ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ В ОБРАЗОВАНИИ

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CHALLENGES AND FUTURE PROSPECTS OF ONLINE PRACTICAL EDUCATION IN PHYSICAL EDUCATION FACULTIES DURING THE COVID-19 PANDEMIC

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Abstract. *Introduction.* Coronavirus (COVID-19) is considered a worldwide pandemic, and as such a threat, it caused millions of cases and above million deaths.

Aim. The present research *aims* to explore the challenges among the lecturers and students during the online practical education in the faculties of physical education (PE) during the COVID-19 world pandemic, and to seek the best solutions and applications that can be used under similar circumstances from the perspective of lecturers and students.

Methodology and research methods. The authors used the descriptive approach on a sample of lecturers (n = 63) and students (n = 1391). To reduce face-to-face interaction, the researchers designed the study tool using a web tool, where the study included two questionnaires. The first dealt with the lecturers' challenges during the online practical education and the best solutions and practices from their perception. In addition, the second dealt with the students' challenges during the online practical education and the best solutions and techniques from the students' points of view. We used frequencies, percentages, Cronbach's alpha coefficient, mean, standard deviations, three-way ANOVA, and Scheffe test to address the study sample responses.

Results. The findings show that the educational environment is one of the main challenges facing the lecturers during the online practical education while considering the aspects of students' social and economic factors is one of the essential solutions. In addition, there are statistically significant differences in the level of challenges according to the gender variable. From the students' points of view, the content and the educational environment are among the most significant challenges they face during online practical education.

Scientific novelty. The study attempted to uncover the challenges facing students in physical education faculties in practical subjects. As far as the researchers know, it is considered one of the few studies that addressed the impact of the transition to distance education due to the Coronavirus pandemic. Therefore, this study constitutes a turning point that can be used in future studies.

Practical significance. The *practical significance* of this study lies in the use of its results in strategic planning for distance education in similar situations, thus contributing to achieving better learning outcomes by addressing weaknesses and encouraging positive aspects.

Keywords: challenges, prospects, practical education, online education, Coronavirus pandemic.

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ВЫЗОВЫ ПРАКТИЧЕСКОГО ОНЛАЙН-ОБУЧЕНИЯ И ПЕРСПЕКТИВЫ ФАКУЛЬТЕТОВ ФИЗИЧЕСКОГО ВОСПИТАНИЯ ВО ВРЕМЯ ПАНДЕМИИ COVID-19

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Аннотация. *Введение.* Коронавирус (COVID-19) считается всемирной пандемией, и как такая угроза он стал причиной миллионов случаев заболевания и более миллиона смертей.

Цель. Цель статьи двоякая: во-первых, изучить проблемы преподавателей и студентов во время практического онлайн-обучения на факультетах физического воспитания (ФВ) во время

мировой пандемии COVID-19, а во-вторых, найти лучшие решения и приложения, которые могут быть использованы в аналогичных обстоятельствах, с точки зрения преподавателей и студентов.

Методология и методы исследования. Авторы использовали описательный подход на выборке преподавателей (n = 63) и студентов (n = 1391). Чтобы сократить личное общение, был разработан веб-инструмент, в котором исследование включало две анкеты: для преподавателей и студентов, каждая из которых была посвящена проблемам во время практического онлайн-обучения и лучшим решениям и практикам с точки зрения реципиентов. Мы использовали частоты, проценты, коэффициент альфа Кронбаха, среднее значение, стандартные отклонения, трехфакторный дисперсионный анализ и тест Шеффе для анализа ответов исследуемой выборки.

Результаты. Результаты исследования показывают, что образовательная среда является одной из основных проблем, с которыми сталкиваются преподаватели во время онлайн-практики, а учет аспектов социальных и экономических факторов студентов является одним из важнейших решений. Кроме того, существуют статистически значимые различия в уровне проблем в зависимости от гендерной переменной. С точки зрения студентов, содержание и образовательная среда являются одними из наиболее серьезных проблем, с которыми они сталкиваются во время практического онлайн-обучения.

Научная новизна. В настоящей статье была предпринята попытка раскрыть проблемы, с которыми сталкиваются студенты факультетов физического воспитания при изучении практических предметов. Насколько известно авторам, это исследование считается одним из немногих, в которых рассматривалось влияние перехода на дистанционное образование из-за пандемии COVID-19. Таким образом, данная работа представляет собой поворотный момент, который может быть использован в будущих исследованиях.

Практическая значимость настоящего исследования заключается в использовании его результатов при стратегическом планировании дистанционного образования в аналогичных ситуациях, что способствует достижению лучших результатов обучения путем устранения слабых сторон и поощрения положительных аспектов.

Ключевые слова: вызовы, перспективы, практическое образование, онлайн-обучение, пандемия коронавируса.

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DESAFÍOS Y PERSPECTIVAS DEL APRENDIZAJE PRÁCTICO EN LÍNEA PARA LAS FACULTADES DE EDUCACIÓN FÍSICA DURANTE LA PANDEMIA COVID-19

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Abstracto. *Introducción.* El coronavirus (COVID-19) se ha considerado como pandemia mundial, y como amenaza que es, ocasionó el contagio de millares de personas y más de un millón de casos fatales.

Objetivo. El propósito del artículo tiene un sentido doble: en primer lugar, estudiar los problemas a los que se enfrentan los profesores y estudiantes durante el aprendizaje práctico en línea en los departamentos de educación física (EF) durante la pandemia global de COVID-19, y en segundo lugar, encontrar mejores soluciones y aplicaciones que puedan ser aplicadas en circunstancias análogas desde el punto de vista de los profesores y estudiantes.

Metodología, métodos y procesos de investigación. Los autores utilizaron un enfoque descriptivo con una muestra de profesores (n = 63) y estudiantes (n = 1391). Para mitigar la comunicación frente a frente, se diseñó un instrumento basado en la web en la que el estudio incluyó dos cuestionarios: uno para profesores y otro para estudiantes, cada uno de los cuales se centró en los desafíos durante la enseñanza práctica en línea y las mejores soluciones y prácticas desde el punto de vista de los destinatarios. Utilizamos frecuencias, porcentajes, alfa de Cronbach, medias, desviaciones estándar, análisis de varianza de tres vías y la prueba de Scheffe para analizar las respuestas de la muestra del estudio.

Resultados. Los resultados del estudio muestran que el entorno educativo es uno de los principales problemas a los que se enfrentan los docentes durante la práctica en línea, y tener en cuenta los aspectos de los factores sociales y económicos de los estudiantes es una de las soluciones de mayor relevancia. Además, estadísticamente, existen diferencias significativas a nivel de problemas en función de la variable género. Desde la perspectiva de los estudiantes, el contenido y el entorno de aprendizaje se encuentran entre los desafíos más importantes que enfrentan durante el aprendizaje práctico en línea.

Novedad científica. Con este artículo se tomó la decisión de intentar dislumbrar los problemas que enfrentan los estudiantes de educación física a la hora de cursar materias prácticas. Hasta donde tienen entendido los autores, se cree que este estudio es uno de los pocos que ha examinado el impacto del cambio hacia la educación a distancia debido a la pandemia de COVID-19. Por tanto, este trabajo representa un punto de inflexión que puede utilizarse en futuras investigaciones.

Significado práctico. La importancia práctica de este estudio radica en la utilización de sus resultados en la planificación estratégica de la educación a distancia en situaciones similares a la pandemia vivida, lo que contribuirá al alcance de mejores resultados en el aprendizaje corrigiendo debilidades y promoviendo aspectos positivos.

Palabras claves: desafíos, perspectivas, educación práctica, aprendizaje en línea, pandemia del coronavirus.

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Introduction

Coronavirus (COVID-19) is considered a worldwide pandemic, and as such a threat, it caused millions of cases and above million deaths. Accordingly, all countries have taken several preventive measures to limit the spread of this pandemic, such as maintaining social distance, closing schools, universities, and borders, applying home quarantine, and delaying sports competitions. These procedures and the pandemic have reasonably been assumed as one of the main factors for increased negative feelings and thoughts, anxiety, fear, stress, and sadness in individuals. It is not surprising; therefore that many people have faced physical and psychological issues in addition to mental disorders and symptoms of depression. Moreover, the university closures may have adversely affected students' physical and mental health that could last for a long time [1–4]. Universities have been widely seen as hot spots contributing to the spread of COVID-19 [5]. The effects of this closure also extend to the long-term economic and social aspects [6]. These challenges led universities to take serious steps toward overcoming the current situation, taking into account that the field of physical education was no exception.

For instance, in response to this pandemic, educational institutions turned to online learning as an alternative to direct education to ensure the continuation of this process. This sudden transformation caused enormous pressure on the lecturers [7]. In addition, the universities recommended using online education programmes and open educational applications and platforms that enable students and lecturers to use them to reach students remotely and reduce the disruption of direct education [8]. Studies indicate that online learning increases the retention of information and reduces the time required to implement it. Online learning provides an opportunity to learn in synchronous and asynchronous environments using different devices (smartphones and computers) with access to the Internet, as these environments help students in learning and interacting with both lecturers and colleagues [9]. Furthermore, these technologies enhance learning [10]. For instance, internet websites are used for learning by providing many benefits to students simultaneously, in addition to flexibility, and there are countless opportunities for innovative education that helps workers in the educational process [11].

Importantly, this sudden and rapid shift to online education was accompanied by many challenges and difficulties, namely the infrastructure, which is the first step towards a new model for the educational process that allows the provision of activities that focus on the student through group activities, discussions and practical experiences [12]. The use of technology in the educational process is also accompanied by many personal issues such as anxiety associated with its use, perception of inequality in evaluation (especially in group tasks), and the inability/difficulty in interacting with colleagues [13, 14]. Regarding technology use, we must be aware that this technology is not a one-size-fits-all approach as it is related to the content of the material presented to the students [15]. In addition, online education faces higher student dropout rates than traditional classroom-based education [16]. In addition, anxiety over computer use is considered a limiting factor for e-learning

[17]. Moreover, understanding students' needs is a significant challenge for lecturers in the e-learning environment [18]. Previous research also indicates that e-learning becomes 30% more time-consuming for lecturers than traditional education [19].

The problem of this study appeared for the researchers through the rapid responses of universities in switching to online education for practical subjects and this may lead to some challenges. Therefore, the justification for the need for this research stems from the specificity of types of practical subjects taught in physical education colleges and that there are some subjects that are difficult to teach via the Internet. Thus, **the aim** of this study is to provide the scientific justification for the effect of the Coronavirus pandemic on the online educational process. Moreover, the study raises the following **research questions**:

- What are the challenges, which lecturers and students face during the online practical education in the faculties of physical education?
- What are the best solutions and practices that can be used under similar circumstances from the academics' and students' viewpoints?
- Are there differences in challenges and solutions according to some variables (gender, age, academic degree, and university)?

Literature Review

Notably, the main challenges to the transformation of e-learning include collaborative learning, group presentations, lack of lecturer's adequate preparation, and difficulty of students interaction [13, 20]. Students may also encounter technical problems accessing learning platforms [21]. Students may have negative feelings due to the perception that digital justice is not available in e-learning because they do not know how all other students in the class performed [22]. The lack of live interaction with students may contribute to this perception [23]. During this pandemic, there will be much information, including inaccuracies, as social media contributes to amplifying this information and quickly spreads it [24]. Considering each learner's differences and circumstances also poses increasing pressures and an additional burden on the teaching bodies, which requires adopting educational strategies to support the learners [10].

To overcome these challenges, researchers seek to find the best practices that improve the online education process by providing stable and advanced learning platforms through which they allow the participants to follow the development of the learning process, as well as contribute to developing the social and emotional aspects of students [25]. Therefore, it is recommended that academics have different styles of education to meet the students' needs. Some students prefer learning through live interaction, some prefer learning through visual presentations, and others prefer listening and taking written notes. This helps provide multiple opportunities for further learning [14, 26]. Furthermore, this requires the design of appropriate educational content based on teaching strategies [27]. Additionally, lecturers' characteristics and knowledge of technology are the most critical element in obtaining a successful educational experience [28].

Therefore, providing adequate training will help lecturers perform their work effectively [29]. Online learning also requires the adequate provision of Internet services in terms of speed and packages, considering not disconnecting the Internet from students who cannot pay their bills [30]. In distance education, we also need to provide a list of common questions that explain the mechanisms of accessing learning platforms and how to access tasks while providing solutions to some technical problems [21]. It should be considered to avoid giving too many assignments or assignments that require materials that are not commonly available [30]. There is also a need for the online learning process to be accompanied by continuous verification of feelings of anxiety and tension, which has a profound effect on the success of this process by sending the recordings and reassuring students over the phone [31]. Notably, students interact highly with the videos prepared by their teachers [32].

S. Jaber et al. [33] indicated that there are obstacles to moving to online teaching, as 44% of the respondents believe that online teaching requires longer preparation time compared to face-to-face teaching. Also, 51% believe that the weakness of the Internet constitutes an obstacle to switching to online learning, 18% believe that there is difficulty in tracking student participation, and 11.5% lack technical skills. L. Moustakas & D. Robarade [34] believe that there are three main axes in the reality of e-learning during the Coronavirus pandemic in university sports and physical education, such as the sudden shift, the pursuit of interaction, resources, and training. While the interaction and diversity are critical components of successful online learning, difficulties in motivating students have also been reported, particularly in the absence of visual contact.

The limitation of the study was limited to achieve the following:

1. Objective limits: The study was limited to explore the challenges among the lecturers and students during the online practical education in the faculties of physical education (PE) during the COVID-19 world pandemic, and to seek the best solutions and applications that can be used under similar circumstances from the perspective of lecturers and students.

2. Time limits: The study was implemented in the first semester of the 2020/2021 college year.

3. Spatial limits: The study was conducted in public universities in Jordan.

4. Human limits: This study was applied to a sample of faculties of physical education in Jordanian public universities.

Materials and Methods

Participants

For this study, we used the descriptive approach of the lecturers from the four faculties of physical education in Jordanian public universities (n = 63), and students enrolled in the PE faculties in Jordanian public universities (n = 1391) at

the same universities. All lecturers and students were involved in online learning during the second and summer semesters of 2019/2020. Characteristics of the study participants are presented in Table 1.

Table1

The study sample characterisation (*n* = 1454)

Sample	**Lecturers (*n* = 63)**			**Students (n = 1391)**			
Variables	Category	Frequency	Percentage %	Variables	Category	Frequency	Percentage %
Gender	Male	49	77.8	Gender	Male	697	50.1
	Female	14	22.2		Female	694	49.9
Total		**63**	**100**	**Total**		**1391**	**100**
Age group	30–less than 40 years	19	30.2	Place of residence	City	955	68.7
	40–less than 50 years	31	49.2		Village	436	31.3
	Over 50 years	13	20.6				
Total		**63**	**100**	**Total**		**1391**	**100**
Academic degree	Professor	10	15.9	University	University of Jordan	565	40.6
	Associate Professor	18	28.6				
	Assistant Professor	32	50.8		Mutah University	404	29
	Lecturer	3	4.8				
Total		**63**	**100**		Yarmouk University	238	17.2
University	University of Jordan	20	31.7				
	Mutah University	15	23.8		Hashemite University	184	13.3
	Yarmouk University	13	20.6				
	Hashemite University	15	23.8				
Total		**63**	**100**	**Total**		**1391**	**100**

Measurements

To reduce face-to-face interaction, we designed the study tool using a web tool. The study included two questionnaires. The first questionnaire aimed at the challenges facing online learning and proposed solutions to online learning problems from the lecturer's point of view and consisted of the following two domains: challenges facing online learning (34 items) and proposed solutions to online learning issues (30 items) (Appendix 1). The second questionnaire was related to the challenges facing online learning and proposed solutions to online learning problems from the students' points of view and consisted of the following

two domains: challenges facing online learning (38 items) and the proposed solutions to the problems of online learning (26 items) (Appendix 2). Notably, both questionnaires focused on the following seven topics (educational content, educational environment, infrastructure, social and economic aspects, training, technical support, and government decisions). Responses to each item were assessed using a five-point Likert-type scale anchored by "strongly disagree" and "strongly agree" as follows: strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1). This study was conducted between August–October 2020, and the ladder of appreciation for the responses of the study sample is presented in Table 2.

Table 2

The estimation scale of the study sample responses

Tools	The response	Degree	Average	Level
Challenges and solutions	Strongly agree	5	More than 4.20	Very high
	Agree	4	3.40–less than 4.20	High
	Neutral	3	2.60–less than 3.40	Moderate
	Disagree	2	2.60–less than 1.80	Low
	Strongly disagree	1	Less than 1.80	Very low

Scientific Coefficients of the Study Tools

To verify the validity of the study tools, we presented the questionnaires to the committee that consisted of five arbitrators with the competence and experience of the faculty academic staff at the University of Jordan to find out the suitability of the items of these two questionnaires and their ability to achieve the study aims. In addition, to verify the consistency of the study tools, we used the Cronbach's alpha coefficient. Cronbach's alpha for the challenges and solutions from the lecturers' perception was found to be 0.95 and 0.94, respectively, and from the student's point of view, (0.97) and (0.96), respectively, and these values are considered as high indicators of the stability of the study tools.

Study Variables

Independent variables from the academics' perception are as follows:

1. Gender has two categories (male and female).

2. Age has three types (from 30–less than 40 years, 40–less than 50 years, and over 50 years).

3. Academic degree has four types (professor, associate professor, assistant professor, and lecturer).

4. The university has four educational organisations (University of Jordan, Mutah University, Yarmouk University, and Hashemite University).

Independent variables from the student's perception are the following:

1. Gender has two categories (male and female).
2. Place of residence has two types (city, village).
3. The university has four educational organisations (University of Jordan, Mutah University, Yarmouk University, and Hashemite University).

Dependent variables involve the study sample responses about the challenges and proposed solutions for online practical education.

Ethical Considerations

The participants' rights were protected by explaining the purpose and significance of the study. All participants were informed that their participation in the survey would remain anonymous and that their privacy was respected. They were provided with a comprehensive explanation that their involvement in the study was voluntary and that they could withdraw at any time. Written approval was obtained from all study participants.

Data Analysis

To achieve the objectives of the study and answer its questions, we applied frequencies, percentages, Cronbach's alpha coefficient, mean, standard deviations, three-way ANOVA, and Scheffe test using SPSS version 24 with a confidence level of 95% (p value = 0.05).

Results and Discussion

The data collected from 63 lecturers (Table 3) reveals the means and standard deviations of study sample responses about the challenges they face in teaching practical courses online.

Table 3

Mean and standard deviations of the study sample responses about the online education challenges (n = 63)

Domain aspects	Items	Mean	Standard deviation	Rank	Degree
Educational content	1–5	3.64	0.55	5	High
Educational environment	6–16	3.86	0.71	1	High
Infrastructure	17–20	3.76	0.81	3	High
Social and economic	21–30	3.77	0.79	2	High
Training	31–32	3.55	0.71	7	High
Technical support	33	3.62	0.71	6	High
Government decisions	34	3.75	0.84	4	High
Domain as a whole		3.71	0.46	High	

Table 4 reveals the responses of the study sample related to the proposed solutions from the points of view of academic staff.

Table 4

Mean and standard deviations of the study sample responses about the proposed solutions for online education (n = 63)

Domain aspects	Items	Mean	Standard deviation	Rank	Degree
Educational content	3, 4, 10, 15	4.20	0.70	7	Very high
Educational environment	11–14, 16, 19, 23–24	4.30	0.70	4	Very high
Infrastructure	2, 7–8	4.31	0.70	3	Very high
Social and economic	17, 18, 21, 22, 25–26	4.73	0.73	1	Very high
Training	1, 6	4.30	0.73	4	Very high
Technical support	5, 9, 20, 29	4.30	0.65	4	Very high
Government decisions	27, 28, 30	4.35	0.68	2	Very high
Domain as a whole		4.36	0.45	Very high	

To reveal the differences in the responses of the lecturers regarding the challenges they face in online education according to the variables (gender, age, academic degree) at the level of significance ($\alpha \leqslant 0.05$), we calculated the means and standard deviations of online education challenges as perceived by academics (Table 5).

Table 5

Mean and standard deviations of the challenges facing the online learning according to the variables (gender, age, and academic degree (n = 63)

Domain	Variables	Category	Mean	Standard deviation
The challenges facing the online learning	Gender	Male	3.87	0.44
		Female	3.40	0.37
	Age group	30–less than 40 years	3.64	0.46
		40–less than 50 years	3.85	0.45
		Over 50 years	3.74	0.49
	Academic degree	Professor	3.59	0.28
		Associate Professor	3.91	0.51
		Assistant Professor	3.75	0.48
		Teacher	3.60	0.49

By reviewing the means in Table 5, we found apparent differences between the means of the challenges facing online learning according to the gender, age group, and academic degree variables. Three-way ANOVA was applied to reveal the differences in the challenges facing online learning according to these variables (Table 6). The significance level in the Levin test was 0.821, which is more significant than 0.05, indicating the homogeneity of the variance.

Table 6

Results of three-way ANOVA analysis to reveal the differences in the challenges facing online learning according to variables (gender, age group, and academic degree (n = 63)

Source of variance/ variables	Domain	Sum of squares	df	Mean squares	F	Sig
Gender	The challenges facing the online learning	2.703	1	2.703	15.764	.000*0
Age group		.5460	2	.2730	1.592	.2130
Academic degree		.9540	3	.3180	1.855	.1480
Error		9.602	56	.1710		
Corrected total		13.469	62			

Similarly, the data collected from 1391 students (shown in Table 7) reveals the means and standard deviations of study sample responses about the challenges they face in teaching practical subjects online.

Table 7

Mean and standard deviations of the study sample responses to the online challenges (n = 1391)

Domain aspects	Items	Mean	Standard deviation	Rank	Degree
Educational content	21, 23–29	3.78	1.012	1	High
Educational environment	5, 10, 12–15, 20, 22, 30, 31, 36, 38	3.77	1.03	2	High
Infrastructure	1–3, 6–8	3.47	1.02	7	High
Social and economic	4, 16, 17, 34, 35	3.68	1.05	4	High
Training	11, 32	3.60	1.05	6	High
Technical support	9, 19, 33, 37	3.62	1.04	5	High
Faculty academic	18	3.76	1.04	3	High
Domain as a whole		3.66	0.68	High	

Table 8 reveals the responses of the study sample related to the proposed solutions from the students' points of view.

Table 8

Mean and standard deviations of the study sample responses about the proposed solutions of online education (n = 1391)

Domain aspects	Items	Mean	Standard deviation	Rank	Degree
Educational content	1, 2, 9, 12, 14	4.16	0.96	4	High
Educational environment	3–5, 13, 16–18, 23	4.07	1	6	High
Infrastructure	15, 24	4.05	1	7	High
Social and economic	7, 20, 21	4.20	0.97	2	Very high
Training	10, 11	4.12	0.99	5	High
Technical support	6, 8	4.34	0.91	1	Very high
Faculty academic	19, 22, 25	4.18	0.98	3	High
Domain as a whole		4.15	0.70	High	

In order to reveal the differences in the responses of the students regarding the challenges they face in online education according to the variables (gender, place of residence, university) at the level of significance ($\alpha \leqslant 0.05$), we calculated the means and standard deviations of online education challenges according to these variables (Table 9).

Table 9

Mean and standard deviations of the challenges facing the online learning according to the variables (gender, place of residence, university) (n = 1391)

Domain	Variables	Category	Mean	Standard deviation
The challenges facing the online learning	Gender	Male	3.63	0.68
		Female	3.69	0.67
	Place of residence	City	3.59	0.65
		Village	3.82	0.71
	University	University of Jordan	3.58	0.62
		Mutah University	3.78	0.72
		Yarmouk University	3.68	0.69
		Hashemite University	3.63	0.69

By reviewing the means in Table 9, we found apparent differences between the means of the challenges facing online learning according to the gender, place of residence, university variables. Three-way ANOVA was applied to reveal the differences in the challenges facing online learning according to these variables (Table 10). The significance level in the Levin test was 0.861, which is more significant than 0.05 and indicates the homogeneity of the variance.

Table 10

Results of three-way-ANOVA analysis to reveal the differences in the challenges facing online learning according to variables (gender, place of residence, university) (*n* = 1391)

Source of variance/ variables	Domain	Sum of squares	df	Mean squares	F	Sig
Gender	The challenges facing the online learning	1.233	1	1.233	2.754	.0970
Place of residence		9.631	1	9.631	21.513	.000*0
University		4.184	3	1.395	3.115	.025*0
Error		620.035	1385	.4480		
Corrected total		640.907	1390			

Table 10 shows the existence of statistically significant differences at the level of significance $\alpha \leqslant 0.05$ in the level of challenges facing online learning from students' points of view according to the variable of the place of residence and the university. The Scheffe test was applied to discover the locations of differences, and Table 11 illustrates that.

Table 11

Results of the Scheffe test to reveal the locations of differences in the challenges facing online learning from the students' points of view (*n* = 1328)

Domain	Experience years	Number	Mean	University of Jordan	Mutah University	Yarmouk University	Hashemite University
The challenges facing the online learning	University of Jordan	565	3.58	-	0.05*	0.1	0.2
	Mutah University	404	3.78		-	0.1	0.15
	Yarmouk University	238	3.68			-	*0.05
	Hashemite University	184	3.63				-

Discussion

The university education institutions in Jordan responded to the Coronavirus pandemic by closing universities. However, to continue the education process, they mainly relied on unconventional methods, including using educational platforms and employing some applications in this process, such as Microsoft Teams, Zoom, WhatsApp, and Facebook. Despite the positive benefits of online learning, this sudden, rapid, and total transformation by relying on online education imposed many challenges on everyone involved in the educational process. We believe this process must be evaluated professionally through an analysis based on scientific grounds because the evidence indicates the possibility of continuing in this process for a long time. This requires all parties in the educational process to adapt to these

circumstances. However, the difficulty of this situation became more challenging because we dealt with teaching practical skills online.

By reviewing the lecturers' responses about the challenges facing the online education process in the practical courses, we found that these challenges were the educational environment, which came with a high average (3.86), followed by the social and economic aspects, which also came with a high average (3.77), then the infrastructure (3.76), and finally the government decisions made by the Ministry of Higher Education in Jordan (3.75). These results are consistent with the Cambridge International Examinations study [7], which indicated that this sudden transformation caused enormous pressure on the lecturers. In a detailed analysis of the lecturers' responses about the challenges of online practical courses teaching, we found that lecturers faced several challenges, namely the difficulty of teaching some skills remotely, the difficulty of conducting practical exams remotely, the difficulty of following students through the practical application of the required skills, in addition to the significant dropout of students. Furthermore, some decisions of the Ministry of Higher Education in Jordan also raised these challenges, such as introducing a system of accreditation "pass/fail" instead of the grading system and allowing students "to attend/not attend" the lectures. Importantly, this sudden and rapid shift to online education was accompanied by many challenges and difficulties, namely the infrastructure, which is the first step towards a new model for the educational process that allows the provision of activities to focus on the student through group activities, discussions and practical experiences [12]. Considering each learner's differences and circumstances also poses increasing pressures and an additional burden on the teaching bodies, which requires adopting educational strategies to support the learners [10].

From the lecturers' points of view, the social and economic aspects of the students are considered as one of the essential solutions proposed to overcome these challenges. We agree with this solution, as the Coronavirus pandemic imposed the suspension of all industrial facilities and shops, which affected the living conditions of all individuals. This point is closely related to the student's ability to be provided with intelligent devices to follow the lectures. In addition, providing Internet packages to students at nominal prices is considered one of the proposed solutions because this provides equal opportunities to all students to access the Internet, and the role of telecommunication companies and universities in serving society increases. Taking into account the provision of psychological and social support to students through the diversity of educational patterns and strategies such as mixed teaching that combines synchronous and asynchronous teaching is also essential. Providing audio-visual educational material suits students' needs, as some prefer learning through live interaction while others prefer learning through visual presentations, and some prefer listening and taking written notes. All this helps to present multiple opportunities for further learning. This requires the design of appropriate educational content based on teaching strategies, as the lecturers' characteristics and knowledge of technology may be essential for obtaining a

successful educational experience. The use of technology in the educational process is also accompanied by many personal issues such as anxiety associated with its use, perception of inequality in evaluation (especially in group tasks), and the inability/difficulty in interacting with colleagues [13, 14]. In addition, online education faces higher student dropout rates than traditional classroom-based education [16]. In addition, anxiety over computer use is considered a limiting factor for e-learning [17]. Moreover, understanding students' needs is a significant challenge for lecturers in the e-learning environment [18]. Previous research also indicates that e-learning becomes 30% more time-consuming for lecturers than traditional education [19].

Therefore, providing appropriate training is expected to help lecturers perform their work effectively. Additionally, online learning requires the provision of Internet services effectively in terms of speed and firmness, considering not disconnecting the Internet from students who cannot pay their bills. Notably, the online learning process is accompanied by the continuous verification of feelings of anxiety and tension, which has a profound effect on the success of this process by sending the recordings and reassuring students over the phone, considering that the students interact highly with the video clips that their lecturers prepare. In addition, students should be considered participants in the educational process rather than recipients, taking into account the need to be aware of the technical specifications of the uploaded videos in terms of their quality and timing. Furthermore, results of the current study show statistically significant differences in the challenges facing academic staff in teaching practical courses remotely according to the gender variable, as male students got a higher average than female students. This means that male students face more significant challenges in online education. This may be because some female students have previous experience in online education, reducing their burden. However, the study shows no statistically significant differences according to age and educational degree variables. Notably, the main challenges to the transformation of e-learning include collaborative learning, group presentations, lack of lecturer's adequate preparation, and difficulty of student interaction [13, 20].

Moreover, the students' responses show that they find it difficult when the lecturer is old, as it came with a high average (3.76). This requires the academics to be facilitators to encourage students to become independent learners. From the students' perceptions, the lecturers' characteristics and knowledge of technology are considered the most important for a successful educational experience.

The results showed that there are some online practical skills that cannot be learned online, as it came with a very high average (4.25). In addition, most of the assignments focused on theoretical aspects, while the students' responses showed that they perceived non-fair evaluation during online learning. Students also reported that the lack of diversity in educational styles led to their boredom feeling and red tape, as students emphasised that student dropout became greater during online education. The students also indicate that there are challenges related to the lecturers through their low ability to manage time during the lecture, and do not

provide opportunities for discussion and questioning and that there is injustice in the evaluation. Moreover, from the students' points of view, current results show that the educational content and the educational environment are among the most critical challenges facing them in the process of learning valuable materials from a distance, and this requires the design of educational content appropriately and based on the principles of teaching to accompany the written text that is sent to students via e-mail.

Additionally, students reported lecturers' inability to provide various educational styles, which is consistent with the lecturers' responses to the difficulty they encountered in providing educational audio-visual content. It came with a high average (3.77). Furthermore, it has been reported that lecturers do not provide appropriate feedback to students regarding the timing and quality of notes. Students also claim that there are challenges in teaching practical skills remotely, represented by the absence of training students on educational platforms and modern technology, in addition to the difficulties they face in receiving and sending assignments. Online education does not provide interaction between peers, students, and academics; this requires the presentation of educational styles that encourage cooperative work and provide opportunities for interaction with the teacher through simultaneous activities.

The solutions from the students' points of view imply the need to provide technical support 24 hours a day and psychological, social, and economic support for them. Adverse effects may accompany the closure of universities on students' physical and psychological health, which may last for long periods, taking into account the provision of moral support to students through positive statements and encouraging them to use alternative tools in learning. In addition, there is a need for training students and academic staff on educational platforms and the use of technology. Moreover, there is a need to modify the educational content to be in line with the process of teaching practical skills from online education. This requires shifting the activities that focus on the lecturer, who should focus on students more through group activities, discussions, and practical learning activities. The results of the study show that there are statistically significant differences in the challenges facing students according to the place of residence variable, as students who live in villages suffer from more significant difficulties in learning practical skills from online education due to Internet speed, economic aspects, and community perception about this process.

Therefore, this requires educating societies about the importance of online education, presenting its various advantages, and accepting those who complete their studies through online education. There were also statistically significant differences in the challenges facing students according to the university variable, as the University of Jordan was the least affected in online education, while the University of Mutah was one of the universities most confronting the challenges in teaching practical skills remotely. This confirms the need to pay attention to the remote areas and far from the capital in terms of infrastructure and spread

awareness among community members of the need to pay attention to this process without neglecting the economic aspects of students. This requires melting down social inequalities among students through uniting joint efforts among all parties to the educational process, exchanging knowledge and skills, and sharing positive and successful experiences.

Taking into account the aspects of social and economic factors of students, the results obtained show that the educational environment is one of the main problems facing teachers during online practical training. It is also demonstrated that our research results are in good agreement with the results of researchers from different countries. For example, to overcome the complexities of forming an educational environment, O. Simpson seeks to find the best practices that improve the online education process by providing stable and advanced learning platforms through which they allow the participants to follow the development of the learning process, as well as contribute to developing the social and emotional aspects of students [25]. Therefore, it is recommended that academics have different styles of education to meet the students' needs. Some students prefer learning through live interaction, some prefer learning through visual presentations, and others prefer listening and taking written notes. This helps provide multiple opportunities for further learning [14, 26]. Furthermore, this requires the design of appropriate educational content based on teaching strategies [27]. Additionally, lecturers' characteristics and knowledge of technology are the most critical element in obtaining a successful educational experience [28]. Online learning also requires the adequate provision of Internet services in terms of speed and packages, considering not disconnecting the Internet from students who cannot pay their bills [30].

Conclusion

During the COVID-19 pandemic and with the transition of the university to online education many challenges have arisen for students and academic staff, including difficulties related to the educational content environment, educational styles, difficulties related to the use of smart devices, and access to educational platforms. Also, the absence of technical support around the clock contributed to the absence of digital justice and a lack of regard for individual differences. In addition, the results of the study revealed the most important challenges facing distance education in physical education colleges and the most important future solution. This requires the provision of diverse educational styles, which achieve learning outcomes and encourage collaborative work and direct interaction with colleagues and teachers. In addition, there is a need for telecommunications companies and universities to assume their responsibility to society by providing innovative devices and Internet packages at nominal prices because of the economic conditions imposed by the Coronavirus pandemic. Educational platforms must be developed continuously and this process must be placed under supervision and accountability. In addition, the decisions of the Higher Education Ministry in Jordan must be compatible with the goals of universities.

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