Heliyon 10 (2024) e24275

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon

Research article

"Being in the digital box". Academic staff experiences in online practical teaching: A qualitative study from six universities and countries

Cigdem Baskici [a,*], Aydan Aytar [b], Halil Ersoy [c], Camilla Wiktsröm-Grotell [d,h], Marina Arell-Sundberg [e], Hugo Neves [f], Verónica Coutinho [f], Aurelija Blaževičienė [g], Alina Vaškelytė [g], Anne Söderlund [d,h], Johanna Fritz [h], Raimonds Strods [i], Nora Jansone-Ratinika [i], Sultan Kav [j]

[a] Department of Healthcare Management, Başkent University, Ankara, Turkey
[b] Department of Orthopedic Physiotherapy and Rehabilitation, University of Health Sciences, Ankara, Turkey
[c] Department of Computer Education and Instructional Technology, Başkent University, Ankara, Turkey
[d] Graduate School and Research, Arcada University of Applied Sciences, Helsinki, Finland
[e] School of Engineering, Culture and Wellbeing, Arcada University of Applied Sciences, Helsinki, Finland
[f] Health Sciences Research Unit: Nursing, Nursing School of Coimbra, Coimbra, Portugal
[g] Department of Nursing, Lithuanian University of Health Sciences, Kaunas, Lithuania
[h] Department of Physiotherapy, School of Health, Care and Social Welfare, Mälardalen University, Västerås, Sweden
[i] Centre for Educational Growth, Rīga Stradiņš University, Rīga, Latvia
[j] Department of Nursing, Başkent University, Ankara, Turkey

ARTICLE INFO

Keywords:
Experience
Health care education
Online teaching
Practical skills
Qualitative study

ABSTRACT

The COVID-19 pandemic has caused radical changes in education, as in everything else, bringing many challenges. Despite all the difficulties, the COVID-19 pandemic has enormous opportunities for online teaching and the use of digital technologies. A comprehensive understanding of this period is needed to investigate these opportunities. Thus, this study aims to explore the academic staff's experiences of online teaching and the use of digital technologies in practical skills-based courses in health care education. This study was conducted at six universities from six countries (Türkiye, Sweden, Finland, Portugal, Latvia, Lithuania). Data were collected between June 17, 2021 and November 30, 2021 via a focus group with an in-depth interview technique. 22 focus group interviews were conducted with a total of 117 participants. Colaizzi's method was used to evaluate the data to discover, comprehend, and define the experiences of academic staff. The analysis of the interview data resulted in 6 themes, 25 subthemes and 56 categories that captured participants' experiences regarding online teaching of practical skills and using digital technologies in health care education. The findings of the study provide crucial information that will help online teaching and digital technology for practical skills be successfully integrated.

* Corresponding author.
E-mail address: cbaskici@baskent.edu.tr (C. Baskici).

https://doi.org/10.1016/j.heliyon.2024.e24275
Received 26 July 2023; Received in revised form 3 January 2024; Accepted 5 January 2024
Available online 9 January 2024

1. Introduction

The COVID-19 pandemic-related quarantine and social isolation measures have not only caused profound changes in many facets of society but also made it extraordinarily difficult to continue traditional forms of teaching and training [1]. With the suspension of face-to-face instruction, a rapid shift to compulsory remote teaching was made, which needed to adapt pedagogical practices [2]. Academic staff entered a period where they had to continue teaching but needed to learn how to teach online [3]. This shift also tested whether universities had adequate and proper hardware and software to enable effective online education [4].

Even though the resource to compulsory remote teaching was the only solution to the worldwide pedagogical disaster [1,5], it was not easy for the academic staff, who had been accustomed to the onsite standard course teaching, to teach all courses online [6,7]. This sudden transition was particularly challenging for those who did not have sufficient knowledge and experience in online teaching [2]. The change in teaching methods put more pressure on academic staff, who had to create online courses to support the development of practical skills in areas such as the health sciences [8]. According to the OECD definition, "Practical skills are the capacities that are required to utilize and manipulate materials, tools and artifacts to achieve particular kinds of educational outcomes" [9]. Health care is the administration, treatment, and prevention of disease as well as the maintenance of physical and mental health through the services provided by health professionals [10]. The fact that the practical skills needed in health care provision are more complicated requires unique methods in teaching these skills in health care education. Learning practical skills necessitates intricate interventions and efficient interaction between everyone involved in health care education [11]. In addition, it is argued that performing practical skills on real patients can help students gain deeper knowledge when compared with the other options [12]. Whereas gaining practical skills in traditional teaching includes components such as physical examination of patients, history taking and performing various procedures [13], this was no longer an option in this new reality. Due to the pandemic, the transition from traditional instructional settings to online environments in gaining practical skills, with the help of digital technologies, has created a new field of experience for both academic staff and students. Thus, both sides had to adapt to the medium with almost no alternative [1].

Effective online education is closely related to how rigorously this process is planned [14]. Designing an online course under normal conditions requires a systematic process of analyzing the learners' needs and reviewing instructional methods and strategies to find the most appropriate approach to target students [2]. At the same time, online teaching requires academic staff to have various competencies to achieve pedagogical goals [15]. Therefore, online teaching is more than imitating and implementing face-to-face experiences in online environments [3]. However, the COVID-19 pandemic left neither universities nor academic staff time to prepare in advance. Under these conditions, the main goal has been not to create a new educational ecosystem but to continue teaching without interruption [16].

Despite all the challenges, the COVID-19 pandemic offered tremendous opportunities for online teaching and the utilization of digital technologies. Online education techniques have created new opportunities for teaching and learning in more creative ways compared to what is offered in a typical classroom setting [1,13]. An in-depth understanding of this period is needed to take advantage of these opportunities. Various studies have revealed important findings about what we were facing and what we were learning from teaching online during the COVID-19 pandemic. In the study of Svihus [17], the results indicated that experience and attitude had a significant role in encouraging involvement in an online environment. Black screens and expectations were two challenges that educators found difficult because no one was prepared for them. Asynchronous resources, role-playing, and outside tools were some of the strategies used to teach students. A multinational survey carried out by Alqahtani et al. [18] revealed that internet speed, inability to track student engagement, and technical skills were barriers limiting the quality of online teaching. The study results of González et al. [19] showed that higher education teachers learned several key lessons from online transition during COVID-19 pandemic. First, they used a variety of digital tools to continue delivering content and encouraging student interaction. Second, they also gained a deeper understanding of course design and assessment. Finally, they developed empathetic qualities to relate to students' circumstances. The themes that stand out in Bhati et al.'s [20] study investigating the perceptions and experiences of academic staff included the importance of improving student involvement, the significance of training and technical assistance, grading and assessment procedures, the reliability of online assessments, and the best work-life balance. In the light of these studies, this study aims to explore the academic staff's experiences with online teaching and the use of digital technologies in practical skills-based courses in health care education. The research seeks to understand "how academic staff have adapted to online teaching in response to the COVID-19 pandemic and to explore the challenges and opportunities that digital technologies offer for teaching practical skills in health care". This study was conducted at six universities from six countries. The findings of the study provide crucial information that will help online teaching and digital technology for practical skills be successfully integrated.

2. Methods

2.1. Research design

A qualitative study with a descriptive phenomenological approach was developed to explore the academic staff's experiences of online teaching and the use of digital technologies when teaching practical skills in health care education.

2.2. Study setting and context

This study was conducted at six universities from six countries (Başkent University/Türkiye, Mälardalen University/Sweden, Arcada University of Applied Sciences/Finland, University of Coimbra/Portugal, Rīga Stradiņš University/Latvia, Lithuanian

University of Health Sciences/Lithuania) as a part of the "Digital and Hybrid Teaching and Learning of Practical Skills in Higher Education (DITEPRACT)" project. The project was funded by the European Union Erasmus + KA2 (number: 2020-1-FI01-KA226-HE-092515).

2.3. Sampling and recruitment

The purposive sampling method was used [21]. Full-time or part-time academic staff who had experience with health care education and having online teaching experience in practical skills were defined as inclusion criteria.

Data saturation was considered to determine the number of academic staff to be recruited [22]. Achieving data saturation was decisive in determining the number of participants, and the data collection process was terminated at the point where the data began to repeat [23].

2.4. Data collection

Data were collected between June 17, 2021 and November 30, 2021 via a focus group with an in-depth interview technique. The interview questions were as follows [24].

- What is your experience using digital technologies in teaching activities of practical skills?
- What are the advantages and disadvantages of using digital technologies in practical teaching?
- How do you ensure students' active participation in using digital technologies in practical teaching?
- What barriers exist in the online teaching of practical skills?
- What are the suggestions for improving the online teaching of practical skills?

In addition to these questions, a personal information form was prepared to determine the academic staff's sociodemographic profiles.

The interviews were conducted by experts in qualitative research, either face-to-face or online, according to the COVID-19 pandemic measures in universities. Each university conducted the interviews in their native language. The face-to-face interviews were held in a quiet, calm room at the university campus where the conversation would not be interrupted. Two researchers were present in the interviews, one of them directed the interview questions to the participants as a moderator, and the other recorded the interview continuously with the voice recorder with the permission of the participants and took short notes on the responses from the participants. An online meeting (zoom) link was sent to the participants in advance for online interviews. They were asked to be in a quiet room with a strong internet connection. The duration of each interview, either face-to-face or online, lasted between 45 and 60 min. Permission of the participants was obtained to record the interviews. The information in the transcription files and recordings of the interviews will be safeguarded for five to seven years before being deleted in accordance with Regulation (EU) 2016/679.

2.5. Data analysis

Colaizzi's method was used to evaluate the data to discover, comprehend, and define the experiences of academic staff, including (1) familiarization, (2) identifying and extracting significant statements, (3) formulating meanings, (4) organizing formulated meanings into clusters of themes, (5) exhaustively describing the investigated phenomenon, (6) describing the fundamental structure, and (7) returning to the participants [25,26]. All the data were transcribed verbatim by three research assistants who were not participating in the study. Once transcribed, all transcripts were imported to Nvivo® 12 [27], ATLAS. ti [28] or MAXQDA 2022 [29] for data analysis following the preferences of the participating universities. Two researchers independently reviewed the interview materials several times to gain a sense of the participants' descriptions of their experiences in online teaching and digital technologies. All statements directly related to their experiences have been revealed. Afterward, the important statements were carefully evaluated, and the meanings related to the experiences were defined. The defined core meanings were brought together under the relevant themes. The themes were reviewed and reorganized into themes, subthemes, and categories. A comprehensive description of the academic staff's experiences was written using themes, subthemes, and categories. The fundamental structure of experiences was described. Finally, researchers turned to participants to validate the descriptions. Themes, subthemes, and categories were provided to randomly selected participants.

This process was carried out in the native language of the universities and then translated into English. Through onsite and online meetings, all university researchers reached a common decision, establishing the study's final themes, subthemes, and categories. While bringing together the themes, subthemes and categories, attention was given to reflect the experience diversity of the academic staff.

To ensure integrity, all researchers examined the connections between themes, subthemes, and categories and the connections between each of them and each other. During the interviews, researchers avoided behaviors that could affect the participants' opinions, and sufficient time was given to all participants to express their experiences. The Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines were followed in reporting the methods [30].

2.6. Ethical consideration

This study was approved by Başkent University Institutional Review Board and Ethics Committee (Project no: 17162298.600–136) on May 18, 2021. The prospective participants were informed about their rights, including that they could decline the study and withdraw from this study.

3. Results

A total of 22 focus groups were conducted with 117 participants, as detailed in Table 1.

The analysis of the interview data resulted in 6 themes, 25 subthemes and 56 categories that captured participants' experiences regarding online teaching of practical skills and using digital technologies for that purpose in health care education (Table 2).

3.1. Theme 1: digital technology skill development

This theme captures how academic staff enable their digital technology skill development. The transition from face-to-face to online teaching has made the competencies of academic staff in using digital technologies critical in terms of the sustainability of teaching. For this reason, the participants resorted to the most suitable ways to improve their competencies. Digital skill development is defined by two subthemes: "informal ways" and "formal ways".

3.1.1. Informal and formal ways

The participants mentioned that they received support from social networks consisting of friends, family, and other academic staff to quickly adapt to the change in a teaching style requiring technological competencies. "*In my case, this stage of providing a remote learning process has resulted in new collaborations with more experienced colleagues. When I realize that I have to implement lessons and I lack the nuances or knowledge of how to do it better. So, I got a lot of good suggestions on how I can run those classes more effectively.*" (Latvia), "*Learn and be inspired by colleagues …* " (Sweden), "I *was involved in two projects to develop and use digital tools, much was learned through employees there, colleagues from other schools.*" (Finland). On the other hand, the younger participants tried to improve their competencies through individual efforts such as self-discovery of the online environment in which they would teach. They emphasized that their curiosity about technology was a good guide for them and that they had no difficulty. "*I'm not a digital immigrant, I'm a bit on the digital native's side, if I'm going to put myself in that classification. Therefore, I did not truly try very hard in terms of competence, I just tried to learn minimally what that process brings.*" (Türkiye).

Participants often used formal ways in addition to the informal ones mentioned above. They said that they attended the courses/certificate programs provided by their institutions whenever they could and benefited from the step-by-step guides prepared by their institutions. "*I was greatly helped by a continuing education course organized by Centre for Educational Growth where I gained an understanding of how to organize online learning. Then, I saw all digital solutions as tools, not as an obligation. In addition, then I understood, how can I involve students more actively and achieve the goals of the lesson.*" (Latvia), "*… we had all those documents […] PDFs with all the steps.*" (Portugal).

3.2. Theme 2: advantages of online teaching

This theme reflects the advantages of online teaching from the perspectives of academic staff. The popularity of online education began to grow before the COVID-19 pandemic and is known to provide many advantages compared to traditional face-to-face education. Participants identified advantages of online teaching for both academic staff and students. These were defined in six subthemes; for academic staff as "advanced learning environment", "advanced time management", and "resources"; and for students as "personal benefits", "academic achievement", and "resources".

Table 1
Characteristics of academic staff who participated in the study.

	Türkiye	Sweden	Finland	Portugal	Latvia	Lithuania
Number of focus group	5	2	2	4	4	5
Total number of participants	25	9	14	26	26	17
Method of interview	Face-to-face	Online/ Zoom	Online/ Zoom	3 face-to- face, 1 online/ Zoom	Online/Zoom	Face-to-face
Gender						
Male	5	3	3	8	7	–
Female	20	6	11	18	19	17
Age (mean)	38,52	48,7	47,50	52,6	38,62	45,76
Teaching experience in years (mean)	12,80	11,4	11,70	20,6	12,04	11,00
Distribution of all participants by departments						
Professions (n)	Physiotherapy	Nursing	Midwifery	Social work	Nutrition and dietetics	Others
	13	53	7	5	4	35

Table 2
Themes, subthemes and categories captured experiences.

Themes	Subthemes	Categories	Participants					
			Türkiye	Sweden	Finland	Portugal	Latvia	Lithuania
Digital technology skill development	1. Informal ways	1.1. Social network	✓	✓	✓	✓	✓	✓
		1.2. Contribution of other academic staff	✓	✓	✓	✓	✓	✓
		1.3. Individual effort	✓	✓	✓	✓	✓	✓
	2. Formal ways	2.1. Course/certificate program	✓	–	–	✓	✓	✓
		2.2. Step-by-step guidelines	✓	–	–	✓	–	–
Advantages of online teaching	**For academic staff**							
	1. Advanced learning environment	1.1. Use of different pedagogical approaches	✓	✓	✓	✓	✓	✓
		1.2. Fewer distractions	–	–	–	✓	–	–
	2. Advanced time management	2.1. Being flexible	✓	✓	✓	✓	✓	✓
		2.2. Less traveling time	✓	–	–	✓	✓	✓
		2.3. Ease of exam evaluation	✓	–	–	–	–	✓
		2.4. Accessibility	✓	✓	✓	✓	✓	✓
	3. Resources	3.1. Easy access to digital resources	✓	–	–	–	✓	–
		3.2. Diversity of resources	✓	✓	✓	✓	✓	✓
	For students							
	1. Personal benefits	1.1. Less travel burden	✓	–	–	✓	✓	–
		1.2. Time flexibility	✓	–	–	✓	✓	✓
		1.3. Easy access to the academic staff	✓	–	–	–	–	✓
	2. Academic achievement	2.1. Increase in exam scores	✓	–	–	✓	–	–
		2.2. Higher motivation	–	–	–	✓	–	–
		2.3. Higher participation	–	–	–	✓	✓	–
	3. Resources	3.1. Easy/fast access to information	✓	✓	✓	–	✓	✓
		3.2. Replaying the recordings	✓	–	–	–	✓	✓
Disadvantages of online teaching	**For academic staff**							
	1. Deterioration of relations with students	1.1. Unable to visualize and know the student	✓	✓	✓	✓	–	–
		1.2. Lower interaction	✓	✓	✓	✓	✓	✓
	2. Difficulties related to time management	2.1. Need more time to prepare for the lesson	–	–	–	–	✓	✓
		2.2. Impact on private life and family dynamics	✓	–	–	✓	–	✓
	3. Health-related consequences	3.1. Physical	✓	–	–	✓	✓	–
		3.2. Emotional	✓	–	–	✓	✓	✓
	For students							
	1. Limitations in learning methods	1.1. Lack of hands-on experience	✓	✓	✓	✓	✓	✓
	2. Psychological consequences	2.1. Isolation	✓	–	–	✓	✓	–
		2.2. Privacy invasion	✓	–	–	✓	–	–
	3. Physical consequences	3.1. Impact on posture	✓	–	–	✓	–	–
		3.2. Eye fatigue	✓	–	–	✓	✓	–
Encouragement for student participation in online courses	1. Pedagogical methods	1.1. Immediate questions by naming	✓	–	–	✓	✓	✓
		1.2. Obtaining and providing feedback	–	–	–	✓	✓	✓
		1.3. Active learning	✓	✓	✓	✓	✓	✓
		1.4. Sharing experiences	–	–	–	✓	✓	–
		1.5. Video creation by students	✓	✓	✓	✓	✓	✓
	2. External control	2.1. Video attendance check	✓	–	–	–	✓	✓
Online teaching barriers	**For academic staff**							
	1. Issues with resources	1.1. Network instability	✓	✓	✓	✓	✓	✓
		1.2. Insufficient technology provision	✓	–	–	✓	✓	✓
		1.3. Working in the same room	–	–	–	–	–	✓

(*continued on next page*)

Table 2 (*continued*)

Themes	Subthemes	Categories	Participants					
			Türkiye	Sweden	Finland	Portugal	Latvia	Lithuania
		1.4. Lack of technical support	–	✓	✓	✓	–	✓
		1.5. Lack of good-practice guidelines	–	–	–	✓	✓	–
	2. Characteristics of the courses	2.1. High number of students	–	–	–	✓	–	–
	3. Issues with academic staff	3.1. Lack of knowledge about the use of digital technologies	✓	✓	✓	✓	–	✓
	For students							
	1. Issues with resources	1.1. Network instability	✓	–	–	✓	–	–
		1.2. Difficulties in accessing technological devices	✓	✓	✓	✓	–	–
	2. Students' knowledge	2.1. Lack of students' digital skills	✓	✓	✓	✓	✓	–
	3. Issues with environment	3.1. Crowded home environment and sound	✓	–	–	–	–	–
Online teaching improvement recommendations	1. Needs of academic staff	1.1. Personalized online training	✓	✓	✓	✓	✓	✓
	2. Needs of student	2.1. Facilitating access to technological devices	✓	–	–	✓	✓	–
		2.2. Training for information technology	✓	✓	✓	✓	✓	✓
	3. Institutional support	3.1. Invest in infrastructure and equipment	✓	–	–	✓	✓	✓
		3.2. Hybrid classrooms	✓	–	–	–	✓	✓
		3.3. Reduce the number of students *per* class	✓	–	–	✓	–	–
		3.4. Technical support	–	–	–	✓	✓	✓

3.2.1. Advantages for academic staff: advanced learning environment, advanced time management and resources

According to the participants, one of the important advantages of online teaching was its advanced learning environment. They emphasized that they were able to enrich the course content further, especially because online teaching allows different pedagogical approaches. "*Streaming movies between the method rooms and complementary digital* support *and uploading films on the implementation of different methods*" (Sweden). In addition, the controlled learning environment by the academic staff has prevented the course from being interrupted by the students. Thus, it has been possible to create a more suitable learning environment for better learning. "*And the cross-talk […] they do not have the colleague next to them, enhancing the interaction with us.*" (Portugal).

Participants also identified online teaching as advantageous in terms of time management. They stated that they had more workloads compared to past rotations. Nevertheless, they had the opportunity to be more flexible about time because they could spread out the course and meeting hours throughout the day. "*Considering the self-scheduling of the instructor, it actually served us a lot. Chance of having evening classes or morning classes, and so using daytime more efficiently … In this respect, it was a much more productive period for me.*" (Türkiye). Not spending time traveling between school and home has allowed them to save time. "*There is no need to waste time going to university; it is much more convenient for the academic staff; I am talking about lectures, not about practical work.*" (Lithuania). In addition, learning environment has allowed them to spend less time on exam evaluations. "…. *making it easier for academic staff not to have to check that paper-based test.*" (Lithuania). Participants also identified accessibility as an advantage of online teaching. "Accessibility gave easiness to the balancing of the schedules … " (Portugal).

The participants emphasized that one of the essential advantages of online teaching was resources. In particular, they said that the lessons became more interesting to students thanks to in-class easy access to digital resources. For example, it has been a great convenience to be able to open a video instantly or share a digital image. Diversity of resources were also defined as advantages of online teaching by participants. "*The number and quality of the things, materials we use as resources has diversified. So, we were able to use not only books, articles and so on, but other things, everything that was available on the internet, as a resource*." (Türkiye).

3.2.2. Perceptions toward advantages for students: personal benefits, academic achievement, and resources

Participants mentioned that the advantage of online teaching for students was related to personal benefits. According to participants, online teaching has saved students financially and, at the same time, reduced their burden of traveling to school by accessing lessons from home. " … *may be cheaper, economically speaking …* ", " … *also facilitates, as students live far from school …* " (Portugal). In addition, the participants stated that setting class hours until the late hours of the day provided time flexibility for the students compared to the hours in face-to-face teaching. "*When thinking about online education, the classes in the evening may have been useful to them in terms of education, in terms of choosing courses*." (Türkiye). They also stressed the importance of ensuring that students had easy access to academic staff when needed. " … *we each have both undergraduate and graduate students, and it feels great that those technologies have made communication between the supervisor and the student easier*." (Lithuania).

Another advantage of online teaching defined by participants was the positive effects on students' academic achievement. They stated that with the transition from face-to-face to online teaching, students' exam scores, motivation and interest in courses increased. "*The evaluation scores, thus far, have not been worse, quite the opposite …* ", "*I think so, they valued the lessons, they are more motivating […] if the methodology is well used.* ", " … *this learning, they get more focused and place questions more quickly*." (Portugal).

Participants identified resources as another advantage that online teaching offers students. They emphasized that students could access information faster than before and listen to course recordings as much as they wanted. " … *they are comfortable being able to repeat an unlimited number of times.*" (Lithuania).

3.3. Theme 3: disadvantages of online teaching

This theme reveals the disadvantages of online teaching from the perspectives of academic staff. Although online teaching provides many advantages for both academic staff and students, it also has significant disadvantages. In parallel with the advantages, participants identified the disadvantages of online teaching for both students and academic staff within six subthemes. Disadvantages for academic staff include "deterioration of relations with students", "difficulties related to time management", and "health-related consequences". Disadvantages for students were defined as "limitations in learning methods", "psychological consequences" and "physical consequences".

3.3.1. Disadvantages for academic staff: deterioration of relations with students, difficulties related to time management, and health-related consequences

The participants identified one of the main disadvantages of online teaching as disrupting their relationship with the students. They stated that the lack of physical presence in traditional classrooms, in other words, the lack of eye contact with students, reduced their interactions. They also said that since the students' cameras were not always on, they could not see their students and did not have the opportunity to get to know them. "*That I get sad and hurt because they do not have the cameras on, and then I feel like this, are they even there*?" (Sweden).

In terms of time management, online teaching has caused disadvantages as well as advantages for academic staff. The preparation for courses has taken more time, affecting private life and family dynamics and causing difficulties for academic staff, especially female academics, to govern time. "*What I encountered was that it took a lot more time to prepare for online lesson, because all the materials had to be remade in digital format - both images and videos - all the resources we had previously prepared for face-to-face lessons, all had to be put in digital format.*" (Latvia), " … *Because there is a child on one side, there is something on the other side, trying to somehow get to courses, I mean, it was challenging for me.*" (Türkiye).

Another disadvantage of online teaching, according to the participants, was the consequences for their health. They mentioned that staying in front of the computer for long hours created physical problems. In addition to the lessons, the transfer of meetings to the online environment has caused these periods to take longer and therefore exacerbated the physical effects. They stressed that the effects were not only physical but also emotional. ''*I find it emotionally difficult when a student is not involved. Once everyone is connected to Zoom, the materials are prepared and the academic staff try to involve the students, but there is no answer - it is emotionally difficult.*" (Latvia).

3.3.2. Perceptions toward disadvantages for students: limitations in learning methods, psychological, and physical consequences

Participants stated the main limitation of online teaching in learning as the lack of hands-on experiences compared to face-to-face teaching. "*All, hundred percent of students said they lacked hands-on experience. They understood the theory and saw the examples, but they could not try it for themselves.*" (Latvia), "via *Zoom, we saw that the students lose the patient safety idea very much.*" (Finland).

Another disadvantage identified by the participants was the psychological problems that emerged in the students. Participants thought that while traditional teaching brings students together physically in the classroom and allows the opportunity to socialize, online teaching creates an isolated environment for students and negatively affects students' psychological well-being. "*Because education and university are not just limited to students learning the course; they come here, they socialize.*" (Türkiye). They also stressed that when it is mandatory for the cameras to be on, they believe that the privacy of the students' lives has been violated. This situation was identified by the participants, among other important factors that adversely affected the psychology of the students. " … the question of privacy, of the poor use, or risk of poor use […] of what can be easily recorded … " (Portugal).

According to the participants, another disadvantage online teaching created for students was physical consequences. They said that staying in front of the computer for long hours negatively affected posture and caused eye fatigue. " … *eye fatigue […] students start to have* … ", " … *bad postures* … " (Portugal).

3.4. Theme 4: encouragement for student participation in online courses

This theme captures how the academic staff encourages students to participate in online courses and which strategies/tools they use. With the pandemic, online teaching has created a new experience for both academic staff and students. Although both sides are trying to keep up with this new arrangement, it is clear that academic staff have more duties in carrying out the process. In particular, they had to make great efforts toward student participation in online courses. These efforts are defined by two subthemes: "pedagogical methods" and "external control".

3.4.1. Pedagogical methods and external control

Participants mentioned that they resorted to various pedagogical methods to encourage the students to participate in online

courses. They said that they often asked direct/sudden questions to the students, especially during the lessons. "*Asking questions. In my practice, this is the best way to engage students in the learning process. The student must be named. Then, the student also turns on the microphone and camera.*" (Latvia), "*I always ask and say by name.*" (Lithuania). However, they observed that obtaining feedback from students or providing feedback to students ensured the student's active participation in the lessons. "*I use Jamboard to get practical and anonymous feedback. I use different methods, also orally. If medical students do it more skillfully and more often, then nursing students are often ashamed and unable to assess - then I mix - if there is a lot of time left in the lesson, then orally, if not, I use Jamboard to write an opinion after the lesson. Usually, 15 min of lesson is devoted to feedback.*" (Latvia). They included active learning methods in the form of peer learning and group work in their courses. "*I use team-based learning, so there are always tasks that students do in a team, and they have the opportunity to discuss the task with each other,* support *each other and help if needed, and they can talk to each other about this period of remote learning, and it is especially important because most students are communicative but lack communication with each other, so working in a small team is especially welcome. In turn, if one team is more successful than another, we send them to help others.*" (Latvia). Some participants invited experts from their fields to the courses and created environments that would allow them to share their experiences with the students. They emphasized that such sharing positively affected students' participation and interest in the course. "*I invited a Brazilian colleague […] and the way she talked to the students, it was so funny, and they were constantly questioning …* " (Portugal). Giving students the responsibility of preparing videos within the scope of the course by the academic staff was a frequently used method. " … *I wanted each student to shoot one part of that exercise program for themselves and one part of that exercise program as a video and send it to me.*" (Türkiye).

Participants also resorted to external control to encourage students' participation in courses. The reluctance of students to turn on their cameras has been the main reason for academic staff to resort to video attendance control. Participants shared that such a control mechanism increases the participation of students in the course, even if it is compulsory. "It is the same requirement to turn on the cameras.", " … the talking students must turn on the cameras … " (Lithuania).

3.5. Theme 5: online teaching barriers

This theme describes the barriers that both academic staff and students face regarding online teaching. Online teaching requires detailed and precise planning in advance. However, the pandemic has not left anyone time to prepare ahead of time. Therefore, this situation has brought various difficulties to implementing online teaching. Participants identified barriers to online teaching for both academic staff and students with a total of six subthemes. While barriers to online teaching for academic staff were defined as "issues with resources", "characteristics of the courses", and "issues with academic staff", barriers to online teaching for students were defined as "issues with resources", "students' knowledge" and "issues with environment".

3.5.1 Barriers to online teaching for academic staff: issues with resources, characteristics of the courses, and issues with academic staff

Participants attributed the issues related to resources as the barrier to performing online teaching. They identified the problem of network connection before or during the lesson as a simple but important problem that makes it difficult to teach online. " … *network connection center … of various kinds make it difficult.*" (Finland), " … *the connection broke, got stuck, threw me out of the lecture.*" (Lithuania). They also stressed that their technology was insufficient for online teaching. "*There are technologies that can now truly teach an applied science to a student, perhaps better than those in the field. However, we do not have any of those technologies right now.*" (Türkiye). Those who had to share their rooms with other academic staff mentioned that this situation seriously hindered online lecturing. Physical facility limitations evidenced the problem of coordination to be able to conduct lessons. "*I would say our offices are not suitable for such work, so that there would be some kind of wall, like in offices, that it would be your space.*" (Lithuania). Lack of technical support and good-practice guidelines have been seen as important barriers. "*The problem with* support *functions is that they are divided into three instances and there is a lack of information about who should help*" (Sweden), " … it would be important to have good practice guidelines … " (Portugal).

Participants also identified the characteristics of the courses as a barrier to online teaching. In particular, the high number of students taking online courses has been seen as an important problem. " … *online the number of students per class is alarming.*" (Portugal).

The participants also defined some situations related to themselves as a barrier. Compared to the younger participants, the older participants emphasized that they lacked in using digital technologies, which was an important part of online education. " … *when I saw the digital boards for the first time, without any previous information, this was a barrier for me …* " (Portugal), "*Having basic skills, I do not have this deep knowledge of technology, and what I could do to solve problems.*" *(Sweden).*

3.5.2 Perceptions toward barriers to online teaching for students: issues with resources, students' knowledge, and issues with environment

Participants identified network connectivity issues as significant barriers to online teaching for students. " … *because more than one person was connected at the same time, for example, because her mother was a teacher, there were students who said, 'My mother also studies, so my connection is very bad.*'" (Türkiye). The participants emphasized that some students had difficulties accessing technological devices, while some had to attend online courses from their phones. "*Not everyone has access to all tools, licenses, they are not always compatible with learning platforms …* " (Finland).

Participants identified the lack of digital skills for students regarding the functioning and requirements of the new system as another barrier.

According to the participants, multiple simultaneous activities in the same physical place disrupted the teaching environment. "*There are employees, there are brothers at home, there are others, everyone uses computers and the internet.*" (Türkiye).

3.6. Theme 6: online teaching improvement recommendations

This theme presents recommendations of academic staff on what is needed to improve online teaching. The improvement of online teaching requires knowledge of the demands at different levels. The recommendations of the participants on the improvement of online teaching were defined by three subthemes: "needs of academic staff", "needs of students", and "institutional support".

3.6.1. Needs of academic staff, needs of students, and institutional support

According to the participants, the improvement of online teaching primarily depends on the academic staff receiving more personalized training on this subject. " … *understand the needs […] in this case of the academic staff, and group them in terms of skills, and perform personalized training …* " (Portugal), "*There is probably a lot of potential in making maximum use of all the tools available to get a high-class teaching, or will it be at a lower level precisely because we do not have access to all this technical stuff*" (Sweden).

Participants stressed that reaching online teaching requires internet access and equipment, so to enhance online teaching, it is important to support economically disadvantaged students and to facilitate accessing to technological devices. "*The economic and infrastructure problems of the students need to be solved*", "*The economic strength and social strength of your target students should be very efficient.*" (Türkiye). They also emphasized the need to provide training to students on information technology. "*IT knowledge for students is very different. However, doctors are more knowledgeable, nurses have poorer IT knowledge. We should work on students' IT knowledge. The moment you talk about the possibilities of data analysis and the student asks you how to insert a column or box, or color the box etc. you are a little confused. What if he doesn't know the most basic things you need to know when working with a computer? you can't teach him further.*" (Latvia).

Participants stated that the parties to online teaching are not only academic staff and students but also institutions with important duties in improving and maintaining the process. While emphasizing the need for universities to invest in infrastructure and equipment, they said that establishing hybrid classrooms is necessary for online teaching. " … *I have many internet disruptions […] the school needs to think about this […] needs to invest in equipment.*" (Portugal), "*Maybe you could do something with the glasses (like google glasses) to keep an eye on what's going on.*" (Lithuania). They emphasized that crowded classrooms make online teaching difficult, and it is important to create classrooms to allow student-academic staff interaction for better teaching. " … *we should have a lower number of students because I believe that with smaller groups, we work better …* " (Portugal). They stated that institutions should always provide technical support for the teaching process to function better. " … *it would be great to have that IT professional somewhere close by.*" (Lithuania).

4. Discussion

The findings of the study are remarkable in several respects. According to the findings, academic staff developed their digital technology skills in two different ways. In the informal ways, for example, the academic staff's social networks, colleagues, and own efforts are the sources of skills development. These results conform with Pokhrel and Chhetri's [1] research, where the academic staff collaborated with colleagues to learn from each other to overcome the limitations of virtual teaching. The second is the formal ways, which include attending a course/certificate program or using step-by-step guidelines. However, academic staff underlined the need for more formal training to develop digital skills. It is important for universities to support academic staff in this regard.

Our findings showed that online teaching provides various advantages, such as an advanced learning environment, advanced time management and resources for academic staff compared to traditional classroom teaching. Academic staff favored online education largely because it allowed them to use different methods and practices of teaching. Thanks to their control over the learning environment, the interruption of the lessons by the students was prevented. Bdair [31] supported these findings by concluding that online learning enables academic staff to control the learning environment from student interruptions. One of the other advantages of online teaching has been the reduction of time spent traveling from home to work, which has also been reported in the literature [32]. According to the participants, online teaching provided advantages in terms of flexibility and accessibility. As mentioned in the literature [32,33], online education offers flexibility to regulate the daily dynamics to their time preferences. According to this study, being accessible to students was an advantage of online education. This finding aligns with the literature, where students defined academic staff accessibility as an advantage [34]. As reported in the literature [35], easy access to digital resources has been an important advantage of online teaching for participants.

In addition to academic staff, students also gained various advantages, such as personal benefits (time flexibility, less travel burden, easy access to the academic staff), academic achievement (increase in exam scores, higher motivation, higher participation) and resources (easy/fast access to information, replaying the recordings). The findings are consistent with the work of Bdair [31], who emphasized that the main advantage of online teaching is the time flexibility it provides. Additionally, according to his study, students save time by not going to school due to online teaching. At the same time, online teaching has opened the way for students to communicate through more channels with their academic staff. Although the increase in the student's academic achievement was described as an advantage in our study, there were doubts about the reality of success. Similarly, Bdair [31] mentioned the difficulties of controlling the learning environment during exams while emphasizing increased student success. The advantages regarding resources were also consistent with various studies in the literature. In Mukhtar, Javed, Arooj, and Sethi's [4] study, recording the lessons and then uploading them to the system was mentioned as an important advantage of online education. As stated by Yuhanna, Alexander, and Kachik [35], access to a wealth of information on topics of interest is easier thanks to online education.

However, our findings showed that, compared to traditional classroom teaching, online teaching has disadvantages, including limited interaction between academic staff and students, time management and health problems concerning the academic staff. One of

the most important reasons for limited interaction is the lack of "real" eye contact, an essential pedagogical tool, in online education [36]. Another reason that disrupted the interaction was that the academic staff and students came together only on an online platform, resulting in an "invisible student" who could choose not to use a camera [32,37]. Similarly, in the study of Casacchia et al. [38], academic staff complained about reduced interaction with students during lessons. Academic staff should understand that online education is student-oriented and therefore create course designs that will ensure the active participation of students to promote interaction between the two sides [33]. Another disadvantage of online teaching for academic staff is the difficulty associated with managing time. Problems with time management stemmed from preparing courses for a new teaching environment and combining private life and business life in the same physical space. According to the participants, preparation time for online courses took more time, as reported in the literature [37,39]. The lack of boundaries between work and home was a challenge for time management for both male and female participants. However, as in other studies [32,40], it has been observed that difficulties related to time management are experienced more by female academic staff. Increased childcare burden and spending more time on cooking combined with work responsibilities [41] created more pressure on time management. Health was also mentioned as another disadvantage created by online teaching. Academic staff have had to spend more time in front of the computer to adapt to changes in teaching practices and course designs. This has challenged academic staff, both physically and emotionally, who are already at high risk of work-related mental health problems [38,42].

There have been various disadvantages of online teaching for students as well. The results supported by Bdair [31], Mukhtar et al. [4], Atout et al. [43] showed that online teaching was not suitable for gaining practical competencies and hand-on skills. There were also various health-related disadvantages. The negative effect of online teaching on peer socialization [31,43,44] has also negatively affected students' psychological well-being. As reported in the literature, long hours spent in front of the computer cause eye fatigue and poor posture [45–48].

The rapid transition from face-to-face teaching to compulsory remote teaching needed students to be encouraged to participate in the courses in alternative ways. Consistent with the results of Heilporn, Lakhal, and Bélisle [49] to foster student engagement in the online component of blended learning, most participants tried to increase the participation of the students with a dynamic approach by immediate questions. Feedback was also reported to have been delivered in ways that support student participation, as stated in the literature [50]. Similar to what was reported in the study of Heilporn, Lakhal, and Bélisle [49], most of our participants emphasized the importance of promoting active learning through peer learning or group working. Nevertheless, it is understood that while the participants tried to encourage student engagement in the online courses, they did not use a particular pedagogical strategy. According to the literature [50], the three generally accepted dimensions of student engagement are behavioral, cognitive, and affective. It is crucial to investigate the best ways for academic staff to promote it in certain learning settings.

Unlike traditional classroom education, online education has enabled access to courses through a single internet connection with flexibility in terms of place [51]. However, academic staff encountered fundamental barriers in online teaching, such as network instability, insufficient technology provision, working in the same room, lack of technical support and good-practice guidelines. Similarly, Muflih et al. [52] found that one of the main obstacles to online teaching was an unstable internet connection. Adedoyin and Soykan [53] state that online learning elements are technology driven and dependent on internet facilities, so removing barriers is paramount to taking advantage of opportunities.

There have been various online teaching barriers for students as well. Network instability has been identified as one of the main barriers for both students and academic staff. Participants mentioned that maintaining online teaching on the internet is mandatory. As mentioned above, insufficient physical space is a barrier for academic staff, as supported by the literature [31], crowded house environments and noise have emerged as spatial barriers for students. Difficulties accessing technological devices have been identified as an important barrier for students. These results were supported by Zou, Li, and Jin's [45] research, where many students reported challenges were concerned with technical issues. Providing students with computer classes and the library with an internet connection at any time could be a solution for students who do not have technological devices and the internet at home.

With the COVID-19 pandemic, it seems that no academic staff in the world has experienced online teaching. There was no time to worry about the ideal online teaching, as face-to-face teaching was shifted to online teaching out of necessity. However, the recommendations drawn from the experiences gained are critical for more effective online teaching. Participants indicated that academic staff and students should receive training as a priority for improving online education. These findings are concurrent with Forde and OBrien's [8] results, where the review of barriers and opportunities was presented by digitally enhanced practical skill teaching and learning. Unfortunately, considering that there are students living in rural areas, access to the internet and technological devices necessary for online learning is not equal for all students. The participants highlighted that these inequalities should be eliminated to improve online education. At this point, universities' and states' efforts and roles are critical for equality in online education. While the COVID-19 pandemic has not allowed institutions time to prepare for online education, there is now more time to make the necessary adjustments. The participants' suggestions regarding universities and the state's contributions are to improve the teaching environment physically. Additionally, participants emphasized the significance of technical support given by universities whenever academic staff and students need it. These results were supported by Bdair's [31] research, where faculty and students highlighted the importance of technical support specialists in following up on technical problems.

4.1. Strengths and limitations

This study has several strengths, including that it is conducted at universities from different countries. Considering that most of the studies focused on a single country, a wider geographical distribution made it possible to see different perspectives together. In addition, the qualitative nature of the study provides an in-depth understanding of the experiences of academic staff regarding online

teaching and digital technologies. This will increase the knowledge base and provide a better understanding of the teaching experiences of academic staff in such situations. This research shed light development of online teaching for practical skill.

However, the study also faced some limitations. The direct quotes of academic staff were all translated from a foreign language, which resulted in some odd language constructions. Additionally, our suggestions depend on the experiences of the participating academic staff. As such, these suggestions need to be understood in the context of the specific situations in which they might be applied. Although the academic staff`s experience with online teaching and the use of digital technologies in practical skills-based courses in health care education were explored, they shared their more general experiences regarding online teaching.

The study only examined the experiences of academic staff; hence, future research may also examine the experiences of universities as an organization being on the front line and students. Some of the focus group interviews were conducted online by researchers. Online interviews are criticized for the lack of nonverbal communication [54].

5. Conclusion

The COVID-19 pandemic left neither universities nor academic staff time to prepare for the transition from traditional teaching to compulsory remote teaching through online environments. While online teaching offers many advantages, such as an advanced learning environment, advanced time management and diversity of resources, there are also disadvantages related to the interaction between academic staff and students, time management and health problems. In addition to academic staff, students have also faced various advantages such as personal benefits, academic achievement, and resources as well as various disadvantages such as limitations in learning methods and psychological and physical consequences. Due to the rapid transition from face-to-face to online teaching, it has been necessary to urge students to participate in online courses with heterogeneous pedagogic methods and external control used by academic staff. The unprepared transition to the new teaching environment has caused academic staff and students to face various barriers. One of the important barriers for both parties has been network instability for online teaching. The main goal has been not to create a new educational ecosystem with a transition to online teaching but to continue teaching without interruption. However, fulfilling the requirements of online teaching requires taking several steps. In this respect, the improvement recommendations reported in this study, training about online teaching and learning by academic staff and students, eliminating the disparities experienced by students in accessing online education, investing in infrastructure and equipment, and giving technical support are receiving attention.

This study demonstrates the paradigm shift we are witnessing, and the COVID-19 pandemic has accelerated that. Engaging all actors in practical skills development is crucial for the success of this new teaching environment. Moreover, understanding the experiences of academic staff has the potential to increase student engagement and improve learning outcomes.

Ethical consideration

This study was approved by Başkent University Institutional Review Board and Ethics Committee (Project no: 17162298.600–136) on May 18, 2021. Informed Consent was obtained from all participants for your study.

Data availability statement

Data will be made available on request.

CRediT authorship contribution statement

Cigdem Baskici: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Aydan Aytar:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Halil Ersoy:** Writing – review & editing, Conceptualization. **Camilla Wiktsröm-Grotell:** Writing – review & editing, Project administration, Formal analysis, Data curation, Conceptualization. **Marina Arell-Sundberg:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Hugo Neves:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Verónica Coutinho:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Aurelija Blaževičienė:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Alina Vaškelytė:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Anne Söderlund:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Johanna Fritz:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Raimonds Strods:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Nora Jansone-Ratinika:** Writing – review & editing, Formal analysis, Data curation, Conceptualization. **Sultan Kav:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The project was funded by the European Union Erasmus + KA2 (number: 2020-1-FI01-KA226-HE-092515).

References

[1] S. Pokhrel, R. Chhetri, A literature review on ımpact of COVID-19 Pandemic on teaching and learning, Higher Education for the Future 8 (1) (2021) 133–141, https://doi.org/10.1177/2347631120983481.
[2] K. Lee, M. Fanguy, B. Bligh, X.S. Lu, Adoption of online teaching during the COVID-19 Pandemic: a systematic analysis of changes in university teaching activity, Educ. Rev. 74 (3) (2022) 460–483, https://doi.org/10.1080/00131911.2021.1978401.
[3] R.J. Rudman, Understanding the unintended consequences of online teaching, S. Afr. J. High Educ. 35 (4) (2021) 1–12, https://doi.org/10.20853/35-4-4717.
[4] K. Mukhtar, K. Javed, M. Arooj, A. Sethi, Advantages, limitations and recommendations for online learning during COVID-19 pandemic era, Pakistan J. Med. Sci. 36 (COVID19-S4) (2020) 27–31, https://doi.org/10.12669/pjms.36.COVID19-S4.2785.
[5] S.M. Saha, S.A. Pranty, M.J. Rana, M.J. Islam, Teaching during a pandemic: do university teachers prefer online teaching? Heliyon 8 (1) (2022) e08663 https://doi.org/10.1016/j.heliyon.2021.e08663.
[6] I.F. Badiozaman, A.R. Segar, D. Iah, Examining faculty's online teaching competence during crisis: one semester on, J. Appl. Res. High Educ. 14 (2) (2022) 541–555, https://doi.org/10.1108/JARHE-11-2020-0381.
[7] J. König, D.J. Jäger-Biela, N. Glutsch, Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany, Eur. J. Teach. Educ. 43 (4) (2020) 608–622, https://doi.org/10.1080/02619768.2020.1809650.
[8] C. Forde, A. Obrien, A literature review of barriers and opportunities presented by digitally enhanced practical skill teaching and learning in health science education, Med. Educ. Online 27 (2022), https://doi.org/10.1080/10872981.2022.2068210.
[9] Organisation for Economic Co-operation and Development (OECD), Preliminary Reflections and Research on Knowledge, Skills, Attitudes and Values Necessary for 2030, 2016.
[10] S.P. Sood, S. Keeroo, V.W. Mbarika, N. Prakash, A. Seth, Medical informatics: thirty six peer-reviewed shades, in: Handbook of Research on Distributed Medical Informatics and E-Health, IGI Global, 2009, p. 16.
[11] S. Störmann, M. Stankiewicz, P. Raes, C. Berchtold, Y. Kosanke, G. Illes, P. Loose, M.W. Angstwurm, How well do final year undergraduate medical students master practical clinical skills? GMS Journal for Medical Education 33 (4) (2016) 1–16, https://doi.org/10.3205/zma001057.
[12] A.G. Gregersen, M.T. Hansen, S.E.A. Brynhildsen, V.A. Grøndahl, A.C. Leonardsen, Students' perspectives on learning practical nursing skills: a focus group study in Norway, Nursing Research and Practice (2021) 1–9, https://doi.org/10.1155/2021/8870394.
[13] A. Söderlund, A. Blazeviciene, M. Elvén, A. Vaskelyte, R. Strods, I. Blese, H. Paakkonen, A. Fernandes, D. Cardoso, S. Kav, C. Baskici, C. Wiktsröm-Grotell, Exploring the activities and outcomes of digital teaching and learning of practical skills in higher education for the social and health care professions: a scoping review, Discover Education 2 (1) (2023) 1–31, https://doi.org/10.1007/s44217-022-00022-x.
[14] K. Karakaya, Design considerations in emergency remote teaching during the COVID-19 pandemic: a human-centered approach, Educ. Technol. Res. Dev. 69 (1) (2021) 295–299, https://doi.org/10.1007/s11423-020-09884-0.
[15] L. Dahabiyeh, M.S. Najjar, G. Wang, Online teaching during COVID-19 crisis: the role of technostress and emotional dissonance on online teaching exhaustion and teaching staff productivity, The International Journal of Information and Learning Technology 39 (2) (2022) 97–121, https://doi.org/10.1108/IJILT-09-2021-0147.
[16] S. Noor, F.M. Isa, F.F. Mazhar, Online teaching practices during the COVID-19 Pandemic, Educational Process: Int. J. 9 (3) (2020) 169–184, https://doi.org/10.22521/edupij.2020.93.4.
[17] C.L. Svihus, Online Teaching in Higher Education during the COVID-19 Pandemic, Education and Information Technologies, 2023, pp. 1–19, https://doi.org/10.1007/s10639-023-11971-7.
[18] J.S. Alqahtani, R.G. Mendes, M.I. Triches, T. de Oliveira Sato, J.K. Sreedharan, A.M. Aldhahir, A.A. Alqarni, R.P. Raya, M. Alkhathami, A.Z. Jebakumar, A. Y. AlAyadi, A.S. Alsulayyim, A.S. Alqahtani, S.M. Alghamdi, I.A. AlDraiwiesh, M. Alnasser, R.A. Siraj, A.Y. Naser, H. Alwafi, S.M. AlRabeeah, T. Oyelade, Perspectives, practices, and challenges of online teaching during COVID-19 pandemic: a multinational survey, Heliyon 9 (8) (2023), https://doi.org/10.1016/j.heliyon.2023.e19102, 1, 9.
[19] C. González, D. Ponce, V. Fernández, Teachers' experiences of teaching online during COVID-19: implications for postpandemic professional development, Educ. Technol. Res. Dev. 71 (1) (2023) 55–78, https://doi.org/10.1007/s11423-023-10200-9.
[20] P. Bhatia, A.A. Joseph, Teaching during COVID- 19 pandemic in India: an interpretive phenomenological analysis of faculty's perceptions and experiences, J. Furth. High. Educ. 47 (7) (2023) 925–940, https://doi.org/10.1080/0309877X.2023.2203317.
[21] M.Q. Patton, Qualitative Research and Evaluation Methods, Sage Publications, Thousand Oaks, CA, 2002.
[22] J.W. Creswell, Qualitative Inquiry and Research Design: Choosing Among Five Approaches, Sage Publications, 2013.
[23] B. Glaser, A. Strauss, The Discovery of Grounded Theory: Strategies for Qualitative Research, Sociology Press, Mill Valley, CA, 1967.
[24] N. Jansone-Ratinika, J. Surakka, C. Wikström-Grotell, A. Soderlund, H. Ersoy, S. Kav, C. Baskici, A.M. Fernandes, H.L. Neves, D.F.B. Cardoso, V.R. Dias Coutinho, K.E. Purina-Bieza, Z. Kadakovska, J. Jansone, R. Strods, E. Grigorovica, Best Practice Guide: Digital and Blended Teaching and Learning of Practical Skills in Social and Health Care (DITEPRACT), Arcada University of Applied Sciences, 2023.
[25] P. Colaizzi, Psychological research as the phenomenologist's view it, in: Existential–phenomenological Alternatives for Psychology, Oxford University Press, New York, 1978.
[26] R. Morrow, A. Rodriguez, N. King, Colaizzi's descriptive phenomenological method, Psychol. 28 (8) (2015) 643–644.
[27] QSR International Pty Ltd, NVivo (2020).
[28] A.T.L.A.S. ti Scientific Software Development GmbH, ATLAS.ti 22 Windows, 2022.
[29] VERBI Software, MAXQDA 2022 [computer Software], VERBI Software, Berlin, 2021.
[30] A. Tong, P. Sainsbury, J. Craig, Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups, Int. J. Qual. Health Care 19 (6) (2007) 349–357, https://doi.org/10.1093/intqhc/mzm042.
[31] I.A. Bdair, Nursing students' and faculty members' perspectives about online learning during COVID-19 pandemic: a qualitative study, Teach. Learn. Nurs. 16 (2021) 220–226, https://doi.org/10.1016/j.teln.2021.02.008.
[32] J. Brown, S. Slatyer, S. Jakimowicz, J. Maben, P. Calleja, H. Donovan, L. Cusack, .D. Cameron, V. Cope, T. Levett-Jones, M. Williamson, K. Klockner, A. Walsh, M. Arnold-Chamney, O. Hollingdrake, D. Thoms, R. Dugga, Coping with COVID-19. Work life experiences of nursing, midwifery and paramedic academics: an international interview study, Nurse Educ. Today 119 (2022) 105560, https://doi.org/10.1016/j.nedt.2022.105560.
[33] Z. Almahasees, K. Mohsen, M.O. Amin, Faculty's and students' perceptions of online learning during COVID-19, Frontiers in Education 6 (2021) 638470, https://doi.org/10.3389/feduc.2021.638470.
[34] S.A. Iqbal, M. Ashiq, S.U. Rehman, S. Rashid, N. Tayyab, Students' perceptions and experiences of online education in Pakistani universities and higher education ınstitutes during COVID-19, Educ. Sci. 12 (3) (2022) 166, https://doi.org/10.3390/educsci12030166.
[35] I. Yuhanna, A. Alexander, A. Kachik, Advantages and disadvantages of online learning, Journal Educational Verkenning 1 (2) (2020) 13–19, https://doi.org/10.48173/jev.v1i2.54.
[36] M.K. Christensen, K.S. Nielsen, L.D. O'Neill, Embodied teacher identity: a qualitative study on 'practical sense' as a basic pedagogical condition in times of Covid-19, Adv. Health Sci. Educ. 27 (2022) 577–603, https://doi.org/10.1007/s10459-022-10102-0.
[37] S.M. Attardi, N.M. Mintz, K.A. Rogers, Perspectives of online anatomy teachers: a neglected study population struggles with the invisible student, Anat. Sci. Educ. 15 (2) (2022) 233–248, https://doi.org/10.1002/ase.2169.

[38] M. Casacchia, M.G. Cifone, L. Giusti, L. Fabiani, R. Gatto, L. Lancia, B. Cinque, C. Petrucci, M. Giannoni, R. Ippoliti, A.R. Frattaroli, G. Macchiarelli, R. Roncone, Distance education during COVID 19: an Italian survey on the university teachers' perspectives and their emotional conditions, BMC Med. Educ. 21 (1) (2021) 335, https://doi.org/10.1186/s12909-021-02780-y.
[39] T. Almpanis, P. Joseph-Richard, Lecturing from home: exploring academics' experiences of remote teaching during a pandemic, International Journal of Educational Research Open 3 (2022) 100133, https://doi.org/10.1016/j.ijedro.2022.100133.
[40] T.M. Yildirim, H. Eslen-Ziya, The differential impact of COVID-19 on the work conditions of women and men academics during the lockdown, Gend. Work. Organ. 28 (S1) (2021) 243–249, https://doi.org/10.1111/gwao.12529.
[41] C. Obeng, M. Slaughter, E. Obeng-Gyasi, Childcare issues and the pandemic: working women's experiences in the face of COVID-19, Societies 12 (4) (2022) 103, https://doi.org/10.3390/soc12040103.
[42] S. Wray, G. Kinman, The challenges of COVID-19 for the well-being of academic staff, Occup. Med. 72 (1) (2022) 2–3, https://doi.org/10.1093/occmed/kqab007.
[43] M. Atout, I. Alrimawi, A.M. Ali, M. Dreidi, I.A. Khader, M. Jaghama, Challenges to online education during the time of COVID-19: a focus group study, Nurs. Forum 57 (6) (2022) 1120–1128, https://doi.org/10.1111/nuf.12800.
[44] M. Aksoğan, Opinions of students about distance education in the pandemic process, Naturen (2020) 1–9.
[45] C. Zou, P. Li, L. Jin, Online college English education in Wuhan against the COVID-19 pandemic: student and teacher readiness, challenges and implications, PLoS One 16 (10) (2021) e0258137, https://doi.org/10.1371/journal.pone.0258137.
[46] A.J. Munsamy, S. Naidoo, T. Akoo, S. Jumna, P. Nair, S. Zuma, S. Blose, A case study of digital eye strain in a university student population during the 2020 COVID-19 lockdown in South Africa: evidence of an emerging public health issue, J. Publ. Health Afr. 13 (3) (2021) 1–12, https://doi.org/10.4081/jphia.2022.2103.
[47] S.E. Kotowski, K.G. Davis, Impact of Covid-19 on the Use of Laptops by College Students and the Effects on Posture and Discomfort, Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Maryland, 2021.
[48] Q.B. Yaseen, H. Salah, The impact of e-learning during COVID-19 pandemic on students' body aches on students' body aches, Sci. Rep. 11 (2021) 22379, https://doi.org/10.1038/s41598-021-01967-z.
[49] G. Heilporn, S. Lakhal, M. Bélisle, An examination of teachers' strategies to foster student engagement in blended learning in higher education, International Journal of Educational Technology in Higher Education 18 (2021) 1–25, https://doi.org/10.1186/s41239-021-00260-3.
[50] B. Hollister, P. Nair, S. Hill-Lindsay, L. Chukoskie, Engagement in online learning: student attitudes and behavior during COVID-19, Front. Educ. 7 (2022) 851019, https://doi.org/10.3389/feduc.2022.851019.
[51] A. Reinhart, B. Malzkorn, C. Döing, I. Beyer, J. Jünger, H.M. Bosse, Undergraduate medical education amid COVID-19: a qualitative analysis of enablers and barriers to acquiring competencies in distant learning using focus groups, Med. Educ. Online 26 (1) (2021) 1940765, https://doi.org/10.1080/10872981.2021.1940765.
[52] S. Muflih, S. Abuhammad, S. Al-Azzam, K.H. Alzoubi, Online learning for undergraduate health professional education during COVID-19: Jordanian medical students' attitudes and perceptions, Heliyon 7 (2021) e08031, https://doi.org/10.1016/j.heliyon.2021.e08031.
[53] O.B. Adedoyin, E. Soykan, Covid-19 pandemic and online learning: the challenges and opportunities, Interact. Learn. Environ. 31 (2) (2023) 863–875, https://doi.org/10.1080/10494820.2020.1813180.
[54] A. Cole, The SAGE Encyclopedia of Communication Research Methods, SAGE Publications, 2017.