Postgraduate Hybrid E-Learning during COVID-19 Pandemic: A Real Experience for Replication

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Abstract

Introduction: The current COVID 19 pandemic has led to abrupt changes in medical education with an imperative need to shift to e-learning for continuity of the education. This shift was challenging especially for developing countries with limited resources and time required for preparation of this shift. Also, there are many queries on the effectiveness and quality of education following this shift.

The study aimed to review a hybrid e-learning experience and the participants' early perceptions.

Method: This was an interventional study. A shortly planned hybrid e-learning system was conducted in the family medicine department programs of MD and MSc. Then, the enrolled 30 postgraduates were invited to participate in a web-based anonymous survey to assess their perception of e-learning after a 2- month experience.

Results: Twenty-six participants were recruited in the survey. The most perceived e-learning advantages were feasibility, saving costs, and motivation to learn. While the perceived challenges were lack of technical skills and internet connection strength. This hybrid learning experience encouraged interaction, motivation, cognitive and problem-solving skills, independent working, and effective time management.

Conclusion: The implementation of hybrid e-learning is a significant step forwards and easily conducted, but it requires work to be improved.

Keywords: E-learning, Hybrid, Postgraduate

Introduction

The spread of COVID-19 has forced many countries into a complete lock-down to apply social distancing. The responses to the COVID-19 pandemic by medical schools globally have varied, from total study cessation to a switch to e-learning (1). But in this pandemic, the need for e-learning is felt more than ever in our living memory as Continuity of medical education is obligatory to meet the imperative need for the generation of future doctors (2).

E-course design requires time for adjusting instructional design, learning assessment, communication, and accessibility of technical support (3). The sudden transition to e-learning approaches is challenging for both faculty and students and has required much planning over a short period and with no clear guidelines. Also, many queries have been raised on the effectiveness, quality of education following this shift and how the awareness and adaptation of new methods may impact medical education (1, 4, 5).

Although teaching is a teacher's activity, the result of learning depends on the student. Effective education is based on participation and cooperation. Therefore, the assessment of its effectiveness depends greatly on the viewpoints of the students (6).

This study aims to review a hybrid e-learning experience and the participants' early perception.

Method

This was an interventional study. In July 2020, the family medicine department, Cairo University stepped towards hybrid e-learning for postgraduates using Blackboard learning management system (LMS) with:

Establishment of an E-scientific committee:
It was formed of 4 family medicine faculty members and 3 medical education experts. It was to set the plan and monitor the implementation.

Digitalization of the curriculum:
There are 2 postgraduate programs, Master (MSc) and Doctorate (MD) Degrees. Digital transformation of the course content was done by weighting the content as documented in the course specification (intended learning outcomes: knowledge, skills, and attitude) distributed on the duration of the course. Each course content was divided into modules according to the weight of topics in the course specification.

Curriculum delivery:
A content map for the curriculum of each program was designed and a module map with the strategy of flipped classroom was set. Each module included pre-class materials (including narrated PowerPoint, videos, guidelines, assignments, and case discussion forms) and synchronous in-class learning (including e-lectures

and webinars). The webinar was held for discussion of cases and addressing candidate inquiries, followed by presenting the updates on the discussed topics. All activities were recorded and uploaded to Blackboard. Kahoot was delivered at the module end.

Orientation:
Nine faculty members were trained on the applications, methods of curriculum delivery, and assessments. A team of 2 faculty members, 2 MD and 4MSc degree candidates was assigned for each module. Several meetings were held with the thirty candidates to elucidate the main objectives of this transition, course syllabus, instructions, and ways of curriculum delivery.

The used technological tools:
The blackboard platform was used for communicating timetables and study plans, uploading the learning resources, case discussion forms, assignments, assessments, virtual meetings, and office hours. Also, Microsoft teams, Zoom Applications were used for virtual meetings. Google forms were used to create the program and module evaluation forms. Kahoot was used as a method of game-based learning. What's App groups were used for faculty-student communication.

Students Assessment:
It was designed to include formative and final summative assessments. The formative assessment included assignments, Case discussions, and 4 simulation exams scheduled every 4-5 modules. The latter were comprised of applied knowledge tests and Clinical Structured Assessments.

Student reflection:
To assess the perception of e-learning, a web-based anonymous survey using Google Forms was delivered to 30 recruited candidates.

Voluntary participation and informed consent were included in the first section of the Google form. The questionnaire covered socio-demographic information, the general perception of E-learning, and Family medicine curriculum evaluation (blackboard system, content, and learning tactics). Each item of the domains was rated on a 5-point Likert Scale. The learning tactic domain was rated on 1 to 5 regarding usefulness. Statistical analysis was performed using SPSS Statistics Software. No statistical test was used due to the descriptive nature of the study.

Results

The total number of engaged candidates at the time of this study, December 2020, was 30. The response rate was 86% (26 respondents). They spent 6.26±3.74 hours per week in the course (Table I).

Characteristics of the studied Group
Table I: Basic characteristics of the studied group (N°=26).

Items	(N°=26) %
Gender:	
Male	(3) 11.5%
Female	(23) 88.5%
Degree:	
MSc 1st part	(11) 42.3%
MD	(12) 46.2%
MSc 2nd part	(3) 11.5%
Institution:	
Kasr Al Ainy Hospital	(19) 73.1%
The Ministry of health	(2) 7.7 %
Others	(5) 19.2%
Participation in The Family Medicine E-course through:	
Data package	(4) 15.4%
Wi-Fi	(4) 15.4%
Both	(18) 69.2%
Number of hours spent in the course per week:	
Mean± SD	6.26±3.74
(minimum-maximum)	(1-15)
Age (years):	
Mean± SD	31.57±5.45
(minimum-maximum)	(26-50)

SD: Standard deviation

Although the majority agreed on all mentioned advantages, the highest perceived advantages were feasibility of e-learning in any place (84.6%), saving costs (84.6%), and its effect in motivating them to search for more relevant learning materials (76.9%).

Lack of technical skills and computer knowledge were perceived as important challenges in more than one-third of the participants, but the most perceived challenge was internet connection strength and its effect on the quality of their learning (Table II).

General perception of E- learning
Table II: General Perception of E- Learning

Items	(N°=26) %				
Previous experience of E- learning	Yes			No	
1. Are you comfortable with technology?	(23) 88.5%			(3) 11.5%	
2. Did you enroll in online courses before this course?	(18) 69.2%			(8) 30.8%	
3. Have you previously used an online platform?	(10) 38.5%			(16) 61.5%	
Perception of advantages of E- learning:	SD	D	N	A	SA
1. I can learn on my own	(1) 3.8%	(1) 3.8%	(5) 19.2%	(6) 23.1%	(13) 50%
2. I can learn in any place (home, work.....)	(2) 7.7%	(0)%	(2) 7.7%	(8) 30.8%	(14) 53.8%
3. My circumstances hinder participation in traditional courses	(2) 7.7%	(3) 11.5%	(4) 15.4%	(10) 38.5%	(7) 26.9%
4. I find e-learning more interesting than traditional	(2) 7.7%	(3) 11.5%	(3) 11.5%	(8) 30.8%	(10) 38.5%
5. E-learning motivates me to search for more relevant learning materials	(0)%	(1) 3.8%	(5) 19.2%	(11) 42.3%	(9) 34.6 %
6. E-learning can save costs and transport	(1) 3.8%	(0)%	(3) 11.5%	(8) 30.8%	(14) 53.8%
Perception of E-learning challenges	SD	D	N	A	SA
1. Lack of computer and technology skills is a challenge	(5) 19.2%	(3) 11.5%	(8) 30.8%	(6) 23.1%	(4) 15.4%
2. Internet connection strength determines our effective learning opportunity	(3) 11.5%	(1) 3.8%	(4) 15.4%	(4) 15.4%	(14) 53.8 %
3. I feel charges to connect to the internet are expensive	(5) 19.2%	(3) 11.5%	(9) 34.6%	(5) 19.2%	(4) 15.4%
4. E-learning is only advisable to people with computer knowledge	(3) 11.5%	(5) 19.2%	(7) 26.9%	(9) 34.6%	(2) 7.7%
5. I find difficulty in finding online relevant learning materials	(4) 15.4%	(5) 19.2%	(9) 34.6%	(5) 19.2%	(3) 11.5%

SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, and SA: Strongly Agree.

Most of them agreed on the appropriateness of Blackboard as a learning platform. The majority agreed that faculty and peer communication and interaction, motivation, creativity, cognitive and problem-solving skills, independent working, effective time management were encouraged in the course. But unfortunately, over two-thirds felt stressed and overwhelmed (Table III).

About 58% of the participants found game-based learning (using Kahoot) useful or very useful. The online classes were perceived by 50% of the participants as a very useful learning tactic.

Family Medicine Curriculum Evaluation
Table III: Blackboard Platform and Content Evaluation

No	(N°=26) %				
Blackboard Platform Evaluation	SD	D	N	A	SA
1. Overall framework and operation levels of the system are clear and smooth	(1) 3.8%	(1) 3.8%	(3) 11.5%	(10) 38.5%	(11) 42.3%
2. Overall configuration colour and background are normally harmonious for the system	(2) 7.7%	(1) 3.8%	(3) 11.5%	(11) 42.3%	(9) 34.6%
3. Overall screen layout and window design of the system is appropriate	(2) 7.7%	(0)%	(4) 15.4%	(11) 42.3%	(9) 34.6%
4. Overall interface operation method is easy and appropriate	(1) 3.8%	(0)%	(4) 15.4%	(11) 42.3%	(10) 38.5%
5. Log-in interface is clear and easy to operate	(1) 3.8%	(0)%	(8) 30.8%	(9) 34.6%	(8) 30.8%
6. Register in the course is clear and easy to operate	(1) 3.8%	(1) 3.8%	(3) 11.5%	(11) 42.3%	(10) 38.5%
7. I am Satisfied with system orientation sessions	(2) 7.7%	(1) 3.8%	(3) 11.5%	(9) 34.6%	(11) 42.3%
8. I am Confident and enjoy using the online platform	(1) 3.8%	(1) 3.8%	(3) 11.5%	(13) 50%	(8) 30.8%
Content Evaluation	SD	D	N	A	SA
1. The course meets my personal and professional goals	(2) 7.7%	(1) 3.8%	(5) 19.2%	(9) 34.6%	(9) 34.6%
2. The course content is clear from the start	(1) 3.8%	(2) 7.7%	(4) 15.4%	(10) 38.5%	(9) 34.6%
3. The learning materials are clear, and understandable, and well organized	(1) 3.8%	(1) 3.8%	(5) 19.2%	(9) 34.6%	(10) 38.5%
4. The course objectives, content and assessment are consistent	(1) 3.8%	(2) 7.7%	(2) 7.7%	(11) 42.3%	(10) 38.5%
5. Webinars and e-lectures are effective in bridging the gap (missed academic information and inquiries)	(0)%	(2) 7.7%	(5) 19.2%	(8) 30.8%	(11) 42.3%
6. It allows great communication and interaction between the teachers and other peers	(2) 7.7%	(1) 3.8%	(5) 19.2%	(7) 26.9%	(11) 42.3%
7. It makes me work independently	(1) 3.8%	(0) %	(5) 19.2%	(7) 26.9%	(13) 50%
8. It enhances my motivation, creativity, cognitive skills and problem solving skills	(2) 7.7%	(0) %	(5) 19.2%	(10) 38.5%	(9) 34.6%
9. I can manage my time effectively	(2) 7.7%	(1) 3.8%	(5) 19.2%	(5) 19.2%	(13) 50%
10. It imparts psychological stress for me	(4) 15.4%	(2) 7.7%	(3) 11.5%	(8) 30.8%	(9) 34.6%
11. I am overwhelmed due to the course	(3) 11.5%	(3) 11.5%	(2) 7.7%	(9) 34.6%	(9) 34.6%

Discussion

Due to the COVID-19 pandemic, the family medicine department adopted e-learning for postgraduates. It conducted adult learning principles, self-directed learning, and constructivism with the active involvement of the learner. Also, giving flexibility to the students decreases stress and stimulates higher levels of cognition.

Hybrid e-learning with the strategy of flipped classroom was the main modality and included both synchronous and asynchronous modalities. The experience depended on the use of e-case based learning in assignments, case scenarios in discussion forms, interactive e-lectures, and webinars. The webinar aimed to enhance the candidate's communication and presentation skills (near-peer or peer teaching).

Also, the study focused on "learners' voices" to identify perceived advantages, needs, and obstacles, and evaluate learners' experience. So, innovative pedagogical advancement can be promoted to support students' effective lifelong e-learning.

The advantages perceived by the majority of students regarding e-learning, in general, comes in concordance with Al-Balas et al., 2020 (7) in which timesaving, flexibility, improved interaction with instructors and classmates were considered e-learning benefits in 55.9% of the participants, while internet streaming quality was the main challenge in 69.1%.

But despite these perceived challenges, e-learning reported a high satisfaction rate (93.4%) among Egyptian students in a study conducted by Seada and Mostafa, 2017 (8).

Eighty percent of the participants in this study found that it was easy to register in their courses and were feeling confident and enjoyed using the platform. They found that course content was clear from the start. This reflects the appropriateness of Blackboard as LMS especially after the orientation sessions with which 76.9% of participants were satisfied. Moreover, about two-thirds of participants showed that family medicine e-course allowed faculty-peer communication and interaction (table III).

This goes in hand with Alturise, 2020 (9), who studied the evaluation of the blackboard for full online courses in Western Branch Colleges of Qassim University. He reported that 68.85% of students could easily access e-course content and about 86% of students agreed that the course guide and description were clear in the newly developed e-course with a total e-course satisfaction rate of 66.35%. Also, improvement of teamwork skills was perceived in more than half of students.

Most of the candidates reported that the recorded videos, discussion forms, and Kahoot were useful or very useful. These recorded videos and lectures may help the candidates to prepare these topics before any e-lectures and webinars. They somewhat agree with most of the students in Azlan et al, 2020 (10) study. More than half of the later students perceived the pre-recorded videos/lectures well and Kahoot as fun, helping their understanding but more than half of them felt that the online discussions did not help them understand their lessons better. This difference may be due to the involvement of the case discussion in the webinars.

Limitations and recommendations for future practice: This research revealed a practical way to implement hybrid e-learning, but it did not assess the faculty perception of e-learning and their student engagement. It provided insights for stakeholders to collaborate with telecommunication service providers for the provision of high-speed data services and unlimited time for the synchronous meetings. Also, the students and instructors should develop their technical skills.

Further research to assess the e-learning impact on student's mental health and educational outcome and performance are needed.

References

1. Taha MH, Abdalla ME, Wadi M, Khalafalla H. Curriculum delivery in Medical Education during an emergency: A guide based on the responses to the COVID-19 pandemic. MedEdPublish. 2020 Apr 16;9. DOI.org/10.15694/mep.2020.000069.1

2. Agarwal R, Singhal M, Shankhdhar VK, Chittoria RK, Sahu RK, Singh V, Chandra R. Plastic surgery practices amidst global COVID-19 pandemic: Indian consensus. Journal of Plastic, Reconstructive & Aesthetic Surgery. 2021 Jan 1;74(1):203-10.DOI: 10.1007/s13312-020-1894-7. Epub 2020 May 14. PMID: 32412913; PMCID: PMC7387262.

3. Chen C, Landa S, Padilla A, Yur-Austin J. Learners' experience and needs in online environments: adopting agility in teaching. Journal of Research in Innovative Teaching & Learning. 2021 Feb 8.DOI.org/10.1108/JRIT-11-2020-0073

4. Sahu P. Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. Cureus. 2020 Apr;12(4).

5. Shehata MH, Abouzeid E, Wasfy NF, Abdelaziz A, Wells RL, Ahmed SA. Medical education adaptations post COVID-19: an Egyptian reflection. Journal of Medical Education and Curricular Development. 2020 Aug;7:2382120520951819.. DOI: 10.1177/2382120520951819. PMID: 32923673; PMCID: PMC7457644.

6. Mirmoghtadaie Z, Kohan N, Rasouli D. Determination and Comparison of the Factors Related to Effective Blended Learning in Medical Sciences from the Viewpoints of Instructors and Learners. Advances in medical education and practice. 2020;11:205. DOI: 10.2147/AMEP.S239216. PMID: 32214865; PMCID: PMC7083639

7. Al-Balas M, Al-Balas HI, Jaber HM, et al. Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. BMC medical education. 2020 Dec;20(1):1-7. DOI: 10.1186/s12909-020-02257-4. Erratum in: BMC Med Educ. 2020 Dec 16;20(1):513. PMID: 33008392; PMCID: PMC7530879.

8. Seada AI, Mostafa MF. Students' Satisfaction and Barriers of E–Learning Course among Nursing Students, Mansoura University. IDOSI Publications. 2017;3(3):170-8.

9. Alturise F. Evaluation of Blackboard Learning Management System for Full Online Courses in Western Branch Colleges of Qassim University. International Journal of Emerging Technologies in Learning (iJET). 2020 Aug 14;15(15):33-51. https://www.learntechlib.org/p/217988/.

10. Azlan CA, Wong JH, Tan LK, et al. Teaching and learning of postgraduate medical physics using Internet-based e-learning during the COVID-19 pandemic–A case study from Malaysia. Physica Medica. 2020 Dec 1;80:10-6.DOI.org/10.1016/j.ejmp.2020.10.002.