Challenges and Opportunities of Online Higher Education during the COVID-19 Pandemic in Romania – a Framework for Sustainable Education

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Abstract: This study focuses on challenges and opportunities of online teaching in Romania as the key factors in adapting education to digital age for accomplishing one of the sustainable development goals of the European Commission. An online survey was used as a quantitative method of data collection, and data were collected through an online questionnaire from a sample of Romanian university teachers. The research questions concerned the following topics: 1) How was the preparation for online teaching organised before pandemic period; 2) What challenges related to emergency remote teaching were faced in 2020; 3) What are the actual challenges (2021) and future perspectives of online teaching; 4) What digital infrastructures and tools for teaching were used. The findings reflect that the most frequent challenges faced were related to students' engagement and with ICT infrastructure.

These results support the importance of how the emergent disruptions caused by the COVID-19 pandemic could be used as an opportunity to reshape the role of online teaching for Education in Digital Age.

Key words: online teaching, higher education, sustainability, online education.

JEL: E0, H0, I2

Introduction

The COVID 19 pandemic, which started in the first part of 2020, determined a forced move of teaching activity to the online environment for most universities in Romania and in the world. This unplanned transition to online education generated a series of challenges for students and teachers, who had to adapt to the teaching and learning process in the new organizational and communication framework.

Despite these challenges, the experience of online teaching also allowed the identification of opportunities that universities can use in the future for quality higher education adapted to the digital age. Romanian universities have used different educational

technologies to allow access to the educational process for students in the context of limiting educational activities on their campuses.

According to some authors (Barbour, 2018; Taie et al., 2019), there is a real need in the specialty literature to explore the online teaching and learning experiences from process and outcome perspectives, including teaching and assessment practices, and learning outcomes.

More than the theoretical aspects, according to the the Commission's holistic approach for sustainability and the Sustainable Development Goals (SDGs), one of its priorities is established as Europe fit for the digital age – Quality Education. In the Brundtland Commission report of the United Nations, sustainability is presented as "the key element in meeting present needs without affecting future needs" (Brundtland, 1987). In recent years, the concept of sustainability is analyzed not only from an environmental perspective, but also from a social and economic perspective (Marcon `et al., 2017).

The Digital Education Action Plan (2021-2027) is a renewed European Union (EU) policy initiative to support the sustainable and effective adaptation of the education and training systems of the EU Member States to the digital age. The Digital Education Action Plan offers a long-term strategic vision for high-quality, inclusive and accessible European digital education, addresses the challenges and opportunities of the COVID-19 pandemic, which has led to the unprecedented use of technology for education and training purposes, seeks stronger cooperation at the EU level on digital education and underscores the importance of working together across sectors to bring education into the digital age, presents opportunities, including improved quality and quantity of teaching concerning digital technologies, and support for the digitalisation of teaching methods and pedagogies, as well as the provision of infrastructure required for inclusive and resilient remote learning.

The present study focuses on challenges and opportunities of online teaching in Romania as the key factors in adapting education to digital age for accomplishing one of the sustainable development goals of the European Commission.

Literature Review

Online teaching was defined by Ko and Rossen (2004) as "conducting a course partially or entirely through the Internet". Online teaching, referred to as virtual learning, cyber learning, and e-Learning, is the form of learning where individuals are not physically present in a classroom, and where instruction and content are conveyed primarily over the Internet (Schwirzke et al., 2018; Thoms & Eryilmaz, 2014).

Online teaching brings about many challenges over traditional teaching methods, including enhancing students' motivation, interaction, and communication (Amasha et al., 2018; Thoms & Eryilmaz, 2014). According to Searls, the greatest disadvantage of online learning is its isolating and impersonal nature (Searls, 2012). Additional barriers include I) inadequate technology access, II) lack of equipment and infrastructure, III) teachers' time management due to increased workload, iv) teachers' and students' technological skills, v) teachers' self- efficacy in navigating online environments, and vi) lack of or ineffective teacher training (Barril, 2018; Ferri et al., 2020; Recker et al., 2013; Simonson et al., 2009; Tinoca & Oliveira, 2013).

Abdelraheem (2003) listed the potentials and characteristics of Web-based learning environments as follows: 1) Relevant and well-designed challenging activities could be designed in Webbased learning environments; 2) Adequate and timely feedback from instructors in rich environments for student interaction could be achieved; 3) Enabling active engagement in construction of knowledge with an easy-to-use and powerful navigation system; 4) Deep learning could be encouraged through question design and links to thought provoking sources; 5) Student learning could be self-paced to suit the individual needs of each student; 6) Student autonomy could be encouraged since the student is in charge of his or her own learning; 7) Students are given the opportunity to study various other points of view via online resources, including Web sites that they can seek out for themselves. In addition, research shows that online learning promotes self-learning and develops an understanding of learning styles (Hoven, 1999).

According to Hodges et al. (2020), emergency remote teaching (ERT) is defined as "a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances" and they claimed the opinion that planned online teaching activities differ

from online courses organized as a response to an emergency as during pandemic happened.

Hodges et al. (2020) state that effective online learning and quality online teaching require careful instructional design, planning, and development, as well as an investment in the support systems. These conditions are mostly absent in emergency shifts, which may reduce the quality of online courses in emergency situations, such as the COVID-19 pandemic.

Online teaching poses unique challenges, such as the lack of experience and preparation, as well as institutional and technological challenges (Bao 2020). Therefore, integrating the use of ICT into the teaching programme has become a fundamental pillar in the preparation of prospective teachers (Bahcivan et al. 2019).

New digital technologies used in education trigger the need to search for new teaching strategies and approaches as a response to the shifts in student learning methods (Compton 2009). Previous research (Downing and Dyment's, 2013) reported a lack of confidence and competence regarding the required technological skills to teach online at the beginning of the transition to online teaching.

Additionally, a concept known as integration in online teaching has a fundamental value in predicting the quality of learning outcomes as a result of preparation (Cosmas-Quinn, 2011). Integration refers to the alignment of online tools with the requirements of the course.

Even though initial teacher education in the virtual setting has a relatively short history (Clarke, 2013), most of the early research on this topic has overlooked how the virtual teaching placement experience has offered opportunities and challenges for prospective teachers to learn how to teach. Course redesigning is a major challenge in online teaching, and this often becomes an intimidating experience for the untrained (Vitale, 2010). Despite these challenges, the purpose of online teaching is to fulfil its goals without compromising on the quality of education (Conroy et al., 2020).

In his study, Dhawn analysed the strengths, weaknesses, opportunities, and challenges of online teaching during the COVID-19 pandemic (Dhawan, 2020). In addition to the strengths, such as location, flexibility, the availability of a wide range of content for different audiences, and opportunities to adopt innovative pedagogical approaches,

weaknesses such as learners' capabilities and confidence level, challenges related to digital literacy, unequal distribution of IT infrastructure, digital divide, and quality education were also reported.

The findings of a study conducted in Chile (Sepulveda-Escobar, Morrison, 2020) suggest that despite the opportunity to discover and learn new technologies, the challenges prospective teachers encountered outweighed the benefits overall. The lack of previous experiences in the subfield of virtual education, the lack of preparation by their teacher education programme, and the possible lack of expertise from the university supervisors might have also directly contributed to making this experience more challenging and frustrating.

According to a study carried out by a group of Romanian researchers (Lup, Mitrea, 2020), students evaluated online courses unfavourably compared to face-to-face ones. According to the study's findings, the majority (59%) consider them worse or much worse, while only 15% find them better or much better than face-to-face. Among the student complaints are the large amount of individual work required by online courses, the sedentary nature associated with them, the lack of interaction with colleagues and access to libraries for documentation. The advantages of online courses include greater participation in activities, especially from students enrolled in master's programs, flexible schedules, punctuality to classes, the possibility of online course registration and the fact that they feel more relaxed during classes as a result of the environment in which they take place.

Research Methodology

In order to collect the necessary data, survey based on questionnaire was used. The online questionnaire was chosen because it allows the collection of different data, such as facts, behavioural information, attitudes, and opinions (Dornyei, 2007), all necessary information to answer the research questions. The survey has been conducted from June to September 2021 in Romania. The sample was formed by 67 teachers from 10 Romanian Universities. In the period preceding the mailing of questionnaires (May 2021), a list of HEIs was determined, along with identification of Departments and Institutes to which the questionnaires were sent. In total, questionnaires were sent to 40 HEI Romanian entities

with the request to distribute the questionnaires among their employees. Within the mailed questionnaires, 10 were addressed to universities of technical profile, 20 to comprehensive universities with different educational profiles, and 10 to natural science and pedagogical universities. The invitation to take part in the survey was also posted on the website of the University and Faculty of Economics, and on the Faculty's social profiles.

The respondents included representatives of 10 of the largest HEI's in Romania. 78% of respondents belonged to the group of establisher/permanent position, 16% have intermediate/temporary position and 6% were at the early career stage. This is also reflected in the age structure of the respondents, with the largest group being 40-49 years old (45%), followed by 30-39 years old (37%). People of 50-59 years old constituted 17% of respondents, whereas people between 60-79 years old constituted 1%. In regards to gender, the sample was consisted in 65% of women and 34% of men. Respondents worked at variety of Faculties, represented almost all fields of study, except for arts, medicine, music, natural sciences, and political sciences.

The research questions concerned the following topics: 1) How was the preparation for online teaching organised before pandemic period; 2) What challenges related to emergency remote teaching were faced in 2020; 3) Which are the actual challenges (2021) and future perspectives of online teaching; 4) What digital infrastructures and tools for teaching were used.

Results

Starting from March 25, 2020, after all the organizational processes have ended (creating student and teacher accounts, having training meetings with teachers, communicating the information to students, etc.) the teachers at universities in Romania were required to teach online, using the officially recognized teaching platforms in their university: Microsoft Teams, Zoom, Google Meets, Google Classroom, or Moodle. This situation was commonly referred to as "e-learning" or "online learning". In almost all universities in Romania, remote teaching was conducted starting from March 25, 2020, for the entire summer semester 2019/2020 and the entire academic year 2020/2021. It's worth mentioning that not all the universities in Romania worked the same. Starting with the summer semester 2019-2020, some universities adopted a hybrid system of teaching.

That meant that all the theoretical courses were taught online, while the seminars and laboratories were taught on-site, especially in the case of computer science, engineering, medicine, sports specializations as they require much more the contact between the professor and the student while teaching-learning process. This was possible because of the university autonomy and as part of the learning outcomes covered by the curriculum can be achieved through classes conducted with the use of distance learning methods and techniques (like philology or economics). These classes could be conducted using infrastructure and software that ensure synchronous and asynchronous interaction between students and teachers. It is important that classes conducted with the use of methods and techniques of distance education may be implemented if it is allowed by the specificity of education in a particular field of study.

Quantitative data obtained from the questionnaire was analysed in order to provide an overview of the challenges and opportunities on online teaching in Romania during the pandemic. The results of the survey show that distance learning was used in Romania in moderation. It was predominantly used in educational institutions that had taught distance learning. 33% of respondents used moderately and 37% did not use online teaching at all. In the previous period, students from Romania used online education only in accessing courses. In Romania, the public education system did not provide for the use of online examination. Students could also attend a certain number of lessons from remote locations (12%), participated in online written exams (7%), and had access to video/recording of registered lectures. Live streaming or online oral exams have not been practically applied. Almost 83% of those who responded that they used the online system did so for part-time education - distance learning. Live streaming lessons was offered for 5% of students.

In the pre-pandemic period, online platforms were used monthly in teaching by 21.3% of those interviewed, but these people are generally the ones who took classes in part-time education. Most of the interviewees used it less than once a semester or never. Analyzing the answers regarding online teaching methods, it was observed that approximately 64% of respondents used presentations and videos animations. Presentations were often used before the pandemic. Online discussions were used by approximative 18% of respondents and polls were used by 15% of respondents. Among other forms of online education mentioned were: e-mail counselling sessions, forum discussions, Skype, sharing

didactic materials, Google Sheets, Google Forms, Google Docs. Some respondents also used electronic tools to create e-learning content or to organize online ad-hoc tutorials navigated by peers. It is interesting that the respondents also mentioned games among the tools used. The results show a link with the predominant form of pre-pandemic education.

For the Romanian respondents, a challenge associated with the transition to online teaching was engagement of students during lessons (e.g. motivation, activation, making students reactive and mentally focused); this was described as a" big challenge" by 52% of respondents and it was identified as significant and moderately challenging by 36% of them. Other challenges faced were related to the work done in front of the computer. Most interviewees mention increased fatigue from prolonged activities on screen ("Significantly challenging" for 54% of respondents) and problems related to ergonomics in remote learning (for 33% of the respondents). Another important issue for the teachers was to get the students involved in the lessons. This issue was rated as a significant challenge by 54% and as moderately significant by 35% respondents.

The big challenge of this period was related to students' assessment and evaluation of their knowledge. However, over 66% of academic staff reported challenges related to conducting examinations, of which 28% rated them as significant. Teachers also reported problems related to the verification of students' identity, 52% of which describing it as significant. Oher challenges that were mentioned by interviewees were related to: Internet connection - irregular, poor (16.4% rated it as significant and 22.4% evaluated it as high), digital equipment used in teaching (e.g. availability/use/plugging of laptop, web camera, screen, etc.) which was rated as significant by 14% of respondents and high by 28% of them. Some teachers reported problems in the absence of licenses. This led to limited access to teaching platforms (e.g. 40 min on Zoom). Internet access was good, and this has not been considered a challenge for teachers. As it is known, Romania is in the third place in the EU when it comes to the Internet, as its Internet infrastructure is a new one and the most of the Internet users use optical fibre and the speed of internet is very good.

From the analysis of the answers provided, it can be observed that most universities have been concerned with providing support to teachers in the transition to online teaching: 65% of respondents mentioned that they had assistance from the university and 59% of them had assistance from their faculty or department. The support received from

colleagues, university authorities or others was also helpful, although almost 59 % of the respondents said that they had received support from the ICT Department. However, a considerable percentage (49%) searched for information on their own.

Universities have taken steps to overcome the difficulties and ease the work of teachers. In general, the activities focused on acquiring new knowledge on the use of IT tools in distance learning and organizing courses for the platforms used in the university. Even if some platforms were known, the courses offered made the work more efficient. Teachers should learn to organize their classes and materials more efficiently. For those who needed specific equipment, halls were equipped within the university. Many teachers who did not have the necessary equipment (camera or microphone) decided to buy it at that time without waiting for support from the university. The quality of internet connections to remote work was also improved by buying better packages.

As far as the conduct of exams and tests were concerned, which was a major problem, some lecturers decided to change the form from written exams to oral exams, some introduced a series of micro-projects instead of the former big projects. In terms of examining students, there was a need for openness from both teachers and students. Examination forms have been changed where possible.

While in the first year of online teaching the higher percentages were in the "significantly challenging" column, in the second year of remote teaching, Romanian respondents showed a small reduction in the challenges they faced. As the percentages in the first column decreased, the ones in the "moderately challenging" and "slightly challenging" increased. For 47.6%, fatigue from prolonged activities on screen remained slightly challenging as well as increased workload due to organization of online teaching (31.3%). Online teaching methods and techniques became moderately challenging (36.4%) or slightly challenging (37.9) or at all (12.1%). Communication with students (e.g. keeping the contact with them) was considered moderately challenging by 43.9%, while slightly challenging by 33.3%, and not challenging at all by 7.6%. Also, scheduling with other professional activities from remote (e.g. research) was considered moderately challenging by 43.9%, while slightly challenging by 24.2%, and not challenging at all by 16.7%. Even the engagement of students during lessons (e.g. motivation, activation, making students reactive and mentally focused) became less challenging. As we can see from the figure bellow, it was

considered moderately challenging by 41.8%, while slightly challenging by 16.4%, and not challenging at all by 9.0%, while only 32.8% still consider it to be significantly challenging (Figure 1).

Figure 1. Challenges for online teaching during May – July 2021
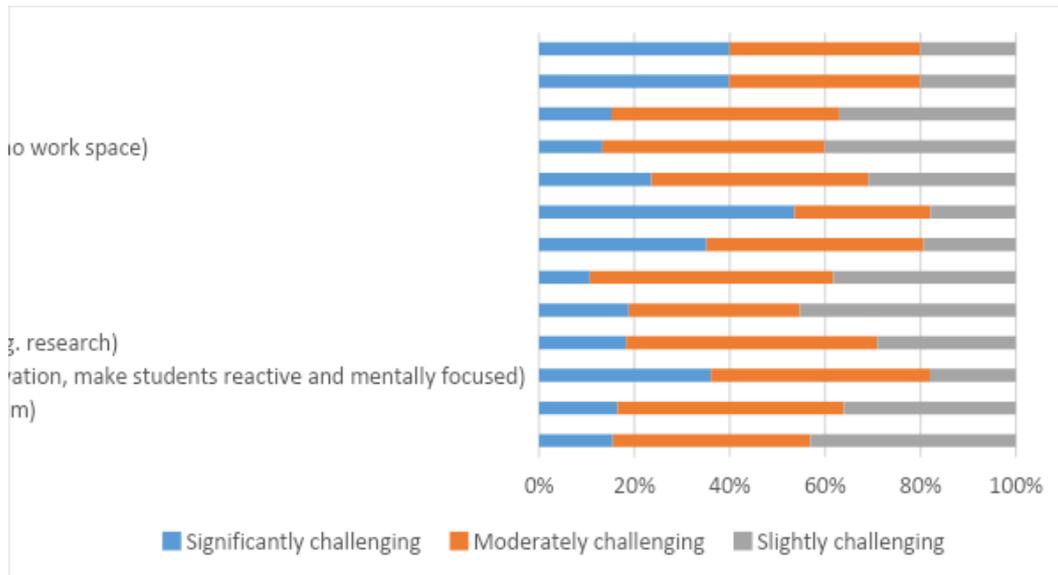
Most probably, the trainings that were organized for each university and their own experience during the last two semesters brought an increase in the skills of academic staff in the use of ICT tools. It can be observed from the Figure 2 that most of the problems reported in the previous period decreased significantly. Internet connection (irregular, poor) was still significantly challenging only for 6.10% (10% less than in 2020), for 28.80% it was moderately challenging, while for 39.40% it was slightly challenging, and not at all challenging for 24.2%. Most of the respondents considered conducting examinations (36.9%) and accessibility related to ICT (36%) to be moderately challenging, followed by verifying student identity (33.9%) and software and applications (33.3%), while the option slightly challenging was chosen for Internet connection (irregular, poor) (39.4%), software and applications (37.9%), licenses for software and applications (29.7%). On the opposite side, digital equipment used in teaching (e.g., availability /use/plugging of laptop, web camera, screen etc.) is considered less challenging.

Figure 2. Challenges related to ICT
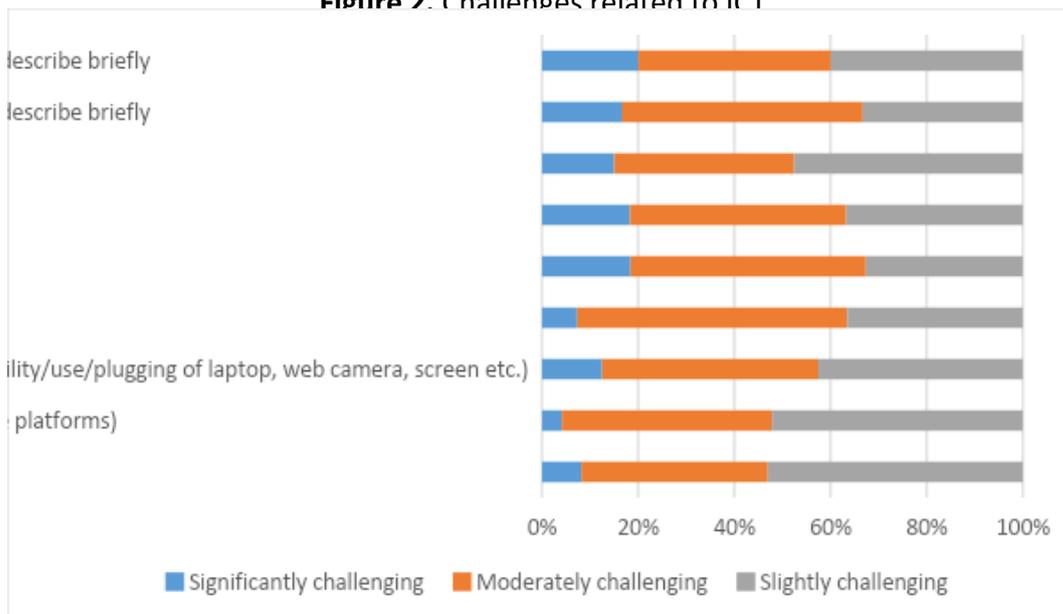
For Romanian respondents, the biggest challenge during this period was online teaching of content related to laboratory work (reported by almost 35% of respondents). This is the case especially for medicine, engineering, and sports specializations. Moreover, content related to fieldwork posed a significant challenge for 30.7% of respondents. The teaching staff (24.5%) also reported to be significantly challenged teaching students' general skills like ability to work independently, problem solving skills, data acquisition, and data production skills.

Figure 3. Challenges related to teaching online certain skills and contents for the students
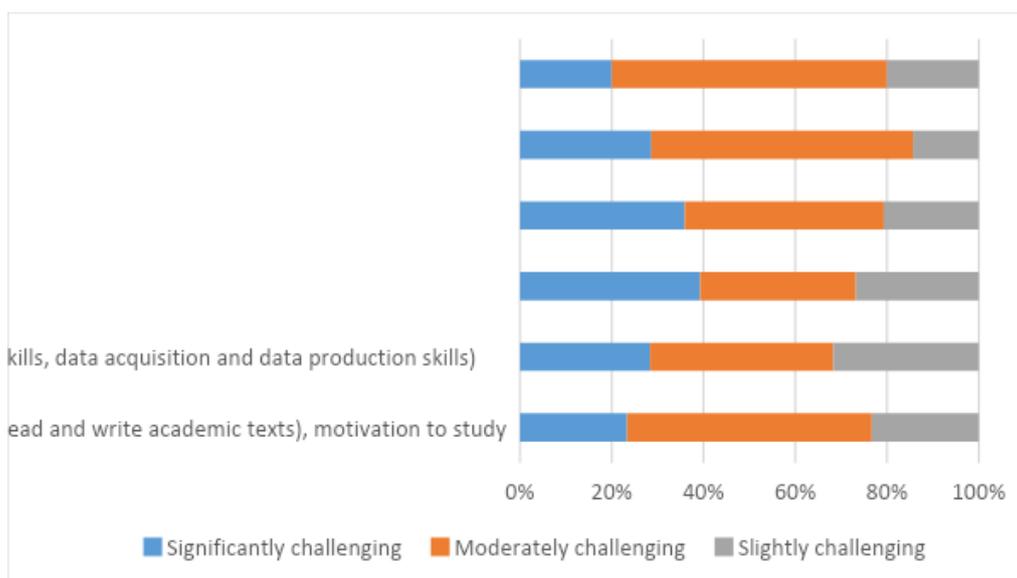
When analysing the information relating to the teaching methods used, as it was expected, presentations remained the most preferred way of teaching (95.50% in 2021, compared with 63.90% before the pandemic), followed by online discussions in pairs or in working groups (59.70% in 2021, compared with 18.00% before pandemic), which has had the most significant change if compared with the period before pandemic (the difference is 41.70%), as it can be observed in the figured bellow. Furthermore, an important change can be observed in the case of online discussion on the subject (56.70% in 2021, compared with 16.40% before the pandemic), which means that even more teachers (40.30%) stated to use this way of teaching. Also, the use of whiteboard (with 31%), the use of videos and animations (with 19.90%), the use of polls (with 18%), and the use of games (with 16.50%) increased if compared with the period before the pandemic.

Other ways of online teaching mentioned by Romanian teachers are discussions in forums, discussions on Skype, sharing materials, Google Sheets, Google Forms, Google Docs.

Figure 4. Online teaching methods used
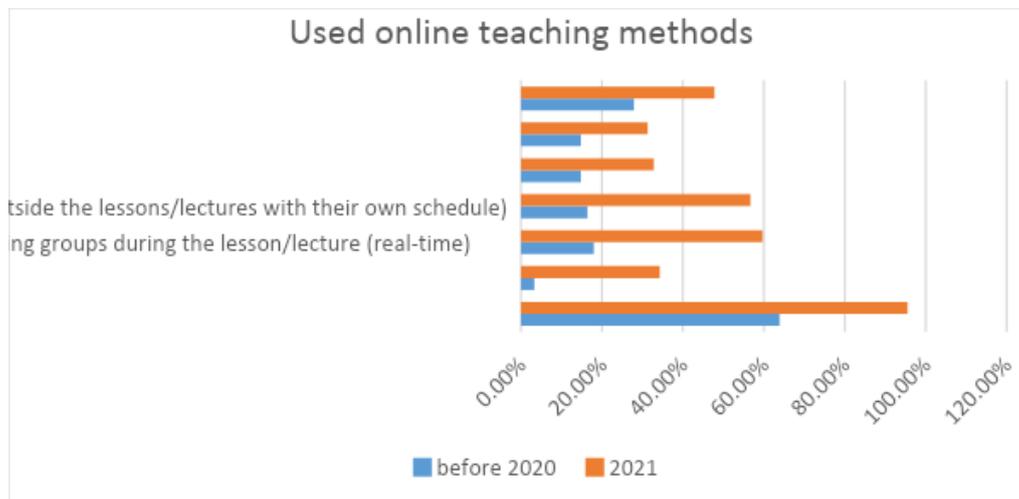
Almost half of the respondents mentioned the practices that they consider to be successful and effective methods used by them during online teaching. Among of them, the most frequent or unique ones were:

- Personalized written feedback on the activities, homework or exams, with additional verbal communication session;
- More intense use of audio-video resources in order to stimulate the formulation of opinions;

- Giving greater importance to the ongoing evaluation;

- Providing course materials in different formats (ppt, pdf, audio-video recordings);

- Random selection of a student to continue an idea during the course;

- Multiplying the applied activities to the detriment of the theoretical ones;

- Changing of emphasis from final, summative, theoretical evaluation to continuous, formative, applied evaluation;

- Completing the evaluation with forms of self-evaluation and inter-evaluation;

- Keeping permanent contact with the students and engaging them in different activities;

- Maintaining students' attention using polls made with Kahoot and awarding points in seminars for the winners;

- Using different videos on YouTube or other websites to maintain students' attention and make sure they will get the information in a more funny or animated way;

- Convincing the students to keep their cameras on significantly improved communication and their engagement;

- Using online whiteboard and challenging students to also use it, in the interactive parts of the courses and seminars;

- Asking students to present their works online to the other students and assessing their works and their involvement with additional points that contributed to the final mark.

Romanian respondents appreciated online education also as a positive experience and more than 33% intend to use online teaching both from their home or from the university premises if it is allowed by legislation. Only 11% of the respondents stated that they do not intend to continue with on-line teaching.

Figure 5. Plans to use online teaching as additional method to traditional class
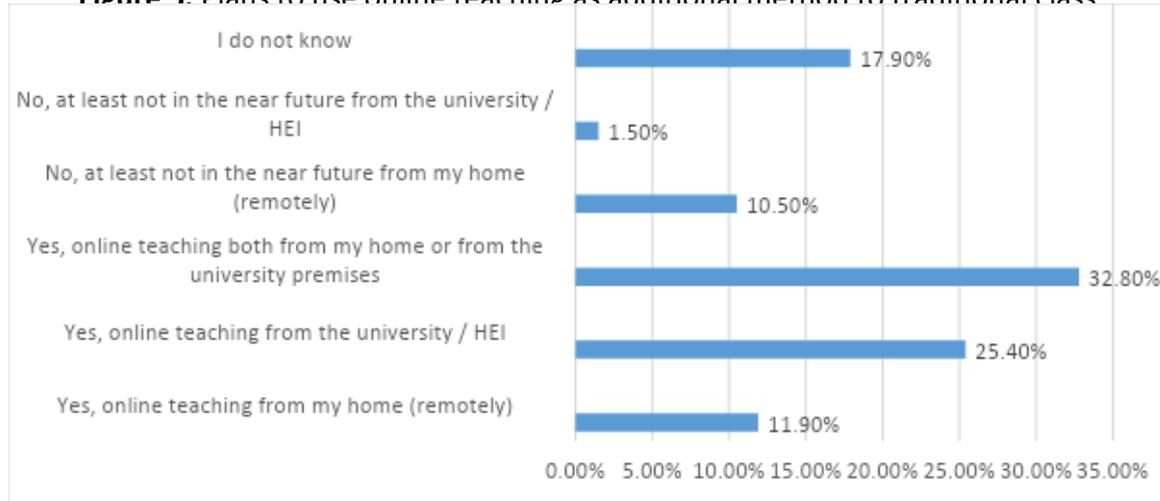
Teachers say they will continue to use the online platform to manage student homework, provide written feedback and achieve faster communication with students. They want to stimulate the team activity (projects) of the students by using the facilities of the online platforms. They will use online learning resources to ensure faster transmission of additional resources and alternative ways of providing specific learning materials. They want to encourage participation in webinars conducted by people outside the university. It is better for students that work or at the master courses as long as their presence is higher online. Teachers want to continue participating in online teaching development programs. Preparation is desired for online teaching methods (33.3%), students' activation online (37%), verification of knowledge (34%).

Conclusions

The aim of this study was to explore the challenges and opportunities that arose during online teaching in Romanian universities during the COVID-19 pandemic. Although before the pandemic online teaching was partially used by teacher from Romanian universities, especially for uploading course materials and for communicating with students, study findings revealed important challenges they faced: engagement of the students during classes (e.g. motivation, activation, making students reactive and mentally focused), the sedentary desk work, students' assessment and evaluation of their knowledge, other challenges related to ICT (Internet Connection, lack of necessary equipment). The aspect that was considered the most negative and challenging during the emergency online

teaching was the lack of interaction with pupils, which might affect their professional development (Flores and Gago, 2020). Most universities have been concerned with providing support to teachers in the transition to online teaching in terms of using IT tools in online teaching and organizing courses for the platforms used in the university. While in the first year of online teaching (2020) the higher percentages were in the "significantly challenging" column, in the second year of remote teaching (2021), Romanian respondents showed a small reduction in the challenges they faced.

Despite the challenges presented, student teachers suggested that this unique experience would contribute positively, at least to a certain extent, to their future careers. Based on the findings of this study, Romanian respondents appreciated online education as a positive experience and 33% of them intend to use online teaching both from home or from the university premises. Teachers mentioned that they will continue to use the online platform to manage student homework, provide written feedback, and achieve faster communication with students. Moreover, they want to stimulate the team activity (projects) of the students by using the facilities of the online platforms and they will use online learning resources to ensure a faster transmission of additional resources and alternative ways of providing specific learning materials.

Although the findings presented in this study share similarities with those of other researchers (e.g. Flores and Gago, 2020, in Portugal; Moorhouse, 2020, in Korea; Bao, 2020, in China), the findings cannot be necessarily generalised to all higher education institutions in Romania, since the number of participants in this study was relatively low. These results support the importance of how the emergent disruptions caused by the COVID-19 pandemic could be used as an opportunity to reshape the role of online teaching for Education in Digital Age.

References

ABID, TAYYABA, ZAHID, GULNAZ, SHAHID, NASEEM, BUKHARI, MAHAM. 2021. "Online Teaching Experience during the COVID-19 in Pakistan: Pedagogy–Technology Balance and Student Engagement". Fudan Journal of the Humanities and Social Sciences, 14:367–391

AHMED YOUSIF ABDELRAHEEM. 2003. "Computerized Learning Environments: Problems, Design Challenges and Future Promises". The Journal of Interactive Online Learning, Volume 2, Number 2, ISSN: 1541-4914

AMASHA, M. A., ABOUGALALA, R. A., REEVES, A. J., & ALKHALAF, S., .2018. "Combining online learning & assessment in synchronization form". Education and Information Technologies, 23(6), 2517–2529

BAHCIVAN, E., M. D. GURER, N. YAVUZALP, AND S. AKAYOGLU. 2019. "Investigating the Relations among Pre-Service Teachers' Teaching/Learning Beliefs and Educational Technology Integration Competencies: A Structural Equation Modeling Study." Journal of Science Education and Technology 28 (5): 579–588

BAO, WEI. 2020. "COVID-19 and online teaching in higher education: A case study of Peking University". Human Behavior and Emerging Technologies 2(2):113–115

BARBOUR, M. K. 2018. A history of K-12 distance, online, and blended learning worldwide. In Handbook of research on K-12 online and blended learning, (pp. 21–40)

BARRIL, L. 2018. "Assessment for culturally inclusive collaborative inquiry-based learning". In Handbook of distance education, (pp. 311–320). Routledge

COMPTON, L. 2009. "Preparing Language Teachers to Teach Language Online: A Look at Skills, Roles, and Responsibilities." Computer Assisted Language Learning 22 (1): 73–99

COMAS-QUINN, ANNA. 2011. "Learning to teach online or learning to become an online teacher: An exploration of teachers' experience in a blended learning course". ReCALL 23 (3): 218–232

CONROY, MICHELLE L., ERICA C. GARCIA-PITTMAN, HANA ALI, SUSAN W. LEHMANN, AND BRANDON C. YARNS. 2020. "The COVID-19 AAGP online trainee curriculum: Development and method of initial evaluation". The American Journal of Geriatric Psychiatry 28 (9): 1004–1008

DOWNING, J., AND J. DYMENT. 2013. "Teacher Educators' Readiness, Preparation, and Perceptions of Preparing Preservice Teachers in a Fully Online Environment: An Exploratory Study." The Teacher Educator 48 (2): 96–109

DARLING-HAMMOND, L. 2017. "Teacher Education around the World: What Can We Learn from International Practice?" European Journal of Teacher Education 40 (3): 291–309

DHAWAN, SHIVANGI. 2020. "Online learning: A panacea in the time of COVID-19 crisis". Journal of Educational Technology Systems 49 (1): 5–22

FERRI, F., GRIFONI, P., & GUZZO, T. 2020. "Online learning and emergency remote teaching: Opportunities and challenges in emergency situations". Societies 10(4), 86

FLORES, M. A., AND M. GAGO. 2020. "Teacher Education in Times of COVID-19 Pandemic in Portugal: National, Institutional and Pedagogical Responses." Journal of Education for Teaching

HODGES, C., S. MOORE, B. LOCKEE, T. TRUS, AND A. BOND. 2020. "The Difference between Emergency Remote Teaching and Online Learning." Educause Review

HOVEN, D. 1999. "CALL-ing the learner into focus: Towards a learner-centred model for CALL". In R. Debski & M. Levy (Eds.), WORLDCALL: Global Perspectives on Computer-Assisted Language Learning, pp. 149-167

LUP OANA, ELENA C. MITREA, Romanian Higher Education System in the Context of COVID 19 pandemic: students experiences, Făgăraş Research Institute Publishing House, ISBN PDF: 978-606-94773-4-2

MARCON, A., DE MEDEIROS, J. F., & RIBEIRO, J. L. D. 2017. "Innovation and environmentally sustainable economy: Identifying the best practices developed by multinationals in Brazil". Journal of Cleaner Production, 160, 83–97

MOORHOUSE, B. 2020. "Adaptations to a Face-to-face Initial Teacher Education Course 'Forced' Online Due to the COVID-19 Pandemic." Journal of Education for Teaching 1–3

PAULINA SEPULVEDA-ESCOBAR & ASTRID MORRISON. 2020. "Online teaching placement during the COVID-19 pandemic in Chile: challenges and opportunities". European Journal of Teacher Education, 43:4, 587-607

ROBINSON, M., AND L. RUSZNYAK. 2020. "Learning to Teach without School-based Experience: Conundrums and Possibilities in a South African Context." Journal of Education for Teaching 1– 11

RECKER, M., SELLERS, L., & YE, L. 2013. "Teacher design using online learning resources: A comparative case study of science and mathematics teachers". Education Research International,2013, 1–11

SIMONSON, M. R., SMALDINO, S., ALBRIGHT, M., & ZVACEK, S. 2009. Teaching and learning at a distance: Foundations of distance education, (4th ed.,). Boston: Allyn & Bacon/Pearson

SCHWIRZKE, K., VASHAW, L., & WATSON, J. 2018. "A history of K-12 online and blended instruction in the United States". In Handbook of research on K-12 online and blended learning (pp. 7–20). Pittsburgh: ETC Press

SEARLS, D. B. 2012. "Ten simple rules for online learning". PLoS Computational Biology, 8(9), e1002631

THOMS, B., & ERYILMAZ, E. 2014. "How media choice affects learner interactions in distance learning classes". Computers and Education, 75, 112–126

TINOCA, L., & OLIVEIRA, I. 2013. "Formative assessment of teachers in the context of an online learning environment". Teachers and Teaching, 19(2), 214–227.

VITALE, ANNE T. 2010. Faculty development and mentorship using selected online asynchronous teaching strategies. The Journal of Continuing Education in Nursing 41 (12): 549–556.

*** BRUNDTLAND, G. H. (1987). Report of the world commission on environment and development: Our common future. World Commission on Environment and Development. Oxford.

*** https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age_ro