UN COVID-19 Response and Recovery Fund

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Assessment on the Needs of Lecturers in Distance Learning in Higher Education in Bosnia and Herzegovina During the COVID-19 Pandemic

UNITED NATIONS BOSNIA AND HERZEGOVINA

unicef for every child

unesco

ILO International Labour Organization

UN VOLUNTEERS

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This document represents one of two assessments done for the purposes of the project ''Re-imagining Education for Marginalized Girls and Boys during and post COVID-19". The second complementary Assessment on the quality of distance learning in higher education in Bosnia and Herzegovina during the COVID-19 pandemic" is an additional result of the work of a multidisciplinary team of researchers from Bosnia and Herzegovina. Primary and secondary research was conducted in the period from March 23 to April 9, 2021.

ABBREVIATIONS

BD	Brčko district
BiH	Bosnia and Herzegovina
COVID-19	Corona virus disease
DELT	Digitally supported teaching activities
FBiH	Federation of Bosnia and Herzegovina
ILO	International Labour Organization
IKT	Information and communications technology
RS	Republika Srpska
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
VŠU	Higher Education Institution

SUMMARY

The assessment was carried out in order to learn more about the impact of the COVID-19 pandemic on the process of higher education in Bosnia and Herzegovina with a focus on the experiences of lecturers, the challenges they faced and their needs which should be met in order to improve the quality of teaching. This is the first large-scale systematic research in Bosnia and Herzegovina, dedicated to a more detailed analysis of the trainings and the identification of various essential aspects of teaching, some of which are neglected in practice (e.g. methodological and pedagogical aspects of teaching, consideration of the challenges faced by students, ethical and security issues) . The analysis is primarily based on survey data obtained from lecturers, but it is supplemented by a review of secondary sources, semi-structured interviews with relevant persons, including surveys conducted with representatives of HEIs as well as students. It was established that there are a number of strengths, but also weaknesses and opportunities for improving distance learning in HEI's in Bosnia and Herzegovina, for which specific recommendations are offered.

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1. INTRODUCTION AND AIM

The assessment was carried out within the United Nations (UN) socio-economic aid plan for Bosnia and Herzegovina (BiH), which includes the United Nations Children's Fund (UNICEF), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Labor Organization (ILO) and UN Volunteers developed the project ''Re-imagining Education for Marginalized Girls and Boys during and post COVID-19". The purpose of the project is to help educational institutions in three pilot administrative units in the fight against the effects of the COVID-19 pandemic and to strengthen the capacities of the educational authorities as well as the capacities of teachers/lecturers from preschool to higher education. The special emphasis of the project is on the development of quality and inclusive distance learning and the teaching process that includes a blended learning model. While data and evidence on access to and quality of distance learning in BiH for lower levels of education were collected through special assessments and analyses conducted after the outbreak of COVID-19 and school closures across the country, there was an evident lack of data on distance learning at the higher education level. It was revealed that there is only one assessment on the quality of the teaching process in place, which was conducted and published in March 2021[1].

As of mid-March 2020, as part of preventive measures to combat the spread of the COVID-19 infection, 31 higher education institutions[2] (HEIs) in BiH were closed[3], which directly affected the learning process of 67,839 active students enrolled in the 2019/2020 academic year, as well as 9,844 employees at the HEIs[4]. Based on data collected through the Rapid Assessment of Situation and Needs - Education in Bosnia and Herzegovina - Phase II, which was jointly carried out by UNICEF and UNESCO from June to August 2020, all higher education institutions introduced distance learning on an *ad hoc* basis to ensure learning continuity for their students. However, the needs of teachers and lecturers for the implementation of distance learning at that stage could not be fully assessed due to the lack of necessary data from higher-education-competent institutions.

A thorough assessment of the needs of teachers and lecturers for the implementation of distance learning is necessary and relevant not only in the context of the above-mentioned aid to the UN educational authorities during the COVID-19 pandemic, but also for the purposes of increasing the capacity and readiness of higher education to systematically devise solutions to future crises, as well to improve post-pandemic education processes. In this sense, UNESCO began the preparation of this assessment, which offers an overview of the needs of lecturers at the level of higher education in BiH and concrete recommendations on how they can be met. In order to make an assessment of the needs of teachers and lecturers in conducting distance education in higher education in Bosnia and Herzegovina, the assessment used three key research questions:

1. What were the main obstacles the lecturers faced in terms of i) the legal, financial and administrative environment, ii) the necessary pedagogical and technical needs in the implementation of distance learning, and iii) the minimum qualifications of teachers/lecturers in terms of the necessary capacities for the implementation of distance learning ?

[1] Agency for Higher Education of Republika Srpska "Thematic analysis of the process of distance learning during the extraordinary circumstances caused by the corona virus." (March, 2021); available at https://www.heaars.com/attachments/article/378/tematska_analiza_20210315.pdf

[2] Higher education institutions in Bosnia and Herzegovina are universities and colleges (higher schools). For more information see http://cip.gov.ba/bs/visoko-obrazovanje

[3] Agency for Development of Higher Education and Quality Assurance of Bosnia and Herzegovina "List of accredited higher education institutions in Bosnia and Herzegovina"; available at: http://hea.gov.ba/akreditacija_vsu/

[4] Agency for Statistics of Bosnia and Herzegovina, "Education Statistics - Higher Education in the 2019/2020 school year. year"; available at: http://bhas.gov.ba/data/Publikacije/Saopstenja/2020/EDU_05_2019_Y2_0_BS.pdf BiH"; available at: http://hea.gov.ba/akreditacija_vsu/

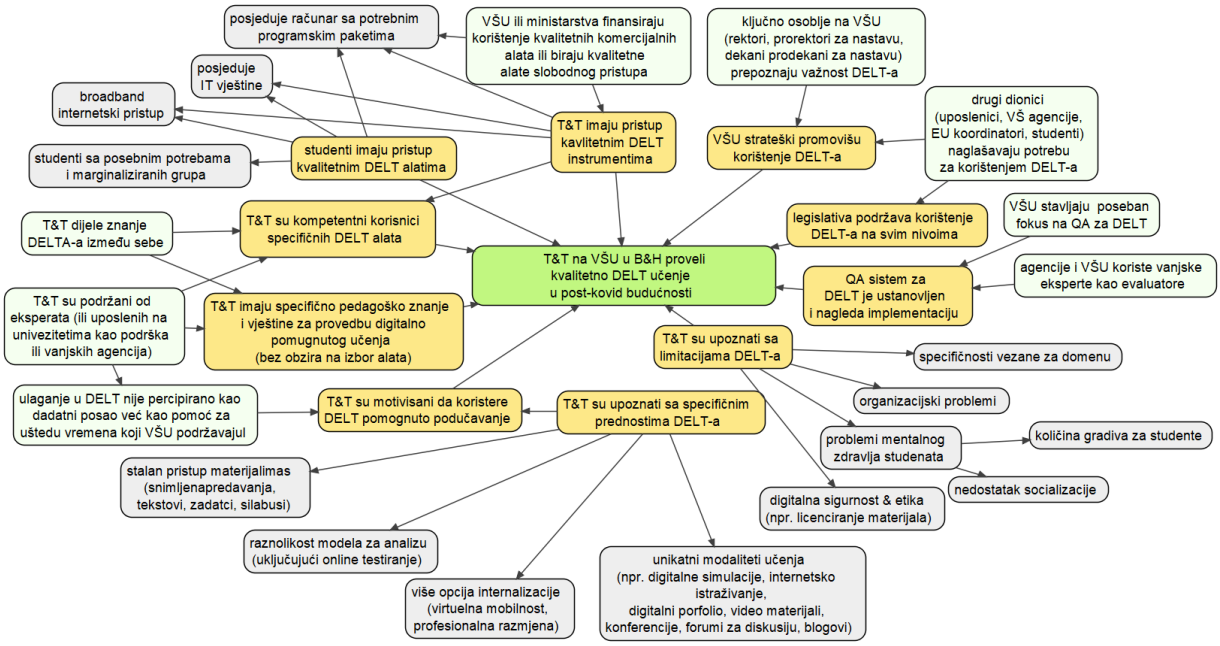
2. What types of specific training and support were provided to lecturers at the HEIs in Bosnia and Herzegovina during the pandemic?

3. What needs are not met regarding the availability of ICT equipment, network connectivity, training for the use of ICT equipment and applications, methodical training on the production of digital and creative content, and possibly other relevant aspects that directly affect the quality of distance learning in higher education in BiH?

After the research questions were defined, the most important factors were identified, representing logical and theoretical assumptions that high-quality teaching supported by digital technologies (DELT - *digitally enhanced learning technologies*) takes place in the post-pandemic period. The final model is visualized as a theory of change in Figure 1. The theory of change is a visual description of the conditions and mechanisms that lead to the desired outcome within a complex system. The purpose of the created model is twofold: (1) the model can serve as a strategic working model for improving the quality of distance education at the HEIs in BiH, (2) the model represented a reference framework for the creation of instruments for examining the quality of distance education and the factors that contribute to it .

Figure 1. The applied model of the theory of change for the UNESCO assessment of the needs of lecturers in the implementation of distance education.

[Abbreviations used: T&T = Lecturers (*Teachers & Trainers*), QA = *Quality Assurance*, DELT = - digitally enhanced learning technologies, IT = information technologies, VŠU = visokoškolska ustanova (HEI – higher education institution]



The same model was used to design a complementary Assessment on the quality of higher education teaching at the HEIs in Bosnia and Herzegovina during the pandemic. In contrast to that assessment, which had a somewhat wider scope and which dealt with the consideration of the overall context of higher education, technical aspects of distance education implementation (e.g. educational platforms), and equally represented perspectives of students, lecturers and representatives of the Higher Education Institutions in terms of attitudes towards education at a distance (i.e. different types of positive and negative attitudes), this assessment focuses on the position of lecturers. Lecturers represent the basis of the teaching process because they have the most active role in it and are relatively permanent

participants, unlike students and the staff which hold administrative positions. Investing in teachers is the safest and most economical way to a long-term improvement of education.

The transition to distance learning has affected drastic changes in teaching practices around the world for a huge number of those who had no previous experience with such a form of teaching. There are a large number of reports that empirically documented the challenges and needs of lecturers in facing previously unheard of ways of working[5]. Special attention was paid to those fields that objectively require a greater amount of physical presence, such as health sciences (medicine, dentistry)[6]. The reports indicate the existence of a large number of effective online solutions, ranging from sending recorded lectures, using the lecture time to discuss the material that students have studied in the meantime (the so-called flipped classroom approach), assignments that involve students more impactfully in researching the topics covered on the Internet and the presentation of findings, all the way to the use of high-resolution information technology achievements that enable simulation environments or virtual microscopy. Additionally, the abovementioned reports also list a number of disadvantages faced by lecturers, stemming from the lack of physical contact.

Therefore, this assessment was designed with the aim of obtaining a large amount of empirical data about the experiences of lecturers in Bosnia and Herzegovina and their perception of how to improve the quality of distance learning. Their perspective is complemented by the viewpoints of students and representatives of the Higher Education Institutions. Recommendations that can be extracted on the basis of specific data are key on many levels for higher education in BiH which represents a specific context, since distance learning and its integration into regular teaching represents very near future process, independent from the dynamics of the pandemic. The rest of this document describes the applied methods and their limitations, followed by an analysis of the data determined by the research team, finalizing with a list of specific recommendations.

[5] Examples of empirical papers focusing on the lecturer's perspective: Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Postdigital Science and Education*, 2(3), 923-945. and Alea, L.A., Fabrea, M.F., Roldan, R.D.A., & Farooqi, A.Z. (2020). Teachers' Covid-19 awareness, distance learning education experiences and perceptions towards institutional readiness and challenges. *International Journal of Learning, Teaching and Educational Research, 19(6), 127-144.*

[6] Examples for the field of health sciences including specific fields such as dentistry and dermatology: Jiang, Z., Zhu, D., Li, J., Ren, L., Pu, R., & Yang, G. (2021) . Online dental teaching practices during the COVID-19 pandemic: a cross-sectional online survey from China. *BMC Oral Health*, 21(1), 1-9.; Kim, J. W., Myung, S. J., Yoon, H. B., Moon, S. H., Ryu, H., & Yim, J. J. (2020). How medical education survives and evolves during COVID-19: Our experience and future direction. PloS one, 15(12), e0243958.; Wilcha, R. J. (2020). Effectiveness of virtual medical teaching during the COVID-19 crisis: systematic review. *JMIR Medical Education*, 6(2), e20963.; Kaliyadan, F., ElZorkany, K., & Al Wadani, F. (2020). An online dermatology teaching module for undergraduate medical students amid the COVID-19 Pandemic: An experience and suggestions for the future. *Indian Dermatology Online Journal*, 11(6), 944.; Jones, V. A., Clark, K. A., Puyana, C., & Tsoukas, M. M. (2020). Rescuing Medical Education in Times of COVID-19. *Clinics in Dermatology*.

2. METHODOLOGY

The methodology for assessing the challenges faced by lecturers at the HEIs in BiH in terms of distance learning was designed to ensure systematic and effective data collection and triangulation of information through various sources and methods, bearing in mind the pandemic circumstances and deadlines for report drafting[7]. Triangulation – information-obtainment from different sources was necessary considering that, much like the quality construct, the construct of needs of lecturers is complex and depends on the perception of different participants or users of the education process. More specifically, what is taken into account when assessing a specific need in education may be conditioned by a subjective perspective (e.g., lecturers may consider that they need a specific type of software, but at the same time do not know about other software optimized for their field of work). In other words, it is very likely that needs could be evaluated differently by independent experts (e.g. in accreditation bodies), administrative staff of institutions, students, lecturers and employers on the labor market. A combination of qualitative and quantitative data collection methods were used for this assessment, which included:

- secondary research of relevant documentation and data (desk analysis/literature review),
- semi-structured interviews with key persons in the most relevant institutions related to higher education,
- surveying lecturers, students and administrative staff at the HEIs.

The analysis is primarily based on semi-structured interviews with key persons and surveys conducted with students, lecturers and representatives of higher education institutions in Bosnia and Herzegovina. Secondary data sources were guidelines, studies, reports, analyses, assessments, and legal/legislative documents, statutes and strategies relevant to this topic. For comparative purposes, recent reports on international research and recommendations made by relevant organizations in the field of higher education as a reaction to the new situation were also used.

When it comes to the interviews, the sample was of a purposive type, which ensured representation according to the administrative composition of BiH. The interviews were mostly conducted via electronic platforms for communication, and a smaller part was conducted in-person. In total, 19 individual interviews were held (3 from state institutions, 1 from BD, 4 from RS, and 11 from FBiH cantons) with 26 people using an interview protocol containing inquiries related to key questions from the assessment. The interview protocol was piloted (one representative of the Higher Education Institution and one employee of the BiH Ministry). The operational population for the interviews consisted of people with previous experience in distance learning, taking due account to the administrative structure of BiH. In order to ensure the participation of the interlocutors, the UNESCO Office in Sarajevo prepared a side letter sent to all potential interlocutors as part of an email with clear instructions and the purpose of the interview.
The survey was created with the aim of obtaining key information about the challenges and needs of lecturers identified in the previously mentioned theory of change. Considering the pandemic conditions and the efficiency of data collection, it was decided the survey shall be conducted online. As stated, the three different target groups were administrative representatives of the HEIs with direct insight into the conduct of classes (i.e. vice-chancellors for teaching, quality assurance coordinators or some other administrative persons), lecturers who conducted classes at the Higher Education Institution and students of all programs offered by the Higher Education Institution.

Separate surveys were created for each target group. For some aspects, it was possible to seek the same information from multiple perspectives and thus check their agreement (e.g. whether the technical conditions for conducting quality distance education were provided in terms of software tools, Internet speed, recommendations for improving distance education). On the other hand, some aspects and information was requested from only one source that was assessed as the most relevant (e.g. students

[7] The research methodology - as well as the limitations of the methodological approach - for this report is consistent with the methodology used for the UNESCO *Assessment on the quality of distance learning in higher education in Bosnia and Herzegovina during the COVID-19 pandemic*.

assessing the lecturer's motivation for adapting to online classes, administrative representatives laying out potential legislative obstacles faced by the Higher Education Institution). All survey instruments were piloted (focus group with students, cognitive interviewing of one student and several lecturers, as well as one representative of the Higher Education Institution at the faculty level). The survey was anonymous, and in order to reduce the threat of identity disclosure that could affect the sincerity of students' and lecturers' answers, the only demographic data that was collected was related to the year of studies and the study program in which the students are enrolled, that is, the age group and scientific-professional the area where the lecturers teach. The surveys are attached to this report.

The operational population for the surveys consisted of all students and all lecturers at the Higher Education Institutions
in BiH, as well as the mentioned administrative representatives of those institutions. In order to ensure the greatest possible response from respondents in the first step, the UNESCO Office in Sarajevo sent a request for participation in the research together with a cover letter to the relevant email addresses of all HEIs that were potential participants. Afterwards an email was sent with clear instructions, a link for each survey and a short text that could be forwarded to all lecturers and students. Based on the feedback, HEIs were contacted again, if shown necessary. After fourteen days being the duration of data collection from 2793 students, 755 lecturers, and 19 representatives of HEIs (all 8 public universities from BiH and 11 private HEIs - 6 from FBiH and 5 from RS), the answers were obtained.

When it comes to the absolute numbers for students and lecturers, the enviable sample size at stake and on which, in theoretically ideal conditions, it would be possible to determine the population parameters (according to the previously presented estimate of the number of employees at HEIs and students in BiH from 2019, 7.7% of the population of university lecturers is sampled, i.e. 4.1% of the total population of active students). However, due to the great heterogeneity of the very nature of higher education and the conditions of teaching (e.g. studying in different fields, at different sub-organizational units within different HEIs, different lecturers at different years of study), as well as the possible biased response of respondents (see Limitations section), quantitative part of the assessment is primarily descriptive in nature, since the findings and recommendations may vary significantly depending on the context (i.e. specific HEI, years of study, area of study). Irrespective of the above, the amount of information that has been collected allows for a high degree of empirical insight into the general picture of the needs of lecturers, which should be met in order to hold higher-quality distance learning during pandemic period, as well as after it. The analysis of the survey data was performed in the statistical programming environment R.

LIMITATIONS

In the process of designing the study, developing instruments and collecting data, we encountered several limiting circumstances which somewhat minify the strength of the findings:

- Data were collected during the peak of the third wave of the COVID-19 pandemic (end of March - beginning of April 2021). This epidemiological situation directly affected the response of respondents from the ranks of representatives of the Higher Education Institutions; for example several key contact persons were infected at the time of the research, which made it impossible to adequately forward information and collect data within the stipulated time frame.
- There is a certain number of private HEIs that did not respond at all to the inquiry about filling out the questionnaire even after multiple contact attempts. Of the HEIs that responded, 8 received a weak response from students (10 or less), and 9 received a weak response from lecturers (10 or less). It was not possible to additionally influence the motivation of lecturers and students to fill out the surveys, nor was it possible to get involved in internal communication within the HEIs, which forwarded an invitation text with links to its employees and students. In addition, the plausible assumption is that the lower response of some HEIs could have been influenced by the fact that they recognized their own weaknesses when conducting distance learning, and therefore were not motivated to share this information with third parties..
- The focus of this report is the thematics of lecturers' needs in bettering their teaching modalities. The perception of these needs depends directly on the insight that lecturers have into what ideal teaching is in their field, and on the amount of motivation to raise the quality of teaching to such

an imaginary ideal point. In other words, it is difficult to set ideal levels objectively without the involvement of experts in the field who could directly observe the teaching and the circumstances in which it is conducted. Given the enormous time and expert resources necessary for such monitoring, it could not be included, and it was only possible to rely on the perception of lecturers, and for some questions, students and representatives of the Higher Education Institutions.

- Due to the fact that students and lecturers were overwhelmed with numerous online surveys during the pandemic, we were forced to create relatively short survey instruments that can be completed "in one sitting". This was emphasized in the body of the invitation email and the introduction of the surveys in order to maintain the motivation of the potential respondents, thus leading to a satisfactory numerical response. At the same time this implied certain interesting details had to be left out.

3. FINDINGS AND CONCLUSIONS

3.1 Legal, financial and administrative environment

Conversations with interviewees revealed that most of them stated that it is clear that HEIs will have to pay serious attention to the training and equipment of teachers and institutions for a smooth sailing teaching process both during the COVID-19 pandemic and in the post-pandemic era. Their remarks are mainly related to the expectation from HEIs to enable continuous professional development programs to strengthen the ability of teachers and lecturers for this form of teaching.

There were no legal barriers to both the provision of training for teachers and lecturers and the provision of additional equipment for a smooth teaching process during the pandemic. Although the legal-administrative framework is complex due to high decentralization and the legal framework in which higher education takes place reflects the administrative organization of BiH, this implies that higher education is managed by 16 authorities at different levels with laws that regulate the work of HEIs[8]. Regardless of this fact, in principle there were no legal obstacles. The needs and challenges of teachers and lecturers in distance learning are primarily regulated by 13 laws on higher education (RS, BD, 10 cantons, and the Framework Law on Higher Education of BiH) **and a review of legal provisions resulted in finding no explicit legal obstacles to address the needs of teachers and lecturers** in the distance teaching process[9].

However, **the fact that there are no glaring legal obstacles does not necessarily mean that they have enabled the authorities to create mechanisms** through which needs can be easily addressed, on the contrary. All laws are not specific but generally state that HEIs are obliged to continuously organize and carry out appropriate forms of scientific, professional and artistic training of academic staff. Additionally, various articles within individual laws, lay out that within the rights and obligations of HEIs, in accordance with the law, statute, other regulations and general acts, they have **the right and obligation to realize and improve educational, scientific-teaching, artistic, artistic-teaching and scientific research work** in accordance with the strategic interests of society, and in accordance with the values and quality standards of the European higher education system.

[8] Ministry of Education and Culture of the Republic of Srpska, Ministry of Scientific and Technological Development, Higher Education and Information Society of the Republic of Srpska, 10 Cantonal Ministries of Education in the Federation of Bosnia and Herzegovina and the Department of Education of the Government of Brčko District of BiH. Also, there are two ministries that have a coordinating role, the Federal Ministry of Education and Science, which coordinates ten cantonal ministries in FBiH, and the Ministry of Civil Affairs of BiH, which is in charge of coordination at the state level.

[9] A review of the laws in the field of higher education regarding distance learning reveals serious shortcomings in the regulation of the field of distance learning itself; more information available in the document: "Assessment on the quality of distance learning in higher education in Bosnia and Herzegovina during the COVID-19 pandemic"

As for the values and quality standards of the European higher education system, it is important to emphasize here that the **higher education systems do not have legal provisions in place which enable harmonization with the quality standards of the European higher education system** because there is currently no existing qualification framework in higher education in Bosnia and Herzegovina[10]. More precisely, there is no linking of previous, current and future learning results, nor are they placed in mutual relations within BiH, but also within the European qualification framework and the European educational space. Therefore, it is very difficult to determine the quality of standard and distance learning. This serious deficiency has resulted in the fact that the indicators for learning outcomes that would emerge from the qualification framework and harmonize the regulations governing the field of higher education in order to adequately assess the quality of any learning have yet to be established and confirmed.

Furthermore, **all laws on higher education do not have a single provision against the necessary pedagogical and technical requirements that institutions must meet for distance learning, nor the necessary minimum qualifications of teachers and lecturers for distance learning**. Moreover, all legal solutions lack explicit regulation of this way of education through various articles and positions within the law. Namely, not only are the conditions for institutions and teachers not mentioned, but this form of distance education is not essentially dealt with in the law and is only mentioned declaratively. In most cases, the laws only state that higher education can be acquired "full-time, part-time, through distance learning, or via a combination of these three ways of studying"[11]. In most laws, the regulation of distance learning ends there, and the rest of the regulation is transferred to the statutes of the Higher Education Institution. The laws do not have clear and precise instructions on the specifics related to distance learning, e.g. study rules, organization of exams, practical and professional work, knowledge verification and evaluation procedure, curriculum and so forth.

In essence, laws on higher education allow HEIs to address the needs of teachers and lecturers for the implementation of distance learning through statutes, other regulations and general acts. However, a review of the statutes (all public and two private) **found that there is no provision on the necessary pedagogical and technical requirements that the institutions must meet, nor the necessary minimum qualifications of teachers and lecturers for distance learning,** although the qualifications are somewhat regulated for regular teaching. Regarding the precise definition of the minimum technical requirements, through the interviews it was found out that HEIs would most likely have a reservation according to the strategic determination of HEIs regarding the definition of minimum technical requirements and criteria (e.g. specifications for equipment and internet connection quality) through internal acts and regulations of HEIs. Their reservation comes from the potential financial burden that such decisions could bring. If the institution insists on specific equipment that students must have in order to follow the classes, then that equipment would have to be provided by the Higher Education Institution if the students are not able to provide it themselves. Otherwise, the law would be violated by denying the right to education to students from financially disadvantaged backgrounds.

Although the statutes of HEIs do not mention distance learning in the context of guidelines on the necessary pedagogical and technical requirements that institutions must meet, nor the necessary minimum qualifications of teachers and lecturers, the statutes of all HEIs regulate these requirements for standard studying programs in different ways. It is important to emphasize that all HEIs periodically organize various trainings and advanced training for teachers and lecturers. However, attendance is at the lecturer's discretion and lecturers aren't obliged to attend the offered programs and courses. The laws on higher education or the statutes of the Higher Education Institution do not entail a single explicit provision that this aspect is taken into account in the evaluation of the work of teachers and lecturers. An examination of the statutes of the Higher Education Institutions makes it clear that the key links for these issues are the scope of work of the vice chancellor for quality and the Quality Management

[10] For more information, see "Qualifications framework basics in Bosnia and Herzegovina"; available at: http://fmon.gov.ba/Upload/Dokumenti/553ef086-3d8d-41b3-aa3a-4ec24ff8a1f1_Osnove%20kvalifikacijskog%20okvira%20u%20Bosni%20i%20Hercegovini.pdf

[11] All laws on higher education.

Committee. However, they are primarily in charge of implementing the decisions made by the senates of the Higher Education Institutions, and during the period of the COVID-19 pandemic, the senates did not define the necessary pedagogical and technical requirements that the institutions must meet at any higher education institution, nor did they determine the minimum necessary qualifications of teachers and lecturers for distance learning . This however doesn't immply that some HEIs did not try to provide higher quality and more effective distance learning through training and education of teachers and lecturers.

The focus of ministries and HEIs in the previous period was to provide some kind of teaching, and there was no thoughtful consideration of the necessary pedagogical and technical requirements institutions must meet for distance learning, nor the necessary minimum qualifications of teachers and lecturers. Strategic thinking about solving the needs of teachers in the implementation of distance learning is still in its infancy at all levels in Bosnia and Herzegovina. The only identified exception is the newly established Ministry of Higher Education and Science of the Sarajevo Canton, which intends to start the process of creating a media and information literacy strategy for the Sarajevo Canton in cooperation with the Institute for Social Research of the Faculty of Political Sciences of the University of Sarajevo. The strategy intends to actively contribute and improve the competences of teachers for the implementation of distance learning in the coming period[12].

The financing of HEIs during the pandemic was reduced because all governments in Bosnia and Herzegovina carried out budget rebalancing for 2020 in order to respond to the COVID-19 pandemic[13]. The authorities carried out these activities in order to try to mitigate the effects caused by extraordinary circumstances. It was found that all levels of government tried to balance the budget by strengthening the planned expenditures and finding new revenues. The 2020 UN report "Mitigating the impact of the COVID-19 pandemic on the learning of children and young people in Bosnia and Herzegovina" states that "*out of 14 educational authorities, only four stated that the education sector in their administrative units will not be subject to budget rebalancing , while two stated that the budget rebalancing plan in their administrative unit has yet to be adopted*"[14]. The report also states that the assessment that the rebalancing of budget lines for education resulted in a cumulative amount of budget reduction in 2020

[12] The strategy will include the Hybrid model of multi-component integration of media and information literacy (MIP) into higher education systems (developed on the principles of UNESCO multi-component integration of MIP). The hybrid model was developed as a unique inclusive model developed by the Institute for Social Research of the Faculty of Political Sciences of the University of Sarajevo since 2017. It is a way of integrating media and information literacy into society, but above all into educational systems, which includes both horizontal and vertical integration. . Media and information literacy is a process, not a state, and the Hybrid Model was developed based on these assumptions, and the option of introducing a separate subject in primary and secondary schools was rejected. The focus is on the principles and contents for the development of the umbrella competence of media and information literacy within the (reform) of the educational system and society. Vertical integration refers to the development of science, research and lifelong education of future teachers, which through science and research will provide support to decision makers, ensure professional and professional training, and work with teachers, librarians and other actors of all levels of the education system. Horizontal integration implies cross-curricular cooperation of teachers and librarians within the framework of teaching programs and plans, and learning outcomes. Integral elements necessary for a feasible and sustainable process in the digital age are: Dynamic digital learning objects; Open Educational Resources (OER - Open Educational Resources); and the method of guided research learning - learning through research, which as such is adapted to the development of media and information literacy competencies; for more see: Vajzović, E. (ed.) (2021) "Media and Information Literacy: Learning Design for the Digital Age", available at https://fpn.unsa.ba/b/wp-content/uploads/2021/04/MEDIA-AND-INFORMATION-LITERACY-DESIGN-UCENJA-ZA-DIGITALNO-DOBA_e-izdanje-1.pdf, and "Positional Study Media and Information Literacy in Education Systems in BiH: Hybrid Model of Multicomponent Integration", (Institute for Social research of the Faculty of Political Sciences of the University of Sarajevo: 2020), available at: https://fpn.unsa.ba/b/wp-content/uploads/2021/03/02-PozicijskaStudija_MIP_BiH_260221.pdf

[13] United Nations, "Mitigating the impact of the COVID-19 pandemic on the learning of children and youth in Bosnia and Herzegovina: rapid assessment of the situation and needs - education in Bosnia and Herzegovina Phase II"; available at: https://bosniaherzegovina.un.org/sites/default/files/2020-10/RNA%202%20Faza%20II_BHS_final.pdf

[14] United Nations, "Mitigating the impact of the COVID-19 pandemic on the learning of children and youth in Bosnia and Herzegovina", p. 21.

in the amount of 14,775,853 BAM[15]. Reductions in the budget for higher education were made on budget items that were not used during the suspension of teaching in schools (transportation costs, utility costs, small inventory procurements, contractual services, renovation and investments in infrastructure, etc.)[16].

3.2 Ways of distance learning support and trainings conducted for lecturers at HEIs

Information about the specific support and training conducted at the Higher Education Institutions was obtained through surveys with lecturers and representatives of the Higher Education Institution and interviews with experts , while surveys with students provided insight into additional relevant aspects.

When it comes to technical support for remote teaching, only slightly more than half of the lecturers (55.1%) confirmed that, in addition to instructions for using the software, they also received this type of support in case of issues arising. A third of lecturers (33.3%) stated that they received instructions, but did not have the opportunity to contact a professional if an issue arose. A minority of lecturers (11.7%) reported that they received neither support nor instructions (6.2%) or they weren't aware they had it at disposal (5.4%)[17]. It is evident from the above that the instructions were mostly delivered, but that a significant number of HEIs should work on hiring experts in the field of digital educational technologies who would be in charge of continuous support for the teaching staff.

When it comes to the development of pedagogic-methodical competences, the answers received from representatives of the Higher Education Institutions and lecturers differ. The representatives of the Higher Education Institutions state that they had trainings provided and that the most frequently used modality was the exchange of good practices among colleagues (a total of 13, or 68.4% of the interviewed representatives stated this). Furthermore, 8 representatives (42.1%) stated that easily accessible materials were delivered in the form of specialized literature and educational videos, and 4 representatives (21.1%) also stated that trainings led by experts in the field of distance learning were organized. Only 2 representatives of higher education institutions (10.5%) stated that they have not paid attention to the improvement of this segment so far.

However, the percentages are lower when reported by lecturers for the first two activities. Thus, only 42.8% of them state that an exchange of good practices was organized, and 31.1% that materials in the form of literature and videos were delivered. On the other hand, the relative number of lecturers who stated that they had expert lectures on the subject of distance learning is even slightly higher (23.6%) than the number of representatives of the Higher Education Institutions. Unfortunately, as many as 30.3% of lecturers state that the Higher Education Institution has not taken any steps to improve pedagogical-methodical competences in terms of distance learning.

The number of lecturers who state that they are satisfied with the support of the Higher Education Institution when it comes to the development of professional pedagogical-methodical competences for teaching at a distance is not negligible. Specifically, 14.4% of them stated that they were completely satisfied with this, and an additional 29.2% said that they were satisfied to a large extent. The most selected category out of all the offered was 'moderately satisfied' (29.9% of lecturers). It can be said that every fourth lecturer was generally dissatisfied with the support of the Higher Education Institution in this segment, with 17.6% of them stating that they were satisfied 'to a lesser extent', and 8.7% that they were 'not at all satisfied'.

[15] *Ibid*.
[16] *Ibid*.
[17] More details on the use of specific software solutions can be found in the UNESCO *Assessment on the quality of distance learning in higher education in Bosnia and Herzegovina during the COVID-19 pandemic*.

Moreover, the majority of lecturers perceive themselves as pedagogically and methodically competent for lecturing in distance learning modality. Admittedly, a smaller number (13.6%) state that they have completely mastered the necessary pedagogical and methodical knowledge and skills, but more than half of the respondents (50.1%) believe that they have mastered these competencies to a large extent. Furthermore, 30.7% state that they have mastered them moderately, 4.1% to a lesser extent, and only 4 lecturers (0.5%) claim that they did not master pedagogical-methodical competencies for distance learning at all.

However, students gave a slightly different assessment. When asked how many lecturers demonstrated good pedagogical skills, thanks to which online lectures and other online activities were interesting and effective, 11.8% stated that all lecturers demonstrated this, and 27.1% that most lecturers did this. Every fourth student (25.9%) stated that approximately half of the lecturers from their study program demonstrated such competencies, and the most frequently selected category was that 'only a minority of lecturers' (29.5%) demonstrated this. Finally, 5.6% of students believe that none of the lecturers demonstrated these competencies.

On the other hand, lecturers' assessments of their own pedagogical competences are more consistent with students' assessments of their ability to cope with digital technology and the competent use of distance learning platforms. Specifically, 16.4% of students believe that 'all lecturers on the study program are competent', and even 44.7% believe that 'most of the lecturers' are. An additional 21.9% believe that approximately half of them are, 15.7% that they are a minority, and only 1.4% believe that none of the lecturers have mastered the technical competencies for distance learning.

The above-mentioned data make for a probable hypothesis that a large number of lecturers **equated technical competences, that is, navigating software tools and multimedia aids, with pedagogical-methodical competences.** This seems even more likely when it is known that a large number of lecturers (41.2%) did not receive any feedback on the quality of the delivered teaching and that only 40.5% of the students stated that, as the main users of the teaching process they were able to provide anonymous feedback on the quality of the teaching. In addition, a significantly larger number of lecturers were largely or completely satisfied with the teaching (total 68.6%), which is significantly more than the number of students who thought that the teaching was mostly or very good (47.2%). **In other words, it is likely that a large number of lecturers are satisfied with their pedagogic-methodical competences when they deliver lectures in a form that is close to what they would do under normal conditions at a physical location**. Good examples of how to improve the situation existing are provided by the University of Sarajevo, which addresses shortcomings in the education of university lecturers and in the standard situation with the TRAIN program[18], but has also established a dedicated education *Praksoteka*[19] for distance education.

Given the fact that the vast majority of lecturers surveyed (71.1%) weren't at all experienced with forms of distance learning before the COVID-19 pandemic as well as that additional 23.1% taught courses in which only certain elements relied on the online mode of lecturing (e.g. discussion groups, online materials), it is clear that trainings that would improve the necessary competencies for distance learning are an imperative. The next chapter records the aspects for which dedicated education would be particularly useful.

3.3 Needs of lecturers for dedicated education and expert support

Information about lecturers' needs for dedicated education was collected primarily through surveys. The surveys mostly contained closed-ended questions examining the satisfaction of individual aspects of interest. Surveys also included questions with open-ended answers which inquired the lecturers, representatives of the Higher Education Institutions and students on the types of education, necessary software, and other conditions which would improve distance learning. Additional insights were gained through interviews with experts.

Technical aspects of teaching and minimum digital competence of lecturers

[18] https://fin.unsa.ba/pocetak-realizacije-train-programa-u-akademskoj-2020-2021-godini/
[19] https://www.unsa.ba/en/node/4674

When it comes to the strictly technical aspects of teaching[20], the partly encouraging data is that slightly more than half of the lecturers surveyed (51.8%) stated that they had no problems of this kind. **However, there was a significant number of lecturers facing issues with: Internet speed (29.4%), lack of quality auxiliary multimedia equipment (cameras, microphone, headphones) (24.0%), lack of specialized software for editing audio-video recordings (20.5%) or outdated hardware, i.e. inadequate computers (20.4%).** Therefore, there is an obvious need for observing the conditions at the Higher Education Institutions in the forthcoming period and working on providing the necessary technical conditions for distance learning.

In addition - although it was not possible to examine this directly with this study precisely because an online survey was used - it is assumed that all lecturers are used to using basic digital tools (e.g. using e- mail, working in a set of general office software). However, since a **total of 39.0% of students believe that approximately half of the lecturers, most of them or even all lecturers in their study program leave a bad impression in handling digital technology and using various platforms**, it would be necessary to examine basic digital literacy at all HEIs and, if necessary, provide training so that all lecturers reach the minimum standards - which also need to be determined.

Pedagogical and methodological aspects of teaching

As presented in the Introduction, **distance learning has a number of peculiarities that need to be addressed in order for such teaching to be carried out with quality. It is certainly not sufficient to copy the content and method of traditional lectures and exercises to the online conference software**. In addition, viewed at the global level, university teaching is increasingly moving away from the classic *ex cathedra* lecture, especially during the pandemic (e.g. flipped classroom approach)[21], but we do not have empirical data on changes for Bosnia and Herzegovina. In any case, in order to give recommendations on the necessary educations, it was logical to look at the specific teaching activities carried out remotely during the pandemic period.

The results of surveys with lecturers and students show that **by far the most common activity was holding online lectures/exercises via conference software: 92.6% of the surveyed lecturers mentioned this type of activity, and 78.1% of the students stated that most or all lecturers in the study program worked in this manner**. On the other hand, although it is well known that the delivery of pre-recorded lectures is an extremely effective activity that allows for asynchronous monitoring of classes[22] - which indeed greatly helps students who face issues with unreliable and slow Internet connection (estimates based on collected data say that approximately between 7% and 28% students involved in one study program in BiH faced these issues) or with other circumstances during the pandemic that prevent them from attending an online lecture that is conducted live - **the number of lecturers who delivered recorded lectures is much smaller. Namely, 39.2% of lecturers state that they worked in this modality, while only 22.9% of students claim that all or most of the lecturers delivered recorded lectures in their study programs**. On the other hand, as many as 64.2% of students claim that only a minority (35.5%) or none of the lecturers in the study program (even 28.7%) did this.

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[20] Analyses and conclusions related to specific software tools are presented in the UNESCO *Assessment on the quality of distance learning in higher education in Bosnia and Herzegovina during the COVID-19 pandemic*.

[21] More details on the flipped classroom in higher education and its effectiveness during the pandemic can be found in: Al-Samarraie, H., Shamsuddin, A., & Alzahrani, A. I. (2019). A flipped classroom model in higher education: a review of the evidence across disciplines. *Educational Technology Research and Development*, 1-35. and Beason-Abmayr, B., Caprette, D.R., & Gopalan, C. (2021). Flipped teaching eased the transition from face-to-face teaching to online instruction during the COVID-19 pandemic. *Advances in Physiology Education*, 45(2), 384-389.

[22] https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000889 The recommendation to deliver recorded lectures during the pandemic appears as the conclusion of several studies: for example - Coyne, C., Ballard, J.D., & Blader, I.J. (2020). Recommendations for future university pandemic responses: What the first COVID-19 shutdown taught us. PLoS Biology, 18(8), e3000889., Sun, L., Tang, Y., & Zuo, W. (2020). Coronavirus pushes education online. *Nature Materials*, 19(6), 687-687. and Armstrong-Mensah, E., Ramsey-White, K., Yankey, B., & Self-Brown, S. (2020). COVID-19 and Distance Learning: Effects on Georgia State University School of Public Health Students. *Frontiers in Public Health*, 8, 547.

Furthermore, 82.7% of the lecturers claim that they ensured that the literature for the courses is easily available online, while according to the students, this figure is somewhat lower: 70.0% of the students answered that all the lecturers (37.2%) or most of them (32.8%). At the same time, this means that 30.0% of students claim that at least half of the lecturers did not submit the literature.

When it comes to grading online activities (e.g. online colloquia and quizzes, grading discussion group activities, grading assignments that were significantly related to materials available online), 51.0% of lecturers indicated that they graded some online activities for the final grade. This data corresponds to a significant extent to the assessment of the students, of whom 46.4% stated that at least half of the lecturers (or most of them or all of them) did this. It is surprising, however, that this number is still small - 53.6% of students claim that a minority (30.2%) or no one (23.4%) did this in their study program - bearing in mind the fact that the vast majority of classes held during the pandemic were conducted remotely.

Related to the above is a very similar **percentage of students (54.8%) who claim that most (34.7%) or all lecturers (20.1%) in their study program did not organize any additional teaching activities aside from holding lectures and delivering materials** (in the survey, examples of additional activities included: referring to links with additional educational video/audio materials, organization of online quizzes, invitations to discussion on specially created online forums). In this regard, 50.9% of lecturers state that they referred students to other online content within their courses, and 9.0% of lecturers state that they used specialized virtual environments in teaching (e.g. digital simulations). A small number of lecturers also mentioned the creation of special films and tutorials and online presentations of artistic work in the field of music and acting.

All of the above indicates that, considering the great popularity of holding online lectures in real time, it is definitely necessary to hold trainings that increase the involvement of students in them (e.g. by dividing students into smaller work groups, by using e.g. *breakout rooms options* in the Zoom and Teams). In addition, it is necessary to point out the advantages of delivering recorded lectures - and therefore the advantages of adequate video and audio recording and production - which certainly includes familiarization with additional software for processing video and audio data. It can also be concluded that, on average, the repertoire of activities is relatively limited, and it is necessary to expand the horizons through education whereby the repertoire of activities can be performed through the creative use of online resources and tools (from the adequate use of dedicated discussion groups, to referring to online content), and which certainly can and should be scored for evaluation within the course.

Motivational aspects of teaching

However, in order for lecturers' education to have an effect on their later work, it is essential for lecturers to be motivated both to improve their work and to apply what they have learned. **Two-thirds of the surveyed lecturers (69.9%) stated that they are highly (47.0%) or extremely (22.9%) motivated to improve their pedagogical-methodical knowledge and skills regarding distance learning in the future, and almost half of the lecturers (45.7%) stated that they are motivated to a great extent (31.5%) or extremely (14.2%) to include distance learning activities in their courses after the epidemiological situation has improved** to an extent which makes it possible to conduct in-person teaching within the premises of the institution.

The data provided by students meaningfully reflect the motivation of lecturers during the pandemic. 43.2% of students estimated that in their study programs all lecturers (16.4%) or most of them (26.8%) were visibly motivated to invest energy in conducting the best possible distance learning. **On the other hand, a third of the surveyed students (33.6%) claim that a minority of their lecturers (27.6%) or none of them (5.9%) were motivated, while almost every fourth student (23.3%) claims that approximately half of the lecturers showed such motivation** .

All in all, the data show that there is room for increasing the motivation of a large number of lecturers in order to include teaching activities into distance learning modalities and teaching modalities which is still - at the time of writing the report (May 2021) - to a large extent carried out online, but also for the period that comes after the pandemic. Above all, it is necessary to emphasize the nature of modern university teaching, which, despite the pandemic circumstances, was such that distance learning gained more and more momentum, and that the pandemic only accelerated the transition extremely suddenly. It is obvious that a significant number of lecturers in Bosnia and Herzegovina are still not aware of such dynamics in global higher education trends, and trainings that would indicate the importance and prevalence of blended learning are necessary, as well of the courses and programs that are strictly carried out at a distance (such as *MOOC courses, English Massive Open Online Courses*).

Sensitivity of lecturers to students' needs

Given that for the vast majority of lecturers this was their first experience of teaching courses in a remote modality, and that it can be assumed that they tried to copy the traditional way of teaching to a significant extent, the question arises as to how sensitive the lecturers are to the situation in which students were positioned, that is, their needs, which have also changed due to the pandemic. Therefore, it was not clear whether they adapted the expectations from students to the new modality, or whether they had an understanding of the complex emotional and motivational conditions students experience. In connection with this, it wasn't clear whether they adequately planned and implemented their teaching activities – including new forms of communication even beyond the times set for classes.

Responses from students confirmed the prevalence of motivational and emotional defficiencies, as well as that the sensitivity of many lecturers was not satisfactory. Namely, more than one third of students (37.7%) reported that they experienced difficulties during the pandemic to a great extent (26.6%) or extremely (11.1%), and practically another third (32.7%) reported that these problems occured to a moderate degree. **On the other hand, more than half of the students (51.6%) report that the lecturers in their study program did not show understanding for the psychological and emotional challenges faced by the students; of that number, even 22.3% stated that understanding was shown by a minority of lecturers, and exactly 10.0% of students stated that they felt that none of the lecturers on the study program had shown an understanding of the students' conditions.** Of course, it is quite certain that these answers also contain the answers of those students who would exclusively advocate for lowering the criteria in the exams, but their number certainly does not explain the total number of such answers. When it comes to obligations during the semester, a significant number of students believe that their amount was not adapted to the new situation. In particular, 23.5% of students claim that only a minority of lecturers adequately adjusted the amount of obligations in their study program, and there are still 9.6% of those who claim that none of the lecturers did this. Hence, **almost every third student feels overwhelmed by most lecturers**.

On the other hand, **in principle reassuring data is that every second student (51.6%) assessed that all lecturers on the study program communicated with students online professionally and correctly, and another 32.3% assessed that this was the case with most lecturers.** To a significantly lesser extent, there were those who assessed that only half of the lecturers did this (9.0%), a minority of lecturers (6.3%), and none of them (0.9%).

The bigger problem seems to be the organization of teaching. While 28.6% of students believe that all lecturers were well organized and that they followed the lesson plan and set deadlines for tasks that suited the students, the numbers for other categories selected are still relatively large. Thus, 36.4% believe that this was done by the majority, 17.5% by approximately half of the lecturers, 14.5% by the minority, and 2.9% that none of the lecturers on the study program structured the teaching plans well. The lecturers themselves give a more positive picture, where 31.5% believe that they have fully implemented a good distance learning plan (adequate timing of assignments, adequate expectations from students, punctuality of lectures), 51.9% believe that they have done this to a large extent, and 14.8% answered that it worked moderately well. Only 1.6% stated that they poorly implemented the lesson plan, and only one lecturer (0.1%) claimed that he did not implement a good lesson plan at all.

The collected data show that **an unenviable number of lecturers show a lack of understanding of the circumstances in which students find themselves and that a certain number of lecturers have problems with structuring classes in the online mode**. Although, objectively speaking, teaching planning is partly conditioned by pandemic dynamics, students cited obvious problems with establishing reasonable limits on a significant number of subjects and entire study programs (see open answers later in the text). There is also a smaller number of lecturers who do not communicate professionally and appropriately with students. All this speaks in favor of the fact that the educations and trainings organized should also be devoted to these areas.

Digital security aspects

A topic that is relatively neglected in this geographical area, but can be very relevant for the Higher Education Institutions is the topic of the online safety. In addition to the usual phenomena concerning general digital security (e.g. protection against malicious software, adequate archiving of digital materials), the pandemic situation has led to the appearance of completely new phenomena, such as "zoombombing"[23] or a drastic increase in cyber-attacks on universities[24].

The data from the survey with the lecturers indicate a very strong need to educate the teaching staff at the Higher Education Institutions in this area. **Practically half of the respondents (49.0%) admit that they know nothing or only to a lesser extent about the relevant aspects of digital security for teaching**, and another 29.8% claim that they have a moderate knowledge of this area. At the same time, the answers of the representatives of HEIs suggest that at some HEIs (2 public and 2 private universities out of a total of 19 surveyed) trainings were conducted or instructions were given that touched on the topics of digital security. Admittedly, it was mainly about general statements (e.g. *"during the education about online teaching, there was also talk about digital security"*, *"trainings were also organized that included this aspect of work"*), and later comparing data from those public HEIs in relation to the percentages obtained for all HEIs show that there are absolutely no differences. At two private universities, the percentages were slightly better, but the number of lecturers was too small to draw reliable conclusions. Also, there were unequivocal answers that this topic was not discussed (e.g. *"We did not work on this. And it makes sense to talk about digital security as well."*). It can be concluded that trainings in this area are a necessity.

Ethical aspects of digital teaching

The topic of digital security, thanks to the new situation, is very close to the topic of ethical behavior in the use of digital materials, tools and information. The abrupt transition to distance learning has opened up a series of new questions for all participants in the teaching process, and especially for lecturers. Examples of dilemmas are the following: libraries and copy shops are closed overnight, so it is not clear what can be provided to students as literature; licensed software is only available on the campuses of the Higher Education Institutions, so the question arises as to how students can work on those parts of the course from their homes; it is not clear what video materials and presentations lecturers can give to students and how public they can or should be.

The survey among lecturers shows that one in three (33.5%) states that they have no knowledge (8.9%) or only weak knowledge of digital ethics (24.6%). An additional third (36.6%) states that they have certain, moderate knowledge. The responses of the vast majority of the representatives of the Higher Education Institution confirm that this topic has not been approached in a systematic and targeted manner, e.g. *"We didn't introduce these topics, but teachers through their scientific research work must be familiar with the basics of copyright, including the protection of personal information."*, *"In different forms [we introduced lecturers about these aspects], mostly in individual consultations."*, *"All the ethical rules*

[23] See more about the definition of Zoombombing and similar phenomena at: https://www.insidehighered.com/news/2020/03/26/zoombombers-disrupt-online-classes-racist-pornographic-contenti https://www.isc.upenn.edu/security/news/zoombombing

[24] Several sources testify to the increase in cyber attacks on universities during the pandemic https://www.universityworldnews.com/post.php?story=20200717134543848 and https://portswigger.net/daily-swig/bad-education-universities-struggle-to - defend-against-surging-cyber-attacks-during-coronavirus-pandemic

regulated by the legal acts of our institution are valid and are applied to e-teaching as well." In addition, although there were representatives of public HEIs who stated that they had held educations related to the topic, no difference was observed in the answers of lecturers from those HEIs compared to toher HEIs.

At this point, we should emphasize the way in which some of the mentioned dilemmas can be solved to a large extent. Namely, global initiatives and guides for a stronger orientation of educational institutions towards open education, open science and the use of open source digital technologies became more and more present even in the time before the pandemic[25]. The purpose is clear, knowledge should become available to everyone who wants it, regardless of financial challenges. Only recently have there been certain initiatives on this issue at public universities in Bosnia and Herzegovina[26]. The data collected suggest that it would be good to insist on the greater use of open educational resources and to present the advantages of open licenses for own publications, especially at public higher education institutions in BiH. Unfortunately, there is evidence that during the pandemic this has not yet happened even at the global level, but it is certainly the path that higher education is waiting for[27].

Views on the improvement of distance learning from the perspective of participants

As already announced, the lecturers, as well as the representatives of the Higher Education Institutions and the students, in the form of open answers stated what they think needs to be done in order to provide better quality distance learning in the future. The received answers were grouped into categories in accordance with the principles of thematic content analysis, and then each answer was coded. The answer was not mandatory for students, so almost two thirds of students (65.3%) did not give an answer that could be coherently coded. Despite the fact that the question was mandatory for lecturers, one in four (24.9%) did not give a relevant answer. All representatives of the Higher Education Institutions answered this question. The content and number of identified categories, which are presented below, differed depending on the examined group (lecturers, students and representatives of HEIs).

When it comes to lecturers' answers, ten categories were identified, and their frequency of occurrence in the answers is shown in Figure 1. There are five categories that were mentioned by more than 10% of lecturers. Leading the way (as many as 31.0% of responses) are statements suggesting the **procurement or modification of the software used, as well as the procurement of licenses for e-libraries or e-literature**. Examples of answers are: *"Procurement of a quality LMS system and training in its use", "Simulation software for working with animals, existing or purpose-built", "software for simulating pathological conditions, software for checking plagiarism, digital images of certain diagnostic slides (e.g. blood smears and bone marrow), software and equipment for digital drawing and writing (tablet and pen)", "It would help to provide plagiarism check software (a need that is not only related to distance learning today)." or "e-library or access to literature in e-format; provide paid access to other platforms (in addition to G-suite), such as: Blackboard, quizlet, etc."*.

More than a quarter of lecturers (26.8%) state that they need **better hardware and multimedia aids**, for which examples are: *"Provision of better quality equipment (computers, headphones, cameras)", "When teaching in remote modalities, it would certainly help me to have newer computer and faster internet connection*." or "*Provision of special cameras for repeated monitoring of classes, use of software with greater multimedia and interaction capabilities...*".

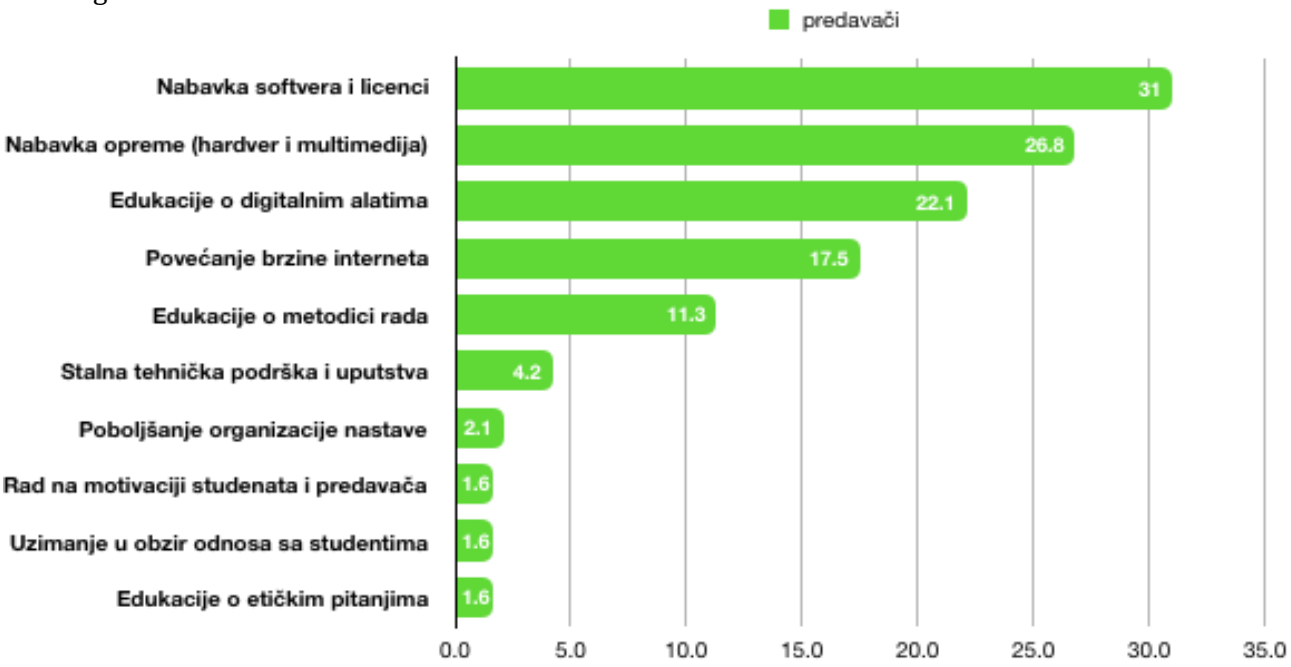
[25] Particularly informative guidelines on the use of open educational resources at the level of higher education can be found in the following UNESCO report: http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications /full-list/guidelines-for-open-educational-resources-oer-in-higher-education/

[26] In 2020, the University of Banja Luka, in cooperation with the EURAXESS Center in BiH, organized a webinar on the topic: https://www.unibl.org/sr-lat/vesti/2020/10/vebinar-na-temu-otvorena-nauka -and-intellectual-property-rights

[27] Data on increased awareness of open educational materials but not increased use can be found here: https://www.insidehighered.com/digital-learning/article/2021/03/18/pandemic-didnt-speed-adoption- open-educational-resources-outlook

Education on the use of digital tools and their advanced options is mentioned by 22.1% of lecturers, e.g. *"Any type of training for the professional use of the Microsoft Teams application and the Moodle platform.", "...training on the use of Moodle every 6 months with explanations of all possibilities - online training with exercises that need to be done.".*

17.5% of lecturers state that the speed of the Internet has increased, both for lecturers and for students. The lecturers thus state: *"Enable a good internet connection throughout the country because it was noticed that some students could not follow classes due to poor internet connections in certain periods.", "...due to the representation of students from different areas of Bosnia and Herzegovina, including the region, a big help would be better 5G network coverage in all areas*" and "*Definitely faster internet*."
Figure 1. Frequency of lecturers' categorized responses to the question of how to improve distance learning.



In the fifth place in terms of frequency of mention (11.3%) **is the need for pedagogic-methodical training for executing distance learning**. The answers that specifically point to this aspect are: *"Trainings on how to motivate students to learn and keep their attention on the subject.", "Trainings that would concern the pedagogy of online classes, but also classes in general, the way of organizing and the structure of online exercises with practical examples for social sciences, tools and applications that could be used to activate students in the realization of exercises, etc.", "Trainings on more advanced online ways of checking knowledge and guiding students for online discussions/debates."*

Also noted (4.2% of responses) was **the need for continuous technical support (e.g. hiring additional experts from the IT sector) and clear and always available instructions on the use of digital tools**. The relevant statements are: *"We had significant support and initial training at the beginning of teaching in an online format, with the great commitment of 2-3 younger colleagues who took over a large part of the organization of the teaching process. However, it would be nice to have some kind of on-call professional IT support in case of difficulties during the lesson and the like.*", "*Some kind of constant support in real time (during working hours).", "More support from the institution, training, better technical conditions and help, so that we are not left to our own devices in such stressful circumstances.*" and "*If possible, at the level of the organizational unit, hire an expert (IT specialist) who would provide constant technical support.*".

Less often, the lecturers touched on the **need to improve the organization of the teaching process** *("Continuity of distance learning, because due to frequent changes in the epidemiological measures of the crisis headquarters, there were frequent changes in the way of working.*", "*First of all, work procedures should be defined, in accordance with the set goals. And work procedures should include possible forms of*

teaching implementation (recorded lecture, lecture via video platform, lecture in the classroom, ...) and how it is implemented. It is very important that both students and teachers know the rules of the game and not that we have situations in which students they expect one thing, teachers can offer something else and the administration expects something else. Only after the rules of the game are defined, then the technical conditions are established (necessary equipment is procured) and teachers are educated about the work.", "*GSuite is excellent, but there are some things that are really aggravating for us teachers, for example, wouldn't it be easier if the records of students were kept automatically, i.e. kept by a program. I installed an additional program that keeps records, but it is really poorly done and has many shortcomings. Also, since we have to take screenshots of classes, it further complicates an already complicated situation. Wouldn't it be better if all of this was automatically managed by GMeet and saved on Drive instead of having to save everything "step by step" on my laptop, which ''died'' because of the amount of material I have. All in all, I think the big problem is that no one asks for the opinion of teachers, etc. I have a feeling that applications to programs are made by people who have never stepped into a classroom (not as students, but as teachers).*"). 1.5% of lecturers also mentioned **the need to work on the motivation of both students and lecturers, taking into account the students' point of view in the education process, and education in terms of ethical issues** (e.g. copyright and digital rights, rights and obligations of participants in the scientific process, *''Education related to data security and exam integrity assurance, exam software that ensures exam integrity"*,). Finally, there were responses that indicated special needs (e.g. "*Digitalization of all bibliographic units in syllabus.*").

The following illustrative answers can be singled out, which contain several relevant aspects:

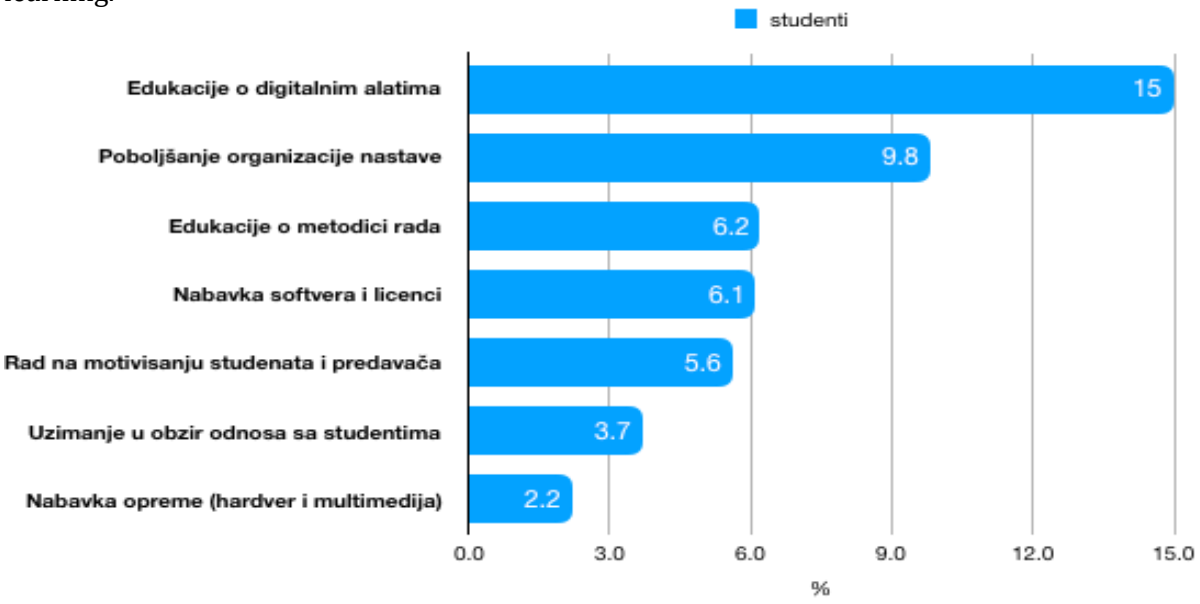
- "*Targeted education that would allow me to develop an online course with the help of a mentor through the example of one of my courses. Conferencing software and recording equipment provided (I have my own, but it would make it easier to have at work).*"
- *"Procurement of appropriate software at the level of the university or the organizational unit itself, which enables holding meetings with an unlimited duration and number of participants; Acquisition of a license for platforms such as exam.net, where the work of students during the exam can be monitored more than, for example, in comparison with google forms and on in this way, at least a little reduction in cheating attempts. Assuming that there will be an insistence on reducing working from home and coming to work when and if online classes are still held in the future, it would be necessary to acquire computers/laptops for all employees, and to provide adequate space for holding online lectures (it is difficult to hold a lecture in the office with 4 other people working there).*"
- " *In order to be able to hold higher quality classes and work with students remotely, it is necessary to change the established approach to learning. On one side approach of the professor, and on the other side approach of the student. It is necessary for the student to study certain areas much more independently, because, at least in my experience, not all students are concentrated during online classes and there is less and less discussion and questions (as the semester progresses). The acquisition of "electronic" whiteboards with the simultaneous possibility for the professor to monitor each individual student on the video screen would be useful, which again is almost impossible for a large number of students. Technical aids and associated software such as smart (digital) pens would certainly improve the lecturer's presentation, especially in that part of the course where numerical assignments are in question. Simulation software that would be made available to students would also enable a different approach to teaching, i.e. by assigning appropriate tasks, the student would learn in the given course through the example of concrete problem solving.*"
- *"1. Ensuring better technical conditions, [such as]: faster internet, built-in camera and microphone (I bought it for myself at the beginning of the pandemic), tablet and applications for communicating graphics, sketches and written formulas in real time 2. Advanced licensed LMS platform such as Canvas and/or Moodle. EXPLANATION: At the beginning of the pandemic, I used the Moodle platform (had previously installed it), and for synchronous virtual lectures the Zoom application. Moodle offers numerous benefits, and I invested a lot of time and energy in preparing lectures, quizzes, workshops, forums, chats, etc. For technical reasons, I cannot use Moodle in the fall semester 2020/21, and a lot of materials stored on Moodle have become unavailable. I mostly*

regret the defined learning outcomes for individual lessons. This semester I am using MS Teams, but many of the advanced options in this application (which Moodle has) are not available, or I did not have time to learn them, because I have a lot of classes and training was not provided."

- *"When teaching remotely, it would definitely help me to have a newer computer and a faster Internet connection. Most of the new knowledge I gained was through an informal exchange of experiences with my colleagues. However, I received a video from the University about installing and using the Google Classroom platform. Since I have a family with children (who attend the lower grades of elementary school), it is often stressful for me to organize the conditions for an audio-video environment in my apartment. I noticed that my students also perceive distance learning as stressful, especially when there is some kind of examining involved and certain technical conditions and procedures must be met in order for them to submit their papers.''*

When it comes to students' answers, the number of identified categories was less, seven. In Figure 2, it is noticeable that the percentages were significantly lower compared to lecturers, as well as that the order of frequency of the mentioned categories, which occurred more often among lecturers, also differs.

Figure 2. Frequency of students' categorized responses to the question of how to improve distance learning.



Thus, students most often give recommendations to **organize education on the use of digital tools** (15.0%), for both lecturers and students, and that it is necessary to work **on improving the planning and organization of classes** (9.8%). For example, students state: *"Teaching should take place as long as it would take place in the premises of the faculty, nothing more or less."*, "*I think that professors and assistants should be more aware of the situation we are in and that if we are at home and not us not going elsewhere doesn't have to mean that we don't have other obligations and they should overwhelm us with extra work that isn't normally planned, especially when it comes to breaking the schedule for lectures and exercises that sometimes last even in the afternoon.*" or *"...there are just too many subjects in the year, too many notifications, at any time of the day or night.*" In this context, the suggestion that **the recorded lectures should be available** was often mentioned (e.g., *"Agree that after the class the recorded lectures remain and can be viewed.*"). These were followed by recommendations to organize **training on working methodology in an online environment** (6.2%), and **to procure certain software and licenses for them, as well as access to other digital services such as bibliographic databases** (6.1% of students). When it comes to this, contradictory proposals were also observed: "*Use one platform for all subjects.*" vs. "*Use multiple software and platforms for work*". **The added work on motivating lecturers and students takes fifth place** (5.6%), e.g. "*I believe that assistants and professors need to be more interested in teaching us. Most of them give a maximum of 10% of themselves to explain, while they demand 100% from us.*" or "*This is perfectly fine, it is only important that there is interest and willingness on the part of the teacher, and in that way the students will be motivated and willing to work.*" Less

expressed, but still recorded recommendations refer to the fact that lecturers **should take into account students' points of view and opportunities** with more interest (3.7%) (e.g. *"More interest in student questions and problems*"), and that **additional hardware and multimedia should be procured.** (2.2%).

The following are two answers that illustratively describe students' observations, stating at the same time several relevant aspects:

- "*Some professors should have additional training in handling the online platform, as well as in the pedagogical approach, i.e. how to make their lectures online interesting, and not just read the text from the presentation. It would help if we had more educational videos, more professors who turn on the camera during lectures so we can see if they want to show us how to do something, etc.*"
- "*Educate professors about technology, software and some other teaching possibilities, and not just using power point, with textual slides, eventually some image and their presentation which consists entirely of reading the powerpoint materials. Professors generally come without any excessive preparation for teaching or the desire to work. The literature is mostly not shared or forwarded, and we should refer to books from the 1990s. Which means that they really need to devote themselves to the creation of literature that will follow modern times, and not to present identical presentations to students from generation to generation..*"

Finally, the representatives of the Higher Education Institutions **equally prioritize the need for pedagogical and methodical education** (e.g. "*Education on pedagogical methods of online teaching*", "*What is missing in current online learning is pedagogical education of teaching staff for this new type of teaching. Access to the student via online learning is different than 'face-to-face'*", "*Educations/improving pedagogical-methodical competences*", "*Educations related to ways of conducting online classes in terms of didactic improvement with an emphasis on student activity*") and the **need for equipment procurement and infrastructure improvement** (e.g. "*improving information systems for conducting online classes and providing the necessary software applications*", "*The University also needs better hardware support and a fast connection to the Internet.", "Procurement of cameras and graphic boards.", "Procurement of appropriate equipment (and software) for all employees and all areas.", "Additional hardware such as several Multiboards and new 360-degree web k amer with active monitoring of the speaker.*"). Other needs that appeared in previous analyzes were also mentioned: *"...regulating the way of recording online classes, regulating the rights and obligations of students related to online classes*". A representative of a public university stated the existence of a strategic plan that would establish a resource center for eLearning, with the aim of achieving high-quality, inclusive and accessible education.

All of the above indicates that the majority of participants in the teaching process are well aware that it is necessary to work on the development of competencies for distance learning. To a certain extent, the priorities they set differ, but at the same time there are similarities. Here it is important to note once again that needs assessment always depends on how well the assessor really knows the domain. Given that there is a rare number of lecturers who have had previous experience with performing in distance learning, as well as the fact that, by the nature of things, different participants in the process (lecturers, students, representatives of the Higher Education Institutions) have different perceptions of what is a priority, it should be borne in mind that for a full overview of the situation, it would be necessary to include direct external evaluators who have proven experience in distance learning. Until then, it remains a probable hypothesis that many lecturers are not able to see possible weaknesses in the pedagogical-methodical approach and in regular circumstances, let alone when it comes to the specifics of distance learning and the enormous opportunities it offers at hand.

4. RECOMMENDATIONS

Based on the presented analyses, there are concrete recommendations for activities that would address the needs of lecturers at the HEIs of Bosnia and Herzegovina in Bosnia and Herzegovina for the purpose of conducting higher quality distance learning:

- Governments in Bosnia and Herzegovina should make amendments to the laws on higher education, where clear and precise instructions on the specifics related to distance learning would be defined, especiall in relation to the necessary pedagogical and technical requirements that HEIs must fulfill for distance learning, as well as the necessary minimum qualifications of teachers and lecturers for distance learning.
- In their statutes, HEIs should create clear criteria and standards on the necessary pedagogical and technical requirements that HEIs must fulfill for distance learning, as well as define the necessary minimum qualifications of teachers and lecturers for distance learning.
- Governments in Bosnia and Herzegovina should suspend the trend of reducing budget funds for higher education and initiate a process in which the needs of HEIs would be individually mapped for the establishment of complete digitization of all teaching processes.
- It is suggested, especially for public universities, to consider the establishment of special sub-organizational units that are common in world universities, usually called Center for Digital Education or Center for Digital Teaching and Learning. Ideally, they would also be staffed by IT associates who would provide continuous technical support (specialized software and hardware support, support in the realization of multimedia projects) and experts in distance learning pedagogy whose tasks would be to organize and conduct education, ensure fulfillment of minimum teaching quality (technical conditions and methodical approach). If it is not possible to permanently hire new staff, consider hiring external collaborators.
- Ministries with competences in higher education, when developing strategic frameworks for the improvement of higher education, should consider the possibility of introducing media and information literacy through horizontal and vertical integration of all teaching processes.
- The competences development plan for distance learning should become a systematic endeavor within quality assurance at each HEI, and not a reaction to individual events. In 2021, distance learning makes up for a necessary element in higher education regardless of pandemic conditions.
- Each HEI would have to assess the basic digital literacy of its lecturers and students. The results of this research suggest that there is also a smaller number of those who have not mastered basic digital competencies. In addition to training aimed at reaching absolute minimum (e.g. use of email, basic navigation on digital platforms, knowledge of recording and uploading online educational materials for lecturers), it is necessary to define this minimum.
- Education that would be organized with the aim of improving specific knowledge and skills can have different formats: workshops led by distance learning experts, sharing of good practices among lecturers, linking to specialized pedagogical materials. In any case, the pedagogical-psychological education of lecturers should become a regular practice of the Higher Education Institutions, and digital aspects should be included as a separate segment.
- When it comes to the priority contents of education, it would be optimal to carry out an external expert evaluation at the HEIs with examination (through surveys, focus groups and interviews) of lecturers and students. It is very important to keep in mind that education should not always be generic, but it is necessary to pay attention to the specifics of different fields (e.g. mechanical engineering and physics may require different approaches compared to education in the field of acting or music).
- In trainings, it is necessary to familiarize lecturers with a very wide range of pedagogical and methodological possibilities that open up once elements of distance learning are included - from the advanced use of various technologies, the use of various Internet sources in teaching, to proven effective methodological approaches such as flipped teaching (eng. flipped classroom) where live meetings (online or on location) are used to discuss what has been read/watched, and not for the classic type of lecture. Special focus should be on the value of blended learning, which combines on-site meetings and distance activities, which will represent the dominant form of teaching in higher education.
- Pay attention to the specifics of individual fields, especially when it comes to subjects that require practical forms of teaching. The specific ways of improvement may be different for different areas.

- Insist on the delivery of pre-recorded lectures, for which trainings on how to ensure good quality audio and video recordings are highly recommended.[28]
- Pay special attention in trainings to the problematics of increasing work motivation. On one hand, this can be done by showing the diversity of teaching repertoire and creative options. On the other hand, it is necessary to think about extrinsic incentives, e.g. at the HEI, conducting or attending training courses on digital teaching could be evaluated in internal documents for the selection of professions. Furthermore, organize trainings with students who will also be presented with how much they can, with their attitudes and activities, contribute to the creation of adequate motivation in the course, for which they can use the sharing of good student practices among students (methods of communication, proactive engagement).
- Hold trainings in the field of psychology with lecturers who will emphasize the emotional needs and real challenges that students face during distance learning, whether the pandemic is ongoing or not. Focus special attention on the way of communicating with students, who must maintain a professional and correct character, but also one that shows adequate empathy. In particular, point out the importance of anonymous and constructive feedback on teaching performance. Consider also appointing student representatives on different study programs who would communicate with the management of the Higher Education Institution and convey their experiences during the semester.
- Although in this research, due to the limitations of the survey, no question was asked about the mental health of the lecturers themselves, it is very much at risk, as evidenced by a series of studies around the world[29]. The trainings that will be conducted should point to the mental hygiene that should be maintained, and note to people in administrative positions that it is necessary to reduce administrative tasks to a smaller extent.
- In these trainings, make sure to emphasize the necessity of planning, implementing and communicating in a timely manner with students an adequate structure of teaching and student obligations. From the position of the Higher Education Institution, clearly define the limits that lecturers must comply with (e.g. too long lectures, an excessive amount of assignments in short deadlines). If possible, perform effective weekly arrangements at the level of the academic year - e.g. using group communication applications such as Slack, Mattermost, GoogleChat - with which lecturers can quickly communicate with each other and agree on assignments.
- In order to ensure minimum technical conditions, it would be necessary for each HEI to make a cross-section of the conditions among lecturers and students regarding the availability of fast and stable Internet and the hardware capacities they have. Among the lecturers, make a record of needs in terms of multimedia equipment (except headsets, microphones, cameras, and smart boards and interactive tablets), and consider at least the possibility of concluding promotional contracts and providing discounts in commercial stores if the Higher Education Institution is not able to directly ensure the purchase.
- When it comes to software, especially for public HEIs, it would be expedient to insist much more on the use of open source software solutions, wherever possible. Open source solutions are satisfactory in a large number of cases, and saving funds can be redirected to the employment of necessary experts in system maintenance, technical maintenance (e.g. servers) and for

[28] for example compare similarities and differences in approaches for mechanical engineering https://news.mit.edu/2020/teaching-mechanical-engineering-in-a-pandemic-0918 and health sciences www.tandfonline.com/doi/pdf/10.1080/10872981.2020.1854066? needAccess=true

[29] Examples of studies that found deteriorating mental health of university lecturers around the world: de Oliveira Silva, D. F., Cobucci, R. N. O., Lima, S. C. V. C., & de Andrade, F. B. (2021). Prevalence of anxiety, depression, and stress among teachers during the COVID-19 pandemic: Systematic review. medRxiv.; Jain, A., Baviskar, M. P., Narawne, S., & Kunkulol, R. (2020). Is the medical teacher's mental health neglected? Effects of perceived student attitudes and behaviors on mental health and lifestyle of teachers in a rural university of western Maharashtra in India. *Journal of Family Medicine and Primary Care*, 9(12), 6046.; Urcos, W. H. C., Urcos, C. N. C., Ruales, E. A. B., & Urcos, J. F. C. (2020). Stress, Anguish, Anxiety and Resilience of University Teachers in the Face of Covid-19. *Utopía y Praxis Latinoamericana*, 25(7), 453-464.; Akour, A., Ala'a, B., Barakat, M., Kanj, R., Fakhouri, H. N., Malkawi, A., & Musleh, G. (2020). The Impact of the COVID-19 Pandemic and Emergency Distance Teaching on the Psychological Status of University Teachers: A Cross-Sectional Study in Jordan. *The American journal of tropical medicine and hygiene*, *103(6), 2391-2399.*

educational purposes. Consider the use of commercial software for certain activities (e.g. exam setting). In any case, when choosing software solutions, convene an advisory committee represented by proven experts in the field of distance learning. Pay attention to individual areas, e.g. health sciences and other more practical fields, which may entail very specific requirements (e.g. simulation software and virtual environment).

- Resolve ethical dilemmas when it comes to materials that are shared, especially original author's materials, by promoting the principles of Open educational resources (OER) at HEIs. Consider a greater connection between HEIs both in Bosnia and Herzegovina and in the region, in order to develop common high-quality resources.
- Include scoring systems in courses provided, e.g. scoring participation in discussions, written papers and projects submitted and evaluated online, occasional knowledge quizzes.
- Provide lecturers with materials on minimum digital security, and periodically organize trainings on various topics (e.g. safe archiving of data and materials, online security).
- As the work of a lecturer at the Higher Education Institution in Bosnia and Herzegovina is usually related to scientific work, special attention should be paid to the principles of open science and various new modes of cooperation with other scientific institutions in the region and around the world.

Appendix 1 – Interview protocol

Interview protocol for the UNESCO "Assessment On The Needs Of Teachers And Lecturers In The Implementation Of Distance Learning In Higher Education In Bosnia And Herzegovina During The COVID-19 Pandemic“

Thank you for your participation.

We are conducting this interview in order to obtain information about distance learning in higher education in Bosnia and Herzegovina, where we are particularly interested in how to improve it. The purpose of our conversation today is to hear about your experience and thoughts on this topic. Your contribution will greatly help us to understand and summarize the data on existing activities, practices, as well as the shortcomings of distance learning in Bosnia and Herzegovina.

All your comments are strictly confidential and you will not be identified in any way in any report.

[NOTE: Write down the name, position and full name of the institution]

Can we record this conversation?

Q1. What are the main obstacles of teachers/lecturers in the implementation of distance learning in higher education in Bosnia and Herzegovina that affect the high quality of distance learning in terms of i) the legal, financial and administrative environment, ii) the necessary pedagogical and technical needs in the implementation of distance learning , and iii) the minimum qualifications of teachers/lecturers in terms of the necessary capacities for the implementation of distance learning?

1. In terms of the needs of teachers and lecturers, what is the biggest challenge for the implementation of distance learning, A) legislative, financial and administrative environment; or B) lack of pedagogical and technical conditions of institutions in the implementation of distance learning?

[Regardless of answer]

Please clarify?

2. What are the specific issues teachers and lecturers face in the implementation of distance learning in higher education and are they related to legislative, financial and administrative circumstances in Bosnia and Herzegovina?

3. What are the specific issues teachers and lecturers face in the implementation of distance learning in higher education and are they related to the pedagogical and technical needs of institutions of higher education in Bosnia and Herzegovina?

4. In your opinion, what should be the minimum qualifications related to the necessary capacities of teachers and lecturers in the implementation of distance learning in higher education in Bosnia and Herzegovina?

5. Could you please share with us the documents, instructions, regulations that you think could contribute to this study?

Q2. What types of training are provided to teachers and lecturers for the implementation of distance learning in higher education, and what types of training do you think should be provided in the future?

1. Are you familiar with the types of training provided to teachers and lecturers for the implementation of distance learning at higher education institutions in Bosnia and Herzegovina?

PROBE: Who provided and conducted the trainings?

PROBE: How useful do you think they were?

2. In your opinion, what type of training will be necessary for teachers and lecturers for the successful implementation of distance learning in higher education in Bosnia and Herzegovina?

Q3. What are the specific needs in terms of ICT equipment, network connectivity, training for the use of ICT equipment and applications, methodological training on the production of digital and creative content that teachers and lecturers currently lack in order to implement distance learning in higher education in Bosnia and Herzegovina?

1. To the best of your knowledge, what are the specific problems related to ICT equipment, network connectivity, training for the use of ICT equipment and applications for teachers and lecturers for the implementation of distance learning in higher education in Bosnia and Herzegovina?

2. To the best of your knowledge, do teachers and lecturers lack training on methodological approaches in distance teaching and the creation of digital content for successful distance teaching in higher education in Bosnia and Herzegovina?

Appendix 2: Surveys for students

United Nations | COVID-19 Response | UN COVID-19 Response and Recovery Fund

Survey on the quality of distance learning and the needs of lecturers in performing distance learning on higher education institutions in Bosnia and Herzegovina

Dear students,
we kindly ask you, by filling out the survey on your impressions of the online/distance learning, to become a part of the survey conducted by UNESCO, within the project which purpose is to create more quality education during and after COVID-19 crisis (partners on the project being UNICEF and ILO - International Labour organization). We are aware you participated in multiple surveys throughout this period, and having this in mind filling out this questionnaire will not take more than 10 minutes.

Each of your responses are significant and important, due to the fact that conducting online classes differs in each higher education institution and each study program with its own specific requirements. This survey is **anonymous,** and gathered data will be used exclusively for the purposes of analysis of the conditions and creating strategies for more quality education in a healthier future.

Institution information

At which higher education institution do you study? (answers offered)

Which study program are you studying?

Which study cycle are you studying at?

What year are you studying?

Assessment of the general quality of online teaching during the pandemic

Based on your personal experience, and taking into account that you had different subjects, lecturers (professors and assistants) and activities, how would you rate the general quality of online teaching in your study program in the period since the start of the COVID-19 pandemic?

1 - very bad, 2 - mostly bad, 3 - neither good nor bad, 4 mostly good, 5 very good

Different aspects of lecturers' work for which student evaluations are relevant (the response scale from 1-5 describes the relative number of lecturers from "none" to "all", except in cases where another type of scale is specified)

(type of software and distribution) Which of the mentioned software solutions did your lecturers use as part of online teaching activities in your study program?

Moodle, Canvas, Blackboard, Microsoft Teams, Google Classroom, Zoom, Google Meet, Skype, Viber, WhatsApp, 3 additional fields (something else, specify what)

(IT competence) The lecturers gave the impression that, overall, they are good with digital technologies.

(technical competence in using DELT tools) The lecturers gave the impression that they competently use specialized online platforms for teaching and learning.

(perception of specific pedagogical knowledge) The lecturers demonstrated objective pedagogical knowledge that made online lectures and other online teaching activities interesting and effective.

(perception of lecturers' motivation) Lecturers were visibly motivated to invest energy in conducting online classes.

(use of additional materials) In addition to lecturing and delivering materials, the lecturers also used additional online materials and activities that helped in acquiring knowledge (eg additional educational video/audio materials, online quizzes, invitations to discussion on specially created online forums).

(recorded lectures) Lecturers delivered recorded video or audio lectures that could be viewed/listened to again later.

(availability of literature) The lecturers provided the necessary literature online, which was easily accessible to everyone.

(use of online grading system) In addition to classical grading, lecturers conducted grading of online activities (eg online colloquia, assessment of discussion group activities, assignments that were significantly related to materials available online).

(organization) When it comes to the dynamics of online classes, the lecturers were well organized and followed a plan that suited the students as well, taking into account all the circumstances.

(communication) Online communication with lecturers was professional and correct.

(workload) The lecturers gave us an adequate amount of duties, taking into account the specificity of the situation and the total duties we had in all subjects.

(mental health of students) The lecturers showed an understanding of the complexity of the situation and the special emotional and psychological challenges that befell us.

(counseling) Our higher education institution offered/offers online psychological counseling that students can refer to. (yes/no/don't know)

(technical problems) Estimate what percentage of your colleagues from the study program had frequent and objective technical problems with following online classes (eg unavailability of computers or mobile devices, very common problem with internet connection).

(support) If you used software that was unknown to you until then, did you receive detailed and clear instructions on how to use it and support from the institution in case you do not manage?

answer scale **: 0- No, 1- Yes, but we received only basic instructions, without the option to turn to someone for help 2- Yes, we received instructions and/or support from the competent service that we could turn to for any problems.*

(QA) As students, we were invited to point out to the responsible persons at our study program/faculty what were the good and bad sides of online teaching as it was implemented in our study program.

Not at all; Yes, but those were the initiatives of individual professors/assistants; Yes, students had the opportunity to adequately point out the good and bad sides of the entire study program

Previous experiences with distance learning

Which of the following describes your personal experience with online teaching at the university before the COVID-19 pandemic?

- *I attended courses that were conducted entirely online.*
- *I attended courses that had a significant number of online elements (eg posting materials, discussion groups, specific online content).*
- *No online experience or only email communication with lecturers.*

Current motivation for DELT

Please assess to what extent the online use of digital technologies should be included in the teaching of your study program considering the nature of what is being studied:

- *There is no room for online teaching activities in this study program.*
- *Most of the teaching activities would have to be held with physical presence, but for a smaller number of activities, the online mode is also suitable.*
- *About half of the teaching activities could be done online, but there is a significant number of activities that require physical presence.*
- *A larger number of teaching activities could be carried out online, and for a smaller number physical presence is really necessary.*
- *All teaching activities in the study program could be carried out online using digital resources without losing the quality of teaching.*

Overall, what is your attitude towards the inclusion of online activities (distance learning) in teaching?

Extremely negative, Mostly negative, Neutral, Mostly positive, Extremely positive

Finally, we would like to ask you to provide additional comments regarding the implementation of distance learning in your study program.

- Three aspects that you would single out as particularly negative. (open answer)
- Three aspects that you would single out as particularly positive. (open answer)

Appendix 3: Surveys for lecturers

Survey on the quality of distance learning and the needs of lecturers in performing distance learning on higher education institutions in Bosnia and Herzegovina

Dear lecturers

we kindly ask you, by filling out the survey on your impressions of the online/distance learning, to become a part of the survey conducted by UNESCO, within the project which purpose is to create more quality education during and after COVID-19 crisis (partners on the project being UNICEF and ILO - International Labour organization). We are aware you participated in multiple surveys throughout this period, and having this in mind filling out this questionnaire will not take more than 10 minutes.

Each of your responses are significant and important, due to the fact that conducting online classes differs in each higher education institution and each study program with its own specific requirements. This survey is **anonymous,** and gathered data will be used exclusively for the purposes of analysis of the conditions and creating strategies for more quality education in a healthier future.

Institution information

At which higher education institution are you employed?

In which scientific field do you teach?

General self-assessment of work quality

All things considered, to what extent are you satisfied with how you conducted online classes during the COVID-19 pandemic?

To what extent do you think that online activities are suitable for conducting quality teaching when it comes to your scientific field?

(software) The institution where I work has provided an adequate software platform for the comprehensive organization and execution of online classes.

- *0-No*
- *1-Yes, but it is not optimal software for the needs of university teaching*
- *2-Yes, it is software that fully meets the needs of university teaching*

What software solutions did you use to perform teaching activities in your courses? (Multiple answers are possible)

Moodle, Canvas, Blackboard, Microsoft Teams, Google Classroom, Zoom, Google Meet, Skype, Viber, WhatsApp, 3 additional fields (something else, specify what)

(technical conditions) To what extent did you have the necessary technical conditions for conducting quality online classes (eg high-speed internet, computer equipment)?

(support software) To what extent has the higher education institution provided content instructions for using specialized software for online teaching?

(DELT software competence) To what extent do you consider yourself technically competent for the use of specific software solutions intended for teaching at higher education institutions?

(DELT competence) To what extent do you consider yourself pedagogically competent to perform quality distance learning?

(support from colleagues) To what extent has your institution worked on the development of professional pedagogical competences when it comes to conducting online classes (eg organized exchange of experiences among colleagues, specialized training with engaged experts, available video courses or specialized literature)?

(DELT policy university) To what extent does your higher education institution emphasize the use of digital technology and distance learning in teaching activities?

(motivation for DELT) Which of the following do you think best describes you when it comes to distance learning?

(used the benefits of DELT) Which of the following did you use when it comes to teaching activities during the pandemic period?

- *led live lectures with the help of conference software,*
- *delivered recorded lectures to students, delivered necessary study materials to students,*
- *graded online activities (quizzes, discussion groups, online colloquiums, digital portfolios),*
- *used specialized virtual environments (e.g. digital simulations) in classes*

(evaluation of online teaching - management) In what way were your online teaching activities evaluated by the management of the higher education institution?

(evaluation of online teaching - students) How did you get evaluative information from students about the online teaching activities you conducted?

(knowledge of digital security, licenses) To what extent do you know the relevant aspects of digital security for teaching?

(knowledge of digital ethics) To what extent do you know relevant aspects of digital security (e.g. the possibility of hacking your teaching-related account) and ethics (e.g. licenses to use online materials) for teaching?

(organization) To what extent do you think that you have set a good work plan that both you and the students were satisfied with?

Which of the following describes your personal experience with online teaching at the university before the COVID-19 pandemic?

- *Conducted courses that were conducted entirely online.*
- *Led courses that had a significant number of online elements (eg posting materials, discussion groups, specific online content).*
- *No online experience or only email communication with students.*

Please assess the extent to which the online use of digital technologies should be included in the teaching of your scientific field, given the nature of what is being studied:

- *There is no place for online teaching activities in my field.*
- *Most of the teaching activities would have to be held with physical presence, but for a smaller number of activities, the online mode is also suitable.*
- *About half of the teaching activities could be done online, but there is a significant number of activities that require physical presence.*
- *A larger number of teaching activities could be carried out online, and for a smaller number physical presence is really necessary.*
- *All teaching activities could be carried out online using digital resources without losing the quality of teaching.*

Overall, what is your attitude towards the inclusion of online activities (distance learning) in teaching?

Extremely negative, Mostly negative, Neutral, Mostly positive, Extremely positive

Finally, we would like to ask you to provide additional comments regarding the implementation of distance learning in your area.

- Three specific suggestions for the necessary professional support to make your online teaching better. (open answer)
- Three aspects that you would single out as particularly negative when it comes to online teaching and how they could be solved. (open answer)
- Three aspects that you would single out as particularly positive when it comes to online teaching. (open answer)

Appendix 4: Survey for HEI representatives

Survey on the quality of distance learning and the needs of lecturers in performing distance learning on higher education institutions in Bosnia and Herzegovina

Dear HEI representatives,

we kindly ask you, by filling out the survey on your impressions of the online/distance learning, to become a part of the survey conducted by UNESCO, within the project which purpose is to create more quality education during and after COVID-19 crisis (partners on the project being UNICEF and ILO - International Labour organization). We are aware you participated in multiple surveys throughout this period, and having this in mind filling out this questionnaire will not take more than 10 minutes.

Each of your responses are significant and important, due to the fact that conducting online classes differs in each higher education institution and each study program with its own specific requirements. This survey is **anonymous,** and gathered data will be used exclusively for the purposes of analysis of the conditions and creating strategies for more quality education in a healthier future.

Basic information

At which higher education institution are you employed?

What administrative position do you hold at your institution?

(Previous experiences with distance learning) ***Which of the following best describes your institution when it comes to distance learning before the pandemic?***

- *We have already organized complete study programs that are carried out remotely.*
- *We did not organize complete study programs, but we know that there were courses that were conducted entirely remotely.*
- *So far, we have had neither study programs nor subjects that were conducted entirely remotely.*

(administrative frameworks) ***Without taking into account the state of emergency due to the pandemic here, which of the following best describes your institution when it comes to administrative frameworks related to distance learning.***

- *All teaching activities must be conducted at the institution's physical location or other designated locations with physical presence.*
- *Our acts provide for the possibility of partially conducting online classes (e.g. blended learning) on different study programs.*

- *Our acts provide for the possibility of conducting entire courses or study programs remotely.*

***(digitalization strategy - formal)* Which of the following best describes your institution in terms of formal strategies for the digitalization of the teaching process after the epidemiological situation normalizes?**

- *Currently, we do not consider digitization of the teaching process to be a priority strategic plan, and we have no plans to include it in our strategic documents (vision/mission/strategy).*
- *Digitization of the teaching process is not included in our official strategic documents (vision/mission/strategy), but we are actively working to include it in the priorities.*
- *Our strategic documents (vision/mission/strategy) already clearly emphasize that further digitization of the teaching process is an important priority of our institution.*

***(digitalization strategy - realistic)* To what extent does your institution intend to encourage and support the use of distance learning after the epidemiological situation normalizes?**

- *Not at all, we will insist on returning to the situation before the pandemic.*
- *We're not sure yet.*
- *We will encourage a certain increase in distance learning activities compared to the period before the pandemic.*
- *We will strongly encourage greater digitization of the teaching process.*

***(Promotion of MOOCs)* What is the current status of your institution regarding the introduction of massive open online courses (MOOCs)?**

- *We already offer or have offered MOOC courses.*
- *We have not yet offered MOOC courses, but there are preparatory plans to do so.*
- *We still have no plans to organize MOOC courses.*

***(used software)* Which of the listed software solutions for conducting online classes did your institution provide to its lecturers and students during the pandemic? (Multiple answers are possible, options: - for all students and lecturers- for certain study programs)**

Moodle, Canvas LMS, Blackboard, Microsoft Teams, Google Workspace/G Suite (Classroom, Meet, Drive), Zoom, 3 additional fields (something else, specify what)

***(software reasons)* Please indicate the main reasons why you decided to use the selected software package (eg financial, pedagogical)? (open answers)**

(software, flexibility) ***How much do you insist that all lecturers use identical software solutions?***

- *all study programs and lecturers would have to use the same software*
- *it is recommended that all lecturers use the same software, but flexibility in choice is allowed*
- *we do not insist on uniformity at all and we fully believe that the flexibility of choice is an advantage*

(students' IT issues) ***According to your estimates, what percentage of students at your institution had frequent and objective technical problems with following online classes (eg unavailability of computers and/or mobile devices, very common problem with internet connection)? (0 to 100)***

(students' IT issues - solutions) ***How did you address the problems students had with technology problems (ie lack of devices, internet problems)? (open answer)***

(students with disabilities, issues - solutions) ***Please describe how your institution addressed issues in online classes in respect to students with special needs (eg students with visual or hearing impairments)? (open answer)***

(satisfaction) ***Overall, to what extent are you satisfied with the delivery of online classes during the pandemic at your institution?***

1. *Not at all*
2. *To a small extent*
3. *Moderately*
4. *To a greater extent*
5. *Completely*

(QA) ***Which of the following methods did you use to evaluate the delivery of online classes during the pandemic? (multiple answers possible)***

- *Survey of students, where online teaching is not distinguished from teaching conducted live in the premises of the institution.*
- *Surveying students, with special treatment of online teaching.*
- *Survey of lecturers, in which online teaching was specially treated.*
- *Focus groups and/or interviews with student representatives.*
- *Focus groups and/or interviews with lecturers.*

- *Reports of managers at sub-organizational units and/or study programs (deans, vice-deans for teaching, heads of study programs, quality control services).*
- *Hiring evaluators who are experts in distance learning.*
- *Some other way (describe)*

(technical support) ***Which of the above have you managed to undertake so far at the level of the institution in order to improve the technical conditions for conducting online classes? (multiple answers possible)***

- *fast internet is provided to all lecturers*
- *it is ensured that all lecturers have the necessary equipment for conducting online classes (computer hardware, auxiliary multimedia equipment such as cameras, microphones, headphones)*
- *basic instructions in written or video form on the use of the software have been provided*
- *distance educations were organized for employees on the use of software for conducting online classes*
- *constantly available technical support is provided in case of problems with the use of the software*
- *something else (describe)*

(pedagogical support) ***Which of the above have you been able to undertake so far at the level of the institution in order to improve the pedagogical-methodical competences of lecturers for conducting online classes? (multiple answers possible)***

- *training sessions led by distance learning experts were organized*
- *we made easily available specialized literature and educational video materials on the topic of quality delivery of online classes*
- *we organized the exchange of good practices among employees on our study programs*
- *something else (describe)*

(student mental health) ***Has your institution so far offered free online counseling for students experiencing emotional or work difficulties during the pandemic?***

- *Yes, such a counseling center is already functioning*
- *Still not*
- *(Other)*

(digital security) ***In what ways have you informed your colleagues about the relevant aspects of digital security in teaching (eg the possibility of a hacker attack on accounts related to teaching, secure data archiving)? (open answers)***

(digital ethics) In what ways have you informed your lecturers and students about teaching-relevant aspects of digital ethics (eg rights and licenses for using online materials and sharing personal information, using software to check plagiarism)? (open answers)

(open comments) Finally, we would like to ask you to provide additional comments regarding the implementation of distance learning.

Please indicate here what would help your institution to perform better distance learning (eg what kind of education, procurement of certain software, provision of some specific technical conditions). (open answer)

List three aspects that you would single out as particularly negative when it comes to online teaching during the pandemic at your institution and how they could be resolved. (open answer)

Name three aspects that you would single out as particularly positive when it comes to switching to online classes at your institution during the pandemic. (open answer)

Appendix 5: Information on surveyees

As part of the primary research, data was collected from the following institutions:

1. Agency for Development of Higher Education and Quality Assurance of Bosnia and Herzegovina BiH
2. Ministry of civil affairs of Bosnia and Herzegovina
3. International Business Information Academy Tuzla
4. International Burch University
5. International University Brčko
6. International University Sarajevo
7. International University Travnik
8. Herzegovina – Neretva Canton, Ministry of education, science, culture and sports
9. Sarajevo Canton, Ministry of science, higher education and youth

10. Una-Sana Canton Ministry of education, science, culture and sports
11. West Herzegovina Canton, Ministry of education, science, culture and sports
12. Independent University Banja Luka
13. Pan-European University "APEIRON"
14. Agency for Higher Education of Republika Srpska
15. Ministry of Scientific and Technological Development, Higher Education and Information Society of Republika Srpska
16. The University of Sarajevo School of Science and Technology
17. University 'Herzegovina'
18. University of Mostar
19. "Vitez" University
20. University "Bijeljina"
21. University of modern sciences CKM, Mostar
22. University Džemal Bijedić Mostar
23. Sinergija University
24. University of Banja Luka
25. University of Bihać
26. University of East Sarajevo
27. University of Sarajevo
28. University of Travnik
29. University of Tuzla
30. University of Zenica
31. University of business studies
32. University of business engineering and management
33. Higher Medical School Prijedor
34. Higher School "CEPS-Center for business studies" Kiseljak
35. Higher School Banja Luka College
36. Higher school for finances and accounting Tuzla (FINRA)
37. Higher school for information technologies, economy and entrepreneurship
38. Brčko district government (BiH)