IMPROVING THE PROCESS OF EDUCATION THROUGH THE DEVELOPMENT OF E - LEARNING MULTIMEDIA PLATFORM AND SMART CLASSROOMS

D.1.2

Analysis of existing distance learning platforms and smart labs models at the Partner countries HEIs

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List of Abbreviations

Abbreviation	Meaning
D	Deliverable
EU	European Union
HE	Higher Education
HEI	Higher Education Institution
ICT	Information and Communications Technology
IO	Intellectual Output
LMS	Learning Management System
KA	Key Action
UN	United Nations
UPKM	UNIVERSITY OF MITROVICA / University of Pristina in Kosovska Mitrovica
IBCM	INTERNATIONAL BUSINESS COLLEGE MITROVICA
UoM-MN	JAVNA USTANOVA UNIVERZITET CRNE GORE PODGORICA / University of Montenegro
AUB	UNIVERZITET ADRIATIK BAR
UES	UNIVERZITET U ISTOCNOM SARAJEVU / University of East Sarajevo
SUM	University of Mostar

INTRODUCTION

The world leaders of the UN member states in September 2015, unanimously adopted the 2030 Agenda for Sustainable Development (UN 2030 Agenda) in the UN General Assembly. The agenda includes 17 goals, 169 targets and 244 indicators for progress measurement. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental. Particularly important for project SMARTEL is Goal 4: to provide inclusive and quality education for all and to promote lifelong learning.

The relevant ministries in EU candidate and in EU neighbourhood countries have adopted educational development strategies in recent years, which provide guidance on how to improve teaching by applying ICT in accordance with the Goal 4 of the UN 2030 Agenda.

The overall objective of project SMARTEL is to improve the teaching process at the HEIs in the Region 1 (Kosovo UN Resolution 1244, Montenegro, Bosnia and Herzegovina) with a special emphasis on enabling the access to a quality teaching process for students who, for objective reasons, cannot attend regular teaching activities at HEIs.

The project goal is using of modern ICT technology and pedagogical approaches to promote equity to the students with: a) disability, b) economic obstacles: people with a low standard of living, low income, dependence on social welfare system and c) geographical obstacles: people from remote or rural areas; people living in small islands or in peripheral regions;

Expected results of project SMARTEL are:

- implementation of modern distance learning platforms,
- creation of e-content for multimedia platforms,
- equipping the remote and central office classrooms with modern ICT technology for teaching (smartclassroom),
- developing new pedagogical approaches that define the use of ICT in education,
- training of teaching and technical staff.

Project SMARTEL will impact on the improvement of equity in the teaching process at HEIs in Region 1.

1 WORK PACKAGE 1 – ANALYSIS

Work Package 1 (WP1) of project SMARTEL seek to identify and analyse the models of existing distance learning platforms and smart labs at higher education institutions (HEIs) in the Programme and Partner countries. Special attention is paid to the applications that help vulnerable groups (people with disability and with economic and geographical obstacles) to attend lectures in an appropriate way for them.

The analysis is done for each institution in particular, and then the results will be integrated into: one joint report for models in the Programme countries (D1.1) and one joint report for models in the Partner countries (D1.2). The reports will also include information of laboratory structure and classroom settings for teaching, distance learning, application of hardware and software in a modern presentation of teaching materials, ICT application for students with special needs.

The differences in applied models will be studied and recommendations for improvements in setting up the appropriate models will be generated for each Partner country HEI. The similarities and differences between the teaching models will be presented in a comparative report (D1.3). It will be analysed which key elements from distance learning platforms and smart labs model for teaching in the Programme countries HEIs should be applied in models for teaching in Partner countries HEIs in order to meet needs of students that belong to vulnerable groups. Comparison of these teaching models will be presented in the joint report.

1.1. Methodology

This research was conducted through a questionnaire which was circulated among partners at the beginning of SMARTEL project. Data collection took place in February and March 2021. All data are self-reported.

Questionary investigated the existing modern distance learning platforms and smart labs models by inquiring eight (8) units: E-learning organization; Learning Management Systems; Videoconferencing; Collaborative platforms; Exams and Knowledge assessment platforms, proctoring systems; Multimedia learning material storage (repository); E-learning, online learning accredited study programs and E-learning enhancements for the students with disabilities. Educational, technical and executive aspects and follow-up mechanisms adopted were taken into consideration.

The report offers insights from the most current view of online education in HEI from Partner countries involved in the SMARTEL project, namely UNIVERSITY OF MITROVICA / University of Pristina in Kosovska Mitrovica (UPKM), INTERNATIONAL BUSINESS COLLEGE MITROVICA (IBCM), JAVNA USTANOVA UNIVERZITET CRNE GORE PODGORICA / University of Montenegro (UoM-MN), UNIVERZITET ADRIATIK BAR (AUB), UNIVERZITET U ISTOCNOM SARAJEVU / University of East Sarajevo (UES), University of Mostar (SUM). Their full contributions may be found in the Annexes to the report.

2 KEY FINDINGS

2.1. E-learning organization

Under this section, project partners were asked regarding the organisation of e-learning in their institutions. In particular, they have been asked regarding the existence of a specific e-learning strategy, presence of dedicated services and staff responsible for e-learning at both university and faculty level, and the quality assurance measure for e-learning (guidelines, methodologies, recommendations).

Apart from SUM, all HEIs do not have an **official strategic document referring to e-learning**. Nevertheless, in all institutions e-learning has become a priority because of the recent COVID-19 pandemic[1] and it is now considered a priority for the future and mentioned in different documents, especially in the perspective of offering accredited study programs in blended learning. SUM is actually drafting their Policy of organization and application of e-learning.

Organisation of **services and staff responsible for e-learning** is really different:

- In AUB and UES, responsible for e-learning are the Vice-Dean undergraduate and master study supported by the Head of the Department of Electronic Communications (AUB), and the Vice-Rector for Education and Vice-Dean for Education (UES).
- In IBCM, UoM-MN, UES and SUM, e-learning is managed by specific units: IT Services (IBCM), Center of Information system (UoM-MN), University Computer Center (UE) and Center for Information Technologies (SUM), which also provide technical support when needed;
- In UPKM, a decentralised approach made experts form the IT sector of the faculties responsible for e-learning.

Only half of the HEIs have a set of guidelines available: AUB has developed guidelines for the use of LMS for both students and staff, UES has a Rulebook on the Organizing and Conducting Classes via Electronic Platforms and SUM have guidelines and manuals that define performances.

2.2. Learning Management Systems (LMS)

Under this section, project partners were asked regarding their Learning Management System and its management specifics as well as the percentage of courses, subjects and teaching staff of the institutions covered and the integration of the LMS with existing information systems. HEIs were asked to rate the level of complexity of their LMS use, three levels (3) were defined: basic, intermediate, and advanced.

All HEIs apart IBCM use Moodle as **LMS**. Moodle – acronym for *Modular Object-Oriented Dynamic Learning Environment* is an Open Source LMS, freely provided, working well in all standard, modern browsers and different operating systems. It can be customised in any way during course creation and

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[1] **The World Health Organization declared a Public Health Emergency of International Concern on 30 January 2020 (Source: Second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV), https://bit.ly/36vi0wd) and a pandemic on 11 March 2020 (Source: WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020, https://bit.ly/3jwor5S)**

its users need basic web browsing skills to use it. It is proven and trusted worldwide by academic and enterprise level institutions and organisations being the world's most widely used learning platform.

Apart from Moodle, other employed LMS in HEIs are Google Classroom (UPKM; IBCM, SUM) and LearnDash (UPKM).

The **complexity level** varies among institutions:

- UPKM, AUB, SUM: Intermediate – electronic learning materials + quizzes for students;
- IBCM: Advanced – performing team work, collaborative work, seminars, regular monitoring of students' progress;
- UoM-MN: Between Intermediate and Advanced;
- UES: Between Basic - putting electronic learning material for the students and Intermediate.

The **utilisation rate of the LMS** has been boosted by the recent COVID-19 pandemic situation:

- In UPKM, LMS covers from 26% to 100% of the courses depending on the Faculty;
- IN IBCM and UES, all subjects are included in their LMS;
- In UoM-MN, all faculties are potentially covered by LMS, but it is not obligatory;
- In AUB and SUM, majority of subjects is covered; SUM made LMS mandatory for all teaching staff.

As for **integration of the LMS**, only in UoM-MN, UES and SUM the LMS is integrated with the HEI information system.

2.3. Videoconferencing (remote or online lectures, laboratory work, auditoria work)

This section investigated project partners' use of videoconferencing software in teaching, especially regarding current practice of use, availability and storage of recordings.

The **most used tools** in the six (6) HEIs are Zoom, BigBlueButton – a free web for Linux servers (UM, UL) and Google Meet. In some cases, systems have been integrated in Moodle. Other mentioned systems are Skype, BlueJeans Meetings platform, Jitsi Meet. Some HEIs left professors free to choose the tool most suitable to them.

Because of pandemic and national restrictions to face to face activities, **videoconferencing** has replaced most of classroom-based training. Teachers could perform activities from their houses or offices. A hybrid (blended) approach was adopted for courses requiring physical/laboratory activity, but in most institutions, videoconferencing could not be used for exams.

When it comes to **recording of lectures**, HEIs declared the usually do not record lessons but they wish they could do it for all subjects (actually teachers are free to record their lectures). Main reason they do not is that they miss a storage system. Drive is used in IBCM but it said to have some restrictions.

As for the **future of videoconferencing**, vision is similar among the HEIs: up to this moment because of the pandemic distance learning was an emergency tool, but they all perceived the potential benefits of having a hybrid (blended) learning approach. Developing hardware and software facilities in this sense is one of the priorities for the future of HEIs at the end of the pandemic.

2.4. Collaborative platforms

Regarding **collaborative platforms**, meaning by this term any virtual workspace where resources (information, files, data) can be stored and which eventually provides tools to facilitate communication, interaction and shared work, five (5) HEIs out of six (6) use mainly relies on Google Workspace which includes Google Drive.

- UPKM also uses an internal iTeacher information system to store students' data;
- In UoM-MN, the main platform is the LMS, but teachers are free to use others if needed;
- At UES, teachers usually integrate LMS and Google Drive with tools like WeTransfer and Dropbox;
- SUM employs also Git – a Content Management System allowing online collaboration.

2.5. Exams and Knowledge assessment platforms, proctoring systems

As for **validation of students learning and performance**, HEIs were asked regarding the way examinations are conducted in a context of distance learning and related regulations and guidelines for students and teachers:

- As for minor tests, in all HEIs they were mainly held online through the LMS (Moodle or Google Classroom);
- UPKM, IBCM, UoM-MN, AUB, UES keep the face-to-face modality for most of the exams, especially the official ones.
- Only AUB and SUM regularly employs Safe Exam Browser for plagiarism prevention in online exams, thus preventing navigation or unauthorized resources being used during an exam.

2.6. Multimedia learning material storage (repository)

In relation to recording lecturers and need for them to store learning resources, HEIs have been asked if their institutions have provided them with a dedicated **repository space** or if the system has been decentralized.

As reported in the Videoconferencing section of this report, all HEIs reported a problem with lack of repository systems. IBCM employs Google Drive, UoM-MN set space in their server as well as UES (which uses also YouTube and the LMS) and SUM (which also employs external cloud services), but these systems do not provide enough storage space, especially in view of expanding the number of recorded lectures and adopting a hybrid (blended) learning approach which require materials to be available online.

2.7. E-learning, online learning accredited study programs

When looking to, as explained above, e-learning in all HEIs has been an emergency measure during the pandemic and up to now there are **no accredited e-learning study programs** nor fully e-learning nor hybrid (blended) learning.

2.8. E-learning enhancements for the students with disabilities

Similarly, as e-learning in all HEIs has been an emergency measure the issue of **accessibility for students with varying impairments or disabilities** in distance learning was not approached before and

it still lacking in all HEIs. Most of HEIs declared there is no requirement for their LMS to be adapted to different needs, and most of the work for accessibility relies on teaching staff which act case-by-case according to the needs expressed by their students.

ANNEXES

University of Pristinia in Kosovska Mitrovica (UPKM)

The Univeristy of Pristinia in Kosovska Mitrovica (UPKM) consists of ten faculties: Faculty of Technical Sciences, Faculty of Natural Sciences and Mathematics, Faculty of Medicine, Faculty of Law, Faculty of Economics, Faculty of Agriculture, Faculty of Philosophy, Teacher Education Faculty, Faculty of Sport and Physical Education and the Faculty of Arts.

1. Organization of distance learning

do you have any e-learning strategy document prepared on the university level or on the faculty level; if not, is e-learning mentioned in your existing strategies; do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans); do you have any department on the university level dealing with e-learning; do you have any guidelines, methodologies, recommendations in written form for e-learning performance? who is responsible for technical aspects of e-learning (setting up platforms, maintenance); does your IT department have dedicated personnel for e-learning?

The faculties of the University of Pristina in Kosovska Mitrovica do not have a document regarding the distance learning strategy. Also, the faculties do not have an organizational unit at the institution that is about distance learning. However, in line with the new situation about the Covid-19 virus pandemic, certain activities have been carried out to enable distance learning. Therefore, in the plans and strategies of the faculty, distance learning is one of the priorities.

From March 2020, all faculties started with distance learning. Instructions and guidelines have been developed for teachers and students to hold online classes. An expert from the IT sector of the faculty is in charge of the technical aspects of distance learning (setting up platforms, maintaining software, ...).

2. Learning Management System (LMS)

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process; Are you using LMS? Which One? What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc; Who is administering your LMS? Is it a manual work (managing users/students/teachers/subjects or automatic)? Is your LMS integrated with any external information system? Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

UPKM does not use a unique LMS for its faculties. Some faculties independently use LMS systems.

The Faculty of Medicine uses the Moodle platform. Since the beginning of the Covid-19 virus pandemic, all teachers and associates have been using the Moodle platform for distance learning. All subjects are covered by the platform.

The Faculty of Science and the Faculty of Arts use Google Classroom. All teachers and associates are involved in the work of the platform. All subjects are covered. The use of the platform is at a medium level (delivery of teaching materials and scheduling video conferences with students). The LMS is managed individually, there is no integration with the external system.

The Faculty of Sports and Physical Education uses the LearnDash platform. The platform covers 26% of subjects. The use of the platform is at a medium level (delivery of teaching materials and the possibility of testing knowledge. LMS is managed individually, there is no integration with the external system.

Other faculties do not use LMS.

3. Video conferences (distance lectures, exercises, laboratory work)

Do you use videoconferencing software for online lectures performance? Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19? Which videoconferencing tools do you use? Do you have licenses covered for all teachers? To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? To what extent do you use it otherwise? Do you use videoconferencing in the webinar mode (teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly? How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)? Do you find the hybrid lectures interesting for your university? Do you record your lectures often? Where do you store your recordings? Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

All faculties use one or more video conferencing software to do distance learning. Use of the software began after the outbreak of a pandemic caused by the Covid-19 virus. Faculties do combined teaching: lectures are held online and laboratory exercises in the faculty in accordance with epidemiological recommendations.

The university left it to the faculties to independently choose the video conferencing software. Table 1 provides an overview of video conferencing software used by UPKM faculties.

Table 1: Video conferencing software

Faculty	Software	License	Percentage of teaching coverage
Faculty of Technical Sciences	Zoom, Skype, Google Meet	No / No / Yes	100%
Faculty of Natural Sciences and Mathematics	Google Meet	Yes	90-95%
Faculty of Medicine	???	???	???
Faculty of Philosophy	Zoom / Microsoft Teams	No / No	90%
Faculty of Law	Zoom	No	???
Faculty of Economics	Zoom / Google Meet	No / Yes	80%
Teacher Education Faculty	Zoom	No	90%
Faculty of Agriculture	Zoom / Google Meet	No / Yes	30%
Faculty of Sport and Physical Education	Zoom	No	26%
Faculty of Arts	Google Meet	Yes	100%

Video conferences are used in the mode of meetings (teachers and students are present in audio and video mode). Teachers and associates hold video conferences from their homes, and a small number from the faculty cabinet.

Faculties do not record video lectures. One part of the teachers and associates independently records their lectures and distributes them to the students.

4. Platforms for cooperation

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

In addition to video conferencing software, faculties use additional platforms to share teaching materials. Faculties mainly use Google Disc. The Faculty of Technical Sciences and the Faculty of Philosophy have developed an internal iTeacher information system for storing and delivering teaching materials to students. All teachers and associates are involved and all subjects are covered through the iTeacher information system (Figure 1). The iTeacher platform provides students with electronic exam registration, as well as electronic records of passed exams and class attendance. The Faculty of Teacher Education has a part of the teaching material on its website. Other faculties do not store teaching files on their servers, but there is a need to introduce storage.
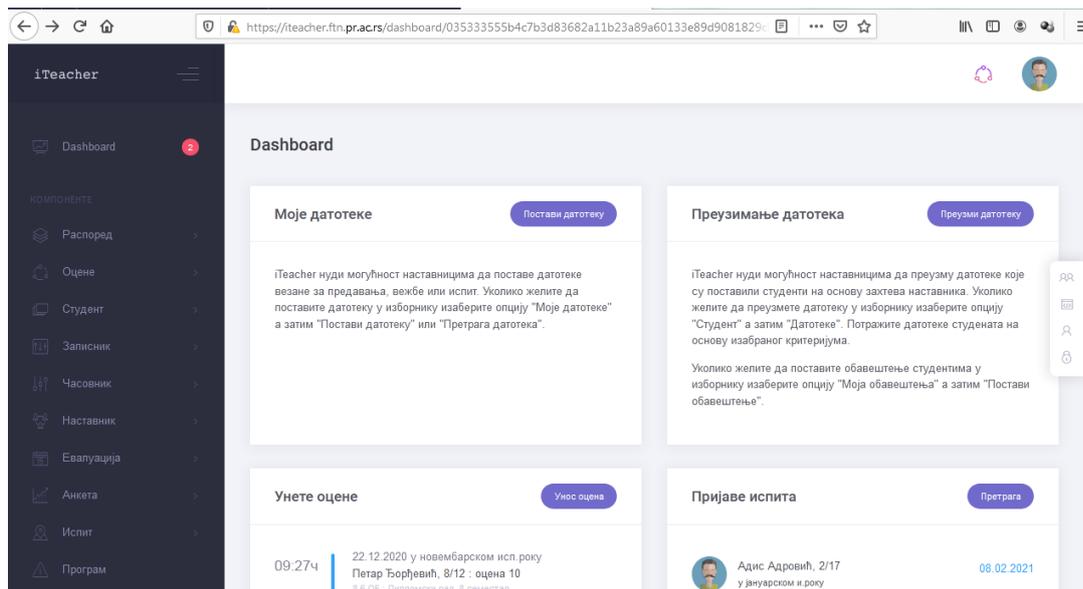

Figure 1: iTeacher environment

5. Examinations and knowledge assessment platforms, safe systems for exams

Do you perform oral or written exams online? How do you do it? Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tool for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

Faculties do not have a system for exams in a safe environment. For that reason, all exams and other forms of knowledge testing (colloquia, presentations of seminar papers, projects, ..) take place exclusively at the faculty.

6. Storage of multimedia learning materials

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

Faculties do not store multimedia content related to teaching, but most faculties are interested in storing multimedia content.

7. Accredited distance learning programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

No UPKM's faculty has accredited distance learning programs, but accreditation of such programs is also planned.

8. Distance learning for students with special needs

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities? Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

Faculties do not prepare teaching materials for distance learning that are adapted for students with special needs, for the blind, visually impaired, hearing impaired, deaf or students with other disabilities.

International Business College Mitrovica (IBCM)

E-learning organization in your institution

do you have any e-learning strategy document prepared on the university level or on the faculty level;

if not, is e-learning mentioned in your existing strategies;

There is no e-learning strategy prepared at the faculty level at our institution.

do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans);

There is no Person responsible for e-learning on the faculty level at IBC-M.

do you have any department on the university level dealing with e-learning;

The IT department is the one dealing with e-learning at IBCM.

do you have any guidelines, methodologies, recommendations in written form for e-learning performance?

There are no such guidelines, methodologies or recommendations in written form for e-learning performance at our institution.

who is responsible for technical aspects of e-learning (setting up platforms, maintenance);

IT department is responsible for technical aspects of e-learning at IBCM

does your IT department have dedicated personnel for e-learning?

It is all done by one person only.

Learning Management Systems (LMS) in your institution

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process;

Are you using LMS?

We do use LMS at IBCM..

Which One?

As a Learning Management System at IBCM we use Google Classroom.

What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)?

All subjects/professors are present in Google Classroom at IBCM.

What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc;

Predominant complexity of LMS use at IBCM is Advanced, we use it for a team work, collaborative work, seminars and regular monitoring of student's progress.

Who is administering your LMS?

IBCM IT department is administering our LMS.

Is it a manual work (managing users/students/teachers/subjects or automatic)?

It is manual work.

Is your LMS integrated with any external information system?

Since we are using Google Classroom we also use the other Google products (Google Meet, Gmail, Google Docs, Sheets, SLides. G Drive etc) that belong to the G Suite for Education package (Google Workspace now).

Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

At our institution we all use the same LMS.

Videoconferencing (remote or online lectures, laboratory work, auditoria work) in your institution

Do you use videoconferencing software for online lectures performance?

Yes, we do use video conferencing software for online lectures performance.

Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19?

We didn't use it before Covid 19 for this purpose, but it is now part of our regular study process and will remain even after Covid 19.

Which videoconferencing tools do you use?

During the summer semester 2019-20 as a main videoconferencing tool, we have used a BlueJeans platform. During the Winter semester, we switched to Google Meet since we found it more convenient in regard to timetable organization.

Do you have licenses covered for all teachers?

Since we are using G Suite for education the license for Google Meet is free to all our teachers.

To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)?

We are using videoconferencing for all subjects in Covid 19 situations, due to the measures imposed by the Ministry of Health and the inability to organize lessons with a physical presence due to these limitations.

To what extent do you use it otherwise?

Before Covid 19 the videoconferencing was used mostly for the purpose of meetings with the students.

Do you use videoconferencing in the webinar mode (teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly?

We are predominantly using Meetings mode.

How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)?

Professors usually perform lessons from cabinets/homes.

Do you find the hybrid lectures interesting for your university?

We are interested in hybride lectures too.

Do you record your lectures often?

We do not record lessons very often .

Where do you store your recordings?

When we do recording we store it to a Google drive.

Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

For the purpose of lecturing we are using Google Meet only, and we have an additional Zoom Pro account that we use for the purpose of meetings with our partners.

Collaborative platforms

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

As an additional online platform at IBCM we use Google drive and other Google services.

Exams and Knowledge assessment platforms, proctoring systems

Do you perform oral or written exams online? How do you do it?

We perform written exams through the Google Classroom platform. Students receive assignments at the beginning of the exam and have limited time to work. Didi not use Exam.net or Safe Exam Browser so far.

Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tools for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

We did not use any other proctoring system to perform exams in the online safe environment.

Multimedia learning material storage (repository)

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

As a storage for large files used in a learning process we use Google Drive but since there is a limitation of keeping video files recorded via Google Meet for only 30 days we are in a need of a repository for video learning material.

E-learning, online learning accredited study programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

We don't have any accredited study program that is performed completely online or in blended mode, but we were forced to switch to this type of lecturing due to the pandemic of Covid-19.

E-learning enhancements for the students with disabilities

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities?

So far, on our e-learning platform, we have not prepared any e-learning material nor module for students with different kinds of disabilities.

Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

We don't have such a requirement.

University of Montenegro (UoM-MN)

E-learning organization in institution

do you have any e-learning strategy document prepared on the university level or on the faculty level; if not, is e-learning mentioned in your existing strategies; do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans); do you have any department on the university level dealing with e-learning; do you have any guidelines, methodologies, recommendations in written form for e-learning performance? who is responsible for technical aspects of e-learning (setting up platforms, maintenance); does your IT department have dedicated personnel for e-learning?

The University strategy for the period 2019÷2024 has defined development of combined methods of learning.

(https://www.ucg.ac.me/skladiste/blog_6/objava_55573/fajlovi/Strategija%20razvoja%20Univerziteta%20Crne%20Gore%202019_2024.pdf), for example blended learning approach.

Development of e-learning is ongoing process that combine joint efforts from Rectorate, Center of Information system and University units and professors.

Learning Management Systems (LMS) in institution

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process; Are you using LMS? Which One? What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc; Who is administering your LMS? Is it a manual work (managing users/students/teachers/subjects or automatic)? Is your LMS integrated with any external information system? Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

UoM has Learning Managament System.

It is based on Moodle software and integrated with profesor and students account database.

Since the begining of Covid-19 pandemic, there are 2615 number of courses on the platform and 13232 active student that are using LMS.

LMS is capable of providing various models of working with students, it is between intermediate and advanced level of complexity.

Administration of LMS is based on the three levels:

- overall administration is realized by Center of Information System;
- part of LMS is realized by administrators on each University units and
- courses are administrated by professors.

All faculties units use LMS, but it is not obligatory, and depends on the learning process metods.

Videoconferencing (remote or online lectures, laboratory work, auditoria work) in institution

Do you use videoconferencing software for online lectures performance? Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19? Which videoconferencing tools do you use? Do you have licenses covered for all teachers? To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? To what extent do you use it otherwise? Do you use videoconferencing in the webinar mode (teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly? How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)? Do you find the hybrid lectures interesting for your university? Do you record your lectures often? Where do you store your recordings? Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

LMS is also connected to Videoconferencing platform based on BigBlueButton cluser.

It is available as part of the LMS, and is integrated within.

Video conferencing system have various posibilites, and is possible to be in webinar or meeting mode.

As for the performing remote lectures, it is not obligatory, and depends on pandemic circumstances.

Some profesors use it from home, but when epidemiological measures allow, they use it from office.

Video conferences can be recorded and published in LMS.

It is not obligatory for professors to use this videconferencing system, and they can choose between other solutions according to their preference.

Collaborative platforms

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

There is no unified collaborative platform and it is left to professors to decide which one to use.

But all communication and material exchange is available via LMS.

Exams and Knowledge assessment platforms, proctoring systems

Do you perform oral or written exams online? How do you do it? Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tool for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

Exams and knowledge assesment is also left to professors to organize but they are also dependent on epidemiologic measures.

LMS can be used for online tests and grading, and various professor use this possibility.

Noteworyhy, the final exams need to be organised in the faulty units' premises.

Multimedia learning material storage (repository)

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

Repository for video conferences is stored within proxy server.

E-learning, online learning accredited study programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

No, we don't have any program that is completely online.

E-learning enhancements for the students with disabilities

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities? Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

Due to Covid-19 and urgency for deploying various solutions for online learning, we don't have any material or module for students with disabilities within LMS.

But in those cases, professors can help them in learning process.

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Univerzitet Adriatik Bar (AUB)

E-learning organization in your institution

do you have any e-learning strategy document prepared on the university level or on the faculty level; if not, is e-learning mentioned in your existing strategies; do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans); do you have any department on the university level dealing with e-learning; do you have any guidelines, methodologies, recommendations in written form for e-learning performance? who is responsible for technical aspects of e-learning (setting up platforms, maintenance); does your IT department have dedicated personnel for e-learning?

University Adriatic Bar., Faculty of Traffic, Communications and Logistics in Budva (hereinafter FSKL), since its establishment, has been, constantly, working on the implementation and improvement of e-learning. There is, currently, no single document that includes the FSKL e-Learning Strategy, however e-learning is one of the priorities in several FSKL documents, that expresse the objectives and strategy of the Faculty.

FSKL adopts the annual Action Plan for the implementation of the Strategy for control and quality assurance of the Faculty. activities that are necessary to provide conditions for the development of e-learning are included into the activities of the Action Plan The implementation of the Learning Support System based on the "Moodle" platform was identified since 2015 and and its implementation began in that year. The implementation of the Moodle platform has significantly improved learning within the FSKL, primarily as a starting point for defining the elements of e-learning that FSKL implements.

The Vice-Dean for undergraduate and master study, prof. Natasa Gospić PhD , is in charge of monitoring the implementation of these activities, and in addition to the stated position, also as   the Head of the Department of Electronic Communications at FSKL.

The main task of this Department, as an organizational unit, is to identify the goals and to improve e-learning, i.e. by defining the methods   of quality assurance and, controlling of e-teaching,. Through the Guidelines for the use of the Moodle platform, prepared by the Department of Electronic Communications, instructions and recommendations for making presentation of subjects in the learning support system are defined. The Guidlines are made for students and teaching staff and are updated every year by the Department teamThis team is led by Natasa Gospić, PhD with the participation of teaching associates Marko Asanović and Ivana Buzdovan. An external company has been hired to maintain the platform, with the task to provide technical access to the e-learning platform for both teachers and students, as well as to ensure data security and integrity. In addition to the external company, one teaching associate from the Department of Electronic Communications is in charge of maintaining and improving the performance of the platform, as well as the available modules/functionalities of the platform itself. In addition the same person is also responsible for administration of the content, and providing technical support for adequately setting the content, and presentation of the individual subjects.

Learning Management Systems (LMS) in your institution

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process; Are you using LMS? Which One? What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc; Who is administering your LMS? Is it a manual work (managing users/students/teachers/subjects or automatic)? Is your LMS integrated with any external information system? Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

The Faculty for Traffic, Communications and Logistics, Budva uses the Moodle Learning Support System, as mentioned in the previous chapter. The FSKL started with the implementation of this platform in 2015. Moodle (Modular Object-Oriented Dynamic Learning Environment) is an open source e-learning software. The system is written in the PHP programming language, and supports multiple databases, which are used in the Internet environment today.

Since the platform itself is an Open source, as well as using the PHP language, users are left with the opportunity to create modules to extend functionality, so today there are a large number of user-made modules that can increase the functionalities of this platform. The Moodle platform environment is designed in the form of a portal. The main, usually the central part, displays the key content, while the side rows contain additional and auxiliary modules for system management. The visual appearance itself can be adapted to the user requirements of the educational institution.

The security of the FSKL Moodle platform is one of the things that is at a very high level. Access to the platform is enabled through any internet browser, and access itself is enabled via the SSL protocol. The user accesses the system via a username and password. After enrolling in the first week of study, students are assigned user accounts, as well as generic passwords, which the system automatically requests to change on first access, thus preventing Moodle platform administrators from accessing student accounts. The privileges of the System themselves are determined by the user roles assigned to the participants. Moodle supports the implementation of courses made according to SCORM 1.2 standard and is interoperable with the contents of other tools such as SCORM, AICC, Tin Can.

Reporting is one of the very important functionalities of the Moodle platform. It is divided into several modules, two of which are the most important. The first module contains data on access to the elements of the System, so you can get reports when the user has accessed a particular course, or activities within the course. Another important functionality of reporting is the presentation of the results of the educational process through a predefined scoring system, which can vary from the execution of certain tasks, tests, to the number of approaches and lessons reviewed. The reports themselves can be exported in various formats, as well as import data from an excel spreadsheet, which is important for entering previous activities or entering other records.

The structure of the courses within the Moodle platform can be organized in several different ways. FSKL courses are presented by weekly activities of held classes. The materials become available at the beginning of the lecture week, and cannot be accessed earlier to ensure adequate student introduction to the curriculum. During the previous year, the coverage of courses within the Moodle platform was about 90%, ie the platform itself did not cover only elective courses, which no student attended.

Each of the courses located on the platform consists of posting e-learning materials such as ppt presentations and pdf files. In addition to the above, a significant number of courses implement some of the ways of electronic knowledge testing such as a test or quiz, so we can conclude that the current level of application of the LMS system at the Faculty of Intermediate level. At the level of Adriatic Bar University, it is currently left to the each Faculties to choose the Learning Support System they want to use, noting that more Faculties are considering implementing the Moodle platform due to the example of the Faculty of Transport, Communications and Logistics.

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Videoconferencing (remote or online lectures, laboratory work, auditoria work) in your institution

Do you use videoconferencing software for online lectures performance? Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19? Which videoconferencing tools do you use? Do you have licenses covered for all teachers? To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? To what extent do you use it otherwise? Do you use videoconferencing in the webinar mode (teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly? How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)? Do you find the hybrid lectures interesting for your university? Do you record your lectures often? Where do you store your recordings? Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

The Faculty for Traffic, Communications and Logistics, Budva uses Zoom video conferencing software, the implementation of which has started mainly due to the overall situation with the Covid 19 virus. However, the implementation of this software is being considered even after the whole situation with the Covid 19 virus is over.

In this regard, the FSKL began to explore the possibility of connecting the system with learning support applied Moodle platform and video conferencing tools to automate these activities, i.e. through the Moodle platform to get reporting on student attendance at lectures. These would be extremely important for the improvement of the e-learning process, especially when hybrid lectures are implemented which include that part of the students are present in the class room and part of the students access from a remote location. In the initial phase of the Covid 19 virus, when a complete ban on movement was introduced, videoconferencing was the predominant way of teaching and all subjects were covered by this way of teaching due to the above situation.

At the current stage, most lectures no longer take place via videoconferencing, except when professors are unable to come, due to measures imposed within their country or due to measures imposed by two countries. FSKL opted to use the videoconferencing tool predominantly in meeting mode, where both lecturers and students are present with video and audio connections. The place of access of the lecturers is currently left to the lecturers to determine for themselves, primarily due to the new situation. All exams are performed with students present at FSKL premisses.

The goal of the FSKL is to provide the necessary conditions for conducting lectures from the Faculty building, with the possibility of a hybrid way of giving lectures, which would be of great importance for the Faculty. This should be kept in mind in particular that this way of lecturing would significantly increase enrollment of students from rural areas as target group. Due to the lack of necessary hardware and software, as well as storage space, FSKL does not currently record lectures, but it is one of the activities that would be of great importance and which is planned in future work. At the level of UniversityAdriatic Bar, each of the faculties are left to choose to use video conferencing tools. For the moment, Zoom is the tool that is primarily used..

Collaborative platforms

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

The Faculty for Traffic, Communications and Logistics uses Google drive to share e-learning materials, which are significantly large and are not able to be supported the by Moodle system.

The platform itself allows the installation of large files, but this restriction primarily comes from the server side, where FSKL is limited by the space on the server where the Moodle platform is located.

Exams and Knowledge assessment platforms, proctoring systems

Do you perform oral or written exams online? How do you do it? Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tool for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

In accordance with the Law on Higher Education, exams can be performed only within the Faculty premises, so exams are held either in writing or orally in the Faculty building with the involvement of professors and via videoconference if necessary.

Minor knowledge tests are performed through tests and quizzes that exist within the subject are done using Moodle platform. The platform itself has an implemented java script solution that disables access to other resources and windows during the exam, if the test itself is not in the focus of the screen for more than 5 seconds, it closes and submits with questions done so far.

If there is a need for additional control during this type of testing, a videoconferencing tool is used for control. The goal of FSKL is to further increase the security of this type of testing, so the integration of Safe Exam Browser with the learning support system is in the plan of the Faculty.

Multimedia learning material storage (repository)

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

The Faculty for Traffic, Communications and Logistics does not currently produce video material for e-learning, but recording lectures and producing video material is one of the goals of the Faculty in the up coming period.

At the level of the University Adriatic Bar, it is currently left to the Faculties to organize the production of this material themselves. The goal of the Faculty of Traffic, Communications and Logistics is to provide a systematic approach to this problem, and to organize a unique way of producing and storing video materials for e-learning at the level of all departments.

E-learning, online learning accredited study programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

The Faculty for Traffic, Communications and Logistics is currently not accredited to conduct distance learning. The goal of the Faculty is to be accredited when the above conditions are provided. That will include the formation of a digital-multimedia classroom from where lecturers will be able to produce video material, or to hold lectures at a distance.

E-learning enhancements for the students with disabilities

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities? Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

The Faculty for Traffic, Communication and Logistics does not currently have material that would be suitable for students with hearing impairments, as well as the visually impaired. Currently, there are no requirements or documents that oblige the Faculty to make e-learning platforms suitable for people with these types of disabilities, However, among other one of the goals is to make knowledge available to everyone, so creating such material is one of the future tasks of our institution.

University of East Sarajevo (UES)

E-learning organization in your institution

do you have any e-learning strategy document prepared on the university level or on the faculty level; if not, is e-learning mentioned in your existing strategies; do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans); do you have any department on the university level dealing with e-learning; do you have any guidelines, methodologies, recommendations in written form for e-learning performance? who is responsible for technical aspects of e-learning (setting up platforms, maintenance); does your IT department have dedicated personnel for e-learning?

Due to specific situation caused by the coronavirus pandemic, Senate of the University of East Sarajevo (UES) adopted the Rulebook on the Organizing and Conducting Classes via Electronic Platforms at the University of East Sarajevo on November 2, 2020. According to this document, e-learning is used in the emergency situations at the state level as well as in some justified cases (University Senate may adopt the decision of teaching-scientific council of the faculty to conduct part of the teaching through e-learning for a particular study program).

Vice-Rector for Education and Vice-Dean for Education are responsible for e-learning at the University and faculties level, respectively.

University Computer Center developed a guide in written form on how to use platform for e-learning.

University Computer Center has responsible staff for technical aspects of e-learning (setting up platforms, maintenance).

Learning Management Systems (LMS) in your institution

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process; Are you using LMS? Which One? What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc; Who is administering your LMS? Is it a manual work (managing users/students/teachers/subjects or automatic)? Is your LMS integrated with any external information system? Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process.

The Rulebook on Organizing and Conducting Classes via Electronic Platforms at the University of East Sarajevo, defines that all members (faculties/academies) of the UES use the Moodle platform, and certain faculties have the Moodle platform on their own servers. Usage of LMS is mostly basic: uploading electronic learning materials for the students (eg. Lesson plans, PDF or PPT materials) and partly at intermediate level: electronic learning materials + quizzes for students.

University Computer Center and selected administrative staff at the faculty level are responsible for running and maintenance of LMS. This process is done both manual and automatic. LMS is integrated within the application for registration of student's exams- "info kiosk".

Videoconferencing (remote or online lectures, laboratory work, auditoria work) in your institution

Do you use videoconferencing software for online lectures performance? Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19? Which videoconferencing tools do you use? Do you have licenses covered for all teachers? To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? To what extent do you use it otherwise? Do you use videoconferencing in the webinar mode

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(teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly? How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)? Do you find the hybrid lectures interesting for your university? Do you record your lectures often? Where do you store your recordings? Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

Until the outbreak of the coronavirus pandemic in March 2020, only a few faculties (Faculty of Electrical Engineering, Faculty of Medicine and Faculty of Transportation and Traffic Engineering) of the UES had been using distance learning platforms and for some on-line lectures (about 5%). Today, almost all members of UES which conduct distance learning due to situation with Covid-19 use videoconferencing software for online lectures, and partly for laboratory work (about 40% of faculties/academies perform classical teaching).

The Rulebook on Organizing and Conducting Classes via Electronic Platforms at the University of East Sarajevo, defines that all members (faculty/academies) of the UES use "Jitsi Meet" platform for video conferencing. However, UES members have the possibility of integrating other video conferencing systems (for example "Zoom", BigBlueButton).

Videoconferencing is predominantly used in the meetings mode (teachers and students present with video and audio). Professors perform remote lectures from their cabinets or home. Only at one faculty remote lectures were performed from the classrooms with some students attending the class and other being online (hybrid lectures). Hybrid lectures could be interesting for UES.

Most of the professors do not record lectures. Another issue with recording is lack of storage space for recorded lectures.

Collaborative platforms

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

There is no systematic approach, but additional online platforms for online collaboration activities with students or to share some larger files are used like: Google drive, We-transfer, Dropbox etc.

Exams and Knowledge assessment platforms, proctoring systems

Do you perform oral or written exams online? How do you do it? Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tool for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

Oral and written exams are not performed online at the UES.

Multimedia learning material storage (repository)

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

There is no systematic approach for multimedia learning material storage (some professors use University platform or other platforms (YouTube) to store and disseminate video learning materials). Another issue with video learning materials is lack of storage space.

E-learning, online learning accredited study programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

At UES there is no accredited study program which is performed either completely online or in the blended mode.

E-learning enhancements for the students with disabilities

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities? Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

At UES there is no prepared e-learning material or any module on our e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities.

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University of Mostar (SUM)

E-learning organization in your institution

do you have any e-learning strategy document prepared on the university level or on the faculty level; if not, is e-learning mentioned in your existing strategies;

- Center for Information Technologies of the University of Mostar (SUMIT) was founded in 2017 with the goal of supporting the academic community in usage of IT technologies in order to improve the educational process.
- The Strategy of development of the University of Mostar for the period of 2018 - 2023. is a document that emphasizes integration of technology in teaching and learning. Yearly action plan is developed for each faculty. Activities concerning the improvement of e-learning are a vital part of it.

do you have a person responsible for e-learning, on the university level (e.g. vice-rectors) or on the faculty level (e.g. vice-deans);

Center for Information Technologies of the University of Mostar is responsible for implementation of all e-learning activities. SUMIT also has a dedicated coordinator at every faculty that is responsible for conducting said activities at their respective faculties.

do you have any department on the university level dealing with e-learning;

University of Mostar does not have a department that is solely focused on e-learning activities (for example a Center for e-learning). Such activities are planned and implemented by SUMIT. SUMIT is responsible for deployment, maintenance and development of e-learning systems, as well as education of both students and teachers in using them.

do you have any guidelines, methodologies, recommendations in written form for e-learning performance?

Currently, University of Mostar is in a process of drafting the Policy of organization and application of e-learning. For now, the University has guidelines and manuals that define e-learning performance.

who is responsible for technical aspects of e-learning (setting up platforms, maintenance); does your IT department have dedicated personnel for e-learning?

- SUMIT is responsible for all technical aspects of e-learning regarding the University of Mostar (such as development and maintenance of software solutions). There are persons in the center tasked with maintenance of the systems, user support and workshops and educations.

Learning Management Systems (LMS) in your institution

LMS are online platforms intended to store and deliver learning materials to students; students are grouped in LMS according to their study programs and subjects; LMS can be used to perform online learning process; Are you using LMS? Which One?

- University of Mostar uses Moodle LMS. Its source code was modified in order to better serve the specific needs of faculties. The name of this modified Moodle LMS (SUMARUM https://eucenje.sum.ba) was chosen by

internal competition for students. University of Mostar also has access to the Google for Education package of services and tools. Among these services Google Classroom is also used.

- As a part of the University of Mostar, SUMIT is required to provide support not only to the University, but also to all elementary and high schools in Bosnia and Herzegovina that use Croatian language as an official one. This is why and additional Moodle LMS was modified and deployed for such schools (ŠKOLARAC https://skolarac.sum.ba). SUMIT also provides support for digitalization of said schools.

What is the extent of use of LMS, how many subject/professors are present in your LMS (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)?

With the start of the pandemic, opened profiles in SUMARUM were mandatory for all teachers. Today, all students and teachers have their profiles in our LMS system.

What is the predominant complexity of the LMS use? Basic: putting electronic learning material for the students (eg. Lesson plans, PDF or PPT materials); Intermediate: electronic learning materials + quizzes for students; Advanced: performing team work, collaborative work, seminars, regular monitoring of students' progress, etc;

Before the pandemic, teachers of the University of Mostar could generally be described as intermediate Moodle users that used static materials (such as PDF and .ppt) as well as dynamic (tests, seminars etc.). For example, Faculty of Civil Engineering had all subjects opened in SUMARUM. During the pandemic, teachers quickly adjusted to the news model of teaching. A great majority of subjects at the University of Mostar are now taught with the assistance of LMS platforms.

Who is administering your LMS? Is it a manual work (managing users/students/teachers/subjects or automatic)? Is your LMS integrated with any external information system?

SUMIT is responsible for the maintenance of the system (providing development of new features, regular updates of the system and caring for servers that LMS is on). Every faculty has a SUMIT coordinator that is responsible for user management on the level of the faculty. Teachers are responsible for user management on course level. AAI, branded as eduID (Authentication and Authorization Infrastructure) is integrated in SUMARUM. That means that our LMS is connected with the Information System of the University of Mostar. One of the benefits of eduID in SUMARUM is automatic generation of profiles for our teachers and students. There profiles are created automatically during the first login of users. This service also provides Single Sign-On (SSO). Also, when our students graduate, their profiles are automatically suspended from our LMS.
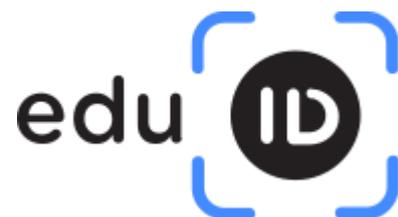
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Do your faculties use the same LMS or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

University of Mostar has systematically approached e-learning. There is a University-level LMS called SUMARUM. To incentivize teachers, e-learning was integrated into the Policy of minimal conditions for elections into scientific-teaching and artistic-teaching vocations. Online courses are evaluated during these elections.

Videoconferencing (remote or online lectures, laboratory work, auditoria work) in your institution

Do you use videoconferencing software for online lectures performance? Do you use it only because of Covid19 situation or is it part of your regular study process/will be part of your regular study process after Covid19? Which videoconferencing tools do you use? Do you have licenses covered for all teachers? To what extent do you use videoconferencing for your lectures in Covid19 situation (e.g. less than 10%, 10%-25%, 25%-50%, 50%-75%, 75%-90%, all subjects)? To what extent do you use it otherwise?

- University of Mostar uses Google Meet videoconferencing tool since all teachers and students of the University get free Google for Education accounts. SUMIT has also integrated BigBlueButton into its LMS system (SUMARUM). BigBlueButton is also hosted on SUMIT servers. The usage of these tools has spiked during the time of the pandemic. During the summer semester of the academic 2019./2020. between March 18 and June 1 more than 60 000 Google Meets were held.

The University and SUMIT estimate that these tools will continue to be used (especially by international staff and students). In the last 30.day period, University of Mostar had 5307 active users.

Do you use videoconferencing in the webinar mode (teachers present, students attend and participate in chat) or in the meetings mode (teachers and students present with video and audio) predominantly?

Classes in academic 2020./2021. are held with respect to the combined model. This means that a certain percentage of classes is held "face-to-face", and the rest is held remotely. Videoconferencing systems are constantly used in classes with regard to this model.

How do you perform remote lectures? Do professors perform them from their cabinets/home or do they perform them from the classrooms with some students attending the class and other being online (hybrid lectures)? Do you find the hybrid lectures interesting for your university?

Teachers of the University of Mostar use hybrid lectures which contribute to better and higher quality realization of learning outcomes

Do you record your lectures often? Where do you store your recordings?

Part of our teachers record their lectures. University of Mostar has the equipment to record lectures in high quality (this equipment is used by the media center of the University – SUM TV and is available to teacher on request)

Do your faculties use the same videoconferencing or different ones, is there a systematic approach or is it left to faculties/departments/individual professors

- Faculties of the University of Mostar use Google Meet and BigBlueButton. SUMIT has integrated BigBlueButton in the University level LMS system and also cares for the servers that host both the LMS and BigBlueButton. Furthermore, Google Meet is used because both students and teachers have been given free Google for Education accounts.

Collaborative platforms

Do you use any additional online platforms for online collaboration activities with students or to share some larger files…? e.g. Google drive, google other services, Dropbox…

University of Mostar provides Google for Education licenses for all users, both teachers and students. This is why Google Drive usage is prevalent.

Students that have programming classes continually use Git platform for online collaboration.

Exams and Knowledge assessment platforms, proctoring systems

Do you perform oral or written exams online? How do you do it? Are you using Exam.net, or Safe Exam Browser in combination with LMS, or Exam.net/SEB in combination with LMS and videoconferencing tool for control, or just videoconferencing tools? Are you using any other proctoring system (to perform exams in the online safe environment)?

Since March of the academic 2019./2020. classes have been exclusively held remotely, as well as spring, summer and fall exam terms. Most of the exams have been held with the help of SUMARUM system, by tests and videoconference tools. If tests are held over SUMARUM LMS, Safe Exam Browser is used, most often in combination with a videoconferencing tool (Google Meet or BigBlueButton).

Oral exams are held over Google Meet or BigBlueButton.

Multimedia learning material storage (repository)

Where do you store the video learning material you produce or other large files used in the learning process? Is there a systematic approach, or is it left to faculties/departments/individual professors? Is there a need for such repository at your university?

At this moment University does not have a digital repository. All materials are stored on our servers or external cloud services.

E-learning, online learning accredited study programs

Do you have any accredited study program that is performed completely online? Do you have any accredited study program that is performed in the blended mode (partly online, partly face-to-face)?

At the moment, University of Mostar does not have any accredited study programs performed exclusively online. At the next revision of study plans and programs, it is planned to adjust study programs and curriculums. For example, up to 50% of face-to-face classes can be substituted by online classes.

E-learning enhancements for the students with disabilities

Do you have prepared e-learning material or any module on your e-learning platform for blind, visually impaired, people with hearing loss, deaf or people with other disabilities? Do you have a requirement at your university that e-learning platforms need to be in accordance with the accessibility principles for all?

- In the Action Plans of the development of the University of Mostar there are certain activities dedicated to ease of access for students with disabilities. For example, web page of the University of Mostar can be adjusted by the users (contrast, font size etc.). There are plans to systematically approach the preparation of e-learning materials, however, at the moment the teachers are the ones to assess whether there is need for such materials among their students. If there is, the teachers are expected to act accordingly.

GLOSSARY

Accessibility: refers to a characteristic of technology that enables people with varying impairments or disabilities to use it. Accessible design also benefits people with older or slower software and hardware. eLearning content developers and instructional designers should aim to make courses clear, easy to understand, and simple to complete. Learners who suffer from sensory, intellectual or technological difficulties will need assistive technology to successfully access and complete their training courses.

Assessment: Assessments often take the form of a test included at the end of a course to evaluate learner performance. They should be aligned with the learning objectives of a course to accurately measure learner progress.

Asynchronous learning: allows learners to access to training material that they can complete at their own convenience. It doesn't require real-time interaction, enabling learners to complete courses at a time, place and pace that suits them. It includes use of online materials that can be obtained or submitted by the internet via classroom portals, messages, emails, etc. Does not require a continuous connection.

Augmented reality (AR): an interactive and enhanced version of the real-world physical environment. Whereas virtual reality (VR) creates its own cyber environment, AR adds to the existing world as it is. It does it by using computer-generated visual elements, sound and other sensory stimuli.

Blended or Hybrid Learning: combination of traditional, face-to-face learning methods with technology-based online learning methods. It's also be described as a blending of live training and self-paced training. It offers a great way to augment the learner's experience. Between 25-50% of instructions, assignments, and discussion takes place online.

Classroom-Based Training: also known as face-to-face or live training, classroom-based training is a more traditional training method. An instructor guides learner through a course in a real-world environment such as a classroom or meeting room.

Cloud computing: 'software as a service'; the cloud provides the infrastructure and platforms on which the applications run and end-users access cloud-based applications through a web browser or a light-weight desktop or mobile app.

Cloud LMS: a web-based platform that helps organisations and institutions to deliver, track, and report on eLearning. The main difference between a cloud LMS and other solutions is that learning content, tracking and reporting data is stored in the cloud. One benefit of a cloud LMS is that it's quicker and more cost-effective to install than self-hosted learning solutions. Cloud learning management systems also tend to require less in-house technical expertise to maintain and run.

CBT (Computer-Based Training): traditional name for what is now known as eLearning Computer-Based Training specifically describes the on-demand elements of eLearning, excluding instructor-led training.

Collaborative platform: a virtual workspace where resources (information, files, data) and tools are centralized with the aim of facilitating communication and interaction. Some example of services are shared calendars, collaborative documents and message notes.

CMS (Content Management System): a system that supports the creation, management, organization and consumption of digital content. An LMS is likely to contain a CMS function, to allow the internal curation of educational content.

Course Builder: Functionality in a learning management system that is used to upload and create courses. Course builders allow you to combine elements such as text, image, video etc., to make your courses more engaging.

Distance Learning: also known as Distance Education. Distance learning occurs when student and teacher / instructor are in different locations. Distance learning has been around since long before the Internet and the presence of a computer in nearly every home and office. Distance learning was a form of asynchronous learning, long before the internet. With the Internet and mobile telephony, distance learning can now be both synchronous and asynchronous – or a combination of both.

eLearning / e-learning / eLearning (Electronic Learning): the delivery of learning and training through digital resources and devices. Although eLearning is based on formalized learning, it's provided through electronic devices such as computers, tablets and even cellular phones that are connected to the internet. This makes it easy for users to learn anytime, anywhere, with few, if any, restrictions.

F2F (Face to Face Training): refers to the in-person elements of instructor-led training. Both teacher and learner are physically present in the same environment and able to converse naturally with no need for digital intervention.

Face-to-Face Web Enabled: Students "meet" virtually with their instructors (and other class members) via video chat or teleconferencing

Feedback: Feedback can be provided while a learner completes a course, an exam, or assignment in an LMS. Types of feedback include showing the learner if the answer they submitted is correct or incorrect or displaying correct answers after submission.

Fully online: Active instruction, testing, assignments, and discussion takes place online.

Hybrid or Blended Learning: combination of traditional, face-to-face learning methods with technology-based online learning methods. It's also be described as a blending of live training and self-paced training. It offers a great way to augment the learner's experience. Between 25-50% of instructions, assignments, and discussion takes place online.

ILT (Instructor-Led Training): training delivered by an instructor either in an in-person or webinar conference setting.

Immersive Learning: it leverages technologies like VR and AR to create stimulated or artificial learning environments. The interactive environments help in replicating possible scenarios and in teaching specific skills and techniques.

Learning Analytics: the measurement, collection, analysis and reporting of data accumulated during an online learning activity. Learning analytics allow for deep insight into the behaviours, competencies and experiences of learners in addition to accurately identifying areas for improvement in both the learner and the learning environment.

LMS (Learning Management System): a software application that is used to manage the administration of training (creation, management, delivering and tracking). Typically includes functionality for course catalogues, launching courses, registering students, tracking student progress

and assessments. A good LMS will allow you to deliver course content in a range of eLearning standards, sell online courses, assess and evaluate learner performance, deliver blended learning, brand or white label the LMS, integrate with third-party systems, and much more.

Learning Platform: a rather general term that refers to the underlying technologies people use to build and deploy eLearning. It usually refers the authoring software, the Learning Management System (LMS) or both.

mLearning (Mobile Learning): learning that's conducted on a mobile handheld device, like a smartphone or tablet. mLearning can occur anywhere at any time. The movement from desktop to portable devices has had a big impact on the development of online learning content. Instructional designers increasingly need to develop responsive mobile learning content that can adapt to the many devices learners now use.

MOOC (Massive Open Online Courses): a pre-recorded online course aimed at unlimited participation and open access via the web with open-ended, self-paced learning, available 24/7.

Online Learning: Often used interchangeably with eLearning and web-based training. Any form of education and training where materials are distributed, and communication takes place on a computer and usually over the internet.

Simultaneous Teaching: Faculty will teach online and in-person at the same time, i.e. a live stream of a lecture that students can attend in person or virtually. Students study course material outside class and utilize classroom time to reinforce learning, ask questions, and interact with their instructor

Synchronous learning: instructor-led learning in a (virtual) classroom setting. During this kind of event, learners attend on at the same time and an instructor guides the class. It includes real time teaching, feedback and contact with instructor and other students, requiring a live (and fast) internet connection.

Virtual Classroom: where a live education or training environment is created online and accessed via digital devices, this is known as a virtual classroom. Learners and instructors need to use the same virtual classroom software to communicate, and this might be downloaded as a desktop application or mobile app, or accessed online with cloud-based software.

Virtual Learning Environment (VLE): a web-based platform to organize resources, courses and users, often within an educational institution.

Virtual Reality (VR): the computer-generated construction of a 3D environment that can be interacted with by a user, often with a headset and/or gloves fitted with sensors to allow for the realistic interaction and manipulation of objects. Virtual reality has application in online compliance training as it can safely simulate dangerous scenarios.

Web Based Training (WBT): delivery of learning content via a web-based application or internalized intranet. Content may be hosted within a web-based application (such as an LMS), or retrieved from external sources to allow a diverse and up-to-the-minute consumption of learning content.