in crisis situations such as COVID-19 pandemic, LIS schools/departments will need to improve the implementation of digital credentials at policy and programmatic level.

Blended learning[3] has proven to be the most used teaching method, along with project based learning and problem based learning that were also significantly represented.

[2]Since the nature of the internet is represented in its decentralised and nonhierarchical architecture, and since online learning has, amongst other things, been using social networking sites like Facebook and new digital tools and applications for communication, coordination and cooperation, there are certain reservations amongst some of the teachers and trainers when it comes to using online tools and their possible infliction of informal communication setting, especially when online communication is the most dominant or only type of communication for a period of time.

[3]It should be noted that the term blended learning may be understood differently by different participants. For instance, in some cases it may refer to the context of complete lockdown when all the classes and activities were moved online, i.e. to the combination of distinct periods of traditional classroom

Blended teaching and learning practices can create an overall inclusive setting with equalized learning opportunities which is especially important in crisis situations that bring disruption in regards to availability and accessibility to education. As opposed to problem based learning and project based learning, virtual reality education and augmented reality education are the least used DE technique/strategy which could be explained by the fact that they require specific, sometimes high-cost equipment and special skills. In most cases, if the institution doesn't already have VR education and AR education integrated in their curriculum, there is a small chance that it could ensure enough money, time and other resources for integrating them in the midst of a crisis situation.

All LIS schools/departments used video conferencing tools while the majority also used learning management systems (LMS) and online anti-plagiarism systems. Repositories, online quizzes and social media were also significantly represented. It should be noted that some tools and systems are being integrated, like in the case of LMS integrating video conferencing tools. When it comes to specific tools, they differ among different institutions. Some LIS schools/department use tools specifically provided by their institution (e.g. through subscription on proprietary tools), while some decided independently to use a certain tool, most often free and open source. Especially as a part of their crisis management strategy, HEIs should deliberately choose tools and systems they want to implement in order to establish coherence, consistency and compatibility between them thus facilitating the work of teachers and students.

All LIS schools/departments used digital learning materials while about 50% of them use digital OERs. Digital learning materials are an essential in the context of online education and they assist both teachers and students. In crisis situations they become more than a supplement to other curriculum materials. They usually include different types of materials, from tutorials and multimedia to e-textbooks that sometimes highly resemble classical textbooks. Digital learning materials are essential part of online education's communication and collaborative environments, and though they can positively influence students' achievements, they are mostly beneficial for enhancing students' engagement by applying individual approach, self-directed learning and other teaching and learning approaches. This is highly important in crisis situations

activities (before and post lockdown) and periods of entirely online activities (during lockdown). In other cases it may refer to the context of reduced face-to-face classes, i.e. the combination of traditional classroom face-to-face activities and online activities during the same period.

where increased autonomy and feeling of isolation may negatively affect students' motivation and engagement.

Almost all of the LIS schools/departments implemented new didactics, i.e. new teaching and learning modalities in their teaching. They did it mostly by using internet and digital tools and media, changing the curricula (or re-prioritising curricula goals) and teaching/learning content, sharing knowledge through different platforms and by using live online sessions that were, in most part, represented in the form of online streaming of the traditional classroom. Live real-time interactions created a synchronous setting for online education which is recognized as an important aspect of HE teaching and learning process, particularly in an ad hoc circumstances of COVID-19 pandemic. Sharing knowledge through different platforms, on the other hand, contributed to an asynchronous setting which is also important for creating conditions that positively influence teaching and learning behaviour and support successful achievement of learning outcomes. Different educational modalities that emerged from the COVID-19 pandemic and suspension of some or most academic activities certainly led to innovations in didactic models and methods that are changing teaching and learning formats. What emerged almost as a pattern, is a combination of different teaching and learning modalities that best support active learner-centred teaching and learning.

Most of LIS schools/departments successfully found the ways to address students' problems and issues regarding DE, either through regular consultations and live online Q&A sessions or by providing technical support to students. The high percentage in online consultations and live online Q&A sessions may indicate the importance of consultations, i.e. the fact that DE, especially if fully online and during crisis situation, can't be successfully implemented if it lacks communication between students and teachers/trainers outside 'the class'. Even though online communication, especially when lacking visual aspect, may lead to communication ambiguity and lower motivation for listening and engaging in communication, live real-time communication can provide a sense of personalization and improve students' motivation.

Digital platforms and tools used during COVID-19 pandemic fostered the adaptation of current or even the development of new curricula in more than half of LIS schools/departments. COVID-19 pandemic disrupted the educational process in many aspects, but most importantly it modified teaching strategies and, for some teachers, impacted their quality of teaching. It also modified learning strategies and, for some students, created many

challenges in regards to autonomous learning from home. These changes led to different types of curriculum innovation. However, further changes or development of curricula may be linked to the development of digital competencies needed for DE as well as learning outcomes that may include such competencies as evaluation of digital content, etc.

Most of the teaching staff at LIS schools/departments had the option of customization of the teaching and learning process. This flexibility is necessary when it comes to crisis situation since they can be very unpredictable, dynamic and stressful. In such situations it is essential to allow the staff to create their own context of teaching and adapt to new teaching and research conditions which, in return, helps them to ensure the quality and steadiness in their work.

In regards to the software used, many of the LIS schools/department used proprietary software, especially Zoom and MS Teams, but many of them also used open source software, especially Moodle. Almost ¼ of respondents (21%) used locally developed software. Integration of educational technology during COVID-19 pandemic has become essential in ensuring the continuity of teaching and learning process. Different tools, applications, platforms, systems and resources have been used in order to provide the quality of both online and offline activities. For many in crisis situations, particular those that need to consider the cost-effectiveness of their technical infrastructure, open source tools and systems can be of great help. Besides, most of them have wide user base and reach, and they provide diverse and strong online and offline functionality.

Most of LIS schools/departments used existing systems, tools and practices during COVID-19 pandemic, but in some cases they were proven to be in mutual discrepancy or inadequate all together. Acquiring and developing additional tools, systems and practices during crisis situation may pose additional cost and stress (time and organization) on the institution and its staff. In order to facilitate more successful implementation of DE in crisis situations, especially in the context of possible future pandemics and global crisis, HEIs themselves as well as government bodies will need to invest in the infrastructure and up-skilling of the teaching/training staff. Open source software and solutions can be of great impact in that context.

Academic libraries had a crucial role during COVID-19 pandemic either as providers of necessary teaching and learning materials (in libraries or repositories) or as providers of virtual information services. During the pandemic and different restrictions, especially during

the lockdowns, libraries were able to provide essential services to students, teachers and trainers. Whether through traditional services such as providing space and materials for teaching and learning (pre and post lockdowns), or through online services such as virtual information services, search interfaces, online interaction and web presence (during lockdowns), they were able to adapt to the changing conditions of the pandemic and successfully support the continuation of the teaching and learning activities. Sometimes the prevalence of content over methods (i.e. the priority of covering every aspect of the curriculum over being methodologically flexible and using different teaching and learning modalities) has a disabling effect on HE in terms of teaching and learning. So when new conditions arise that ask for new methods and procedures, institutions may find themselves overwhelmed. However, certain studies have shown that academic libraries have successfully responded to the challenges of this pandemic by continuing their services throughout the pandemic and closures (Holland 2021, Martzoukou 2021, UNESCO 2021). They found new ways to approach existing service while being innovative in designing new digital services and adopting new practices in delivering those services. They have once again proven their role of cornerstone of HE, especially during crisis situations. They have also demonstrated great flexibility and adaptability in their work since they had to undergo a rapid leveraging of services and skills to meet the demand of newly transformed educational environment. Finally, they've proven to be of special importance in regards to new undergraduates for whom the whole experience was particularly challenging.

In most cases the implementation of DE was ensured at institution level, but in more than 1/3 of the cases it was also a decision and responsibility of an individual teacher. Institutional support, specifically in crisis situations such as COVID-19 pandemic, is sine qua non. But sometimes the lack of it puts additional pressure and responsibility on the teaching staff. In such cases, in order to successfully answer the challenges, teachers must be motivated and knowledgeable in using DE tools and applying DE techniques/strategies. Investing in up-skilling and re-skilling of the teaching staff is thus an important aspect of preparing not just for possible future crisis situations, but for the changes in education in general.

Most of LIS schools/departments carried out monitoring and evaluation procedures of DE. Monitoring and evaluation of DE is important for defining indicators of success, for future planning and improving and/or adapting existing programmes and models.

OPEN EDUCATIONAL RESOURCES

Majority of LIS schools/departments stated that either there is no national repository of OERs in their country or they are not familiar with the information. The same applies to repositories of LIS OERs. The situation is a bit different with institutional repositories containing collections of OERs where almost half of LIS schools/departments state that they have such repositories. This information shows that LIS community needs to be encouraged more to produce and publish OERs and to release existing educational materials and content as OERs. Publicly available repositories of OERs could make stakeholders and policy makers more familiar with the role, effectiveness and cost-effectiveness of OERs, their use and reuse, and their impact on HE thus motivating them more to find different funding sources and models to support their production.

Creating and implementing OERs was often the result of an engaged individual, though in some cases there were specific governmental measures and incentives or projects with public funding. Having specific governmental and institutional policies, providing additional funding and actively including different stakeholders should increase the production and publishing of OERs and increase the availability of OERs. Engaged individuals may sometimes feel overwhelmed with responsibilities of planning, designing and publishing OERs and one way to help them in their endeavours is to establish common frameworks for designing and implementing OERs (as much as possible considering the variety of subjects and courses) and to establish professional networks of engaged individuals that would offer each other organizational and practical support through sharing ideas, experiences, resources and tools. Through networking, these individuals could create and discover opportunities for peer production of OERs.

More than half (54%) of LIS schools/departments didn't use OERs during COVID-19 pandemic! The reasons vary from lack of technical and financial resources, lack of integration, coordination and motivation, lack of support, incentives or even institutional pressure to arguments such as that it is mostly a decision of an individual teacher or that they already use different teaching materials in Moodle. Most of the reasons initially stem from lack of awareness about the concept of OERs itself, but also effectiveness and impact OERs could have on HE.

There are different ways to motivate LIS school/department and their teachers/trainers, to adopt, design and author OERs. Both, institutional and personal motives refer to similar motivational factors. Despite some of the participants stating that they don't know what could

motivate and incentivise both their institutions, and teachers and trainers to start using OERs, the rest of the participants stated that the use of OERs could be motivated/incentivized by creating awareness of OERs, open education and open science, providing teaching staff with more time, resources and flexibility, recognizing and rewarding teachers' work on the development and implementation of OERs, providing necessary funding and bonuses for teachers who create and implement OERs, creating policies and providing infrastructure, or event making it an obligation, i.e. having institutional order. There is no "one size fits all" approach that could motivate all institutions equally and meet their needs. This is why adoption and creation of OERs needs informed planning and strategic development.

In general, a small number of LIS schools/departments used OERs during the pandemic. Existing teaching materials were often used as OERs[4], especially those that were already a part of Moodle courses, but LIS schools/departments also used OERs developed and created by others at national and international level, and OERs that were personally designed, developed and created by their staff. The reason for poor use of OERs is, as already stated, the lack of awareness about the concept itself and the relevance and impact OERs have on HE, but also the lack of time, which is understandable in terms of organizational challenges posed by the pandemic, and the lack of institutional initiatives that refer to capacity building OERs solutions.

When developing/creating and/or adapting OERs the staff usually did it independently and within their own department/school, i.e. without the support from their faculty or university. More than 2/3 of LIS schools/departments have no institutional policy regarding OERs. The lack of institutional policy may directly affect the role of OERs in DE, usually by decreasing awareness of the importance of OERs and by decreasing motivation and incentive to create and use them.

Flexible teaching and learning, open education and knowledge sharing, distance education and resource-based learning, effective and quality teaching and learning were amongst some of the most common reasons for developing, creating, adapting and/or implementing OERs during COVID-19 pandemic. Despite their overall poor adoption, certain LIS schools/departments have recognized valid reasons for using and creating OERs,

[4]For instance, teachers and trainers would use existing teaching/learning materials they created and used for Moodle lessons and activities, modify them and publish them as OERs.

There was still a number of LIS schools/departments that don't ensure peer-review for OERs. Ensuring peer-review for OERs not only improves their quality and efficacy but ensures their further implementation and use. There is a slow, but steady increase in number of peer-reviewed OERs, yet evaluation is still usually the responsibility of the teacher using the OERs.

The curation and management of OERs was usually done by the teacher(s) who created it/them or by the academic library. Again there is an issue of individual responsibility that could be one of the main reasons why many of the teaching staff decide against the creation of new OERs. They were solely responsible at all levels of OERs production – planning, designing, curating, promoting and evaluating. Yet, additional support was provided by academic libraries.

More than a half of the OERs created within the institution (LIS school/department) were created using open source software. In the context of OERs and open education in general, it is crucial to use the tools and systems that allow for open collaboration and cooperation, and for free use and reuse (sharing and exchanging) of educational materials, resources and infrastructure. It should be noted that a smaller number of participants had problems distinguishing certain terms and concepts in this regard. For instance, understanding the difference between authoring tools and software, and OERs respository management software. Also, they would presume the software is open source because it was provided by the institution, event though the institution itself maybe had to buy it or pay for licensing.

Most of the OERs created within the institution (LIS school/department) were published under open license. Open licensing should be an imperative when it comes to publicly funded materials and resources. Sometimes, the chosen licensing framework depends on how OERs will be used. Still, even when using open licensing, most of the respondents don't recognize Creative Commons as an open licensing framework. Besides open licensing, important issue for OERs is recognizing the significance of open formats and open standards since they provide a basis for open education and democratization of education.

The role of the academic library in the creation and use of OERs during COVID-19 pandemic refered mostly to providing library materials for planning, designing and creating OERs and, in some cases, providing infrastructure or having library staff involved in the creation of OERs. In response to the pandemic, academic libraries haven't just expanded their existing digital services and created new ones, they were crucial for planning, designing and creating OERs within their institution. Libraries can differ in their role and level

of engagement when it comes to adoption and creation of OERs within HEI. Whether providing library materials, infrastructure of having their staff directly involved in the creation of OERs, whether a partner or a project/activity leader, academic libraries were a major contributor in creating OERs during COVID-19 pandemic. This may be indicative of further investing in library staff and their skills and in clearly defining their role and responsibilities within the institution in regards to OERs initiatives.

Only half of LIS schools/departments using OERs also promoted and shared them, while most of them did not monitor and evaluate the use of OERs. This indicates that there should be a greater focus on promoting and sharing existing OERs which may raise general awareness about the role and importance of OERs in (digital) education. Of course, promotion and sharing usually imply additional obligations for teaching staff, especially if they are the only ones in charge of OERs. The lack of monitoring and evaluation of the use of OERs may have negative impact on their future development and use. Data gathered through monitoring and evaluation provide direction for further improvement of OERs at policy and programmatic level.

INSTITUTIONAL SUPPORT

Institutional support during COVID-19 pandemic was mostly provided through different recommendations and policy documents and procedure frameworks. Still, there was a certain lack of policy documents and procedure frameworks regarding OERs. This may be both the reason for and consequence of lack of understanding of the concept of OERs and their potential for (the future of) education. This further indicates the need for a more in-depth analysis on OERs policies and their implementation in HE.

Practical support for the teaching staff during COVID-19 pandemic came mostly in the form of online training, technical support and provided access to software and digital tools. During crisis situations like COVID-19 pandemic teachers and trainers may assume multiple roles in order to successfully navigate through corona teaching. This can put additional pressure and thus the need for support grows bigger, whether it’s having access to teaching resources, being able to use different tools and teaching strategies, or even being able to reflect on the experience itself.

LIMITATIONS OF THE STUDY

At the end, we would like to emphasize that there may be three possible limitations in this study.

First limitation refers to the methodology, i.e. methods used to collect the data. Since the heads of the LIS schools/departments were answering the questions in the survey that were addressing the processes and practices regarding the whole school/department and institution, it may be possible that they are not familiar with all institutional documents, strategies and actions undertaken, particularly by each member of the department/school. This is the case especially when some of the actions and practices are the result of a personal decision of a certain teacher/trainer. Thus, some of the survey questions could be addressed from another viable perspective. An opportunity to do so and to include the missing elements will introduce itself within the IO2 when the interviews and focus groups will be conducted to determine teachers', trainers' and students' DE appraisal and perception of quality.

Second limitation refers to the sample size regarding the part of the study focused on the issues of OERs. Since only a part of the study participants (26 out of 56 participants) were actually using OERs and could participate in the OERs part of the study, we think that sample size isn't sufficient enough to be able to fully generalize statistical results. But this has proven to be an issue within other studies on COVID-19 pandemic and the use of OERs that, in general, conclude there was quite a small scale adoption of OERs. Still, the hopeful prospect in this context is the opportunity to raise awareness about the role and importance of OERs for DE and education in general, both in crisis situations and beyond, to motivate HEIs to create, adapt, use and share OERs, and to instigate the creation of initiatives that will establish OERs as valuable and standard educational materials.

Third and final limitation refers to the lack of clarity and understanding of certain terms and concepts used in the survey by a smaller number of participants. Despite the explanation and definitions of DE and OERs given at the beginning of the survey, a number of participants expressed they do not have clear understanding of the term "open educational resource" and "open licensing" which may have impacted their answers and end results. Also, some of the specific educational tools, applications, approaches, techniques and strategies mentioned in the survey and offered as a possible answer may not be familiar to all the participants. Finally, because OERs, open licensing and open source software are not represented enough in some HEIs (i.e. LIS schools/departments), there is a lack of differentiation between certain concepts like published digital learning materials and OERs, or between open source software, locally developed software and proprietary software.

6. Conclusion

Whatever definition, description or 'a showcase' of DE and OERs we call upon, it is quite evident that using OERs and DE principles and paradigms, in both classical and online/virtual classroom, has many benefits – from being a positive disruptive force that transforms the teaching and learning process and widens access to education, particularly for the more vulnerable groups of students, to creating a more resilient HE ecosystem, in general and in global crisis situations such as COVID-19 pandemic. However, due to DE's and OERs' reliance on digital tools and systems, and in the context of remote (crisis) education, special attention should be given to the issues of increased use of technological resources, possible digital inequalities among students, as well as the need for institutions to establish and provide a support system that will ensure quality of work life of teachers and trainers, as well as students' unhindered participation in classes, and empower them both through a number of different teaching and learning opportunities, modalities and strategies. The tools referring to free and open source software, open formats, open standards and open access can be of great significance in this matter.

COVID-19 pandemic generated a great disruption for the teaching and learning process, but it also served as an impetus for (greater) adoption of DE and OERs. Different changes during the pandemic upscaled certain existing educational practices, but also brought a shift in the use of digital tools and OERs in the classroom. Implementation of DE and OERs can act as a mechanism to minimize the impact of crisis situation on education, even more if combined with open licensing, open technologies, open standards and open formats. Yet, although some practices were upscaled and many new arose during COVID-19 pandemic, the question is whether they should all become standardised. This is why a more in-depth analysis of policies and practices is required. For instance, OERs designed out of necessity during COVID-19 pandemic should be verified and evaluated before they become an integral part of the curriculum.

Even though results of this research helped identify mostly positive trends in regards to DE, they've also pointed out to some challenging trends regarding OERs. First of all, implementing digital tools and OERs in HE shouldn't be viewed just as an emergency procedure in crisis situations, but as a long-term opportunity that can change HE classrooms beyond the crisis. In the context of crisis situations and open education, HE shouldn't just rely on tools and systems provided by big tech companies thus becoming more dependent of proprietary software and

commercial platforms, but instead should deploy free and open solutions that enable collaboration, cooperation and free exchange of ideas and practices. The results indicated a certain lack of awareness, policies, resources and funding in regards to OERs. This, of course, can be understood to some extent, since part of institutional support, i.e. most of the funds, documents and procedure frameworks in many HEIs were focused primarily on managing urgent health risks, as opposed to ensuring the same quality education during the crisis. But it proves that HEIs need a more comprehensive and planned strategy when it comes to guaranteeing the continuity and quality of classes during crisis situations. Even if challenging circumstances of crisis situations don't allow for new OERs to be created, due to their customizable character, existing learning materials created as part of full online courses could easily be redesigned as openly licensed OERs.

Certain studies, as well as the results of this research, revolve around a general conclusion that COVID-19 pandemic didn't encourage HEIs to a large scale adoption of OERs, but it certainly instigated many studies on the issue, as well as the creation of OERs' initiatives that proclaim and anticipate a promising future for OERs, Open Access and Open education movement. Other identified issues include the need for: a) a more comprehensive and networked approach to creating OERs policies, b) open licensing of educational materials that come in other formats, c) designing institutional strategies whose purpose would be to focus on capacity-building and provision of adequate quality infrastructure and services that would support quality OERs practices, d) collaboration and cooperation, both within and between HEIs, e) conducting studies on OERs (cost-)effectiveness and their impact on HE, f) (steady) funding of OERs initiatives, and g) motivating stakeholders and decision makers to embark on OERs strategies, either through securing additional funding or by providing socio-political, cultural and economic support for the development of quality OERs and OA policies and practices. For example, there have been some suggestions of building a repository of research papers and studies on the subject of OERs that would enable policy and decision makers to get familiar with the matter.

As for academic libraries and LIS school/departments, there were two ground motives for our focus on LIS HEIs in this research and for investigating the role and involvement of academic libraries in the process of adoption and/or creation of OERs during COVID-10 pandemic. The first one was to analyse the current situation in regards to OERs practices, policies and initiatives in LIS schools/departments and, in case of lack of general awareness and OERs adoption, to raise cognizance of the impact OERs have on HE and encourage LIS HEI to adopt

OERs policies and practices. The second one was to bring about a discussion on ways current and future library professionals and information scientists can involve themselves in activities that benefit OERs initiatives and the need to develop professional skills and competencies that could further help academic communities in their capacity-building amongst teachers and their institutions to use, reuse, create, adapt and share OERs. In order to meet the needs of future OERs adopters, libraries, HEIs and stakeholders involved in HE should provide support for wider adoption of OERs and their professional development.

The intention and purpose of this research but also project DECriS in general, is to emphasize the necessity:

- of building awareness among (LIS) HEI about the role and importance of OERs for HE, especially during crisis situations such as COVID-19 pandemic,
- of adopting and sharing OERs and thus contributing to equitable education system,
- for DE and OERs ongoing optimization according to the dynamics and changing character of education in general and in crisis situation in particular,
- of identifying critical success factors, test them via case studies, and put them into practices,
- of building the right framework for apprenticeship during crisis situations.

Of course, the results of this research will also provide basis, context and support for carrying out the following 5 IOs within this project.

Finally, the aim of the DECriS project is to help LIS HEIs, (academic) libraries and stakeholders in policy making and decision making regarding OERs, and help create frameworks and guidelines that would enable easier, more sustainable and more widespread adoption of OERs in (LIS) HEIs. We hope our work will inspire a firmer commitment to open education and OERs movement.

7. Literature[5]

Ali, Wahab. "Online and Remote Learning in Higher Education Institutes: A Necessity in light of COVID-19 pandemic." *Higher Education Studies* 10, no. 3 (May 2020): 16-25. https://files.eric.ed.gov/fulltext/EJ1259642.pdf

Bergdahl, Nina, and Jalal Nouri. "Covid-19 and Crisis-Prompted Distance Education in Sweden." *Technology, Knowledge and Learning* 26, (2021): 443-459. https://doi.org/10.1007/s10758-020-09470

Butcher, Neil. (2015). *A Basic Guide to Open Educational Resources (OERs)*. Paris: UNESCO, 2015.

Centre for Educational Research and Innovation. Giving Knowledge for Free: the Emergence of Open Educational Resources. Paris: OECD, 2007.

Conrads, Johannes et al. (2017). *Digital Education Policies in Europe and Beyond: Key Design Principles for More Effective Policies*. Seville: European Commission, Joint Research Centre.

D'Antoni, Susan, and Cantriona Savage. *Open Educational Resources: conversations in cyberspace*. Paris: UNSECO, 2009.

Daniel, John. "Education and the COVID-19 pandemic." *Prospects* 49, no. 1-2 (April 2020): 91-06. DOI: 10.1007/s11125-020-09464-3

Encyclopedia Britannica. "Artificial intelligence." Accessed October 5, 2021. https://www.britannica.com/technology/artificial-intelligence

European Commission. *Digital Education Action Plan: Resetting education and training for the digital age*. Luxembourg: European Union, 2020.

Glennie, Jenny et al. (eds.) *Open Educational Resources and Change in Higher Education: Reflections from Practice*. Vancouver: Commonwealth of Learning, 2012.

Hall, Tony. *Education, Narrative, Technologies and Digital Learning: Designing storytelling for creativity with computing*. London: Palgrave Macmillan, 2018.

[5]Literature used for designing the survey and explaining/defining terms and concepts used in this report.

Holland, Barbara. *Handbook of Research on Library Response to the COVID-19 pandemic*. Hershey, PA: IGI Global, 2021.

Hybrid Pedagogy. "Hibridity, pt. 2: What is Hybrid Pedagogy." Accessed October 5, 2021. https://hybridpedagogy.org/hybridity-pt-2-what-is-hybrid-pedagogy/

Iasias, Pedro, Demetrios G. Sampson, and Dirk Ifenthaler. (eds.) *Online Teaching and Learning in Higher Education*. Cham: Springer, 2020.

Institute for Academic Development, The University of Edinburgh. "What is digital education?." Accessed October 5, 2021. https://www.ed.ac.uk/institute-academic-development/learning-teaching/staff/digital-ed/what-is-digital-education

Jones, Kevin Anthony, and Ravi S. Sharma. *Higher Education 4.0: The Digital Transformation of Classroom Lectures to Blended Learning*. Singapore: Springer, 2021.

Kergel, David et al. (eds.). *The Digital Turn in Higher Education: International Perspectives on Learning and Teaching in a Changing World*. Weisbaden: Springer VS, 2018.

Li, Cathy, and Farah Lalani. "The COVID-19 pandemic has changed education forever. This is how." *World Economic Forum*. April 29, 2020. https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/

Martzoukou, Konstantina. "Academic libraries in COVID-19: a renewed mission for digital literacy." *Library Management* 42, no, 4/5 (May 2021): 266-276. https://doi.org/10.1108/LM-09-2020-0131

Miao, Fengchun, Sanjaya Mishra, and Rory McGreal (eds.). *Open Educational Resources: Policy, Costs and Transformation*. Paris: UNESCO, 2016.

Orr, Dominic, Michele Rimini, and Dirk Van Damme. *Open Educational Resources: A Catalyst for Innovation*. Paris: OECD Publishing, 2015.

Osiannilsson, Ebba. "Challenges and Opportunities for Active and Hybrid Learning related to UNESCO Post 2015." In *Handbook of Research on Active Learning and the Flipped Classroom Model in the Digital Age*, edited by Jared Keengwe and Grace Ochward, 333-351. Hershey, PA: IGI Global, 2016.

Oxford Learner's Dictionary. "Augmented reality." Accessed October 5, 2021. https://www.oxfordlearnersdictionaries.com/definition/english/augmented-reality?q=augmented+reality

Oxford Learner's Dictionary. "Blended learning." Accessed October 5, 2021. https://www.oxfordlearnersdictionaries.com/definition/english/blended-learning

Oxford Learner's Dictionary. "Virtual reality." Accessed October 5, 2021. https://www.oxfordlearnersdictionaries.com/definition/english/virtual-reality

Radha, R. et al. "E-learning during Lockdown of COVID_19 Pandemic: A Global Perspective." *International Journal of Control and Automation* 13, no. 4 (2020): 1088-1099. http://sersc.org/journals/index.php/IJCA/article/view/26035.

Reimers, Fernando M., and Andreas Schleicher, A. *A framework to guide and education response to the COVID-19 Pandemic of 2020*. Paris: OECD Publishing, 2020.

Shank, John D. *Interactive Open educational Resources: A Guide to Finding, Choosing and Using What's Out There to Transfrom College Teaching*. San Francisco: Josey-Bass, 2014.

The Critical Thinking Consortium. "Digitally-enhanced learning." Accessed October 5, 2021. https://tc2.ca/uploads/PDFs/online_materials/Digitally-enhanced-learning-infographic.pdf

Thomas, Michael (ed.). *Digital Education: Opportunities for Social Collaboration*. New York: Palgrave Macmillan, 2011.

UNESCO. "Open educational resources." Accessed October 5, 2021. https://en.unesco.org/themes/building-knowledge-societies/oer

UNESCO. 2021. "University libraries facing the COVID-19 pandemic: better prepared than the university that hosts them?." Accessed October 5, 2021. https://www.iesalc.unesco.org/en/2021/07/03/university-libraries-facing-the-covid-19-pandemic-better-prepared-than-the-university-that-hosts-them/

United Nations Educational, Scientific and Cultural Organization & Commonwealth of Learning. *A Basic Guide to Open Educational Resources (OERs)*. Paris: UNESCO, 2015.

United Nations Educational, Scientific and Cultural Organization & Commonwealth of Learning. *Guidelines for Open Educational Resources (OERs) in Higher Education*. Paris: UNESCO, 2015.

Van Allen, Jennifer, and Stacy Katz, “Teaching with OERs during pandemics and beyond.” *Journal for Multicultural Education* 14, no. 3-4 (June 2020): 209-218.

Zawacki-Richter, Olaf. “The current state and impact of COVID-19 on digital higher education in Germany.” *Human Behavior and Emerging Technologies* 3, no. 1 (December 2020): 218-226.

8. Appendices

8.1. Appendix 1: List of LIS schools/departments participated in this questionnaire

Table 30: List of participants (LIS schools/departments)

ID	Name of LIS school/department
1	Samara State Institute of Culture), Samara, Russia (https://samgik.ru)
2	Pompeu Fabra University. Department of Communication. Area of Information Science and Interactive Comunication, Barcelona, Spain (https://www.upf.edu/en/web/universitat/-/departament-de-tecnologies-de-la-informacio-i-les-comunicacions)
3	Bartın University Information and Records Management, Bartin, Turkey (https://en.bartin.edu.tr)
4	Berlin School of Library and Information Science, Berlin, Germany (https://www.ibi.hu-berlin.de)
5	Universitat Politècnica de València, Dept. of Audiovisual Communication, Documentation and History of Art (https://www.upv.es/entidades/DCADHA/index-en.html)
6	Universidad Computense Madrid. Departamento de Biblioteconomía y Documentación, Madrid, Spain (https://www.ucm.es/dbyd)
7	Universidad de Zaragoza. Departamento de Ciencias de la Documentación e Historia de la Ciencia, Zaragoza, Spain (http://ccdocumentacion.unizar.es)
8	Uppsala University. Department of Archives, Libraries and Museums (ALM), Uppsala, Sweden (https://www.abm.uu.se)
9	Belarusian State University of Culture and Arts. Department of Information and Document Communications, Minsk, Republic of Belarus (https://bsu.by/en)
10	University of Mostar. Faculty of Humanities and Social Sciences. Department of Information Sciences, Mostar, Bosnia and Herzegovina (https://ff.sum.ba)
11	University of Osijek. Faculty of Humanities and Social Sciences Department of Information Sciences, Osijek, Croatia (https://www.ffos.unios.hr

ID	Name of LIS school/department
12	Department of Information Sciences, University of Zadar, Zadar, Croatia (https://iz.unizd.hr)
13	Department of Information, Book and Library Studies at University of Lodz, Lodz, Poland (https://uni.lodz.pl)
14	Department of Library and Information Resources, Tambov State University named after G.R. Derzhavin, Tambov, Russia (https://uni24k.com/u/13564/)
15	Department of Library and Information Science, Faculty of Arts, Comenius University in Bratislava, Bratislava, Slovakia (https://fphil.uniba.sk)
16	Department of LIS&Book Studies, Faculty of Arts, University of Ljubljana, Ljubljana, Slovenia (https://www.uni-lj.si)
17	University of Pisa. Digital Humanities, Department of Philology, Literature, Linguistics, Pisa, Italy (www.unipi.it)
18	Digitális Technnológia Intézetének (https://uni-eszterhazy.hu/dti)
19	East Siberian State University of Culture. Faculty of Humanities and Information. Department of Library and Information Resources, Ulan-Ude, Russia (https://www.vsgaki.ru/information-in-foreign-languages/east-siberian-state-institute-of-culture-vsgik)
20	ENSSIB – École nationale supérieure des sciences de l'information et des bibliothèques, Lyon, France (https://www.enssib.fr)
21	Facultad de Ciencias de la Documentación y la Comunicación, Universidad de Extremadura, Badajoz, Spain (https://www.unex.es/conoce-la-uex/centros/alcazaba)
22	Universitat de Barcelona. Facultat d'Informació i Mitjans Audiovisuals. Barcelona, Spain (https://www.ub.edu)
23	Faculty of Information and Library Technologies Kemerovo State Institute of Culture, Kemerovo, Russia (https://muegn.ru/en)
24	Faculty of Philosophy, University of Sarajevo, Department of Comparative Literature and Information Sciences, Sarajevo, Bosnia and Herzegovina (https://www.ff.unsa.ba)
25	Hochschule Darmstadt. Faculty of Media. Mediencampus, Darmstadt, Germany (https://mediencampus.h-da.de/studium)

ID	Name of LIS school/department
26	Hochschule Hannover. Studiengänge Infomationsmanagement, Informationsmanagement –berufsbegleitend, Hannover, Germany (https://f3.hs-hannover.de)
27	Open University of Catalonia. Information and Communication Studies, Barcelona, Spain (https://www.uoc.edu/portal/es)
28	University of Oulu. Faculty of Humanities. Information Studies, Oulu, Finland (https://www.oulu.fi)
29	Information studies programme (Tampere University) (https://www.tuni.fi/en)
30	Nicolaus Copernicus University in Toruń. Institute of Information and Communication Research, Toruń, Poland (https://www.ibik.umk.pl)
31	Jagiellonian University in Krakow. Institute of Information Studies, Krakow, Poland (https://www.ibik.umk.pl)
32	ISCAP – Porto Accounting and Business School of Porto. Information Science, Porto, Portugal (https://www.iscap.pt)
33	Kharkiv State Academy of Culture. Information, Library and Archives, Karkiv, Ukraina (https://ic.ac.kharkov.ua)
34	St. Petersburg State University of Culture. LIS Department, St. Petersburg, Russia (https://english.spbu.ru)
35	University of Debrecen. LIS Department, Debrecen, Hungary (https://www.edu.unideb.hu)
36	Marmara University. Department of Information and Records Management, Istanbul, Turkey (https://turkiyat.marmara.edu.tr)
37	National Aerospace University "Kharkiv Aviation Institute". Documentation Science and the Ukrainian Language Department, Karkiv, Ukraine (http://www.khaiedu.com)
38	University College Dublin. School of Information and Communication Studies, Dublin, Ireland (https://www.ucd.ie/ics)
39	Aix-Marseille University. School of Journalism & Communication, , Aix-Marseille, France (https://ejcam.univ-amu.fr)

ID	Name of LIS school/department
40	Sofia University "St. Kliment Ohridski". Faculty of Philosophy. Department of Library Science, Scientific Information and Cultural Policy, Sofia, Bulgaria (https://www.uni-sofia.bg/faculties)
41	St. Petersburg College of Library and Information Technologies, St. Petersburg, Russia (https://www.spcollege.edu)
42	Tallin University. School of Digital Technologies. Study Area of Information Sciences, Tallinn, Estonia (https://www.tlu.ee)
43	Stuttgart Media University. Information Sciences, Stuttgart, Germany (https://www.hdm-stuttgart.de)
44	Technische Hochscuhle Köln, Institut für Informationswissenschaft, Köln, Germany (https://www.th-koeln.de)
45	University Carlos III of Madrid – UC3M Ischool, Madrid, Spain (https://www.uc3m.es)
46	Universidade de Lisboa. Faculdade de Letras/Programa em Ciências da Documentação e Informação, Lisabon, Portugal (https://www.ulisboa.pt)
47	Universitat de Valencia. Facultad de Medicina. Departamento de Historia de la Ciencia y Documentación, Valencia, Spain (https://www.uv.es)
48	University College, London (UCL), London, United Kingdom (https://www.ucl.ac.uk)
49	University of Coimbra. Department of Philosophy, Communication and Information. Information Section, Coimbra, Portugal (https://www.uc.pt)
50	University of Graz, School of Business, Economics and Social Sciences, Graz, Austria (https://sowi.uni-graz.at›)
51	University of Hildesheim. Faculty of Linguistics and Information Sciences, Hildesheim, Germany (https://www.uni-hildesheim.de)
52	University of Leon. Department of Artistic and Documentary Heritage, Leon, Spain (https://www.euni.de)
53	University of Library Studies and Information Technologies, Sofia, Bulgaria (https://www.unibit.bg)

ID	Name of LIS school/department
54	University of Veliko Tarnovo "St. St. Cyril and Methodius, Veliko Tarnovo, Bulgaria (https://www.uni-vt.bg)
55	University of Western Macedonia. Electrical anc Computer Engineering, Kozani, Greece (https://ece.uowm.gr)
56	Uzhhorod institute of culture and arts. Socio-cultural activity, Moskow, Russia (http://www.mgik.org)

8.2.Appendix 2: List of repositories URL reported by participants

Table 31: List of national repositories of OERs

ID	URLs of national repositories of OERs
1	https://harman.ulakbim.gov.tr/index
2	https://www.openrepository.ru/
3	http://nbuv.gov.ua/e-resources/
4	https://otwartanauka.pl
5	http://window.edu.ru/
6	https://www.openrepository.ru/ ; https://npoed.ru/
7	http://window.edu.ru/, http://fcior.edu.ru/
8	https://e-koolikott.ee
9	https://bpos.bg/en/about-portal
10	https://www.digll-hessen.de/
11	https://e-learn.mon.bg/
12	https://www.twillo.de/OERs/web/
13	https://repository.OERs-berlin.de/edu-sharing/components/search?viewType=1
14	https://harman.ulakbim.gov.tr/index
15	agrega.educación.es
16	https://riunet.upv.es/

Table 32: List of LIS OERs repositories

ID	URLs of LIS OERs repositories
1	http://medioteka.uw.edu.pl/dlibra
2	https://e.lanbook.com/books
3	http://bby.hacettepe.edu.tr/yayinlar.php
4	http://window.edu.ru/;chool-collection.edu.ru/catalog/ ; http://edu-all.ru/search/full?type
5	http://medioteka.uw.edu.pl/dlibra
6	http://eprints.rclis.org/34426/
7	https://einfose.ffos.hr/platform/course/index.php?categoryid=9

Table 33: List of institutional repositories containing OERs collection

ID	URLs of institutional repositories containing OERs collection
1	https://repozitorij.uni-lj.si/info/index.php/eng/
2	http://elibrary.spbguki.ru/?#/documents/page/1
3	https://add.unizar.es/add/campusvirtual/recursos-educativos-en-abierto
4	http://openaccess.uoc.edu/webapps/o2/?locale=en
5	https://repozytorium.uni.lodz.pl/
6	https://e-archivo.uc3m.es/
7	https://acikerisim.bartin.edu.tr/
8	lib-hdak.in.ua
9	http://dspace.library.khai.edu/xmlui/?locale-attribute=en
10	http://repozytorium.umk.pl
11	https://ruj.uj.edu.pl/xmlui/
12	https://dspace.uowm.gr/xmlui/
13	Gredos.usal.es
14	http://diposit.ub.edu/dspace/handle/2445/2
15	https://konyvtar.uni-eszterhazy.hu/hu
16	http://repository.buk.by/
17	https://roderic.uv.es/

ID	URLs of institutional repositories containing OERs collection
18	https://www.enssib.fr/bibliotheque-numerique/
19	https://repositori.upf.edu/?locale-attribute=en
20	http://openaccess.marmara.edu.tr/
21	https://buleria.unileon.es/
22	https://riunet.upv.es/handle/10251/192

8.3. Appendix 3: List of URLs to policy documents or procedure frameworks for DE or OERs reported by participants

Table 34: List of documents and procedure frameworks for DE at national level

ID	Policy documents or procedure frameworks for DE in general, at national level
1	https://www.uc3m.es/covid19/inicio
2	https://minedu.fi/en/frontpage
3	https://zakon.rada.gov.ua/laws/show/z0703-13#Text
4	https://www.mon.bg/
6	https://www.lex.bg/laws/ldoc/2135494883 ORDINANCE on the state requirements for organizing distance learning in higher education (in force from 01.09.2021, ПМС № 78, 05.03.2021 г.; State Gazette, Issue 21 from 12.03.2021)
7	https://www.bmbwf.gv.at/Themen/HS-Uni/Hochschulgovernance/Leitthemen/Digitalisierung/Lehre.html
8	https://mzo.gov.hr/UserDocsImages/dokumenti/Vijesti/2020/10-6-2020/Akcijski%20plan%20za%20provedbu%20nastave%20na%20daljinu%20-%20Model%20nastave%20na%20daljinu%20-%20prijedlog%20-%2010.%20lipnja%202020..pdf
9	https://www.landesrecht-bw.de/jportal/?quelle=jlink&query=LVerpflV+BW&psml=bsbawueprod.psml&max=true&aiz=true

Table 35: List of documents and procedure frameworks for DE at institutional level

ID	Policy documents or procedure frameworks for DE in general, at institutional level
1	https://www.tuni.fi/tlc/en/planning-and-implementation-of-teaching/digital-pedagogics/digital-teaching/
2	https://khai.edu/ua/university/normativna-baza/polozheniya1/polozhennya-yaki-regulyuyut-poryadok-zdijsnennya-osvitnogo-procesu/polozhennya-pro-distancijnu-formu-zdobuttya-osviti/
3	https://www.uni-vt.bg/bul/spec/?tab=azb
4	In the period of COVID-19,"Digital learning strategy of Tallinn University for 2021-2025" was developed.
5	Strategy for the Development of distance learning at the University of Library Studies and Information Technologies (not available online); Rules for the Activity of the Distance Learning Center at ULSIT (not available online)
6	https://online.uni-graz.at/kfu_online/pl/ui/$ctx/wbMitteilungsblaetter_neu.display?pNr=17310&pDocNr=5942757&pOrgNr=14190
7	https://www.uc.pt/covid19

Table 36: List of documents and procedure frameworks for DE in regards to COVID-19 pandemic at national level

ID	Policy documents or procedure frameworks for DE in regards to COVID-19 pandemic, at national level
1	https://minedu.fi/en/frontpage
2	https://zakon.rada.gov.ua/laws/show/641-2020-%D0%BF#n2
3	https://coronavirus.bg/bg/620 - Orders from Ministry of Health Affairs and Ministry of Science and Education
4	http://universitats.gencat.cat/web/.content/00_home/slider/documents/Mesures_academiques_curs_2020_2021_ES.pdf
5	https://narodne-novine.nn.hr/clanci/sluzbeni/2020_09_99_1876.html?fbclid=IwAR0xA3LwWAb2577mtu2HxS7sfdLyuxH5ZpaVMu9sqeUQ5wIvcKypqG0Uvvw
6	https://mwk.baden-wuerttemberg.de/de/service/informationen-zu-corona/corona-verordnung-studienbetrie/

Table 37: List of documents and procedure frameworks for DE in regards to COVID-19 pandemic at institutional level

ID	Policy documents or procedure frameworks for DE in regards to COVID-19 pandemic, at institutional level
1	http://filolog.uni.lodz.pl/?p=18346
2	https://www.uc3m.es/uc3mdigital/covid19/pdi
3	https://www.tuni.fi/tlc/en/planning-and-implementation-of-teaching/digital-pedagogics/digital-teaching/
4	https://khai.edu/ua/news/nakaz-rektora-shhodo-organizacii-osvitnogo-procesu-j-diyalnosti-universitetu-v-umovah-karantinu/
5	(https://www.unibit.bg/news/news-events/rectors-order-1112; https://www.unibit.bg/news/news-events/rectors-order-271112; https://www.unibit.bg/news/news-events/rector%D1%81-order)
6	https://www.ub.edu/web/ub/galeries/documents/universitat/coronavirus/Doc_Orientacions_curs_2020-21_def.pdf
7	https://uni-eszterhazy.hu/hu/egyetem/kozlemenyek/utasitasok
8	https://online.uni-graz.at/kfu_online/pl/ui/$ctx/wbMitteilungsblaetter_neu.display?pNr=17310&pDocNr=5942757&pOrgNr=14190
9	https://www.uc.pt/fluc/article?key=a-1eb7024b73

Table 38: List of documents and procedure frameworks for OERs in general, at national level

ID	Policy documents or procedure frameworks for OERs in general, at national level
1	https://minedu.fi/en/frontpage
2	https://ips.ligazakon.net/document/view/Re33637?utm_source=jurliga.ligazakon.ua&utm_medium=news&utm_campaign=IPS_text&utm_content=jl03&_ga=2.221101720.1850399335.1624110909-41766653.1624110909
3	https://bpos.bg/en/about-portal
4	https://www.openeducation.at/

Table 39: List of documents and procedure frameworks for OERs in general, at institutional level

ID	Policy documents or procedure frameworks for OERs in general, at institutional level
1	https://baw.uni.lodz.pl/d/5570/5/
2	https://khai.edu/ua/university/normativna-baza/polozheniya1/polozhennya-yaki-regulyuyut-poryadok-zdijsnennya-osvitnogo-procesu/polozhennya-pro-navchalnij-distancijnij-kurs/
3	https://crai.ub.edu/ca/que-ofereix-el-crai/publicar-repositoris-ub/instruccions
4	https://static.uni-graz.at/fileadmin/digitales-lehren-und-lernen/Dokumente/OERs_Policy.pdf

Table 40: List of documents and procedure frameworks for OERs in regards to COVID-19 pandemic at national level

ID	Policy documents or procedure frameworks for OERs in regards to COVID-19 pandemic, at national level
1	https://ips.ligazakon.net/document/view/Re33637?utm_source=jurliga.ligazakon.ua&utm_medium=news&utm_campaign=IPS_text&utm_content=jl03&_ga=2.221101720.1850399335.1624110909-41766653.1624110909

Table 41: List of documents and procedure frameworks for OERs in regards to COVID-19 pandemic at institutional level

ID	Policy documents or procedure frameworks for OERs in regards to COVID-19 pandemic, at institutional level
1	https://www.uc3m.es/uc3mdigital/covid19/pdi
2	https://kemguki.ru/sveden/education/
3	https://khai.edu/ua/university/normativna-baza/polozheniya1/polozhennya-yaki-regulyuyut-poryadok-zdijsnennya-osvitnogo-procesu/polozhennya-pro-navchalnij-distancijnij-kurs/

Table 42: List of documents and procedure frameworks related to data privacy, confidentiality and security practices

ID	Policy documents or procedure frameworks related to data privacy, confidentiality and security practices
1	The Federal Law of Personal Data, Sankt-Petersburg, Russia https://rg.ru/2006/07/29/personaljnye-dannye-dok.html
2	https://khai.edu/assets/files/nauka/dogovor-o-spivpraci_antiplagiat.pdf
3	https://www.unibit.bg/documents ULSIT Strategy for Research Development 2016-2020; Rules for the research activity of ULSIT; Regulations for the structure and activity of the Institute for Scientific Research and Training of Doctoral Students at ULSIT; Rules for the publishing activities at ULSIT; Intellectual Property Management Policy of ULSIT (not available online)
4	https://www.ub.edu/web/portal/ca/legal
5	https://www.uv.es/uvweb/universidad/es/universitat/delegacion-proteccion-datos-/informacion-interes-1286118234932.html
6	https://dsgvo-gesetz.de/

Table 43: List of recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at national level

ID	Recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at national level
2	https://zakon.rada.gov.ua/laws/show/641-2020-%D0%BF#n2
3	https://www.gov.pl/web/edukacja-i-nauka/ksztalcenie-zdalne-na-uczelniach
5	https://www.lex.bg/laws/ldoc/2135494883 ORDINANCE on the state requirements for organizing distance learning in higher education (in force from 01.09.2021, ПМС № 78, 05.03.2021 г.; State Gazette, Issue 21 from 12.03.2021).
6	https://www.ub.edu/web/ub/es/universitat/coronavirus/index.html

Table 44: List of recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at institutional level

ID	Recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at institutional level
1	https://khai.edu/ua/news/nakaz-rektora-shhodo-organizacii-osvitnogo-procesu-j-diyalnosti-universitetu-v-umovah-karantinu/
2	https://www.umk.pl/koronawirus/organizacja-zajec-dydaktycznych-oraz-dzialalnosc-naukowa/
4	Strategy for the Development of distance learning at the University of Library Studies and Information Technologies (not available online); Rules for the Activity of the Distance Learning Center at ULSIT (not available online)
5	https://www.ub.edu/web/ub/es/universitat/coronavirus/index.html
6	https://www.digitale-lehre.hu-berlin.de/de
7	https://www.ffos.unios.hr/covid-19-pratite-tekuce-obavijesti-upute-i-preporuke
8	https://angela.uv.es/display/INICIO/UVonline

8.4.Appendix 4: Survey questionnaire

State-of-the-play of the use of OERs at European HEIs during the COVID-19 pandemic

This research is part of the Erasmus+ project "Digital Education for Crisis Situations: Times when there is no alternative (DECriS)" and it is conducted by Faculty of Humanities and Social Sciences, University of Osijek (Croatia) in partnership with Stiftung Universität Hildesheim (Germany), Universitat de Barcelona (Spain), Universitet po bibliotekoznanie i informacionni tehnologii (Bulgaria), University Computing Centre, University of Zagreb (Croatia), University of Sarajevo (Bosnia and Herzegovina), University of Mostar (Bosnia and Herzegovina), Victoria University of Wellington (New Zealand), and St. Petersburg State University of Culture (Russia).

The aim of this research is to identify state of play regarding the implementation of digital education and open educational resources in the context of COVID-19 pandemic.

In order to facilitate more comprehensive understanding of the topic researched, definitions of digital education and open educational resources are given below:

Digital Education (DE) – Digital education is the innovative use of digital tools and technologies during teaching and learning, and is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technologies gives educators the opportunity to design engaging learning opportunities in the courses they teach, and these can take the form of blended or fully online courses and programmes. (Institute for Academic Development, The University of Edinburgh)

Open Educational resources (OERs) – Open Educational Resources (OERs) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. OERs form part of 'Open Solutions', alongside Free and Open Source software (FOSS), Open Access (OA), Open Data (OD) and crowdsourcing platforms. (UNESCO)

This questionnaire is designed to be answered by heads/directors of LIS departments/schools and it has three parts. The first part refers to the issue of digital education; the second part investigates the degree of implementation and modes of use of open educational resources; and the third and final part explores the issue of institutional support provided to LIS Schools and departments regarding digital education and open educational resources. All three issues are assessed both in general and in the context of COVID-19 pandemic.

Data and information collected from the respondents are kept strictly confidential and will be used exclusively for the purpose of this research and project in general.

Preliminary questions

1. Name of LIS school/department: _____
2. Name, surname, position and e-mail of the person who is completing the questionnaire: _____
3. Country: _____
4. Number of teachers: _____
5. Number of students: _____
6. Number of study programmes (undergraduate, graduate and postgraduate combined): _____

Part 1 – Digital Education (DE) during COVID-19 pandemic

a. Which aspects of DE are being implemented at your LIS school/department during COVID-19 pandemic? (Please, check everything relevant.)

   i. digital repository of teaching and learning materials

   ii. live teaching sessions via Zoom, Big Blue Button, Jitsi, MS Teams, etc.

   iii. recorded and archived teaching sessions

   iv. online courses via LMS (Learning Management systems, like Moodle, Blackboard, etc.)

   v. online examination and new ways of assessment and evaluation of student's work (e.g. of students' papers like essays and seminars, of their oral presentations and overall activity, of the originality of their work, etc.)

   vi. online communication with students (e.g. follow ups, mentoring, communication in general)

   vii. online communication and collaboration with local and distant colleagues and fellow educators

   viii. digital credentials (digital diplomas, certificates, badges, etc.)

   ix. other (please, state which): _____

b. What DE techniques/strategies does your LIS school/department use during COVID-19 pandemic? (Please, check everything relevant.)

   i. adaptive or personalized learning (adaptive learning provides personalized learning through learning paths that are efficiently and effectively customized to each student's skills, interests, strengths and needs)

   ii. blended learning (blended learning uses multiple methods to deliver learning by combining face-to-face interactions with online activities)

   iii. problem based learning (a student-centred approach to learning with groups of students working together to solve an open-ended problem

thus supporting self-directed learning and strengthening of their communication and teamwork, research skills, information literacy, problem-solving skills and critical thinking)

iv. project based learning (a teaching method and a dynamic approach in which students actively engage in exploring real-world problems through personally meaningful projects while acquiring a deeper knowledge in the field)

v. fully online learning

vi. mobile learning (mobile learning is a variety of e-learning that is based on using handheld devices such as tablets and smartphones to access learning content)

vii. virtual reality education (practice of using immersive virtual reality for education and training; e.g. using VR hardware for deep learning in science and medical fields, for vocational training, etc.)

viii. augmented reality education (practice of using augmented reality for education and training; e.g. using AR hardware for increasing interaction and engagement, improving learning outcomes, enhancing problem-solving skills, etc.)

ix. gamification (approach to education based on incorporating game design elements such as badges to increase motivation and engagement)

x. something else (please, state what): _____

xi. none

c. What DE tools does your LIS school/department use during COVID-19 pandemic? (Please, check everything relevant.)

i. learning management systems, LMS (e.g. Moodle, Blackboard, Iliac, etc.)

ii. virtual classroom software (e.g. Blackboard Collaborate, Google Classroom, TutorRoom, etc.)

iii. video conferencing tools (e.g. Big Blue Button, Adobe Connect, Jitsi, Zoom, MS Teams, Google Meet, Skype Meet Now, etc.)

iv. repositories (institutional repositories, online subject repositories, vendor platforms with repository features)

v. online quizzes (e.g. Kahoot!, ClassMarker, ProProfs, etc.)

vi. interactive activities/applications (Hot potatoes, Ardora, H5P)

vii. online plagiarism detection systems (e.g. Turnitin, Viper, Unicheck, etc.)

viii. instant messaging apps (Viber, WhatsApp, Signal, etc.)

ix. social media (e.g. Facebook, Twitter, YouTube, etc.)

x. something else (please, state what): _____

xi. none

d. What DE resources does your LIS school/department use during COVID-19 pandemic? (Please, check everything relevant.)

i. digital learning materials (documents, articles, videos, pictures, etc.)

ii. digital OERs

iii. e-textbooks

iv. wikibooks

v. something else (please, state what): _____

vi. none

e. Does your LIS school/department implement new didactics in its teaching? (This refers to didactic approach that applies more to online education than to face-to-face education. It concerns the issues of presenting the educational content and intensifying the learning process in the digital environment, and its aim is to ensure conditions needed to lead and manage effective teaching and learning.)

i. Yes. If Yes, please state how do you implement it. (Please, check everything relevant.)

1. by increasing flexibility
2. by using platforms to share knowledge
3. by implementing transparency through learning analytics
4. by focusing on learning activities and competencies
5. by increasing interaction with live online sessions
6. by providing clear structure and content of the online course
7. in some other way (Please, state how.) _____

ii. No. If No, please explain why not. _____

f. How do you approach and handle students' problems and issues regarding DE; for instance, lack of motivation or having no reliable internet access? (Please, check everything relevant.)

i. by using coaching system and gamification

ii. by providing regular online consultations and live online Q&A sessions

iii. by securing additional computer lab-classrooms for students with poor internet access

iv. by providing technical support and/or video tutorials that help students adapt to unfamiliar technology

v. by opening up pass-fail option (providing students with an option to take pass or fail classes)

vi. in some other way (Please, state how.) _____

g. Have you been developing new or adapting current curricula regarding the structure of the digital platform and digital tools you've been using?

i. Yes.

ii. No.

h. Is the teaching staff within your LIS school/department provided with the option of customization, i.e. with the option of personalizing and adapting the teaching and learning process?

    i. Yes. If Yes, please state which customization options are offered to them. (Please, check everything relevant.)

        1. they can personalize the learning environment
        2. they can flip instructions thus having shorter lectures and longer classroom activity instead of long lectures and homework
        3. they can customize learning goals
        4. they can apply flexibility in the course content
        5. they can allow students different opportunities to show and demonstrate their knowledge
        6. in some other way (Please, state how.) _____

    ii. No.

i. What software does your LIS school/department use for DE in general? (Please, check everything relevant.)

    i. free and open source software (please, state which one): _____

    ii. proprietary software (please, state which one): _____

    iii. personally (at the institutional level) developed software (please, state which one): _____

    iv. something else (please, state what kind of software) _____

j. Do existing systems, tools and practices within your LIS school/department provide enough help and support in ensuring the continuity and quality of classes and activities during COVID-19 pandemic?

    i. Yes, and they worked well as integrated system, i.e. they all proved to be compatible when working together.

ii. Yes, but all the tools, systems and practices do not work well with each other which creates discrepancy in the system at the institutional level.

iii. No, we had to acquire/develop additional tools, systems and practices.

k. In what ways does your LIS school/department collaborate with academic library regarding DE during COVID-19 pandemic? (Please, check everything relevant.)

i. Students are able to obtain necessary library materials.

ii. Students are able to obtain library materials during library closures.

iii. Students are able to attend online classes via library computers.

iv. Library staff was involved in preparation of students and teaching staff with the information and digital literacy competencies.

v. Library staff is providing support regarding repositories of teaching and learning materials.

vi. Library is providing virtual information services.

vii. Library has implemented innovative practices in its work (e.g. Click and Collect service for low- or no-contact circulation of collections, personal delivery of books by mail, the use of online software and applications for selecting dates and times for library use and online book reservation such as Calendly, etc.).

viii. In other way(s). (Please, explain how.) _____

ix. I am not familiar with that information.

l. At what levels is DE implemented at your LIS school/department?

i. Implementation of DE is a decision and responsibility of an individual teacher.

ii. Implementation of DE is ensured at institution (school, department) level.

iii. Implementation of DE is ensured at institution (university) level.

iv. Implementation of DE is ensured at national level.

v. Implementation of DE is ensured jointly with partners at EU projects.

vi. Other (please, state in what way): _____

m. Does your LIS school/department carry out monitoring and evaluation procedures of DE during COVID-19 pandemic?

i. Yes. If Yes, what components, procedures and aspects of DE do you monitor and evaluate? (Please, check everything relevant.)

1. online teaching and learning (online course)
2. pedagogy, didactics, and methodology
3. availability and user friendliness of digital tools (e.g. platforms, software, applications)
4. teachers performance
5. students' participation (engagement and interest, retention, assignment completion, etc.)
6. students' learning outcomes
7. outcome indicators for digital literacy in general
8. teachers' and students' workload
9. availability of information related to the course
10. level of communication between teachers and students, and between students
11. other (please, state which one) _____

ii. No. If No, please explain why not. _____

Part 2 – The use of OERs during COVID-19 pandemic

n. Is there a national repository of OERs in your country?

i. Yes. If Yes, and if possible, please provide the URL link to the repository.

ii. No.

iii. I am not familiar with that information.

o. Is there a repository of LIS OERs in your country?

i. Yes. If Yes, and if possible, please provide the URL link to the repository.

ii. No.

iii. I am not familiar with that information.

p. Does your institutional repository have a collection for OERs?

i. Yes. If Yes, and if possible, please provide the URL link to the repository.

ii. No.

q. Are there any incentives at your institution and/or at national level for developing and implementing OERs during COVID-19 pandemic? (Please, check everything relevant.)

i. No, the creation and implementation of OERs is the result of an engaged individual.

ii. Yes, there is a specific project/programme with public funding.

iii. Yes, there is a specific project/programme with private funding.

iv. Yes, the government is providing initiative through specific measures and incentives.

v. I am not familiar with that information.

r. Does your LIS school/department use OERs during COVID-19 pandemic? (The use refers to using existing OERs created by other institutions and by your own institution, to adapting existing OERs and creating new ones.)

i. Yes.

1. In how many courses are OERs implemented? _____

ii. No.

1. What is the reason for not using OERs? _____
2. What would motivate and incentivise your institution (LIS school/department) to start using OERs? _____
3. What would motivate and incentivise the teaching staff within your LIS school/department to start using OERs? _____
4. Does your institution (LIS school/department) use something else, as an alternative to OERs?

    a. Yes. If Yes, please state what do you use? _____

    b. No.

s. In what way are OERs used at your LIS school/department during COVID-19 pandemic? (Please, check everything relevant.)

i. use of OERs that are developed and created by others at international level

ii. use of OERs developed and created by others at national level

iii. use of OERs that are created by others that we later assemble, adapt and contextualize according to our own courses and programme

iv. existing teaching materials are used as OERs, i.e. we use existing teaching materials like course workbooks, presentations, etc. with no or some modification and adaptation, and we publish them in public domain and/or under an open license (e.g. taking an existing textbook and remixing it or working with others to remix it, swapping examples in a resource for ones that are more relevant to your own context, etc.)

v. use of OERs that are personally designed, developed and created by our staff (e.g. producing new material from the beginning)

t. How does the staff at your LIS school/department find OERs that are created by other at international and/or national level? (Please, check everything relevant.)

i. By using specialised OERs search engines.

ii. By using suitable OERs repositories.

iii. By using OERs directory sites.

iv. Some other way. (Please, explain how) _____

u. How does the staff at your LIS school/department develop/create and/or adapt their OERs? (Please, check everything relevant.)

i. Independently as a department/school/faculty.

ii. Jointly with other department/school/faculty.

iii. Jointly with partners at EU projects.

iv. Jointly with students.

v. Jointly with library staff.

vi. Jointly with the institutional tech support team.

vii. In some other way. (Please, explain how.) _____

v. Does your LIS school/department have an institutional policy regarding OERs?

i. Yes.

ii. No.

w. What is the reason your LIS school/department decided to develop, create, adapt and/or implement OERs during COVID-19 pandemic? (Please, check everything relevant.)

i. OERs support and provide efficiency and quality of teaching and learning

ii. OERs support adaptive and flexible teaching and learning

iii. OERs support distance education and resource-based learning

iv. OERs support open science, open education and knowledge sharing

v. OERs are cost-efficient educational materials

vi. OERs have positive impact on students' learning outcomes

vii. OERs have the benefit of localisation, personalisation and contextualisation

viii. because teachers are more motivated to teach using educational materials they personally developed and created

ix. because OERs represent innovative practice and have great transformative potential in the context of DE

x. because of the lack of quality educational materials in the field

xi. because of the closures of libraries and lack of access to educational resources

xii. because of incentives and additional funding

xiii. something else (please, state the reason) _____

x. What kind of peer-review do you ensure for your OERs? (Please, check everything relevant.)

i. pre-publication

ii. open, post-publication

iii. none

y. Who is responsible for the curation and management of OERs (i.e. OERs collection) at your LIS school/department?

i. The teacher(s) who created it/them.

ii. Curation and management are provided as a special service by our LIS school/faculty/university.

iii. Curation and management are provided by our academic library.

iv. Somebody else. (Please, state who.) _____

z. What software do you use for the creation, adaptation and management of OERs? (Please, check everything relevant.)

i. free and open source software (please, state which one): ____

ii. proprietary software (please, state which one): _____

iii. personally (at the institutional level) developed software (please, state which one): _____

iv. something else (please, state what kind of software) _____

aa. How do you publish OERs created within your LIS school/department?

i. as a part of public domain

ii. under an open license

bb. How does your LIS school/department collaborate with academic library regarding OERs?

i. Library materials (books, journals, etc.) were used in the process of planning, designing and creating OERs.

ii. Library infrastructure was used to create OERs. (E.g. library IT infrastructure and library space were used.)

iii. Library staff was involved in the creation of OERs.

cc. Do you promote and share OERs that your LIS school/department developed and created (e.g. on social networks or your webpage)?

i. Yes.

ii. No.

dd. Do you monitor and evaluate the use of OERs within your LIS school/department (e.g. number of times certain material was accessed and/or downloaded)? (This refers to the OERs that your LIS school/department designed and created.)

i. Yes.

ii. No.

Part 3 – Institutional support regarding DE and OERs during COVID-19 pandemic

ee. Which of the documents or procedure frameworks does your LIS school/department have? (Please, check everything relevant.)

i. policy documents or procedure frameworks for DE in general, at national level (e.g. provided by relevant government body/ministry of science/education)

ii. policy documents or procedure frameworks for DE in general, at institutional level (e.g. provided by university, faculty or school/department)

iii. policy documents or procedure frameworks for DE in regards to COVID-19 pandemic, at national level (e.g. provided by relevant government body/ministry of science/education)

iv. policy documents or procedure frameworks for DE in regards to COVID-19 pandemic, at institutional level (e.g. provided by university, faculty or school/department)

v. policy documents or procedure frameworks for OERs in general, at national level (e.g. provided by relevant government body/ministry of science/education)

vi. policy documents or procedure frameworks for OERs in general, at institutional level (e.g. provided by university, faculty or school/department)

vii. policy documents or procedure frameworks for OERs in regards to COVID-19 pandemic, at national level (e.g. provided by relevant government body/ministry of science/education)

viii. policy documents or procedure frameworks for OERs in regards to COVID-19 pandemic, at institutional level (e.g. provided by university, faculty or school/department)

ix. policy documents or procedure frameworks related to data privacy, confidentiality and security practices (e.g. regarding rights and responsibilities concerning students' data collection and management of information about students)?

x. recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at national level (e.g. provided by relevant government body/ministry of science/education)

xi. recommendations regarding the continued conducting of university classes and activities during COVID-19 pandemic, at institutional level (e.g. provided by university, faculty or school/department)

ff. What type of practical support does your university/faculty/school/department provide for the teaching staff during COVID-19 pandemic?

i. online training (courses, seminars, workshops) regarding the development of digital skills, i.e. the use of ICT and digital tools for online teaching, online exams, etc.

ii. service desk or help desk as in-house technical support (e.g. managing technical issues and service requests)

iii. financial incentives (e.g. for the acquisition of new equipment needed for intensive online teaching)

iv. additional ICT equipment and devices (e.g. the possibility of 'renting out' a laptop, additional computer monitor, etc.)

v. software and digital tools access (e.g. paid access to or subscription for a certain software or application)

vi. counselling services (e.g. for dealing with anxiety, depressions, PTSD, and other issues)

vii. other (please, state what type): _____

Thank you for taking time to complete this survey.