

Virtual training of trainers for skill acquisition using blended learning. A new experience of an old format: A pilot project

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ABSTRACT

Background. Blended learning (BL) for skill acquisition is an integral part of the undergraduate curriculum. Teachers may be trained in BL using physical or virtual platforms. Training of Trainers (ToT) using a virtual platform was adopted during the Covid-19 pandemic. We report our experience in conducting virtual training to impart hands-on knowledge to trainers about the BL technique.

Methods. We conducted a virtual ToT workshop to train trainers on a blended model for skill teaching. A moderator and a list of trainers were identified at the host institution. Invitations were sent to other institutions. The moderator briefed the participants through email. They were required to identify a topic for creating an e-learning module and asked to develop learning objectives, a standard operating procedure, and multiple-choice questions for the same. A 1.5-day programme was developed that included didactic lectures and small-group discussions on developing eModules. A feedback form using Google Forms was distributed among the participants to be completed after the programme.

Results. Thirty participants were enrolled. All were highly satisfied with the content of the workshop. Didactic lectures were completed on time. The duration in the breakout room for small group discussion was considered short. Twenty-eight participants felt that the workshop had sufficient learning points to keep the learner engaged for 1.5 days on a virtual platform. Only 3 participants were not satisfied with the use of a digital platform for this workshop. The content of the workshop regarding functioning and utility of the skill laboratory was perceived as useful for their institutional practice by 27 participants.

Conclusion. Virtual platforms can be used to conduct ToT workshops focusing on BL for skill acquisition.

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INTRODUCTION

With the increase in online teaching and training, many learning activities have shifted to online platforms. While activities involving didactic teaching were easy, activities requiring alternate big and small group interactions, hands-on training, and participants' involvement with live demonstrations were difficult to conduct online. Many online platforms allow breakout rooms for small group discussions, but their use has not been explored in situations involving participant demonstrations of the activity being taught. At our institute, we launched a skill training programme for undergraduate (UG) students, which involved students first completing an online teaching activity, followed by a hands-on session in the skills laboratory. The institute's central skill laboratory, Skills-e-Learning-Telemedicine (SET) facility, was the nodal place for developing and managing the programme. The success of this online and hands-on training session, which taught essential clinical skills to UG students, led us to hold a workshop where we could share our experience and help teachers create online modules for additional skills to be taught. Due to the Covid-19 pandemic and the subsequent restrictions, however, we decided to hold this workshop online. We describe our experience of successfully conducting the first such virtual 'Training of Trainers' (ToT) workshop.

METHODS

We used a blended model for training in clinical skills, where students are required to complete an online teaching module using the learning management system (LMS) followed by a hands-on session under the supervision of faculty. Each clinical skill training module was developed by subject faculty with active input from peers and reviewers. Each training module consisted of 4 components.

1. Standard operating procedures (SOP) for the skill
2. Video of the skill (Videos created using either PowerPoint [PPT] or Keynote)
3. Multiple choice questions (MCQs) based on SOP and video demonstration
4. Checklist for assessment of the skill.

We also conducted ToT workshops to train teachers in imparting skill training using a blended model. The objectives of the ToT workshop were to:

1. Train the trainers regarding the above blended model module for skill teaching
2. Provide them know-how about content creation for each component of the module

3. Discuss the troubleshooting and advantages that we derived during the implementation of our programme

Invitations were sent to institutional heads after the workshop was planned. Each institute nominated 2–3 faculty members actively involved with skill teaching to UG students to attend the workshop virtually. The moderator of the ToT contacted the participants via email, briefed them about the workshop (including learning objectives and the programme flow), and asked them to choose a topic for developing a module. They were further asked to complete some pre-workshop work on developing learning objectives, SOPs, and MCQs for their module.

A team of core faculty members from various departments of the All India Institute of Medical Sciences (AIIMS) New Delhi, who had been trained in content development and were actively involved in skill teaching at the SET facility, was contacted by the workshop moderator to confirm their availability. Once the final list of trainers was available, the programme was designed to span 1.5 days to be conducted over the virtual platform (ZOOM™ video communications). The programme structure consisted of both large-group and small-group sessions throughout the workshop. The main flow of the programme included a description of the component of the module over 15 minutes in the form of a didactic lecture (large-group session), followed by the drafting of that component of the module by the participant trainers with their respective moderators (small-group session). The didactic lecture was hosted in the common hall of the virtual platform, while breakout rooms were used for faculty-led participant exercises. The breakout rooms were hosted by at least two trainers each, who moderated the creation of content by the participants. It was ensured that participants understood the creation of all four components of the skill module, namely, learning objectives, formulating SOPs, developing e-content using PPT/keynote, MCQs, and checklists. The breakout room sessions were planned to be 30 minutes long, after which one representative from each breakout room discussed with all the participants and trainers. All participants were asked to switch on their camera and unmute themselves in the breakout room to allow better interaction. Additional topics discussed included the use of LMS, operationalizing a skill laboratory (panel discussion), conducting a skill session using Peyton's method, the importance of skill learning in competency-based medical education, the role of the skill and wet laboratories in UG teaching, and the importance of blended learning.

A demonstration of the skill modules prepared by the participants was also scheduled. A virtual tour of the skill and wet laboratories, telemedicine facility and histopathology laboratory (for demonstration of digital technology) was planned at the end of the programme. A feedback form, using Google Forms, was shared with the participants to be completed after the programme (Table 1).

A delayed follow-up questionnaire was shared approximately 1.5 years after the workshop to assess the impact of the workshop on their perception and incorporation into regular institutional practice (Table 2).

RESULTS

A response to the invitation letter was received from 16 institutions and 30 participants were enrolled for the workshop. Thirty faculty members participated as trainers for the workshop.

Twenty-four participants shared the topic and learning

TABLE 1. Key questions shared through a Google Form for assessing feedback of the workshop

1. The workshop had enough learning points to keep the learner engaged for one and a half days
2. Digital format is well-suited for such workshops
3. You would be using the knowledge gained during the workshop to create digital content for blended learning
4. The knowledge and information gained during the workshop regarding the functioning and utility of the skill lab would be useful for our institutional practice.
5. What other information or content would you like to be added to this workshop, keeping the duration the same?
6. What other workshops related to the skills lab would you be interested in attending?
7. Additional remarks

TABLE 2. Key questions shared through a Google Form for assessing the impact of the workshop in institutional practice

• Have you used the knowledge gained during the workshop to create digital content for blended learning?
• Have you conducted any skill-teaching sessions for students?
• If yes, did this Training the trainers (ToT) programme help you conduct the session?
• If no, what is the reason?
• Does your institution have a functioning skill lab?
• If yes, did the knowledge and information gained during the workshop regarding skill lab functioning and utility help you in your institutional practice?
• If no, is your institution in the process of setting a functioning skill lab?
• Do you think, this ToT programme is helping you contribute effectively to conceptualizing the setting of a skill lab?

objective of their module. All the enrolled participants attended the workshop. This was the first ever ToT on this subject for all the participants. All participants felt that the workshop was useful and aligned with their learning objectives.

Although there was no difficulty accessing the Zoom platform, some participants who attended the meeting via mobile devices felt that it would have been better if accessed on a larger screen. Furthermore, 2 participants did not have a web camera on their devices, making interaction with them in the breakout room suboptimal.

All the participants were highly satisfied with the organization of the workshop, the trainers, and the content. The didactic lectures could be completed largely within the stipulated time. The breakout room sessions were felt to be of insufficient time, especially while drafting the SOP. Twenty eight participants felt that the workshop had sufficient learning points to keep learners engaged for one and half days on a virtual platform. Almost 10% (three participants) were not satisfied with the use of digital platform for this workshop. The content of the workshop regarding skill lab functioning and utility was perceived as useful for their institutional practice by almost 90% (27 participants) (Table 3).

Additionally, participants felt that more time should have been allocated to demonstrating the blended teaching methodology. They also felt that more information and discussion should have been provided on the setting up of the skill lab, logistic issues, procurement of manikins, and difficulties faced during the establishment and operationalization of the facility at AIIMS, New Delhi. Although most participants felt that the workshop was well-conducted during a pandemic with several restrictions in place, they expressed that a physical visit to the facility would have been ideal to allow for a real-time demonstration of a skill

TABLE 3. Feedback of the workshop

Feedback	Fully agree <i>n</i> (%)	Partially agree <i>n</i> (%)	Disagree <i>n</i> (%)
• The workshop had enough learning points to keep the learner engaged for one and half days	28 (93.33)	1 (3.3)	1 (3.3)
• Digital format is well suited for such workshops	14 (46.67)	16 (53.33)	3 (10.0)
• You would be using the knowledge gained during the workshop to create digital content for blended learning	100	0	0
• The knowledge and information gained during the workshop regarding skill lab functioning and utility would be useful for our Institutional practice.	27 (90.0)	3 (10)	

session, including the assessment of candidates. In addition, the participants were interested to learn about the LMS. The virtual platform itself was hitch-free. There were no software-related problems with the platform throughout the workshop. The few participants who did have problems during access were advised to log out and re-login, which worked.

The follow-up questionnaire circulated at 1.5 years was completed by 25 (83.3%) participants. Of these, 22 participants (88%) had conducted skill-teaching sessions and created digital content for BL using the knowledge gained during the workshop. All these participants felt that the workshop helped them conduct these sessions effectively. Only 4 participants had a functioning skill lab in their institution. They acknowledged that the knowledge and information gained during the workshop, regarding the functioning and utility of the skill lab, helped in their institutional practice. All the remaining participating institutions were in the process of establishing one, and the participants believed that the programme had helped them contribute effectively to conceptualizing the setting of a skill lab.

DISCUSSION

The past decade has seen a sharp rise in the adoption of manikins and simulation-based training (MSBT) for training and evaluating trainees in complex decision-making and time-sensitive, skilled tasks.^{1,2} BL is a combination of traditional face-to-face learning with e-learning to mitigate the disadvantages of both.³ In BL, students study before class using the study material provided by the teacher beforehand. They apply this knowledge in discussions and skill learning in the classroom or skill lab setting. This method has been shown to have a consistent positive effect on knowledge acquisition and learner performance.⁴ It allows learners to review the study material as often as needed at their own pace and schedule.^{4,5} Furthermore, BL is more student-centric and transitions teachers from instructors of knowledge to promoters of study. It leads to a better teacher–learner interaction. Adoption of BL for teaching clinical skills to trainees is an increasingly recognized proficiency in skill acquisition integral to patient safety. This is important for reducing peri-interventional risk and improving the delivery of patient care.

With the evolution of MSBT, some even consider direct acquisition of skills on a patient as outdated and unethical. The increase in the number of students has led to a decrease in hands-on experience. It has, thus, become desirable that the initial part of the curve for learning clinical patient-based skills be shifted to manikins and simulators. The National Medical Commission of India has made skill-based learning mandatory, and recognition of medical colleges across India requires all medical colleges to have a skill lab.⁶ Trainers form the centre stage of these skills centres to teach the skills to the trainees. Since most trainers

in India belong to the era of ‘learning by doing’ with patients, it is of utmost importance to provide training to these trainers. Despite the existence of skill and simulation facilities in many medical colleges across India, the utilization of these facilities for training students in clinical skills is limited by the constraints of time and the availability of trainers. We, therefore, utilized the blended model for training students in essential clinical skills. We incorporated MSBT into our UG curriculum in 2018 and utilized BL as a modality to deliver the knowledge required for skill-based learning. As ours is an apex medical and training institution, we decided to conduct serial workshops to train trainers in delivering MSBT to trainees. The first such workshop was planned for March 2020 and had to be cancelled two weeks before its scheduled date due to the increasing Covid-19 cases and the induction of a nationwide lockdown. In mid-2021, we realized that the pandemic was here to stay, and delaying its response would be futile. We hence resorted to an innovative idea of conducting this ToT workshop in a virtual mode.

Although we received a positive response from the participating faculty, we had certain logistical concerns. The technology required uninterrupted high-speed internet from all participants and hosts. The participants would have different levels of comfort with the use of the internet and the online platform. Creating and directing participants to breakout rooms was a first for us. Conducting whole-day online programmes could become monotonous to participants unless they were actively involved. We thus designed the programme so that breakout room interactive sessions were placed intermittently between didactic lectures. The chat box feature was used effectively by participants, allowing queries, comments, and discussions to be carried out during didactic lectures and panel discussions. One moderator was continuously engaged with participants through the chat box, announcing the chat box comments to the main audience and the in-person faculty members for further discussion. The audience was also continuously encouraged to ‘raise hands’ to take part in the discussion whenever they could. The breakout rooms enabled us to engage in active small-group learning, and most participants found the interaction in these rooms to be satisfactory. The time allotted for each breakout room was often considered short to discuss one to two topics. Being on a virtual connectivity may have also led to some amount of time being wasted during interactions to understand the content created by the participants. The various strategies we used to keep the online audience involved and interested in the proceedings are summarized in Table 4.

Around 40% (12/30) participants fully agreed and 46% (14/30) partially agreed to having a virtual platform as the preferred modality for conducting ToT. This could be attributed

TABLE 4. Strategies to engage the online audience during a virtual workshop involving hands-on activities

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- Keep the participant number reasonable
 - Keep creative activities intermittently between didactic lectures
 - Creative activities can be done in small group breakout rooms with anchoring faculty available in each breakout room
 - Allow for creativity to be showcased during breakout rooms
 - Keep the chat-box active with continuous monitoring of chats and comments being taken up in the main discussion from the chat-box
 - Allow participants to take an active part in the main discussion intermittently
 - Polls can be used in between (though not used in this workshop due to paucity of time)
-

to the feedback that a physical visit to the facility would have been ideal, allowing them to have a real-time demonstration of a skill session, including the assessment of candidates.

The questionnaire, circulated 1.5 years post-workshop, was used to assess the application of learning and its impact on teaching and institutional practices. Most participants (88%; 22 out of 25 who filled the Google form circulated at 1.5 years) had incorporated BL into skill-based teaching. The delay in starting the academic curriculum was the reason cited by those who did not participate. All of them felt that the programme helped them in their institutional practice and the setup of such skill labs and programmes. These correspond to levels 3 and 4 of the Kirkpatrick organizational tool for assessing educational training.⁷ We can infer that our virtual ToT was effective in transferring knowledge into practical application among participants and institutions starting or having BL in simulation.

Overall, the workshop was considered time-efficient and an effective alternative way of conducting the ToT, serving as an alternative method to a physical workshop. Although an exclusive virtual ToT may not be the ideal solution, we

believe that this method could be used either exclusively or as a hybrid approach to overcome geographic barriers and financial constraints.

The use of a virtual platform that allows both large- and small-group interactions can be used for conducting workshops that involve faculty-participant interaction. This mode was successfully utilized in our first ToT workshop. The focus of the workshop being digital content creation, the use of a virtual platform is probably as effective as a face-to-face workshop.

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Conflicts of interest. None declared

REFERENCES

- 1 Choules AP. The use of e-learning in medical education: A review of the current situation. *Postgrad Med J* 2007;**83**:212–16.
- 2 Bediang G, Stoll B, Geissbuhler A, Klohn AM, Stuckelberger A, Nko'o S, *et al.* Computer literacy and e-learning perception in Cameroon: The case of Yaounde Faculty of medicine and biomedical sciences. *BMC Med Educ* 2013;**13**:57.
- 3 Kim KJ, Bonk CJ, Oh E. The present and future state of blended learning in workplace learning settings in the United States. *Perf Improv* 2008;**47**:5–16.
- 4 Wu JH, Tennyson RD, Hsia TL. A study of student satisfaction in a blended e-learning system environment. *Comput Educ* 2010;**55**:155–64.
- 5 Vallée A, Blacher J, Cariou A, Sorbets E. Blended learning compared to traditional learning in medical education: Systematic review and meta-analysis. *J Med Internet Res* 2020;**22**:e16504.
- 6 Medical Council of India. Skills Training Module for Undergraduate Medical Education program. Delhi: Medical Council of India; 2019. p. 1–49.
- 7 Kirkpatrick DL. Evaluation of training. In: Craig RL, Bittel LR (eds). *Training and development handbook*. New York, NY: McGraw Hill; 1967. p. 87–112.