

# ANNALES

*Anali za istrske in mediteranske študije*  
*Annali di Studi istriani e mediterranee*  
*Annals for Istrian and Mediterranean Studies*  
*Series Historia et Sociologia, 33, 2023, 1*





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**Series Historia et Sociologia, 33, 2023, 1**

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Založništvo PADRE d.o.o.

**Založnika/Editori/Published by:**

Zgodovinsko društvo za južno Primorsko - Koper / *Società storica del Litorale - Capodistria*® / Inštitut IRRIS za raziskave, razvoj in strategije družbe, kulture in okolja / *Institute IRRIS for Research, Development and Strategies of Society, Culture and Environment* / *Istituto IRRIS di ricerca, sviluppo e strategie della società, cultura e ambiente*®

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Address of Editorial Board:**

SI-6000 Koper/Capodistria, Garibaldijeva/Via Garibaldi 18  
**e-mail:** annaleszdjp@gmail.com, **internet:** https://zdjp.si

Redakcija te številke je bila zaključena 30. 3. 2023.

**Sofinancirajo/Supporto finanziario/  
Financially supported by:**

Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS), Mestna občina Koper

*Annales - Series Historia et Sociologia* izhaja štirikrat letno.

Maloprodajna cena tega zvezka je 11 EUR.

**Naklada/Tiratura/Circulation:** 300 izvodov/copie/copies

Revija *Annales, Series Historia et Sociologia* je vključena v naslednje podatkovne baze / *La rivista Annales, Series Historia et Sociologia è inserita nei seguenti data base* / *Articles appearing in this journal are abstracted and indexed in:* Clarivate Analytics (USA): Arts and Humanities Citation Index (A&HCI) in/and Current Contents / Arts & Humanities; IBZ, Internationale Bibliographie der Zeitschriftenliteratur (GER); Sociological Abstracts (USA); Referativnyi Zhurnal Viniti (RUS); European Reference Index for the Humanities and Social Sciences (ERIH PLUS); Elsevier B. V.: SCOPUS (NL); Directory of Open Access Journals (DOAJ).

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## STUDENTS' AND TEACHERS' PERCEPTIONS OF EMERGENCY REMOTE TEACHING AND LEARNING IN MONTENEGRIN HIGHER EDUCATION DURING THE COVID-19 PANDEMIC

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### ABSTRACT

*This paper presents the results of the research carried out to determine the perceptions of students (N=377) and professors (N=69) in higher education institutions in Montenegro of remoted teaching and learning during the COVID-19 pandemic. An online questionnaire was used to collect data on: a. perception of basic characteristics of delivered teaching and learning, and b. difficulties encountered by the respondents, as well as their preferences toward face-to-face or online teaching. The survey results show that the respondents' perceptions of characteristics of delivered teaching and learning tend to be positive, with almost all the scores equal to the mean scale value (3) or higher. The students' concentration during teaching received the lowest score. The respondents pointed to a number of issues (technical, psychological, communication, organisational, etc.) they faced, but also the benefits they noted during the teaching and learning in the digital environment.*

**Keywords:** Academic Staff, Digital Learning Environment, Emergency Remote Education, Face-to-face teaching, Online teaching, Student

## DIDATTICA A DISTANZA IN EMERGENZA DURANTE LA PANDEMIA DI COVID-19: VALUTAZIONE DA PARTE DEGLI STUDENTI E DEI DOCENTI DELL'ISTRUZIONE SUPERIORE MONTENEGRINA

### SINTESI

*Il contributo presenta i risultati di un'indagine realizzata per rilevare le valutazioni degli studenti (N=377) e dei docenti (N=69) delle istituzioni di istruzione superiore montenegrine in merito alla didattica a distanza svolta durante la pandemia di COVID-19. Attraverso un questionario online si raccoglievano dati su: a) la valutazione delle caratteristiche fondamentali della didattica svolta, e b) le difficoltà riscontrate dagli intervistati nonché le loro preferenze per la didattica presenziale o quella online. Secondo quanto è emerso dai risultati, il giudizio degli intervistati sulle caratteristiche dell'insegnamento impartito e apprendimento è tendenzialmente positivo, con quasi tutti i punteggi assegnati pari o superiori al valore medio della scala (3). Il punteggio più basso registrato era in relazione alla concentrazione degli studenti durante l'insegnamento. Gli intervistati hanno evidenziato una serie di difficoltà (tecniche, psicologiche, di comunicazione, organizzative ecc.) che hanno dovuto affrontare, ma anche diversi vantaggi del processo di didattica nell'ambiente digitale che hanno rilevato.*

**Parole chiave:** personale accademico, ambiente di apprendimento digitale, didattica a distanza in emergenza, didattica presenziale, didattica online, studente

## INTRODUCTION

The World Health Organization declared a pandemic caused by the COVID-19 virus in March 2020. The measures which, among others, suspended face-to-face teaching at higher education institutions (HEIs), were adopted in Montenegro that same month. All HEIs shifted to Emergency Remote Teaching and Learning or Emergency Remote Education (ERE). Montenegrin *Law on Higher Education* (2017) does not provide for the possibility of accreditation of study programs in partial or full online modality or any other form of remote learning, so from the moment of shifting from face-to-face teaching to ERE, the HEIs did not have the opportunity to organise teaching in any way other than face-to-face, i.e., in-person teaching. At the time of the suspension of face-to-face teaching, all HEIs in Montenegro changed their courses to a format that could be organised using digital platforms and applications, i.e., into the Digital Learning Environment (DLE) (Lodge et al., 2021). However, it is beyond doubt that short deadlines as well as a rather stressful overall situation at the onset but also during the pandemic – combined with a lack of competences for working in the DLE - did not allow for appropriate modification of the curricula and their actual adjustments to the online format.

From March 2020 to mid-2022, measures to prevent infection were changed several times depending on the epidemiological situation, but ERE remained an option until the end of the academic year 2021/2022. At the end of 2021, and in particular at the beginning of 2022, the measures were relaxed, and by mid-2022, most of the courses went back to in-person teaching, although so-called large groups (usually the first years of undergraduate studies with a large number of students) were operating in the DLE till the end of 2021/2022 academic year. From spring 2020 until mid-2022, teachers and students gained almost two years of DLE teaching and learning experience, providing optimal conditions to assess their perceptions of the experience.

Our aim in this paper is to identify the perceptions of students and teachers of how ERE was delivered during the pandemic. In the research, we checked our respondents' perceptions of teaching and learning during ERE, as well as the difficulties they faced during ERE, preferences towards different teaching models (face-to-face, online or blended), and the need for trainings.

## THEORETICAL BACKGROUND

At the onset of the COVID-19 pandemic, it was evident that the education institutions were the places of mass gathering and that a temporary

suspension of face-to-face teaching was necessary, resulting in serious consequences in education (Marinoni et al., 2020). The education process had to be continued, which proved possible thanks to the Internet, and numerous digital tools developed years back for online teaching and learning (Kerr, 2011).

Many HEIs worldwide shifted to teaching and learning in a virtual environment during spring 2020, where such transition was not a planned and systematised modification to online teaching and learning. The new, pandemic-induced teaching format is often referred to in the literature as Emergency Remote Teaching and Learning or Emergency Remote Education (ERE) (Drvodelić et al., 2021), and the name itself indicates the necessity and the temporary character of such teaching. Namely, the method of organisation of teaching during the COVID-19 pandemic does not have the characteristics of well-structured online teaching, so the term ERE describes it more precisely (Drvodelić et al., 2021). An important ERE characteristic is that “emergency remote teaching involves transforming on-site classes to a virtual mode, without making changes to the curriculum or the methodology” (Farnell et al., 2021, 7). The transition to DLE was induced by an external force, hence it was unplanned, unexpected and unprepared. The teaching methodology, which has many specific characteristics in online teaching and learning (Kerr, 2011; Vai & Sosulski, 2011; Laurillard, 2012; Salmon, 2012; Means et al., 2014), has practically remained the same as in in-person teaching. Teaching was delivered in a virtual environment or DLE, but in a way that could not have been well adapted to the new circumstances, at least in those institutions with no experience with online courses.

In most HEIs, the COVID-19 pandemic affected teaching and learning to a significant extent, and the greatest difficulties and challenges were registered at the very onset of the pandemic and concerned the following:

- a. technical infrastructure,
- b. teachers' competence for delivering the teaching in a digital environment, and
- c. specific needs of certain fields of study (Marinoni et al., 2020).

The HEIs have been working for years on digitalisation as an important infrastructure precondition for communication within academic communities (Marinoni et al., 2020). However, in most cases, these efforts by the HEIs were not aimed at the transformation to online teaching and learning, so the new reality demanded prompt and skilful reactions. In most cases, the HEIs' teachers' competences for work in DLE are not part of

their regular professional development and training, just as general teaching competences are not part of mandatory curricula to a sufficient extent (ETINED, 2018). In that regard, teachers faced a serious challenge, accompanied by additional pressure that came with the pandemic. The third important segment refers to the specific character of individual study fields, particularly those involving small groups or individual work (art groups) or those where practical training in the real work environment is particularly important (medical or educational studies). In general, the adoption of skills or practical teaching aspect was under a specific influence that could not be ensured in a digital environment for many professions, especially given the short time for a change.

Since the onset of the pandemic, it is clear that the quality of education has been compromised, which is expected already based on the lack of experience of teachers and students in working in DLE, which implies significantly different methods of teaching (Kerr, 2011), communication and learning (Lodge et al., 2021). Greater losses are expected to be suffered by those individuals from non-privileged social strata (Schleicher, 2020), and higher losses will be suffered by education in lower-income countries (Cecilio-Fernando et al., 2020). The closing of HEIs has hit 220 million students globally (Farnell et al., 2021), with a very serious crisis in education (Karakose, 2021), which already shows short-term consequences, with many predictable mid-term and long-term consequences (Farnell et al., 2021).

The European Commission's report (Farnell et al., 2021) highlights the key short-term effects of the pandemic on HEIs teaching and learning. Almost all HEIs transferred their activities to ERE; students and teachers received some assistance and support, whereas numerous difficulties concerning the use of technology and tools were registered, there was also the willingness of academic staff to adapt to the new teaching environment in a very short time (Farnell et al., 2021). Academic staff transformed a high percentage of their teaching courses and learning into DLE (Marinoni et al., 2020); however, it is questionable to what extent and how the curricula were delivered, taking into account the inability to fully adapt them to online formats. Namely, online teaching and learning imply a complete transformation of the teaching and learning context and all of their elements, so the teacher is more of a facilitator of students' activities than a lecturer. Furthermore, the teacher's activities are focused mainly on the preparation of interesting learning content, encouraging students' engagement and interaction, while lectures in the classical sense are almost entirely absent from

online courses (Vai & Sosulski, 2011; Laurillard, 2012; Salmon, 2012; Means et al., 2014).

Since the beginning of the pandemic, it has been clear to universities that it is necessary to provide preconditions for transition to ERE, with HEIs reporting mainly that the infrastructure necessary for communication within the academic community existed at the beginning of the pandemic (Marinoni et al., 2020). Among other things, it was necessary to: (a) provide internet access and digital devices, (b) develop appropriate virtual learning environments, (c) improve the availability of technology for students with special education needs, (d) support teachers in all segments of the new teaching, starting with improving their digital competences (Di Pietro et al., 2020). The research shows that in European universities, teaching and learning were delivered mainly "via live-streamed lectures in real-time (74.6 %), presentations sent to students (44.5 %) and asynchronous pre-recorded lectures available online via video (32.1 %) or audio (20.6 %)" (Farnell et al., 2021, 7). In Montenegro, the teaching was delivered mainly through live-streamed lectures in real-time.

For the HEIs to be able to modify the traditional face-to-face teaching into ERE, they needed proper digital equipment and sufficient digital competences of their teachers and students. A number of studies show that the digital competences of students are not quite satisfactory, especially in terms of information literacy, digital creation, digital research, and digital identity management (Martzoukou et al., 2020). At the beginning of the pandemic, a high percentage of teachers (68%) pointed out that they feel they need the training to use digital equipment (Schleicher, 2020). During the pandemic, the teachers went beyond their usual working circumstances (Khan, 2021). Research shows that burnout and teacher's resilience correlate significantly with their attitudes toward technology, change, and efficacy (Sokal et al., 2020). As expected, teachers were not ready for ERE, so they faced many challenges, some of which were not related to their digital competence, and additional difficulties were related to communication (with the university and with students), concerns about students' access to technologies, finding a suitable place for work, spending too much time in front of the screen, managing the working time and setting a balance in life and work (Erlam et al., 2021).

Studying during ERE has also influenced changes in students' cognitive and non-cognitive engagement and achievements (Di Pietro et al., 2020). The students' perspectives on the teaching delivered are polarised, so their negative perceptions indicate that many of them faced challenges during learn-



ing, starting with the uncertainty concerning the organisation of teaching (lectures were cancelled occasionally, materials were not available in time), the students' workload increased, further affecting their psychological and emotional well-being and emotions (anxiety, anger, frustration) that hindered cognitive achievements (Farnell et al., 2021). Learning in a new, less structured teaching context affected students' emotional well-being and motivation (Di Pietro et al., 2020) and therefore their activity (Pelikan et al., 2021). The students' basic needs for autonomy, competence, and social relatedness play a significant role in distance learning. For example, in some online learning variants, students are often given greater autonomy in choosing the place and time for learning, which they can use properly and develop their competence (Pelikan et al., 2021). Independent learners had the advantage during the pandemic (Di Pietro et al., 2020). However, autonomous learning skills are not equally developed among all, so some students may suspend their activity expecting to return to classrooms, which can often be the case in ERE situations. It was found that there were slightly more students with negative attitudes toward ERE than those with positive perceptions (Dikaya et al., 2021). Senior students assessed that ERE had more negative than positive effects (Hoss et al., 2021). Furthermore, the link between the students' attitudes towards ERE and their communication skills and learning styles was identified (Dikaya et al., 2021).

The transition to ERE was significantly more difficult in study fields involving mandatory practical learning component (Farnell et al., 2021; Hamamoto Filho et al., 2021), which is a natural consequence of the fact that adopting skills implies practical exercises that are most functional under the circumstances of a real working environment or similar situations. In general, ERE resulted in a change in teaching methodologies, essential competencies and assessment methodologies (García-Morales et al., 2021). Therefore, change in teaching and learning is not only based on digital technologies, but different pedagogy is needed, i.e., it is necessary to transform the curriculum into a form that can be meaningfully delivered under the new circumstances (Blankenberger & Williams, 2020). This includes, inter alia, the sequencing of specific topics, i.e., the separation of larger lecture blocks into smaller units so that students can follow a well and clearly structured learning content.

Regarding the quality of learning in DLE, some of the initial premises that should be fulfilled concern the interactions achieved, concentration on the lecture topic, students' attention, and engagement. Those are the basic assumptions of the teaching

methodology based on the current paradigm of learning – social constructivism. Several principles of successful online learning and teaching are highlighted in the literature. Among other things, the principles mentioned are as follows: a. ensure students' participation, b. strengthen their cooperation, c. encourage active learning (Sadiku et al., 2018). Naturally, attention and concentration are the prerequisites for any learning, but the difference in their statuses in in-person and online environments is great.

Universities responded to the pandemic by introducing a whole range of digital tools available for the purpose of teaching and learning, which should continue to be developed also once the pandemic ends in order to prepare HEIs for future challenges (Pokhrel & Chhetri, 2021), but also in order to modernise in-person teaching. Advanced technology in the service of ERE could have a positive impact on HEIs digitisation (Skulmowski & Rey, 2020).

## RESEARCH METHODOLOGY

The research aimed to determine the perceptions of ERE of teachers and students in Montenegro during almost two years of work in DLE. Bearing in mind that ERE is a very complex phenomenon transferring in-person teaching to DLE, we operationalised the key aspects of teachers' and students' perceptions through two research tasks.

It was necessary to determine the following:

- a. teachers' and students' perceptions of ERE delivered (overall teaching delivery, lectures, the whole curricula delivery, learning content mastering, interaction achieved, students' concentration during lectures, teachers' activities to engage students, students' engagement), and
- b. difficulties students and teachers encountered during ERE, their attitudes towards in-person teaching, teaching in DLE and hybrid models, as well as the training they considered important for future teaching and learning activities.

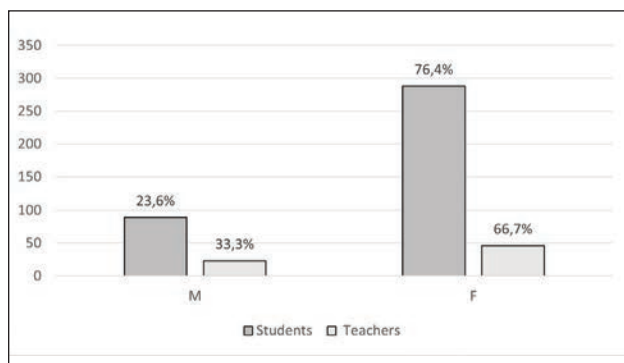
## HYPOTHESES

We formed one main hypotheses, with eight auxiliary hypothesis.

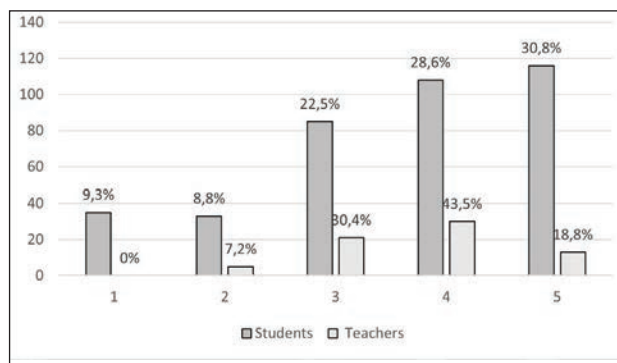
Main hypothesis – H: Teachers and students have positive perceptions of ERE.

Auxiliary hypothesis:

- H1: Teachers and students have positive perceptions of overall teaching delivered during ERE;
- H2: Teachers and students have positive perceptions of the quality of lectures;
- H3: Teachers and students have positive percep-



**Chart 1: Sample by gender and role (student/teacher).**



**Chart 2: Perception of the overall teaching delivery.**

tions of the whole curriculum delivery;  
 H4: Teachers and students have positive perceptions of mastering learning content by students;  
 H5: Teachers and students have positive perceptions of interaction achieved;  
 H6: Teachers and students have positive perceptions of students' concentration during lectures;  
 H7: Teachers and students have positive perceptions of teachers' activities to engage students;  
 H8: Teachers and students have positive perceptions of students' engagement.

The online questionnaire consisted of closed-ended and open-ended questions. Closed-ended questions supplied data on the sample characteristics, i.e., independent variables: gender, university, level of studies (for students), gender, university, academic title, years of service (for academic staff). All questions concretising the hypotheses were scaled as a five-point Likert-type scale where 1 is the lowest and 5 is the highest value. In addition, the questionnaire also contained several open-ended questions used to collect the data on the respondents' perceptions of difficulties, obstacles, and other relevant aspects. The data obtained with open-ended questions were processed in line with the qualitative research methodology rules, while the data obtained with closed-ended questions were processed in accordance with the quantitative methodology and with the use of statistics. IBM SPSS Statistics 23 was employed for data analysis. The statistical measures used include: M (Mean), SD (Standard Deviation), skewness, chi-square test,  $p$  (asymptotic significance),  $df$  (degrees of freedom), and  $C$  (contingency coefficient). Percentages were used to present the data.

The questionnaire was distributed to a large number of academic addresses through students' representatives and academic community members. Since participation in the survey was voluntary, only the respondents interested in commenting on the topic participated.

The scale used to identify the hypothesis acceptance or rejection was as follows:

<3 – hypothesis rejected,  
 =3 – data obtained do not enable the hypothesis acceptance or rejection,  
 >3 – hypothesis accepted,  
 with value 3 representing the mean scale value and the matching data representing the arithmetic mean of the respondents' answers.

#### SAMPLE

A total of 446 respondents completed the questionnaire, of which 377 students and 69 academic staff members. The sample structure is shown by the basic independent variables (gender and role) in Chart No. 1. The *role* variable (student or teacher) was chosen for the graphic representation of most of the data since it is expected that students and teachers have partly or entirely different perceptions of the ERE process.

The sample comprised 334 female and 112 male respondents. The total number of 446 respondents is a convenience sample with a sufficient number of participants who were all relevant interlocutors on the topic as they were involved in university education during the pandemic. The sample includes one public (University of Montenegro) and two private universities (University of Donja Gorica and Mediterranean University).

According to the study cycle, the sample consists of 317 students of undergraduate studies and 60 of master's degree studies. As for academic titles, 15 full and 16 associate professors, 13 assistant professors, and 23 teaching assistants participated in the survey. One-third of teachers (33.3% or 23) have less than ten years of work experience, slightly more than a third (37.7% or 26) have 11 to 20 years, 12 teachers or 17.4% belong to the group of 21-30, and others (8 or 11.6%) have more than 30 years of work experience.

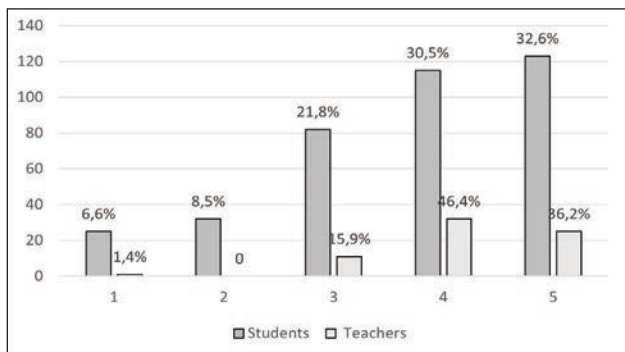


Chart 3: Perceptions of the quality of lectures.

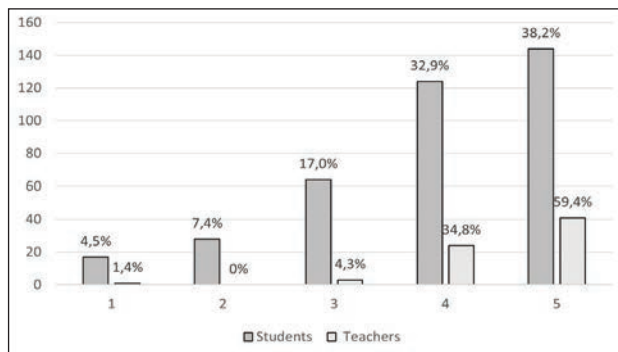


Chart 4: Perceptions of the whole curriculum delivery.

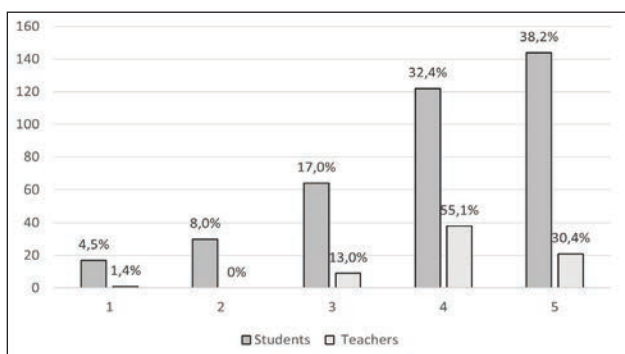


Chart 5: Perceptions of the learning content mastering by students.

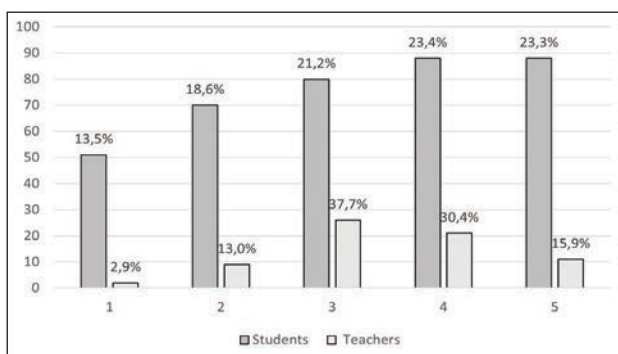


Chart 6: Perceptions of interaction during teaching in DLE.

## RESULTS OF THE RESEARCH

The results of the survey are presented according to the tasks and hypotheses set, so the first part presents the results on the perceptions of teachers and students of teaching and learning during ERE, and the second concerns the assessment of the difficulties accompanying the work in ERE, attitudes toward in-person teaching, DLE and hybrid model, and the training necessary.

All the questions concerning perceptions are scaled, except for open-ended questions. Likert-type scaled statements were analysed in terms of reliability, and Cronbach's Alpha was found to be 0.921, which is an acceptable value.

### Perceptions of delivered teaching and learning during ERE

The first in a set of scaled questions concerned the respondents' perception of overall teaching delivery.

At the students' subsample we got an average  $M=3.63$ , with  $SD=1.20$  and a slight skewness (-0.67) of results toward higher values. Teachers

gave very positive score, so  $M=4.03$ ,  $SD=0.91$ . Statistically significant differences were established for  $p=0.004$ ,  $\chi^2=15.104$ , with  $df=4$ , and contingency coefficient of  $C=0.18$ .

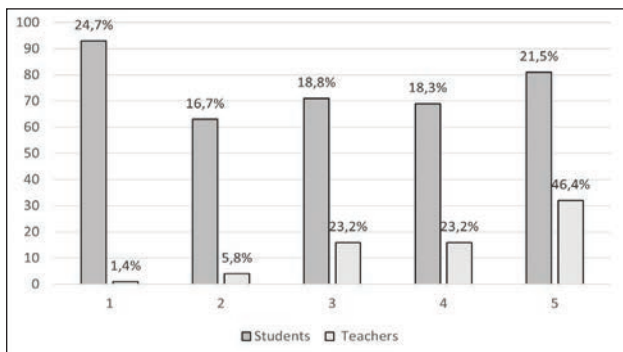
In general, both subsamples perceive that students and teachers tend to have positive perceptions of the overall teaching in DLE.

Naturally, the most important part of the teaching in DLE are the lectures, i.e., their quality. Both subsamples gave their views on this segment of work.

Students have positive perceptions of the lectures they listen to in DLE, so their responses have  $M=3.74$ , with  $SD=1.19$ . The teachers' perception is even more pronounced, because for their sample  $M=4.16$ , with  $SD=0.8$ . At the statistical significance level  $p<0.01$ , differences were identified, with the following values:  $\chi^2=21.06$ ,  $df=4$ ,  $C=0.21$ .

This data shows that, on average, students and academic staff tend to have positive perceptions of the lectures delivered in DLE.

At the very beginning of the pandemic, during the first closing of HEIs, there was plenty of concern to what extent and how curricula can be delivered in DLE. Our respondents also assessed this question.



**Chart 7: Perceptions of students' concentration during lectures in DLE.**

Students deem that the curricula were successfully and fully delivered ( $M=3.93$ ,  $SD=1.12$ ), and assessments given by teachers are even more favourable in this regard:  $M=4.5$ ,  $SD=0.72$ . The teachers' responses are notably skewed toward higher values (skewness=-2.1). Statistically significant differences were established and the following values obtained:  $p=0.01$ ,  $\chi^2=19.07$ ,  $df=4$ ,  $C=0.20$ .

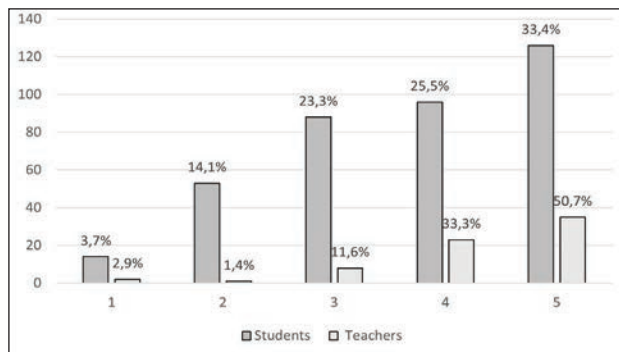
A particularly important is the question of the results of the learning process, i.e., the perception of the extent to which the learning content was mastered by students.

The question of perceptions of the learning content mastered by students received high scores from students, so  $M=3.92$ ;  $SD=1.13$ . For this question, teachers gave even more favourable assessments,  $M=4.38$ , with a fairly obvious homogeneity of results  $SD=0.82$ . Statistically significant differences were identified among subsamples, with the following values obtained:  $p=0.021$ ,  $\chi^2=11.53$ ,  $df=4$ ,  $C=0.16$ .

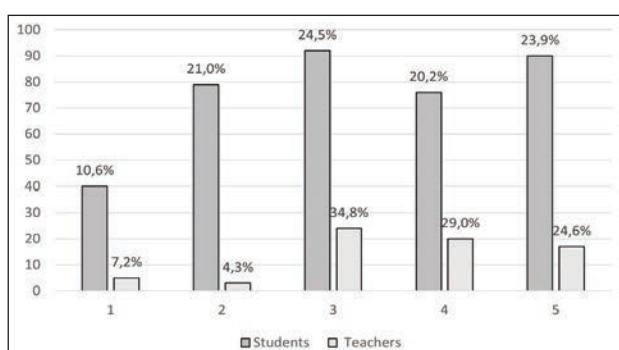
Since both respondent groups deem that students were able to master the learning content – although there were differences among the samples – the data obtained indicates that the work in DLE, despite all difficulties, yielded positive results as regards the learning process results.

Social constructivism, as a paradigm of modern teaching and learning delivered in any format, assumes a significant role of multidirectional communication and rich interaction in the teaching and learning process. With this premise in mind and the fact that digital spaces provide entirely different communication patterns compared to in-person contact, we checked our respondents' perceptions of the level and quality of the interaction achieved in DLE.

Students are moderately satisfied with the level of interaction they could achieve in DLE ( $M=3.24$ ,  $SD=1.36$ ), and teachers' scores are also solid



**Chart 8: Perceptions of teachers' activities to engage students.**

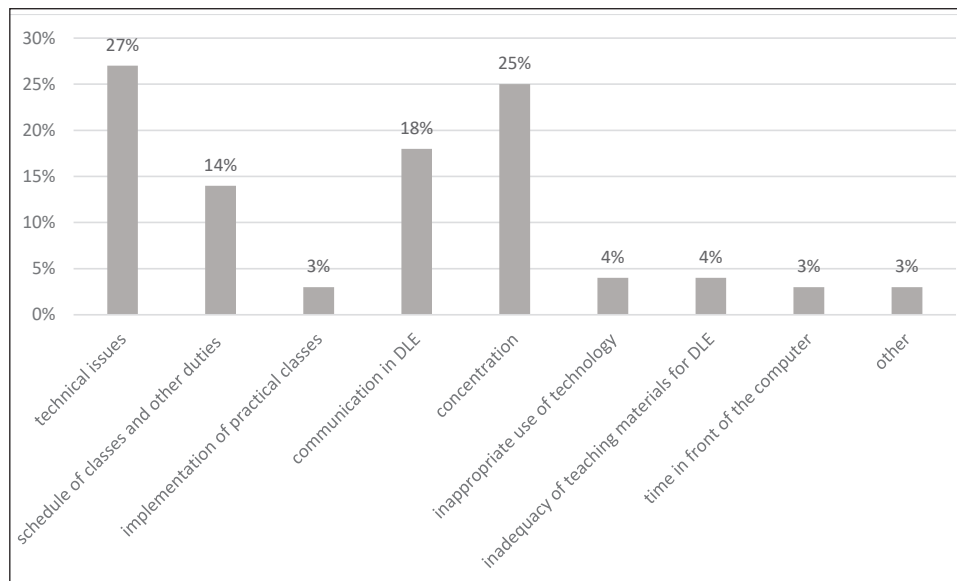


**Chart 9: Perceptions of the students' engagement in DLE.**

( $M=3.43$ ,  $SD=1.0$ ). Statistically significant differences between respondent groups were established for  $p=0.03$ . At that value,  $\chi^2=15.84$ ,  $df=4$  and  $C=0.18$ . Although average scores are not very high, they are still quite sufficient to indicate respondents' positive perceptions of the interaction achieved. Any good teaching involving learning implies strong concentration on the subject. Respondents also assessed this segment of work.

The only question students gave lower scores to than to any other question was the assessment of concentration. In their group,  $M=2.95$  was obtained, with a fairly high dispersion of responses  $SD=1.48$  and a slight frequency distribution skewness toward lower scale values (skewness=0.23). Teachers perceptions were more positive, so  $M=4.07$ ,  $SD=1.03$ . Statistically significant differences were identified for  $p<0.01$ ,  $\chi^2$  is 35.105, with  $df=4$ . The contingency coefficient  $C=0.27$  has a relatively high value.

Therefore, students, according to their own perceptions, were not very focused. Teachers gave higher average scores, which we explain with the possibility that they assessed this segment compared to the level of mastering the learning content,



**Chart 10: Difficulties of students during ERE (self-perceptions).**

i.e., they probably assumed that all those who successfully mastered the learning content had good concentration during lectures.

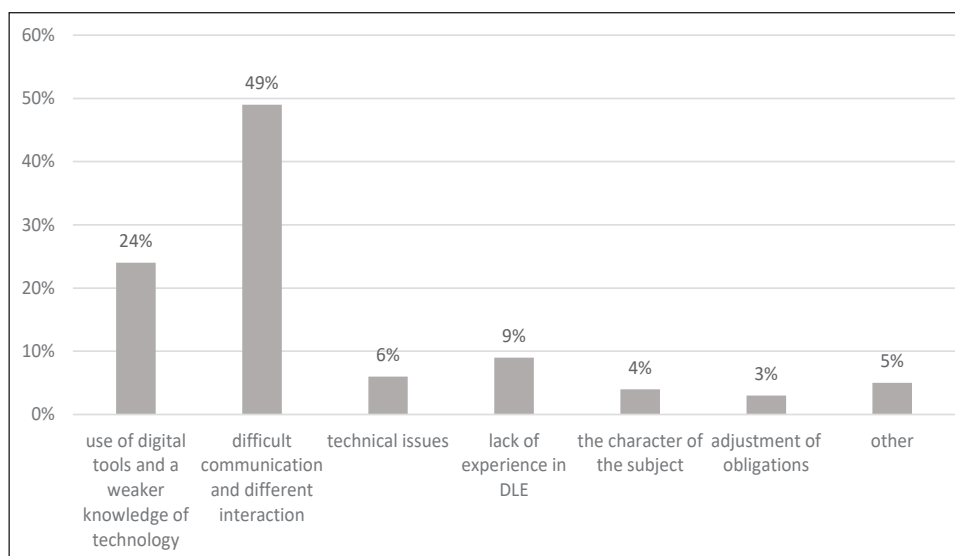
There are many differences between in-person work and work in DLE. Thus, the students' engagement varies significantly depending on the context. Respondents assessed teachers' efforts to engage and encourage students to work.

The mean value of students' responses to the question how they were encouraged by teachers to engage in the work is  $M=3.71$ , but with a higher dispersion of results,  $SD=1.18$ . Teachers' perceptions were more positive, so in their sample  $M=4.27$ , with a slightly lower dispersion  $SD=0.94$  and higher skewness of distribution towards positive assessments. For  $p=0.001$ , the values identified were  $\chi^2=17.7$ ,  $df=4$ , and  $C=0.19$ , which suggests differences in assessments between the two subsamples. These data generally indicate a positive trend and the teachers' concern for the students' activities. On the other hand, how students respond to encouraging tasks given by teachers is just as important, and respondents also provided their perceptions of that issue.

Students deem they were actively engaged in the work. The mean value of their assessment is  $M=3.26$ , with a dispersion of  $SD=1.31$ , which is relatively high if the total scale range is taken into account. Teachers' assessments are more favourable for this item, as well, so  $M=3.59$ ,  $SD=1.13$ . Statistically significant differences were identified:  $p=0.007$ ,  $\chi^2=13.94$ ,  $df=4$ ,  $C=0.17$ . Although the assessments are not very high, they are positive and indicate that students' response to activities was appropriate.

### Perceptions of difficulties and attitudes towards in-person and DLE teaching

The questionnaire contained several open-ended questions for both groups of respondents. The first of these questions concerned the issues the respondents faced during ERE, the second was about the attitudes towards face-to-face, online, and blended learning, and the third asked the respondents to identify training needs. The respondents provided diverse responses and comments to the first and other open-ended questions. One of the researchers (the first author of this paper) processed these responses by reading the complete material several times to determine the code (=the basic unit of meaning) to which the data could be classified. (Other open-ended questions were processed using the identical procedure.) Following the multiple reads, the codes indicated in the charts no. 10, 11, 12, and 13 were identified for the first question. Some respondents provided longer responses, which were divided into codes as basic units of meaning. Reliability and objectivity were confirmed by a procedure in which the other researcher (the second author of the paper), along with the code list provided, marked the raw responses with the code marks given. Kappa coefficient (Cohen's kappa) for this question was 0.85 for responses received from students (two groups of responses; the first concerns assessment of the difficulties for students and the second for teachers) and 0.92 for responses received from teachers (also two groups of responses – one for the students' difficulties and the other for the teachers' difficulties), which are high enough values indicating that codes



**Chart 11: Difficulties of teachers during ERE, students' perceptions.**

were defined in an objective and reliable manner (Krippendorff, 2004). Illustrative responses given by students are occasionally given in comments to this segment of results.

The students provided a total of 135 comments, in which 169 units of meaning were identified and classified into 8 codes. In this process, some responses could not have been covered by the codes mentioned and were placed in the code "Other" (N=5). The most frequent code in students' responses was "technical issues" with 45 comments, in which respondents mentioned: internet issues (29), issues with applications and/or platforms used, or with limited duration of certain classes due to restrictions given by the level of availability of the application (e.g., Zoom application is available for 45-minute without a subscription). Furthermore, some students pointed out difficulties with the living space used to attend the classes, i.e., in students' words: *The fact that not all students have enough space or even their own room where they can attend classes for an hour or more without distraction.*

The second code by frequency is "issues with concentration" with 43 comments, some of which require taking systemic steps: *Lack of concentration, therefore the willingness to learn was significantly weaker, I haven't got a single second of concentration.*

By response frequency, the third code is "communication in DLE" with 31 comments. The changed interaction was explicitly mentioned by 16 students. For example, some say they did not feel comfortable talking because their fellow students' cameras were turned off. Some of the difficulties in communication concern barriers,

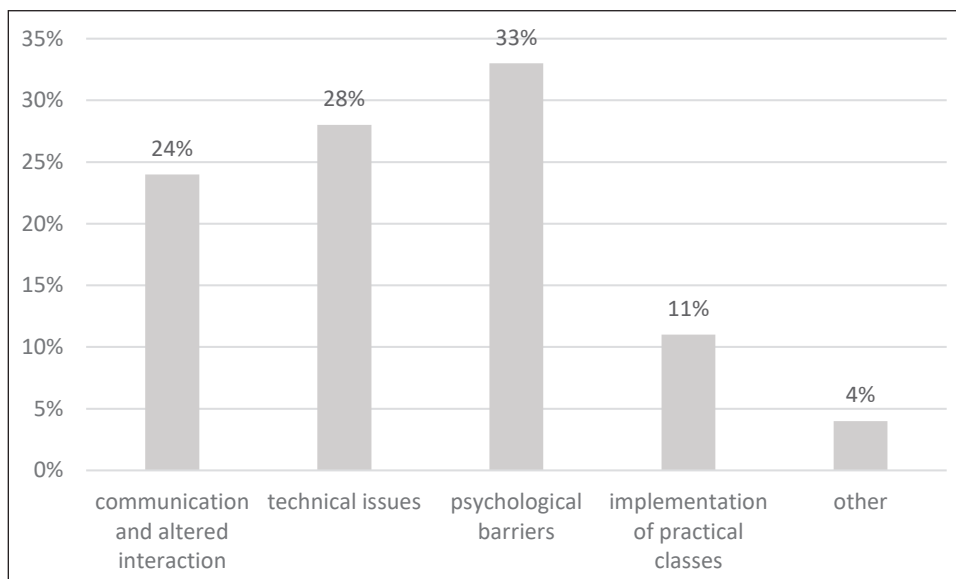
which is clear from the following comment: *Late notice of the schedule, some e-mails went directly to the spam folder, and many students did not even know we had a class.* Some of the respondents are quite sceptical with regard to the communication that can be achieved in DLE, and a respondent pointed out, *Professors have met the expectations, they are making the utmost effort, but simply, in my opinion, the knowledge passed on in-person teaching is different, more lasting, focus is deeper.*

Respondents pointed out the code "schedule of classes and other duties" (N=24). According to the respondents' comments, it turned out that: *It was difficult to get organised and attend all the classes on time, as some professors did not follow the schedule of the classes set at the beginning of each semester, and also Long string of consecutive classes.*

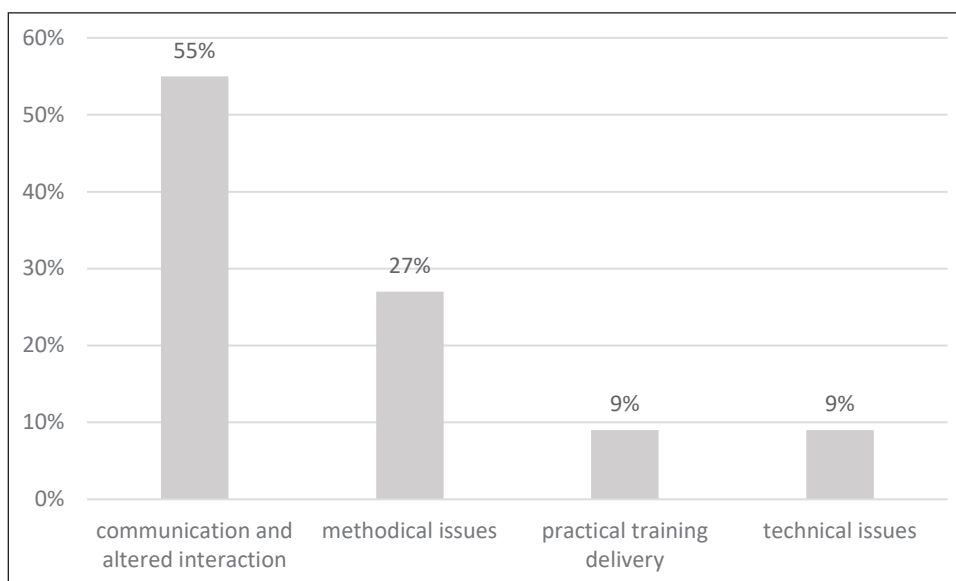
The students (N=7) also pointed to difficulties with "inadequacy of teaching materials for DLE" which corresponds to the results of other studies (Farnell et al., 2021), as well as problems related to the code "implementation of practical classes" (N=6). Several students (6) pointed to the code "inappropriate use of technology by teaching staff", and the three raised concerns about too much time spent in front of the computer.

The students also assessed the difficulties the teachers encountered during ERE.

Respondents from the students' sample entered 114 comments on the question of the teachers' problems, with 153 units of meaning classified into 6 codes, with an additional group of uncoded responses named "Other" (N=8). The code "difficult communication and different interaction"



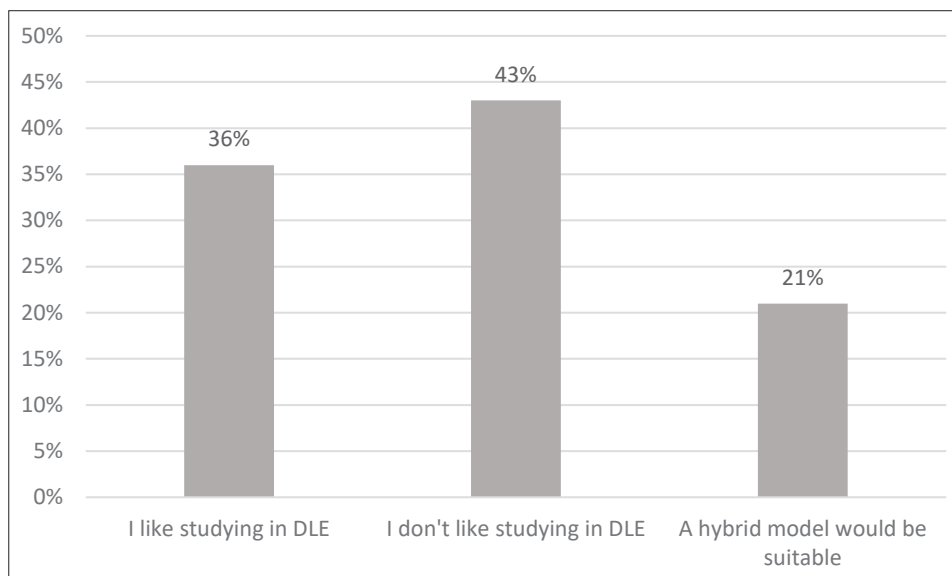
**Chart 12: Students' difficulties during ERE, teachers' perceptions.**



**Chart 13: Difficulties of teachers during ERE, self-assessment.**

dominates their responses with 78 units, with more responses (30) linked directly to the lack of feedback and are clearly illustrated by a student's opinion: *I think they do not feel that students are listening to them, I think they feel like they are talking in an empty space.* The code "use of digital tools and a weaker knowledge of technology" was found in 39 responses, and "lack of experience in DLE" was pointed out by 14 respondents. Some students (N=10) observed the code "technical issues" and a rather small number of students (N=7)

pointed to the code "the character of the subject" where respondents addressed issues related to practical or theoretical aspects of teaching, and it has been shown that courses with an emphasis on acquiring the skills (any form of practical training) tend to be less adaptable in the DLE. Several students (4) pointed out that "adjustment of obligations" certainly posed a difficulty for their teachers. Teachers also commented students' difficulties first and then those faced by academic staff.



**Chart 14: Students' attitudes towards DLE.**

Describing their perceptions of the students' difficulties in ERE, teachers entered 37 comments, with 46 units of meaning identified, classified into four codes and the group "Other" (2). The highest frequency (N=15) of teachers assigned to the code of "psychological barriers", including the lack of motivation, concentration, attention, and interest. The "technical issues" group is next with 13 responses, followed by difficulties in "communication and altered interaction" code (N=11). Several teachers (N=5) highlighted the code "implementation of practical classes".

Comments from teachers concerning the difficulties of academic staff in teaching delivery were rather homogeneous and could be grouped into four codes.

The number of teachers' open-ended comments is 31, and within these comments 44 units of meaning were identified, clearly and unequivocally classified into four codes. The biggest problem teachers identified in difficult "communication and altered interaction" code (N=24), then in "methodical issues" (N=12), followed by the same frequency codes (N=4) "practical training delivery" and "technical issues".

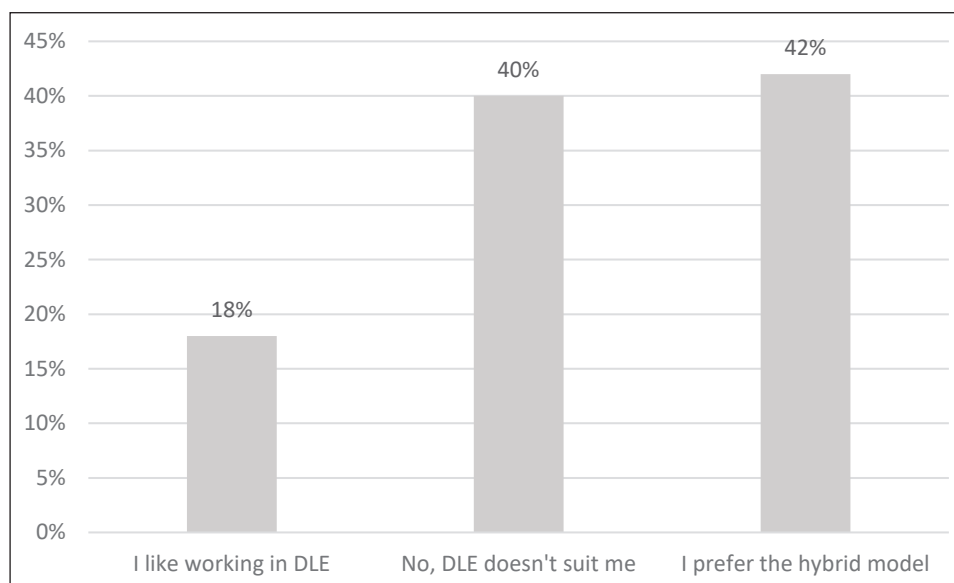
The concrete attitudes of students and teachers towards DLE were also obtained with open-ended questions, and the responses are presented in charts no. 14 and 15. Comments were processed using the same procedure as previous questions of the same type, with simpler coding as three options were explicitly dominant in all responses obtained, so the kappa coefficient had a value of 1.

Exactly 200 student comments were recorded, of which 73 wrote a fully affirmative response. These students highlighted the advantages of distant or online learning as there is no need to travel and the possibility to attend the classes at any time and place. Several students pointed to the benefits of recording classes and listening.

A few more students (N=86) wrote the answers that were coded as *I do not like studying in DLE*. They point out that students' attention is low, that they do not know how to learn in DLE, the lack of direct communication with fellow students and professors negatively affects their motivation and achievement, and several students wrote a comment *I hope this never happens again*.

The hybrid teaching (blended learning) was opted for by 41 respondents from the students' sample. They identified some elements where DLE could be of use to overcome some weaknesses of in-person teaching. For example, they point out that theoretical classes can occasionally be very successful in DLE, the great advantage of recording and multiple listening to class segments that were not entirely clear, etc. However, regarding practical training, this group of students also preferred in-person teaching only. Some students were right to note that the work in DLE needs to be radically different from in-person teaching, which is well illustrated by the following comment: *I think that online teaching can be very useful in many cases, but that it is necessary to work on methods to deliver online classes (in-person and online classes should not be designed in the same way)*.





**Chart 15: Teachers' attitudes towards DLE.**

Teachers' responses to the same question were also classified into three codes.

Comments were given by 38 respondents (out of a total of 69 respondents) from the group of academic staff. Fully affirmative were 7 comments, indicating the benefits of the fast flow of information and greater availability of content, then reduction of costs of studying and opportunities to improve digital competences of students.

The absolutely negative attitude was expressed by 15 teachers. Their line of reasoning is illustrated by the following comment of a professor: *A fully artificial learning model that implies numbness, often drowsiness and lack of motivation.*

The hybrid model would be chosen by 16 teachers, which is the highest frequency of response to this question. Respondents whose responses belong to this group highlight the great opportunities of teaching and learning in DLE, but also the need for all participants in the teaching process to attend training to strengthen their skills of teaching and learning in DLE.

It was expected that the two-year experience of working in DLE – regardless of many difficulties – would lead respondents to the view that teaching in DLE has certain benefits but that competences have to be further developed to bring about such positive effects. Respondents from both subsamples indicated what training they consider necessary to improve teaching and learning in DLE. The students' responses were presented first, followed by responses given by academic staff.

Students' responses are coded into three groups. The objectivity and reliability were determined by

the same procedure as the previous open-ended questions, with a kappa coefficient of 0.93.

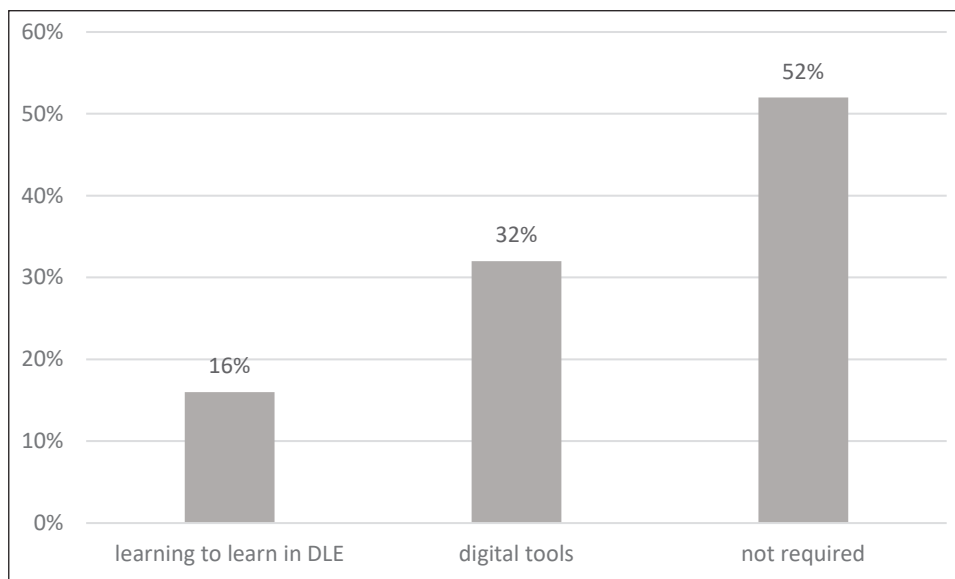
Out of 377 respondents, 77 students answered this question. Most students wrote that they did not need training (N=40), 25 felt that it would be good for them to receive additional training to improve their digital competences, and 12 respondents said that training on learning in DLE would be important to them.

Academic staff members also pointed to the training they need to improve the quality of teaching in DLE. To determine the objectivity and reliability of the coding the kappa coefficient was calculated at 0.96, which, among other things, indicates the homogeneity of these responses.

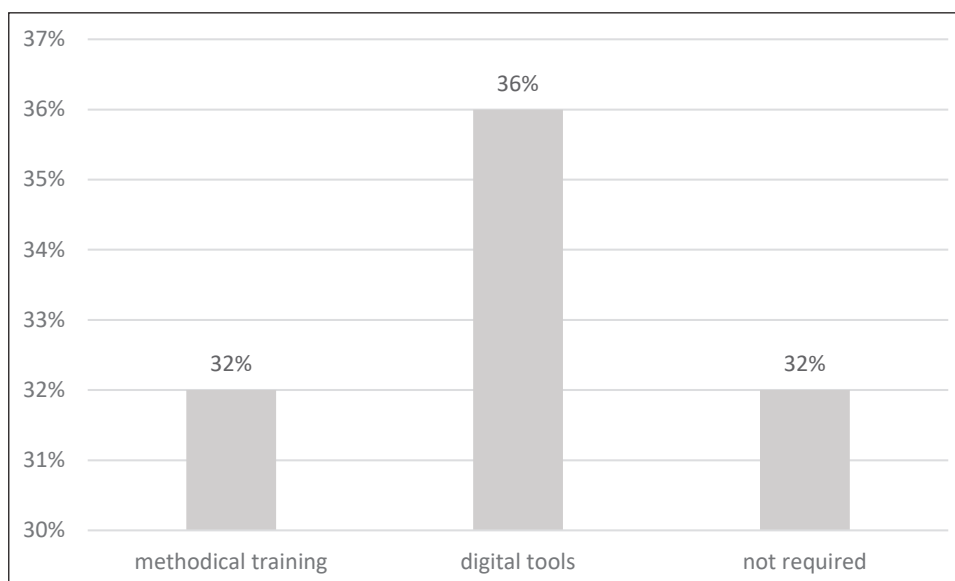
Of the total 69 respondents from the teachers' group, 31 of them answered the training question. Most of the respondents (11) wrote that they needed training on digital tools. Ten teachers each wrote that a. they need no training, and b. they find training on teaching methods relating to the preparation of materials and activities for teaching, online assessment, etc.

## DISCUSSION

Bearing in mind the fact that before the onset of the COVID-19 pandemic, students and members of academic staff in Montenegro had no experience with any distant learning method, the results we obtained in this research can be described as relatively positive experiences. Naturally, we should keep in mind that this research did not aim to identify objective factors of higher education during ERE but rather the



**Chart 16: Students' training needs.**



**Chart 17: Teachers' training needs.**

perception of participants in the process: students and teachers. Thus, in general, their perceptions tend to be positive.

The main hypothesis was tested through a set of 8 statements defined for auxiliary hypothesis and covering the basic characteristics of teaching during ERE. The results, in the form of average response values, are given in Table No. 1.

For each statement, students gave lower scores than teachers, with statistically significant differences between all the responses of subsamples.

However, the assessments of both subsamples tend to be positive. The only arithmetic mean value below 3 was obtained in relation to the statement concerning the concentration during lectures. Students gave an average score of 2.95, which means we cannot accept this auxiliary hypothesis. Given that one of the auxiliary hypothesis were accepted, we did not get results that would allow for the main hypothesis to be accepted (H: Teachers and students have positive perceptions of realized ERE). These

**Table 1: Mean values of assessment of statements for hypothesis testing.**

The content of the scale statements	Students	Teachers
Perceptions of the overall teaching during ERE	3.63	4.03
Perceptions of the quality of lectures	3.74	4.16
Perceptions of the whole curriculum delivery	3.93	4.5
Perceptions of mastering learning content by students	3.92	4.38
Perceptions of the students' interaction achieved	3.24	3.43
Perceptions of students' concentration during lectures	2.95	4.07
Perceptions of teachers' activities to engage students	3.71	4.27
Perceptions of students' engagement	3.26	3.59

results are further supported by comments received from our respondents to open-ended questions, as they often cited the lack of concentration to follow classes in DLE, which is expected since the classes planned for in-person teaching are not suitable for DLE (Means et al., 2014).

The students pointed out that the main issues they faced during ERE were precisely those concerning concentration, attention, communication, and interaction, which is consistent with other studies (Lodge et al., 2021). It is true that work in DLE definitely implies a completely different teaching model and that students naturally, having no previous experience with learning in such an environment, note they had psychological barriers to following classes and learning. Furthermore, students respondents pointed to several issues concerning the schedule of classes and the notifications about the change of time. Particularly interesting are responses from students who experientially identified the need for a different preparation of activities and materials than for in-person teaching. They also pointed out that practical training could not fit well into the ERE system delivered, which is also an observation noted in other studies (Marinoni et al., 2020).

Teachers also noted the students' difficulties in the group of psychological barriers (concentration, attention, interest, motivation), communication issues, technical issues, and problems related to the practical training delivery. This statement corresponds fully to the students' responses, so the positive side of these comments on the obstacles to the delivery of teaching is that students and teachers pointed out the same elements, which further demonstrates that teachers had students and their needs in focus.

Teachers' difficulties, according to students' comments, varied and were related to: communication, use of digital tools, lack of experience of work in DLE, technical issues, as well as difficulties arising from a specific character of teaching content (e.g., practical training). Like students, teachers placed communication difficulties as the first among obstacles to the delivery of ERE and pointed out that they did not find it easy to deliver classes in DLE from the teaching method point of view (different materials, activities, etc.) or from the perspective of practical components. Therefore, when assessing teachers' difficulties, both subsamples pointed to the same aspects.

When comparing in-person teaching and teaching in DLE, respondents give a notable advantage to face-to-face teaching, stating the advantages of direct communication in which a diverse and rich interaction can be achieved, but some have observed and highlighted a number of benefits that a functional hybrid class model could provide. Among others, students and teachers highlighted economic factors as an advantage of the hybrid model, and students also consider recording and re-listening of lectures as useful. Regarding practical training, all respondents, regardless of the sample or preference for in-person teaching, teaching in DLE or in a hybrid model, undoubtedly point out that only in-person work on adopting practical skills can be functional.

In both subsamples, additional training needs were identified, so students would attend training on digital tools, as well as training on learning in DLE. Their professors stressed the importance of digital tools training that could be used in teaching, which is pointed out also by other research works

(Schleicher, 2020), as well as training that would improve their teaching methodology skills for the work in DLE.

### CONCLUSIONS AND RECOMMENDATIONS

The results of this survey suggest a rather positive perception of ERE delivered in Montenegro's HEIs during the COVID-19 pandemic bearing in mind a lack of previous experiences with DLE. However, the hypothesis on the positive perceptions of realized ERE could not have been accepted as one of the auxiliary hypothesis (on concentration during the lectures) had a slightly lower average value in the students sample (2.95). In this regard, the results indicate that there was room for improvement of the quality of teaching and learning in DLE.

Assessing the difficulties of students and teachers during ERE, both subsamples pointed to similar codes, and the most common problems of students belonged to a group of psychological factors (concentration), factors concerning communication, and aspects related to the practical part of the teaching and learning. Teachers' difficulties also concern communication (more specifically – frequent lack of feedback), lack of teaching methodology skills for work in DLE, practical training delivery issues.

Both subsamples note that a hybrid teaching model can be functional in the future, provided that the practical aspect of the teaching is kept

exclusively for in-person teaching. The respondents pointed out several areas where it would be important to provide training to improve the quality of teaching. Some of the training topics are the same for both survey groups (use of digital tools), while some training topics are specifically suggested for each of the two groups. Thus, students find it important to learn about learning in DLE, and teachers should be trained in the methodical aspects of teaching in DLE.

The main recommendations of this research are:

- organise training for students and teachers related to the psychological characteristics of teaching and learning in DLE;
- prepare teachers for delivery of teaching in DLE in terms of teaching methods;
- improve the organisation of teaching in DLE – define the schedule more clearly, improve the communication of institutions with students, students with teachers and within student groups;
- practical training in almost all conditions should be delivered in-person, in small groups of students.

The limitations of this research concern primarily the fact that this type of survey brings concerns of obtaining socially desirable responses. One of the constraints is that such a questionnaire could not examine all aspects concerning ERE during almost two years, as it concerned a complete transfer of the entire complex teaching and learning process into a completely new virtual environment.

## UČENJE IN POUČEVANJE NA DALJAVO V IZREDNIH RAZMERAH PANDEMIJE COVIDA-19: MNENJA ŠTUDENTOV IN UČITELJEV V ČRNOGORSKEM VISOKOŠOLSKEM IZOBRAŽEVANJU

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### POVZETEK

*V prispevku so predstavljeni rezultati raziskave, opravljene med študenti (N=377) in akademskim osebjem (N=69) visokošolskih ustanov v Črni gori z namenom, s katero so želeli izvedeti, kako anketiranci ocenjujejo skoraj dveletno delo v digitalnem učnem okolju (DUO). Izobraževanje na daljavo (InD) v izrednih razmerah je bilo organizirano v vseh visokošolskih ustanovah za vse študijske programe, kjer je bilo izvedljivo. Ker je InD med pandemijo pomenilo preusmeritev poučevanja v DUO, smo ključne vidike ocene učiteljev in študentov operacionalizirali v več raziskovalnih vprašanj. Z njimi smo ugotavljali: a) kako učitelji in študenti ocenjujejo InD (izvedbo pouka na splošno, predavanja, izvedbo celotnega učnega načrta, obvladovanje učnih vsebin, vzpostavljeno interakcijo, zbranost in osredotočenost študentov, dejavnosti učiteljev za motiviranje študentov za akademsko delo, zavzetost študentov za akademsko delo; b) na katere težave so anketiranci naleteli med InD, kakšne so njihove preference glede neposrednega poučevanja, poučevanja v DUO ali hibridnih modelov, ter kakšna usposabljanja so po njihovi presoji pomembna za poučevanje in učenje v prihodnosti. Za potrebe raziskave smo oblikovali spletni vprašalnik, ki ga je izpolnilo 446 anketirancev. Rezultati raziskave kažejo, da so mnenja naših anketirancev praviloma pozitivna, čeravno ne najvišja. V skoraj vseh ocenjevanih segmentih so študenti prisojali nižje ocene kot predstavniki akademskega osebja. Z najnižjimi ocenami (pod 3) je bila ocenjena zbranost in osredotočenost študentov med predavanji. V obeh podvzorcih prevladuje mnenje, da bi morali v prihodnje uporabljati hibridni model poučevanja, saj so anketiranci na podlagi izkušenj spoznali, da delo v DUO lahko pomaga odpraviti nekatere slabosti neposrednega poučevanja. Menijo pa, da bi bilo treba praktično usposabljanje izvajati samo v živo. Za višjo kakovost poučevanja v DUO je nujno usposabljanje na področjih digitalnih orodij, učenja in učnih procesov v DUO.*

**Ključne besede:** akademsko osebje, digitalno učno okolje (DUO), izobraževanje na daljavo (InD) v izrednih razmerah, neposredno poučevanje, spletno poučevanje, študent

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