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Original Article

Evaluation of Virtual Education Challenges at COVID-19 Pandemic in Iran: Practical Solutions for Optimal Usage at the Educational System

Rahim Moradi[1*], PhD; Behnam Rasouli[2], PhD

[1]*Department of Educational Sciences, Faculty of Humanities, Arak University, Arak, Iran*
[2]*Department of Educational Science, Faculty of Psychology and Education, University of Allameh Tabataba'i University, Tehran, Iran*

ABSTRACT

Background: By closing university and educational centers due to the pandemic outbreak of Coronavirus, E-learning achieved prominence. The technology advances in this field, moreover, have caused fundamantal changes in many approaches, including learning assessment methods. Therefore, this study aimed to identify the challenges of evaluating E-learning in the Coronavirus era and provide practical solutions for the optimal usage at the educational system in Iran.

Methods: This is a qualitative and research synthesis study. The inclusion criterion was the studies indexed in national and international databases, which were identified through a systematic search process. From 170 studies identified in the initial review stage, 100 were excluded from the analysis process due to the lack of sufficient information on the research objectives, repetitiveness, and unrelated research objectives. Then, in the content review, 70 researches were examined, and finally 20 studies which met the criteria for in-depth analysis were selected.

Results: The analysis of the selected studies showed that there were key challenges in the E-learning assessment such as validity and reliability, lack of real measurement of learning results, lack of real interaction between students and professors, technological challenges, and heavy workload for the teacher and learner.

Conclusion: According to the results of the research, it is suggested that an agenda should be set in educational systems for the training the professors with applying and integrating the new tools and technologies in the assessment of the students' learning.

Keywords: Learning, Education, Distance, Research, Evaluating challenges, Coronavirus, Practical solutions

Corresponding author:
Rahim Moradi, PhD;
Department of Educational Sciences, Faculty of Humanities, Arak University, Arak, Iran
Tel: +98 9372408016
Email: rahimnor08@gmail.com

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Introduction

After the outbreak of the Covid-19 pandemic, health protocols emphasized social distancing (1). In that sense, in many countries, to reduce the spread of the Coronavirus, face-to-face training was suspended in schools and universities (2). Meanwhile, the closure, cancellations and restrictions of universities and educational centers as a response to the COVID-19 pandemic enhanced the importance of E-learning, and it promoted the schools and universities to provide the learners with virtual education instead of face-to-face classes (3). In other words, the growing spread of the Coronavirus in the world forced many countries to take measures, such as cancelling face-to-face activities in all educational levels and adopt the modern educational approches through social platforms and E-learning tools (4). As a result of the educational advances, teachers and professors used these technologies to facilitate the learning process among the learners and produced creative and innovative learning opportunities. In other words, the technology progress in education created new forms of learning, one of which was Virtual Eduvation or E-learning (2). Education and training experts believe that E-learning in the Coronavirus era has particular characteristics:

Unexpectedness: E-learning, due to unpredictable needs, was applied in educational centers without prior preparation (5). *Compulsion*: In many countries, it is imposed as an outstanding national measure (6). While distance learning was just a formality, now it is implemented as a necessity to confront the Coronavirus, and distance education has become , a "critical mission" (7). *Universality*: E-learning, as a worldwide reality, was used as a non-pharmacological intervention around the world (2). *Reputation*: It has become such a common interest in societies that dominates the public domain.

Pervasiveness: Before the Coronavirus spread, E-learning was mostly used in universities; nevertheless, today, ithas entered the schools, in all educational levels and centers, as an educational approach (3). *Medical Emergency*: Whereas the route impassability, remote areas, physical disability, and war were the deliberate reasons for virtual training usage, now it is used as a vehicle to deal with a global crisis in the field of public health (8).

Therefore, it can be said that the emergence and expansion of the computer and Internet technology provided the educational centers with new and powerful tools, so that they can achieve their institutional goals and create new and dynamic teaching-learning environments (2). Today, web-based distance education has recieved the attention of the most universities (9). E-learning provides the learners with opportunities to access materials and contents, participate in a collaborative learning environment, and obtain formative and cumulative feedback and assessment from professors (10). The learner, however, can voluntarily choose what, how, where, and when to learn (9); it leads to the realization of universal and public education (11). Since it has no need for physical facilities and classroom, the infrastructure costs are reduced (12); ultimately, it leads to information expansion and social interactions (11).

Moreover, learners and teachers can attend the classroom and use the educational facilities without being restricted to a specific time or place. E-learning facilitates teaching and learning features for learner-centeredness, context awareness, personalization, adaptability, interaction and immediate feedback, and assessment integration (13).

The assessment of learning by learners is, moreover, another important issue in electronic education environments. Some other issues that lead to challenges faced by E-learning include difficulties in the interaction between the instructor and the learner, use of technology to communicate with learners, workload and time management, possibility of getting feedback from experts, and the continuous need to collect a variety of assessment data (11). One of the basic concerns in this field is the quality of assessment. There are various roles and processes in E-learning design (14). According to Khan (15), E-learning consists

of several factors, includeing educational factors (education design, implementation and assessment), managerial and administrative factors (rules of registration, acceptance, documents, certificates, etc.), technical factors (software, hardware and user interface), support factors, and ethical factors.

Utilizing the information and communication technology in education, in addition to raising issues in both content and course materials transfer, leads to discussions about the possibility or impossibility of using traditional education tests on the Internet platform (11). Experts believe that as the systems of learning paradigms are different, and it is necessary to use methods and tools appropriate to each paradigm to measure the learning of the learners in network-based education, similarly, such assessment methods should be used that are compatible with the nature of the education type and environment; since plurality and variety of the factors effective on distance education makes its structure complicated, it causes concerns for teachers and learners (12).

In addition, teachers cannot monitor, in online classes, the educational activities of learners for a long time, or react to their questions, points of view, and non-verbal behaviors; thus, they have to explore other techniques to receive the expected information (15).

However, virtual learning environments have various facilities and capabilities that can help to apply effective methods and strategies to truly measure the learning of learners (11). Experts believe that E-learning has limitations, for example, it may not be able to supersede the teacher attendance, human emotional interactions, and face-to-face communication in the classroom (16).

In various researches, however, following E-learning challenges has been mentioned in general; Beleulmi in his study (17) refers to delay in feedback from the instructor, lack of social feeling, and feeling of isolation as disadvantages of E-learning courses. The author acknowledges that these disadvantages can be the result of the lack of effective comprehensive interaction with the instructor (15). The lack of interaction and support service program for the learner can be considered as the challenges that lead to the feeling of isolation, lack of self-regulation, and reduced motivation.

Al-Maqbali and Raja Hussain (18) in their research examined the challenges of E-learning assessment, and the results showed that challenges included heavy teaching workloads, cheating, lack of online assessment tools, false or false identity/ inauthenticity, lack of assessment measure for practical experiences, plagiarism, grade inflation, teamwork assessment, scientific authenticity and great number of students in every section. Also, Maatuk et al. (19) in a study mentioned that large physical distance, teaching problems, assessment problems, and copyright are the challenges with which E-learning is faced (18).

The widespread use of E-learning during the outbreak of Coronavirus, therefore, has faced the professors and teachers with challenges in E-learning assessment. A review on the related researches revealed that there was no independent research, using a Research Synthesis method, on identifying the challenges of E-learning assessment in Coronavirus era. Therefore, carrying out research which can suggest a general framework of challenges of E-learning assessment and their applicable solutions and identify the shortcomings of previous researches can help to plan and set policiesin the field of educational system. For this end, we aimed to identify and discover the challenges of E-learning evaluation and present a conceptual model of the existing studies in this field.

The following questions were posed:

1. What are the challenges of E-learning evaluation in the era of Coronavirus

2. What are the solutions of these challenges for the optimal use of the educational system in Iran?

Methods

The current research was conducted as a

qualitative study using the research synthesis and systemitised review method. Research synthesis pays attention to previous relevant theories, critically analyzes the findings in a specific field, and tries to resolve the conflicts in the literature and determine the main topics for future research (19, 20). In other words, research synthesis integrates the current knowledge and research findings related to a subject in order to generalize and apply the existing findings, and develop new knowledge by an integration process (21).

To systematize the research process, we used the seven-step method of Sandelowski and Barroso (22) as follows:

1. *Setting the research question*; 2. *Performing a systematic review of the sources;* 3. S*earching and selecting appropriate sources*; 4. *Extracting data from the findings*; 5. *Analyzing and combining the findings of the investigated sources*; 6. *Performing quality control, and* 7. *Finding presentation*.

Therefore, based on this method, the question of who, when, and how was raised, as clarified below. The research data (who) includes articles indexed in national and international databases. In order to access the background and collect data appropriate to the purpose of the research (systematic review of sources), studies were selected from national databases such as Megairan, Normagz, Civilica, Research Institute of Humanities, Iran profile, and international databases such as Scopus Science Direct, ProQuest, Eric, Springer and Google Scholar. Keywords in the systematic search of international databases: E-Learning, Virtual learning ,Online learning OR /And challenges, Barriers, Problems OR / And Assessment, evaluation.

Criteria for Selecting Articles

In order to achieve the goal of the research, we considered the literature published in the last 10 years in international researches, and for the last 8 years in national researches. Also, all articles of scientific journals, seminars and conferences, theses and doctoral dissertations were included in the results. Book chapters, newspaper articles, general magazines, reports and editorials were, nevertheless, excluded from the search process. In all stages of the review, from the title and abstract to the full text, until reaching the final articles for analysis. The related criteria of articles: related to virtual education, related to E-learning, related to electronic education, related to the publication year 2012 and later for international researches, related to the publication year 2014 and later for natinal researches, public interviews and reports. The unrelated criteria of articles: irrelated to virtual education, irrelated to the Coronavirus era, lack of research in education or higher Education, publication years older than 2012 for international research, publication years older than 2014 for natinal research, published in authoritative scientific journals and magazines and theses and Ph. D dissertations.

Systematic Search Output

In the process of searching and selecting articles, as shown in Figure 1, after the initial search in reliable databases, 170 studies were identified. In the process of searching and screening the articles, the current sources were reviewed according to the title, abstract, and content. We, moreover, used the Critical Appraisal Skills Program (CASP) method as quality check list to evaluate the quality of the articles. The main assessment criteria, in line with the analysis of the articles and reaching the goal of the research, include the relevance of the item title, item topic, its up-to-dateness, accuracy of the findings and results, and the overall value of the item (how). In addition, the independent variable criterion for E-learning assessment, in order to consider its effects and time period, was from 2012 to 2022. From all the included studies, 100 studies were excluded from the analysis process due to insufficient information concerning research objectives, repetitiveness, and lack of relevance to the research objectives. Also, in the next stage review, some researches were excluded from the review process due to not mentioning the challenges of E-learning assessment. Subsequently, 25 items were selected from

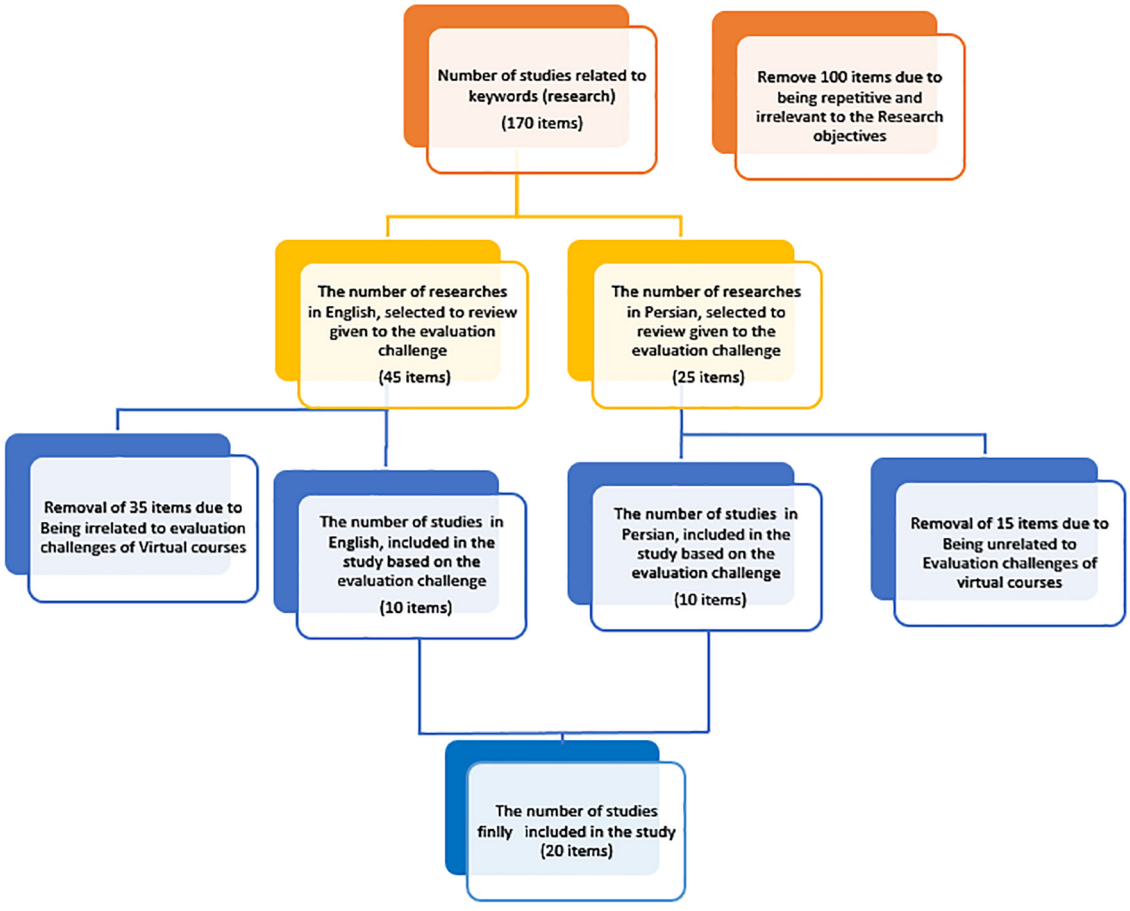

Figure 1: Chart of the review and selection process of the items during the systematic review

the natinal database from 2012 to 2022, and 45 items were selected from international databases, from 2012 to 2022. Finally, we obtained the required data, 20 samples were purposefully selected and analyzed, according to the criteria of research, title, abstract, and body of the text. The data and results of the research findings were classified and analyzed in two dimensions of open concepts and core (main) categories. The data and sources used were refined and extracted in several stages. After analysis and combination of the results, a concept was presented in a conceptual framework (Figure 2).

In order to ensure the validity and reliability of qualitative studies, we used two methods

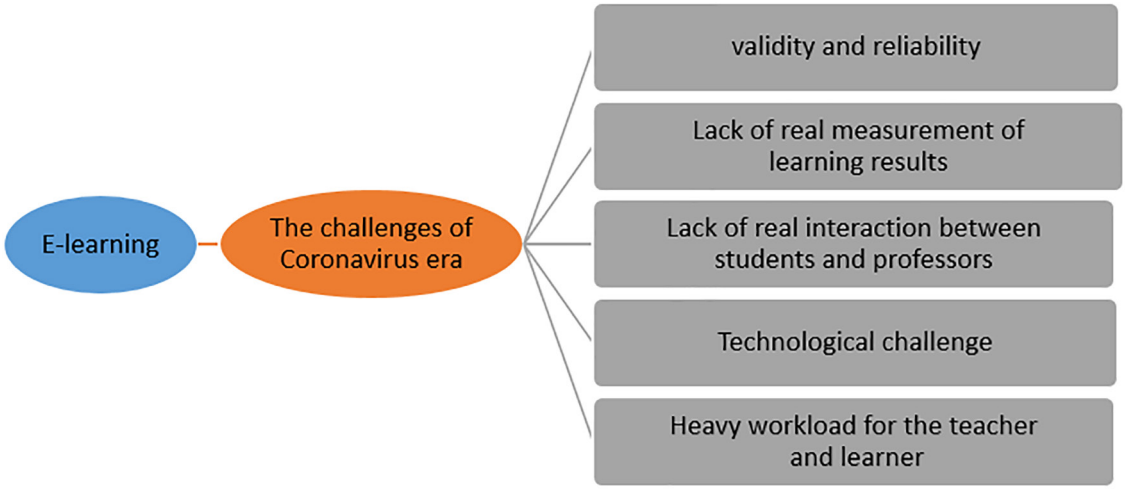

Figure 2: Challenges of E-learning assessment at COVID-19 Pandemic

Table 1: Kappa coefficient obtained from agreement

Symmetric Measures					
		Kappa value	Asymptotic Standard error	Approximate TB	Approximate Significance
Measure of Agreement	Kappa	0.63	0.99	6.54	
N of Valid Cases					

a. Not assuming the null hypothesis; b. Using the asymptotic standard error assuming the null hypothesis

of member control and Kappa coefficient in the current research (Table 1). The obtained analysis and interpretations were evaluated by two experts active in the field of coding and qualitative research, and their accuracy was confirmed. The Kappa coefficient obtained was also obtained by two evaluators (the author and an expert). The analysis of the selected items was carried out according to the assessment challenges in E-learning, summarization of the results, and interpretation of the researchers (analysis and presentation of findings).

Result

In accordance with the method of the current research, which is qualitative and research synthesis, the analysis and interpretation of the data was carried out as follows:

Initially, 20 studies were selected as a sample according to the theoretical saturation of the data, which had the most harmony and appropriateness with the research objectives. After selecting the samples, the desired researches were carefully analyzed. Table 2 explains the characteristics of each

Table 2: Related research to E-learning assessment challenges in the university system in the era of Coronavirus

Code	Researcher(s)	Year	Research title	Research type	Findings
1	Beleulmi (17)	2022	Challenges of online assessment during Covid-19 Pandemic: An experience of Study Skills teachers	Qualitative	The results indicates that these teachers believe that online assessment was necessary and useful, especially during the quarantine period of the epidemic; however, they believe that they come with challenges due to non compliance with this assessment method, lack of face-to-face teaching, technical problems and academic inauthenticity.
2	Al-Maqbali & Raja Hussain (18)	2022	The impact of online assessment challenges on assessment principles during COVID-19 in Oman	Synthesis	When using online assessment, this study found challenges such as learners' refusal to turn on cameras, heavy teaching workloads, cheating, long time needed to develop online assessment tools, false identity/ inauthenticity, assessment of practical experiences, plagiarism, grades inflation, assessment of team-working, scientific authenticity and excess of students in each section. This study concluded that these challenges threaten the principles of validity, efficiency, fairness, reliability, and diversity, respectively.

3	Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi (19)	2022	The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors	Qualitative	Challenges include physical distance, teaching problems, assessment problems and copyright.
4	Almeida & Monteiro (23)	2021	The challenges of assessing and evaluating the students at distance.	Review	To the teachers, there is a lot of concern about adopting models free of cheating and excessive focusing on the collective assessment component, which is less superior in the distance education model compared to the processes of gradual monitoring and assessment of students. There is, also, Challenge in human and social interactions. To the students, there are issues with equipment to track training sessions, and concerns about their privacy, especially when intrusive IT solutions request them to access to their cameras, audio and desktops.
5	Aboagye, Yawson & Appiah (24)	2021	COVID-19 and E-learning: The challenges of students in tertiary institutions	Correlative	The most important challenges include social, teaching, academic and general issues.
6	Zalat, Hamed & Bolbol (25)	2021	The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 Pandemic among medical universities staff	Survey	The majority (88%) of staff agreed that the technological skills of online course delivery increased the educational value of the college staff experience. Participants' agreement on perceived usefulness, perceived ease of use, and acceptance of electronic training was 77.1% 76.5% and 80.9% respectively. The highest barriers for e-learning were insufficient/unstable internet connection (40%), insufficient computer labs (36%), lack of computers/laptops (32%), and technical problems (32%), respectively. The most important indicators influencing the acceptance of e-learning included low age, teaching experience of less than 10 years and being male.
7	Chamase-mani & ehtesham (26)	2021	E Designing a conceptual model of factors affecting the quality of university virtual education and evaluate its quality during the COVID.19 pandemic	Blended	The identified challenges include lack of attention to the appropriate infrastructure for education, lack of assessment of deep understanding, possibility of cheating, lack of assessment compatibility with teaching methods, lack of grading of semester activities and assignments, heavy workload for teachers, and lack of real phtsical experience.

9	Mosayebi, Rezapour Mirsaleh, & Behjati (27)	2021	The problems and challenges of E-learning during the outbreak of the Coronavirus in elementary school	Qualitative Phenomenology	By analyzing the data, E-learning problems were identified in the fields of "education", "teacher and school", "parents", "students", and "E-learning infrastructure"
9	Guangul, Suhail, Khalit & Khidhir (28)	2020	Challenges of remote assessment in higher education in the context of COVID-19: a case study of Middle East College	Survey	The main challenges identified in distance assessment were academic inauthenticity, infrastructure, coverage of learning outcomes and students' commitment to providing assessments. To minimize academic inauthenticity, the best approach includes preparing different questions for each student.
10	Seifert (16)	2020	Student assessment in online learning: Challenges and effectiveness practices during Covid-19.	Review	The challenges included validity and reliability, rules and regulations, lack of familiarity with educational technology and shortage of technology and tools.
11	Mahyoob (29)	2020	Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners	Survey	It is found that the main problems affecting online language learning and during COVID-19 are related to technical, academic and communication challenges. The results of the study show that the majority of English language learners are not satisfied to keep on online learning, because they cannot meet the desired improvement in language learning performance.
12	Sadati, Nouri, Hajfiroozabadi, & Abjar (30)	2020	Faculty Members' Experiences About Virtual Education Opportunities and Challenges During The Covid-19: A Qualitative Study	Qualitative	The investigation resulted in the extraction of two main classes as follows; 1) " individual obstacles in effectiveness of E-learning, with subclasses: "personality characteristics and family factors " 2) "Organizational management" with subclasses of "infrastructure provision, management and leadership, training and supervision, ethics and law and assessment".
13	Alborzi, Mohammadi, Naseri, Safari and Mirghafari (31)	2020	Elementary School Teachers' Experiences of the Challenges of Changing Traditional Education to Virtual Education during the Corona Virus Outbreak	Qualitative	The assessment challenges include the ; slow internet and the lack of access to proper internet, the lack of monitoring of students' academic progress, the increased possibility of student cheating, the time-consuming nature of assessment for the teacher, the lack of belief in online assessment, and the human and social interactions.

14	Rahbar Karbasdehi & Rahbar Karbasdehi (32)	2020	E-learning of students during the 2019 Coronavirus epidemic: problems and solutions.	Analysis	The identified challenges include lack of appropriate feedback, insufficient reality, time-consuming, academic inauthenticity.
15	Hajizadeh, Azizi and Kihan (9)	2020	Analyzing the opportunities and challenges of e-learning in the Corona era: An approach to the development of e-learning in the post-Corona	Phenom-enology	The assessment challenges includes lack of verification and holding of examinations, lack of trust in students in taking the test, stress of students, fatigue, lack of real and authentic assessment, lack of recognition of the learning accuracy, lack of accurate information on the extent of student learning, lack of receiving feedback
16	Rezaei (10)	2020	Student learning evaluation during the Corona: Challenges and Strategies	Qualita-tive	The identified challenges include time-consuming, possibility of cheating, lack of face-to-face communication, fatigue, failure to send answers on time, internet disruption.
17	Salimi & Fardin (33)	2020	The Role of corona virus in virtual education, with an emphasis on opportunities and challenges	Blended	At the macro level, the challenges include the lack of strategic thinking of managers and planners, unfavorable policies, imperfections in educational technology and inefficient management; At the intermediate level, the challenges include imperfections of the introduced technologies, lack of independence and action freedom, and disruption of budgeting allotted.
18	Roshani Ali Bena See, Fathi Vajargah, K & Khorasani (34)	2017	The Challenges of the Quality Evaluation of Virtual Education Curriculum: The Case of Shahid Beheshti University	Descrip-tive	The results showed that the quality of e-learning curriculum assessment faces challenges in both managerial-executive and definitional-professional dimensions.
19	Zamani, Parhizi & Kaviani (35)	2015	Identify challenges of evaluating students' academic performance e-courses.	Survey	The results showed that, from the point of view students, the biggest challenges in the E-courses assessment include technical issues 3.71%, pedagogical issue3.2%s and psychological issues 3% respectively.
20	Kearns (14)	2012	Student assessment in online learning: Challenges and effectiveness practices	Survey	The results showed that the most important challenges included physical distance, inauthenticity and technological gap.

research, which includes the year, researcher name, title, type, and findings of research. In the next step, by coding and classifying the categories, we extracted the assessment challenges of the E-learning, and the main categories and themes. Then, we selected and named 50 open codes as the themes. Subsequently, we selected 5 axes as the main (core) categories in axial coding (Table 3). Also, Table 4 presents the frequency of assessment challenges in E-learning shared between the investigated researches. By combining the core categories to the design, we set out the conceptual framework of the assessment challenges in the E-learning (Figure 2).

Table 3: Assessment challenges in E-learning in the educational system during the Coronavirus era in selected researches

Codes	Open coding	Axial coding	The main/ central category
1-2-3-4-7-8-10-11-14-15-16-17	Academic inauthenticity - cheating, false identity – plagiarism – copyright - educational inauthenticity - validity and reliability - lack of verification		Validity and reliability
1-2-4-5-7-9-11-13-14-15-16-18-19	lack of assessment of practical experiences and team-working - real assessment problems - lack of expected progress in learning performance - lack of assessment of deep understanding - lack of grading activities and assignments throughout the semester - lack of monitoring of students' academic progress - lack of appropriate feedback - lack of real and authentic assessment - lack of accurate information on the extent of student learning, failure to receive feedback - pedagogical issues		Lack of real measurement of learning results
1-2-3-4-10-11-14-16-17	Students' refusal to turn on the cameras - lack of real pysical experience - reduction of human communication - eliminating the sense of real interaction - challenge in human and social interaction - communication challenges- physical distance - lack of monitoring the academic progress of students - lack of face-to-face communication		Lack of real interaction between students and professors
1-3-4-6-8-9-10-11-13-14-17-18-20	Technical problems - equipment problems - insufficient/unstable internet connection - infrastructure - Lack of technology and tools - technical challenges - technological gap, lack of attention to proper infrastructure - E-learning infrastructure, slow internet and lack of proper internet access - failure to send answers on time - internet disruption, technology imperfection		Technological challenge
1-4-11-15-16-17-19-20	Heavy teaching workload - teaching problems - teacher's problems - heavy workload for the teacher - time-consuming - fatigue - executive and psychological problems		Heavy workload for the teacher and learner

Table 4: The frequency of assessment challenges in shared E-learning among the research sample in the present study

No	The core category	The code of related research	Frequency
1	Validity and reliability	1-2-3-4-7-8-10-11-14-15-16-17	12
2	Lack of real measurement of learning results	1-2-4-5-7-9-11-13-14-15-16-18-f19	13
3	Lack of real interaction between students and professors	1-2-3-4-10-11-14-16-17	9
4	Technological challenge	1-3-4-6-8-9-10-11-13-14-17-18-20	13
5	Heavy workload for the teacher and learner	1-4-11-15-16-17-19-20	8

After analyzing the studies, from the total collected and coded information, categories close to each other were placed in a core (main) category. According to Figure 2, the challenges of E-learning assessment in the Coronavirus era include five main components (core category as follows:

1. *Validity and reliability* include the sub-components of academic inauthenticity - cheating, false identity – plagiarism – copyright - educational inauthenticity - validity and reliability - lack of verification (the study codes: 1-2-3-4-4-8-10-11-14-15-16-17)

2. *Lack of real measurement of learning results* includes the sub-components of lack of assessment of practical experiences and team-working - real assessment problems - lack of expected progress in learning performance - lack of assessment of deep understanding - lack of grading activities and assignments throughout the semester - lack of monitoring of students' academic progress - lack of appropriate feedback - lack of real and authentic assessment - lack of accurate information on the extent of student learning, failure to receive feedback - pedagogical issues (the study codes: 1-2-4-5-7-9-11-13-14-15-16-18-19)

3. *Lack of real interaction between students and professors* includes the sub-components of students' refusal to turn on the cameras - lack of real pysical experience - reduction of human communication - eliminating the sense of real interaction - challenge in human and social interaction - communication challenges- physical distance - lack of monitoring the academic progress of students - lack of face-to-face communication (the study codes: 1-2-3-4-10-11-14-16-17)

4. *Technological challenge* includes the sub-components of technical problems - equipment problems - insufficient/unstable internet connection - infrastructure - lack of technology and tools - technical challenges - technological gap, lack of attention to proper infrastructure - E-learning infrastructure, slow internet and lack of proper internet access - failure to send answers on time - internet disruption, technology imperfection (the study codes: 1-3-4-6-8-9-10-11-13-14-17-18-20)

5. *Heavy workload for the teacher and learner* includes the sub-components of heavy teaching workload - teaching problems - teacher's problems - heavy workload for the teacher - time-consuming - fatigue - executive and psychological problems. (The study codes: 1-4-11-15-16-17-19- 20)

Discussion

The current study aimed to synthesize the challenges of E-learning assessment in the Coronavirus era and provide practical solutions for the optimal educational system in Iran. The findings research showed that the challenges of the E-learning assessment in the educational system included validity and reliability, lack of real measurement of learning results, lack of real interaction between students and professors, technological challenge and heavy workload for the teacher and learner. In this regard, Rezaei (10) mentioned challenges such as time-consuming nature, possibility of cheating, lack of face-to-face communication, fatigue, failure to send answers on time, and Internet disruption.

Reslut of Moustakas and Robrade's (36) research showed that teachers reported difficulties in motivating students, especially if there was no visual communication. Finally, even with innovation, variety and interactivity, the practical and social nature of sport and physical education did not fully translate into online settings.

Also, Al-Maqbali and Raja (18) in their researchmentioned such challenges as the learners' refusal to turn on cameras, heavy teaching workloads, cheating, long time needed to develop online assessment tools, false identity/inauthenticity, assessment of practical experiences, plagiarism, grades inflation, assessment of team-working, scientific authenticity, and great number of students in each section.

Maatuk et al. (19) in their study, discussed the challenges such as physical distance, teaching problems, assessment problems,

and copyright. Also, Aboagye et al. (24) mentioned the social, teaching, academic, and general issues as the most important challenges.

Muhie, Tesfay and Tamirat (37) in their research, also, mentioned challenges such as lack of technological skills, high costs of e-learning incentives, lack of strategies, lack of computers, culture of university teaching and learning process, and students' fear of being in a new environment.

In explaining these findings, it can be said that face-to-face assessment strategies in the classroom do not underlie the online or combined learning contexts, but they require changes in the assessment approaches, tools, and mentality. It can be more difficult to track and triangulate observations, conversations and learner products, and threaten the validity of the assessment in order to assess the learning over time. Learners do not always have sufficient technical infrastructure for online learning and meaningful formative assessment, which raises the issue of equity. Authentic assessments and demonstrations of learning in the online context are more challenging (e.g. group projects and practical work), putting us at risk of returning to traditional summative assessments such as quizzes, exams, and essays.

Therefore, it can be said that professors and teachers need targeted and explicit professional learning in online education and assessment strategies because assessment and the method of online education are very different from face-to-face courses. Online assessments should be reliable, transparent, and feasible. Other key components include integrity, cheating prevention, privacy, and accessibility. Assessment techniques such as reports and projects are seriously subject to plagiarism. It may happen more when similar resources are available to learners, and there are fewer interactions with instructors. In oral assessment through video conference, lack of a strong and reliable Internet connection can cause qualitative problems in assessment. On the other hand, not all learning results can be measured using online assessment. Learning outcomes assessed through written assignments may work well; they are not, however, sufficient for quality assessment. For example, it is difficult to assess group dynamics during a group presentation, when group members are in separate locations. Valid assessments of group projects, presentations, demonstrations, practical work, etc. can be more challenging in the online context (25).

Limitation and Suggestion

Since the researchers themselves were the tools of data collection, the possibility of bias in its results can be a limitation of the current research.

According to the results of this research, the following practical solutions can be proposed for the optimal educational system in Iran:

Set an agenda in educational systems for the training the professors with applying and integrating the new tools and technologies in the assessment of students' learning. Professors and officials should ensure that learners have the necessary software and hardware resources to work with this technology.

Provide multiple opportunities for the learners to participate in self-assessment, peer-assessment, joint problem-solving tasks, and teacher-learner discussions, so that teachers can gain relevant and appropriate insights into their learning process. Systematic design and presentation of educational materials can help the professors to choose appropriate assessment methods and technologies to increase learning.

Universities and educational centers can use probing tools that help to monitor the learners while taking the test. Other strategies to prevent cheating include timed open-book tests, scrambled question papers, low-risk tests with measures such as self-examination and individual performance assessment.

Professors should conduct regular peer reviews in which learners are asked to review the work of their peers. Such activities can motivate the learners to learn from each other. In addition, well-prepared activities such as

projects and group discussions can help the learners master the course material, and improve their collaboration skills.

Use strategies to receive accurate feedback from the learners for online assessment activities. Such strategies can include online surveys, weekly surveys, active management of discussion boards, etc. Divide large projects into smaller projects, so that learners do not feel fatigued. Design tools to monitor large numbers of learners, and also design rubrics to be used as self-assessment or peer review.

To perform performance assessment, educational centers should advise the learners to use appropriate and reliable hardware and software components to improve the quality of the assessment. To make the sessions more interactive, combine the related multimedia such as drag & drop activities, audio and visual assessments, picture-based activities.

Use the peer assessment method in E-learning with the aim of reducing the workload of the teachers. Peer assessment or peer evaluation is an educational approach that allows the learners to evaluate the level, value, and quality of their peer's comprehensive intelligent activity. Peer assessment usually involves providing feedback to peers' activities using criteria that are in the form of instructions.

Conclusion

Online assessments and exams are set in a digital environment; nevertheless, certain rules and regulations are still applicable to those assessments. Assessments operated in a virtual environment may require changes in strategies, approaches, and tools. For educators and professors, the lack of knowledge in using technology to evaluate the learners can threaten the quality of assessment and lead to poor time management. For learners who are not familiar with online tools, remote exams and other online assessment methods can be stressful. A reliable Internet connection and technical infrastructure is necessary for establishing online assessments. Not all learners may have sufficient resources needed for meaningful assessment activities. If learners lack the required technical infrastructure, assessment through an online medium can be difficult. Online learning methods limit the direct interaction of learner-learner and learner-teacher. When learners and teachers are in the same place simultaneously, exchanging verbal commands is natural and feasible. Virtual learning environments may require planned structures to support communication and immediate feedback.

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Authors' Contribution

All the authors contributed equally to conceptualization, methodology, software, data curation, and writing the original draft preparation.

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Ethical Consideration and Participants Consent

In this research, all the ethical issues were considered, such as introducing ourselves, a clear explanation of the purpose of the research, and the confidentiality of personal information. The study was approved with the code (1402/D/11103).

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