

# Third-Millennium Challenges in Virtual-Learning Contexts: A Systematic Review in Developing Countries

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**Abstract-** Education is the only industry in the pandemic era in most countries, even developing countries, has been wholly transferred to the online mode. Although virtual-learning is the best way to continue education during an epidemic, developing countries face challenges. This study aimed to determine the challenges of virtual education in developing countries. The PRISMA guideline was followed in this review, with seven databases searched: Scopus, ISI, ScienceDirect, Emerald, Pubmed, Ovid SP, and Google Scholar. The query "(virtual-learning OR E-Learning OR online learning) AND (challenges)" was used to retrieve records in the fields of title, keywords, and abstract without any date restrictions in order to achieve as many articles on this topic as possible. Then the references of each article were backward-tracked and searched in Google Scholar to identify extra potentially relevant articles. Three hundred and twenty-five records were retrieved from the literature search on January 9, 2021, with 56 retained after removing duplicates. After a detailed screening and selection process, 32 articles were selected. The results showed that the most critical virtual-learning challenges in developing countries were in six items: 1. Technical (Lack of proper telecommunications infrastructure, Lack of necessary electronic standards, hardware and software, reduced information security) 2. Cultural (attitude of second-rate education) 3. Virtual-learning skills (unfamiliarity with the virtual-learning environment, low hardware, and software literacy) 4. Socio-psychiatric factor (fear and anxiety in facing the virtual-learning environment, Distractions) 5. Quality of (education, difficulty in assessing the quality of learning, Lack of effective student-teacher interaction) 6. Ethical (information plagiarism, Lack of intellectual property rights, and copyright law) were why most e-learners and e-tutors in developing countries were dissatisfied with virtual learning. According to the results, to overcome these challenges, it is necessary to create infrastructure and technology standards and use the experiences of developed countries concerning virtual-learning. In addition, it is necessary to create an appropriate culture and familiarize professors and learners with the development and use of a virtual-learning system while maintaining ethics.

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**Keywords:** Virtual-learning; Challenges; Developing countries

## Introduction

The spread of the coronavirus and the mode of human-to-human created transmission created the need of social distancing and avoiding crowded places (1). So, most governments have closed the schools and institutions in which crowds cannot be averted until in addition note (2). The sudden closure of tutorial

institutions caused the authorities to indicate emergency distance education. Therefore, the conventional strategies (conventional face-to-face teaching) were replaced with on-line (e-learning) at the intervening time (3). Evaluating of developed countries to the developing ones, it became observed that the latter are dealing with demanding situations which include terrible internet connectivity, inadequate information on the use of ICT

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and weakness of content material development, and so forth (4-6). Although nowadays, the challenges to access virtual-learning are less because both learners and teachers have been experienced the excellent opportunity of knowing and interacting with educational technology tools such as mobile-based learning, computer-based learning, and web-based learning (7-9). According to Prensky, today's learners are entirely different from their predecessors because they are native speakers of the technological language. Their interaction with the virtual and digital world is more (10). The interactions of today's learners with different sorts of technology for various purposes enabled them to be active recipients of e-learning (11). However, virtual-learning in higher education institutions in developing countries is faced with several challenges that go away the stakeholders disappointed when they fail to satisfy their expectancies (12,13). According to Alhumaid *et al.*, (14), Eltahir (15), Wanga *et al.*, (16), and Mohammadi, most Virtual -Learning projects in the third world countries fail partly or either absolutely, thus failing to deliver on their promise (17). In the literature, numerous research have addressed the demanding situations related to the introduction of e-learning (4,17-22). There are evidence indicating the introduction of electronic learning projects has failed due to the fact establishments and their components had been no longer organized for the previous practice in developing countries. In addition, people are connected to current pedagogies and practices, making it difficult to adjust to innovations. Some studies showed that the application of virtual -learning had been considered as a strategy at universities worldwide. Virtual-learning has been implemented in universities and schools in developing countries, too. However, previous studies on the challenges of virtual-learning systems suggest that using and implementing this strategy requires considerable analysis in developing countries (18,22-24).

As the rapidly expanding use of E-learning technology in universities and schools of developing countries is realized, analyzing the problems of this emerging phenomenon becomes a kind of necessity. Understanding and facing these problems and issues either reduce their disadvantages and also considering the approach of changing the traditional education method to electronic learning makes universities stronger in stepping to this area; therefore, to implement an e-learning system, an understanding of the facts, circumstances, and challenges of this technology is

required. This study focused on the key challenges which are hindering the shipping of virtual learning in the developing countries.

## Materials and Methods

### Search strategy and selection criteria

The PRISMA guideline was followed in this review, with seven databases searched: Scopus, ISI, Science Direct, Emerald, PubMed, Ovid SP, and Google Scholar. The query "(Virtual-Learning OR E-Learning OR online learning) AND (challenges)" was used to retrieve records in the fields of title, keywords, and abstract without any date restrictions due to find as many articles on this topic as possible. The included articles references were backward-tracked, and searched in Google Scholar was searched to identify extra potentially related articles. It was conducted on January 9, 2021 and three hundred and twenty-five records were retrieved that after removing duplicates 56 retained. The first and second authors conducted the first round of article abstracts screening. In Many review studies a small random sample of abstracts were picked for coding by two or more coders to evaluate selection reliability between different codes to calculate inter-rater reliability. All of the retrieved abstracts in this review, were screened by two authors. and in the case of discrepancies, the third author decided about the abstract retaining for the full-text screening. Finally, twenty-eight articles were selected and following the same procedure full-text screening was performed by the first and second authors for final inclusion. As it shown in figure 1 discrepancies were solved through discussion between the two authors or consultation with the third one. To reach a consensus for each included study. An article was included in this review if the following inclusion criteria were met: 1) published in a peer-reviewed journal; 2) written in English; 3) focused on the challenges in virtual -learning contexts in developing countries rather than it was mentioned only as the context; 4) Not news articles.

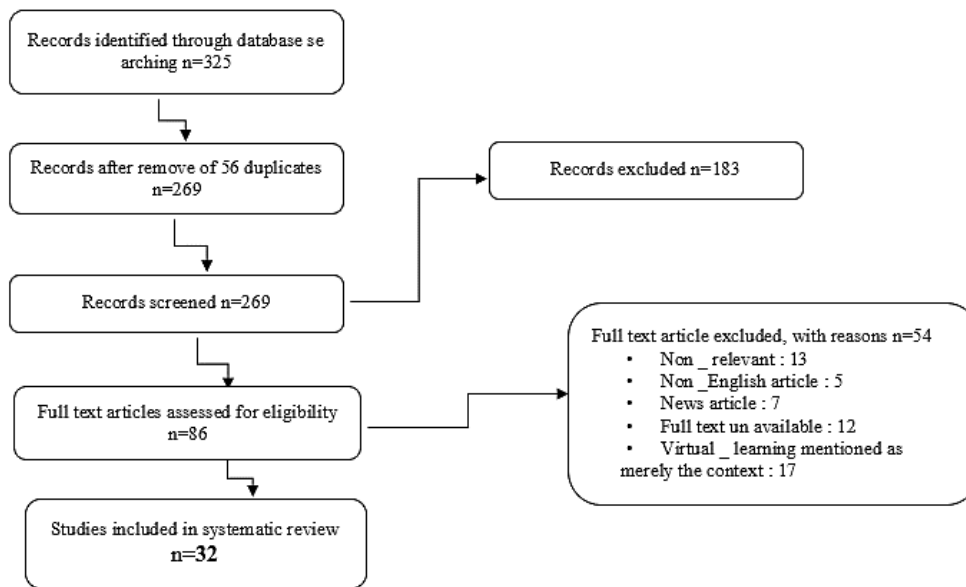


Figure 1. PRISMA flowchart

### Data analysis

Different types of articles such as following the same procedure were included in this review. The information of title, journal name, publication date, country, article type, and the challenges in virtual-learning was extracted from the included articles. A narrative synthesis technique was used to synthesize the findings from various articles considering that have been methodologically heterogeneous. An iterated coding process developed a coding scheme to categorize these findings. For example, if one specific cause was identified from a unique article during the coding, LM attempted to assign it to a specific category in the cause framework. A new subcategory was introduced if the current classes were unsuitable until all the reasons were classified. The same method was done for the impacts and countermeasures; the other author AL did a second round of coding to validate the scheme and they have discussed to solve discrepancies. The third author, RF, become introduced when the consensus not reached. The empirical studies included in this review were evaluated for the risk of bias. For the non-empirical articles, their findings require further validation since their risks of

bias could not be assessed. However, they were also peer-reviewed (with references), providing more perspectives on understanding the virtual-learning challenges.

### Results

The most critical virtual-learning challenges in developing countries were in six items. 1. Technical (Lack of proper telecommunications infrastructure, Lack of necessary electronic standards, hardware and software, reduced information security) 2. Cultural (attitude toward second-rate education) 3. Virtual-learning skills (unfamiliarity with the virtual-learning environment, low hardware and software literacy) 4. Socio-psychiatric factors (fear and anxiety in facing the virtual-learning environment, Distractions) 5. Quality of education (difficulty in assessing the quality of learning, Lack of effective student-teacher interaction) 6. Ethical (information plagiarism, Lack of intellectual property rights, and copyright law). The details are provided in table 1.

**Table 1. Coding framework and Summary of the key findings from the included studies**

Challenges coding categories	Challenges Subcategories	Instances	Author/Date	Research Design	Participants
<b>Technical</b>	Lack of proper telecommunication s infrastructure	<ul style="list-style-type: none"> <li>● Lack of broadband connectivity issues in rural areas</li> <li>● Technophobia</li> </ul>	Muthuprasad, Aiswarya, Aditya, Jha. 2021 (25)	Descriptive-analytical (questionnaire)	307 Agriculture students from different universities of National Agricultural Research System (NARS).
		<ul style="list-style-type: none"> <li>● Network instability and frequent changes in connections and routing</li> <li>● High cost of fiber optic connections</li> <li>● low-speed internet</li> </ul>	Rajab, Mohammad, Gazal, & Alkattan, 2020 (26)	Descriptive-analytical	Medical students/faculty in College of Medicine (COM) of Alfaisal University in Riyadh, Saudi Arabia
		<ul style="list-style-type: none"> <li>● Provide appropriate bandwidth based on estimates</li> <li>● High accessibility and reliability with plug-in connections</li> </ul>	Nyerere, 2016 (18)	Descriptive-analytical	Deans/directors of ODL Centers in twelve universities that are implementing ODL in Kenya
		<ul style="list-style-type: none"> <li>● inadequate information and communication technology (IT) infrastructure</li> <li>● Budgetary constraints and sustainability issues</li> </ul>	Nawaz and Kundi 2010 (27)	Descriptive-analytical	Students/faculty all the Higher Education Institutions (heis) in the cities of Peshawar and Dera Ismail Khan in Pakistan
		<ul style="list-style-type: none"> <li>● Lack of development of proper network infrastructure in deprived areas</li> <li>● lack of free access to services (ICT) in deprived areas</li> </ul>	Oye, Salleh, Iahad 2011 (19)	Descriptive	In Nigerian University
	lack of necessary electronic standards, hardware, and software	<ul style="list-style-type: none"> <li>● Lack of infrastructure in the field of electricity supply</li> <li>● Limited internet and electricity access in some areas</li> <li>● Frequent power and internet outages</li> </ul>	Eltahir. 2019 (15)	Exploratory research	Faculty /students at five public universities in Sudan, as well as policymakers from these institutions and the higher education ministry
		<ul style="list-style-type: none"> <li>● Lack of user interface standard, quality standard, and content transfer in terms of audio, video and text, education</li> <li>● Lack of system design standard,</li> <li>● lack of financial support for providing the necessary equipment</li> </ul>	Letseka, Letseka, Pitsoe, 2016 (28)	Descriptive-analytical	Students of the University of South Africa (UNISA)
		<ul style="list-style-type: none"> <li>● Lack of attention to maintenance and repair of technical devices</li> <li>● Electronic system failure</li> </ul>	Yaghoubi, Malek Mohammadi, Iravani, Attaran, Gheidi, 2008 (29)	A descriptive-correlation survey	Virtual graduated students in Iran (Amirkabir University of Technology, Iran University of Science and Technology (IUST) and Shiraz University)
		<ul style="list-style-type: none"> <li>● lack of accessible, free, and adequate virtual - learning components such as computers, laptops, and the internet</li> <li>● Lack of access to digital resources and suitable software required for e-education</li> </ul>	Olutola and Olatoye, 2015 (30)	Descriptive	Nigerian university
		<ul style="list-style-type: none"> <li>● Lack of security of computer networks</li> <li>● Lack of intelligent filtering and blocking and control of annoying IPs</li> </ul>			

Cont. table 1

<b>Cultural</b>	An attitude of second-rate education	<ul style="list-style-type: none"> <li>• Lack of information security management system (ISMS) using risk assessment strategies</li> </ul>	Qureshi, Ilyas, Yasmin, Whitty, 2012 (20)	Empirical evidence	Student of Pakistan
		<ul style="list-style-type: none"> <li>• lack of security in storing information and uploaded documents, including hackers</li> </ul>	Rhema, Miliszewska 2010 (31)	Descriptive	Virtual campuses in universities and colleges in Libya
		<ul style="list-style-type: none"> <li>• Lack of free similarity software</li> <li>• Some learners do not consider e-learning to be essential and may not be actively present in the classroom.</li> </ul>	Alkharang. 2014(8)	Mix method Quantitative (empirical study) and qualitative	Students/faculty Kuwait
<b>Virtual - learning skills</b>	Unfamiliarity with the virtual-learning environment	<ul style="list-style-type: none"> <li>• Negative attitudes on e-learning and IT</li> <li>• E- Learners' habit to traditional education</li> <li>• Lack of proper advertising for e-learning</li> </ul>	Andersson and Grönlund 2009 (32)	Critical review	No participants
		<ul style="list-style-type: none"> <li>• Lack of interest and commitment of training staff to use e-learning,</li> <li>• Ignorance of the benefits of e-learning and resist the acceptance and use of that</li> </ul>	Gunga, Ricketts. 2007 (33)	Descriptive-analytical	Workers, Teachers, and students
	Low hardware and software literacy	<ul style="list-style-type: none"> <li>• Lack of ICDL skills</li> <li>• Lack of essential computer skills</li> <li>• Lack of essential internet search skills and access to online information</li> </ul>	Shahmoradi, Changizi, Mehraeen, Bashiri, Jannat, Hosseini. 2018 (23)	Descriptive_cross_sectional	Students in Tehran University of Medical Sciences
		<ul style="list-style-type: none"> <li>• Inability to communicate with others via the internet,</li> <li>• The inability to simultaneously type and talk,</li> <li>• Inability to perform and submit online PowerPoint assignments, typing</li> </ul>	Andersson,2008 (34)	Descriptive-analytical	Students and staff includes all staff and managers at the e-learning center at the UCSC and the teachers at the training institutes in Sri Lanka
<b>Socio-psychiatric factors</b>	Fear and anxiety in facing the virtual-learning environment	<ul style="list-style-type: none"> <li>• Fear and anxiety resulting from insufficient knowledge and skills in information technology</li> </ul>	Alhumaid, Ali, Waheed, Zahid, Habes. 2020 (14)	Descriptive-analytical	Instructors from Rawalpindi University in Pakistan
		<ul style="list-style-type: none"> <li>• Feeling anxious about unexpected feedback from teachers or classmates</li> </ul>	Kim and Park. 2018 (9)	Descriptive-analytical	Faculty/students universities in Indonesia
	Distractions	<ul style="list-style-type: none"> <li>• Worry about not having enough time for online exams</li> </ul>	Schurgers, Van Stam, Banda, Labib. 2009 (21)	Qualitative	Students Of University of Zambia
<ul style="list-style-type: none"> <li>• Distractions at home</li> <li>• visual fatigue</li> </ul>		Singh Mahajan, Kaur, Lal, Singh, Kaur. 2021 (35)	Descriptive cross- sectional study	Various colleges of Punjab	
<ul style="list-style-type: none"> <li>• Human or pets' disruption or diversion</li> </ul>		Adedoyin & Soykan 2020(2)	The crisis-response migration methods	Students and faculty members	
<b>Quality of education</b>	Difficulty in assessing the quality of learning	<ul style="list-style-type: none"> <li>• Lack of a curriculum commensurate with e-learning (Pedagogical model, Subject content, Teaching and Learning Activities, Localization, Flexibility)</li> </ul>	Shraim and Khlaif ,2010 (36)	Descriptive-analytical	Students and teachers in Palestine
		<ul style="list-style-type: none"> <li>• Lack of proper planning in the training course and a combination of learning strategies</li> </ul>	Muuro, Wagacha, Kihoro, Oboko. 2014 (37)	A cross-sectional study	Students of two public universities and two private universities in Kenya

Cont. table 1

		<ul style="list-style-type: none"> <li>Weaknesses in creating opportunities for students to experience, explore, create - Feedback and action</li> <li>Weakness in monitoring learners' progress and giving them positive and regular feedback</li> </ul>	Kanwal and Rehman. 2017 (11)	Empirical evidence study	learners at the Virtual University of Pakistan
	Lack of effective student-teacher interaction	<ul style="list-style-type: none"> <li>Lack of face-to-face communication has hindered moral influence and the promotion of interpersonal relationships and role modeling</li> <li>Democratization of teacher-student relations</li> <li>Student communication becomes an inefficient one-way relationship and reduces competition between them</li> <li>Absence of the timely presence of teacher or students in the virtual classroom</li> <li>deficiencies in communication and interaction</li> <li>Lack of Create opportunities for students to discuss and collaborate more with each other</li> <li>lack of Use collaboration tools in virtual classrooms such as shared boards - group web browser and virtual tours</li> </ul>	Salloum, Al-Emran, Shaalan, Tarhini. 2019 (38)	Descriptive-analytical	Students/faculty the British University in Dubai (BUiD) and University of Fujairah (UOF) in the UAE
		<ul style="list-style-type: none"> <li>Democratization of teacher-student relations</li> <li>Student communication becomes an inefficient one-way relationship and reduces competition between them</li> </ul>	Grönlund, Islam, 2010 (39)	Action research study	practitioners and researchers in Sweden and Bangladesh
		<ul style="list-style-type: none"> <li>Absence of the timely presence of teacher or students in the virtual classroom</li> <li>deficiencies in communication and interaction</li> <li>Lack of Create opportunities for students to discuss and collaborate more with each other</li> <li>lack of Use collaboration tools in virtual classrooms such as shared boards - group web browser and virtual tours</li> </ul>	Aboagye, Yawson, Appiah. 2021 (2)	Quantitative	Ghanaian student
		<ul style="list-style-type: none"> <li>deficiencies in communication and interaction</li> <li>Lack of Create opportunities for students to discuss and collaborate more with each other</li> <li>lack of Use collaboration tools in virtual classrooms such as shared boards - group web browser and virtual tours</li> </ul>	Alsoud & harasis 2021 (40)	Descriptive-analytical online-based surveys	Students of Jordanian universities
		<ul style="list-style-type: none"> <li>Lack of Create opportunities for students to discuss and collaborate more with each other</li> <li>lack of Use collaboration tools in virtual classrooms such as shared boards - group web browser and virtual tours</li> </ul>	Owolabi, Oyewole, Oke, 2013 (41)	Descriptive research	Teachers in Nigeria
<b>Ethical</b>	Information plagiarism	<ul style="list-style-type: none"> <li>weakness to maintain control over how data is used, stored, and shared inside and outside the virtual class</li> <li>The use of a filter breaker by e-learners and non-compliance with copyright laws</li> <li>Lack of proper policies and guidelines to prevent data theft by e-learners and et al.</li> </ul>	Zalat, Hamed, Bolbol. 2021 (17)	Descriptive-analytical	Medical staff members, Zagazig University, Egypt
		<ul style="list-style-type: none"> <li>Lack of proper policies and guidelines to prevent data theft by e-learners and et al.</li> </ul>	Gitonga, Muuro, Nzuki, 2014 (42)	A descriptive and cross-sectional study	students from Kenyatta and KCA universities in Kenya
	Lack of intellectual property rights and copyright law	<ul style="list-style-type: none"> <li>Lack of respect and disregard for copyright law</li> <li>Lack of adherence to ethical obligations and laws e-learning</li> </ul>	Wanga, Ngumbuke, Oroma. 2012 (16)	A descriptive and cross-sectional study	Uganda primary education (UPE)/ Uganda secondary education (USE)

## Discussion

The primary purpose of this paper was to identify and analyze significant challenges for virtual-learning virtual-learning in a developing country context where exposure to ICTs is low and virtual-learning courses rare. This paper informs both research and practice about factors that require particular attention in the virtual-learning context. Virtual-learning carries excellent potential for developing countries, but

particular challenges need consideration. Six significant challenges were identified in this context: 1. Technical (Lack of proper telecommunications infrastructure, Lack of necessary electronic standards, hardware and software, reduced information security) 2. Cultural (attitude toward second-rate education (3. Virtual-learning skills (unfamiliarity with the virtual-learning virtual-learning environment, low hardware, and software literacy) 4. Socio-psychiatric factors (fear and anxiety in facing the virtual-learning virtual-learning

environment, Distractions) 5. Quality of education (difficulty in assessing the quality of learning, Lack of effective student-teacher interaction (6. Ethics (information plagiarism, Lack of intellectual property rights, and copyright law) was why most developing countries were dissatisfied with virtual-learning virtual-learning.

### Technical

The technical problem is the main challenge in universities and schools in developing countries (14,15,26,27,29,43); as most of the virtual learning techniques used are borrowed from developed countries (19). These techniques have been developed according to the needs and requirements arising from the situation in these countries, which is very different from the situation in developing countries (29). Attempting to adapt these borrowed techniques to universities and schools in the context of developing countries presents further challenges (30,43,44). This borrowing needs the high financial resources and ICT infrastructure requirements necessary to operate a world-class virtual learning solution (43) that was previously essential for many universities and schools in developing countries as previously observed (15). In some reports it is suggested that developing countries conducted feasibility studies before investing in virtual learning, targeting the technical choices of virtual learning while maintaining a competitive advantage (8,31,45,46).

### Cultural

Quality is considered the degree of excellence, and in the e-Learning context in developed countries, such as the UK, Australia, Korea, and France (19), Njoroge and Kibaru introduced it as an excellent, valuable, outstanding and positively impactful service to the virtual-learner (47). Gaskell and Mills, stated that the quality of virtual -learning delivery has occasionally been challenged and questioned in developing countries (12), where virtual -learners and e-tutors have had to contend with negative perceptions from their traditional learning (48). In one study, one of the biggest challenges of virtual-learning in developing countries was the attitude of second-rate and minor education with the function of creating opportunities for funding and tuition, which is considered an opposing advantage for teachers (8), although professors believe that successful teaching of virtual-learning requires positive attitude and experience (32). This type of education in developing countries has a long way from success and requires more

cultural issues and more accountable measures.

### Virtual-learning skills

Although virtual-learning has many advantages for e-tutors and e-learners and the education system in developing countries, fear and anxiety in the face of virtual education - low hardware and software literacy and unfamiliarity with the virtual-learning environment is a reason for the Lack of inclination and barrier to using virtual-learning in developing countries (23,33,34). Educational section support can be a stimulus for virtual-learning in universities and educational organizations (22) and support virtual-learning skills-eliminating and its challenges-recognizing the benefits of virtual-learning applications (49).

### Socio-psychiatric factors

Since the beginning of virtual learning, stress has increased. Personal anxiety and fear of online learning, inadequate learning environment at home, not having a separate room, anxiety associated with new pedagogy techniques because of insufficient knowledge and skills in information technology; Lack of time for online exams, and issues about unexpected feedback from both teachers and classmates faced learners with enormous challenges (2,9,14,21,35).

For example, interruption in e-learning by family members or pets' intrusion (like dogs barking or cats' walking across the table) may cause disruption or diversion of online learning participants' attention during the learning process and online teaching (35).

### Quality of education

Learners can interact amongst themselves (7,48), discover ideas and facts on their own, and experience firsthand knowledge (by participating in virtual learning process (11); but it is not the case with most recent virtual-Learning systems in developing countries (38); since they are content-centered (16). Many systems of virtual-learning in developing countries encourage an inert virtual learner (36); a fact referring to the Lack of synchronous interactive capabilities that are the symbol of interaction between the learner-tutor and learner-learner (5). Muuro *et al.*, also revealed that many virtual-learning initiatives in developing countries are characterized by a lack of e-tutor feedback and learner collaboration (37). Some studies showed that e-tutors was not succeed to initiate collaborative activities in the e-learners of e-learners, suggesting that their e-tutors did

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not involve them in collaborative tasks (2,39,41,50). In situations where the e-learners were taken apart in collaborative activities, lack of e-tutor feedback was a great challenge (36), a problem that many studies referring to the Lack of e-tutor training and low motivation in the part of the e-tutor (4-6,16,17,51). Also, the course content have been uploaded in the form of lecture notes, tests, and assignments on the universities' virtual-Learning portals in the most e-tutors (21), and in turn e-learners, download these notes, tests, and assignments from the institutions' virtual-learning portals (27). They study the lecture notes and do the assignments individually because the systems are not designed for collaborative group work (39,41).

### Ethical

Current Virtual-Learning systems in developing countries supporting online learning do not sufficiently meet essential security requirements (24,46). online learning experiences are usually designed and implemented with pedagogical principles, while security issues are largely ignored in these countries (22). This may lead to undesirable situations that have a detrimental impact on the learning process and its management, such as Lack of security in storing information and uploaded documents, including hackers (42); Lack of intellectual property rights and copyright law (16) and weakening adherence to ethical obligations to education (52). Therefore, e-learning technologies have several security threats to both the user and the provider. E-tutors and e-learners can copy another e-tutor and e-learners' work and claim it to be their own. E-learners can also gain unauthorized access to the databases that store questions etc., (51).

Several challenges inhibit the implementation and provision of virtual-learning in universities of developing countries and schools and thus effect on the full realization of the benefits and opportunities that can result from the adoption of virtual-learning in the countries' education and higher education sector.

Some of the Internet Services Providers in different countries provide socio-economic intervention programs, such as the provision of free broadband to college USA students (53), or have launched special bundles and increased their zero-rated offer to all public citadels of learning in South Africa (54), or give 20 and 60 gigabytes of free internet to teachers and faculty members who are teaching students online amid the spread of the coronavirus in Iran (55). Relying on remote learning and online classes also exposes the

country's deep digital divides. Too many children live without essential internet services and drop out of school in remote areas.

Lack of devices like PC, laptop, microphone or device incompatibility to the applications used for online classes like Skype, adobe connect, Low-quality audio or video; low bandwidth, Lack of compatible learning environment, distractions that deviate learner from learning, Lack of user training for the virtual environment, Lack of attention by the instructor to addresses learners' queries or get feedback from them, and Lack of interest or enthusiasm in learning are the most faced e-learning issues in developing countries (25).

Other problems that have not been addressed in the six items but have sometimes caused problems in the e-learning process include learners' health issues due to the effects of harmful radiation or the confusion of users among downloaded digital files due to the Lack of training to manage them. Alternatively, time zone differences of learners in different countries and not having a specific time for training.

However, not all the universities and schools experienced these challenges in developing countries. In another word, the degree to which they inhibit the implementation and provision of virtual-learning is different from one institution to the other and from one country to another. This study recommends addressing these challenges to minimize the impact on the implementation and delivery of virtual learning in developing countries. Virtual learning professionals and researchers in countries and organizations need to face the situation and find ways to address these challenges.

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