



## Original Research Article

# Online monthly discussion module of simulation-based teaching: Effect on knowledge

Maria Thomas<sup>1</sup>, Niket Verma<sup>2,\*</sup>, Dinesh K Badyal<sup>3</sup>

<sup>1</sup>Dept. of Biochemistry, Christian Medical College, Ludhiana, Punjab, India

<sup>2</sup>Dept. of General Medicine and Member, Medical Education Unit, Army College of Medical Sciences, Delhi Cantt, New Delhi, India

<sup>3</sup>Dept. of Pharmacology and Medical Education, Christian Medical College, Ludhiana, Punjab, India



## ARTICLE INFO

## Article history:

Received 04-08-2021

Accepted 21-08-2021

Available online 28-08-2021

## Keywords:

Education Medical

Faculty Medical

Fellowships and Scholarships

Learning

## ABSTRACT

**Introduction:** Online discussion forums engage learners in higher-level thinking, allowing them to explore topics in much greater depth. One such formal online professional discussion platform is the two-year Foundation for Advancement of International Medical Education and Research (FAIMER) Fellowship offered by the Christian Medical College Ludhiana (CMCL) - FAIMER Regional Institute (CMCL-FRI). In this study, we report the results of a survey conducted among FAIMER fellows after attending online discussions on Simulation-based teaching (SBT) to evaluate their change in knowledge levels on the topic. **Materials and Methods:** This was a retrospective analysis of pre-moderation and post-moderation questionnaire responses. The questions/statements were designed to cover the entire range of topics planned to be discussed during the moderation month.

**Results:** While the median score between the pre-moderation and post-moderation month questionnaires remained the same, the average score showed an increase from 9.5 to 10.37. The number of fellows who scored the maximum possible score of 12 showed a significant increase from 2.94% to 23.33% between the pre-session to the post-moderation month questionnaires (p-value=0.015). The percentage of respondents who answered the questions correctly in the post-moderation month questionnaire showed an increase over the pre-moderation month questionnaire in 10 out of 12 questions, with the increase being highly significant in 2 out of these 10 questions.

**Conclusion:** Attending online ML web discussions leads to an increase in knowledge levels among participants and is an effective way to introduce medical educationists to essential concepts in medical education.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)

## 1. Introduction

Online discussion forums are being increasingly used to train health professional faculty in health professional educational science. These discussion forums facilitate asynchronous communication amongst a community of adult learners on broad topics that enables understanding and application of various aspects of health professions

education (HPE). A well drafted asynchronous online discussion forum engages learners in higher level thinking (application, analysis, synthesis & evaluation, as well as in the affective domain), allowing them to explore topics in much greater depth in addition to promoting critical thinking and knowledge construction.<sup>1</sup>

One such formal online professional discussion platform for health professional educators is a two-year fellowship programme in HPE. This Foundation for Advancement of

\* Corresponding author.

E-mail address: [drniketverma@gmail.com](mailto:drniketverma@gmail.com) (N. Verma).

International Medical Education and Research (FAIMER) Fellowship offered by the Christian Medical College Ludhiana (CMCL) - FAIMER Regional Institute (CMCL-FRI) is a blended programme with two residential contact sessions (Sessions 1 and 3; 7 days and 5 days respectively) and supplemented with asynchronous online discussions (Sessions 2 and 4; 11 months each).<sup>2</sup> The online deliberations (also called the Mentor-Learner or ML Web discussions) are conducted through discussion threads that are hosted on listserv, which is a dedicated email group for the course. Each broad topic is facilitated by a team of moderators who plan and discuss specific sub-topics. The team frames a well-defined content and activities plan to create an environment that promotes in-depth exploration, critical thinking, knowledge construction, reflection and analysis. During the residential session conducted in January-February 2020, the topic chosen for August 2020 was Simulation Based Teaching (SBT). The authors of this article were part of the moderating team for conducting the ML Web sessions on SBT.

The objective of the month-long moderation on SBT was to engage the learners to connect the theory of SBT to their own lives to align and examine their assumptions and use this to determine “how” and “when” they could apply simulation scenarios in their respective professional domains and also to acquire the skill sets of a simulation educator to be able to effectively conduct a simulation activity.

Despite its popularity in the West, in India there is still some amount of resistance towards incorporating SBT in the training curriculum.<sup>3</sup> It has gained popularity in certain specialities especially anaesthesiology and emergency medicine, however it continues to be an unexplored concept in many other subjects, in both undergraduate and postgraduate teaching.<sup>4</sup> One of the reasons cited is the lack of trained faculty who do not understand the scope (teaching -learning relevance), applicability and also lack the ability to design modules for conducting a simulated session. The new CBME curriculum mandates the use of skills and simulation laboratories in undergraduate training. While this has prompted many institutes to heavily invest in equipments, there is a lack of emphasis on training their faculty on how to develop and implement simulation-based teaching-learning.<sup>5</sup> Most training focuses on simulation activity and learner outcome but it needs to be stressed that in order to ensure an effective learning experience, educators need to be trained through faculty development programmes or through formal training.<sup>6</sup> Currently there is a dearth of research on best ways to educate medical faculty on the art of delivery of an effective SBT session.

Here we report the results of a survey conducted among FAIMER fellows after attending online ML web sessions on SBT, to evaluate their change in knowledge levels on the topic.

## 2. Methodology

This was a retrospective analysis of pre-moderation and post-moderation questionnaire responses. The questionnaires were designed by the moderating team and were validated by subject experts. The questions/statements of the questionnaire were designed so as to cover the entire range of topics that were planned to be discussed during the moderation month. Both questionnaires were designed on Google Forms, and consisted of the same 12 questions. The questions covered the entire range of topics being planned to be discussed during the month-long intersession on SBT. Each question had 4 options with one correct answer and each question was assigned a score of 1 mark, thereby making the maximum score as 12 in both the forms. There was no negative marking for selecting the incorrect answer choice.

Apart from the multiple-choice questions, the pre-moderation month questionnaire included 3 yes/no type questions and one question which was required to be answered using a 5-point Likert Scale. These 4 additional questions were designed to gain an insight into the prior experiences of the fellows with SBT and their perception regarding conducting online SBT sessions.

Ethical clearance for the study was obtained from the institute ethics committee. The study participants comprised of CMCL-FRI FAIMER fellows who were attending the ML Web discussions on SBT. Links to the questionnaires were shared on the discussion threads and all current fellows (Year-2 and Year-1) were invited to participate in the surveys. Fellows from previous batches could also fill and submit the surveys. Participation was voluntary and the fellows who did not consent to participate in the study were excluded from the study.

### 2.1. Pre-moderation planning

During this stage, the moderating team brainstormed on how activities could be designed to engage and cater to the needs of adult learners and the learning sessions and activities were developed accordingly. Our target learners were a varied group of medical teachers spanning specialities from basic sciences (22.6%) to para-clinical (25.8%) and clinical subjects (51.61%). The aim of the intersession was not to provide formal simulator education, but to encourage learners to come up with innovative ideas on how SBT could be applied in their own fields, facilitate them to develop SBT modules and also to gauge their perceptions.

### 2.2. Monthly discussion module

We conducted an online survey and needs assessment to gauge the needs of our learners and judge their prior experience, exposure and knowledge about SBT. The results revealed that for most learners, Simulation was synonymous with high-end technology with application

limited to clinical specialties especially cardio-pulmonary resuscitation (CPR) training and emergency settings. So, one of the first activities of engaging them was to allow learners to reflect on experiences with Simulation from their own professional and personal backgrounds and to build on this foundation.

The sub-topics included in the monthly topic of co-learning included : (1) various types, levels and categories of simulations that could be used in HPE (2) components of an SBT session, including briefing and debriefing (3) scenario designing - which were extensively reviewed by trained faculty and co-learners (4) understanding the role of SBT in the HPE curriculum (5) discussing the advantages and challenges of introducing SBT in HPE (6) designing an online SBT session in their respective specialties (7) outlining the challenges anticipated, with possible solutions, for implementation of online SBT sessions in the COVID-19 era (8) reflecting on the learning experience during the online discussion on SBT. To ensure active participation and engagement of all participants, both individual and team-based activities were conducted. To break the monotony, learners were encouraged to think creatively and cite (based on literature search) an example of how simulation scenarios (from medical or non-medical fields) could be incorporated in their respective specialties after considering all the challenges they anticipated at their workplaces.

### 2.3. Survey

The pre-moderation month survey was shared with the fellows on the first day of the intersession and they were asked to complete the survey before participating in the discussions on the topic. After 4 weeks of intense asynchronous and synchronous exchanges, the post-moderation month questionnaire was shared with the learners and responses were obtained. The data was analysed on Google Forms and the linked Google Sheets. Numbers and percentages were calculated by Google Forms and are presented as tables and a bar diagram.

## 3. Results

A total of 34 fellows responded to the pre-moderation month questionnaire while 30 fellows responded to the post-moderation month questionnaire.

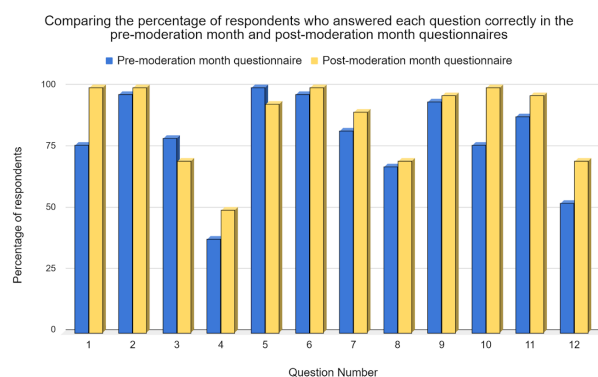
### 3.1. Pre-moderation month questionnaire

(34 responses) The first section consisted of 3 yes/no type statements. Fellows were asked whether they had previously attended any lecture or workshop on SBT or had been a resource faculty at such a session/workshop. 70.6% respondents had attended a lecture and 58.8% respondents had attended a workshop on SBT. 20.6% respondents had been the resource faculty at such a session. The responses are presented in Table 1. The next section consisted of

the 12 multiple-choice questions. The average score of the respondents was 9.5, the median score was 10 and the score range was 7-12. (Table 2) Only 1 respondent (2.94%) scored 12 points. The percentage of respondents who answered each question correctly is presented in Table 3.

### 3.2. Post-moderation month questionnaire

(30 responses) The questionnaire consisted of the same 12 multiple choice questions as the pre-moderation questionnaire. The average score of the respondents was 10.37, the median score was 10 and the score range was 6-12. (Table 2) 7 respondents (23.33%) scored 12 points. The percentage of respondents who answered each question correctly is presented in Table 3. A comparison between the percentage of respondents who answered each question correctly in the two surveys is presented in Figure 1.



**Fig. 1:** Comparing the percentage of respondents who answered each question correctly in the pre-moderation month and post-moderation month questionnaires

## 4. Discussion

We can observe from the results that although a majority of most respondents had attended a lecture or workshop on SBT, only a small minority of them had been the resource faculty at such a session. We can also note that while the median score between the pre-moderation and post-moderation month questionnaires remained the same, the average score showed an increase from 9.5 to 10.37. Furthermore, the number of fellows who scored the maximum possible score of 12 showed a significant increase from 2.94% to 23.33% between the pre-session to the post-moderation month questionnaires ( $p$ -value=0.015).

The percentage of respondents who answered the question correctly in the post-moderation month questionnaire showed an increase over the pre-moderation month questionnaire in 10 out of 12 questions, with the increase being highly significant in 2 out of these 10 questions (in questions 1 and 10,  $p$ -value=0.0049).

**Table 1:** Fellows' response to yes/no type questions in the pre-moderation questionnaire

Statement	Number (and %ge) of respondents who marked 'Yes'	Number (and %ge) of respondents who marked 'No'	Total number (and %ge) of respondents
I have previously attended a Lecture/Webinar on Simulation based teaching.	24 (70.6%)	10 (29.4%)	34 (100%)
I have previously attended a Workshop on Simulation based teaching.	20 (58.8%)	14 (41.2%)	34 (100%)
I have previously been a resource faculty/facilitator in a Simulation based teaching session/workshop.	7 (20.6%)	27 (79.4%)	34 (100%)

**Table 2:** The average score, median score and score range for the 12 multiple choice questions in the pre-moderation and post-moderation questionnaires

S. No.	Parameter	Pre-moderation month questionnaire (maximum score=12)	Post-moderation month questionnaire (maximum score=12)
1.	Average score	9.5	10.37
2.	Median score	10	10
3.	Score range	7-12	6-12

**Table 3:** The percentage of respondents who answered each question correctly in the two questionnaires

Question No.	%ge of respondents who answered the question correctly in the pre-moderation month questionnaire	%ge of respondents who answered the question correctly in the post-moderation month questionnaire	p-value
1.	76.5	100	0.0049
2.	97.1	100	0.351
3.	79.4	70	0.389
4.	38.2	50	0.346
5.	100	93.3	0.128
6.	97.1	100	0.351
7.	82.4	90	0.386
8.	67.6	70	0.837
9.	94.1	96.7	0.626
10.	76.5	100	0.0049
11.	88.2	96.7	0.210
12.	52.9	70	0.165

Most of the fellows had some baseline knowledge on the topic, probably because they had attended lectures/webinars/workshops on SBT earlier. Moreover, the erstwhile Medical Council of India (the present National Medical Commission) had issued guidelines for setting up skills laboratories in all medical colleges and since most of the FAIMER fellows have some background in medical education or are part of medical education units in their institutions, they were probably a part of the team tasked with the setting up of the skills labs and/or designing the simulation modules; therefore it is possible that they may have read about the topic previously. However, the findings of our study show that there was a definite increase in knowledge levels regarding SBT among the fellows after attending the online discussions during the moderation month.

## 5. Conclusion

Literature is replete with research stressing the importance of educational technologies training, which translates into providing an effective learning environment for students.

Our observations support the fact that attending online ML web discussions leads to an increase in knowledge levels among participants and is an effective way to introduce medical educationists to important concepts in medical education. Being an evolving area, it is essential that faculty must attend simulation focussed faculty development programs to keep abreast with the evolving knowledge on these topics.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

## Acknowledgements

The authors wish to acknowledge the support and contributions of the members of the moderation team - Dr. Tanushree, Dr. Alya, Dr. Jarina, Dr. Padmini, Dr. Christina and Dr. Anil. The authors also wish to thank the fellows who participated enthusiastically in the surveys.

## References

1. Seethamraju R. Effectiveness of using online discussion forum for case study analysis. *Educ Res Int*. 2014;doi:10.1155/2014/589860.
2. The Fellowship [Internet]. CMCL-FAIMER. [cited 2021 Jun 23]. Available from: <https://cmcl.faimerfri.org/the-fellowship/>.
3. Singh TSS. Simulation Based Learning: Indian Perspective. *J Anaesthesiol Clin Pharmacol*. 2015;31(2):268–9.
4. Kundra P, Cherian A. Simulation based learning: Indian perspective. *J Anaesthesiol Clin Pharmacol*. 2014;30(4):457–8.
5. Badyal D. Simulation-based learning in competency-based medical education: The Indian context. Available from: <https://ahpe.in/simulation-based-learning/>.
6. Nestel D, Bearman M, Brooks P, Campher D, Freeman K, Greenhill J. A national training program for simulation educators and technicians: evaluation strategy and outcomes. *BMC Med Educ*. 2016;16(1):25.

## Author biography

**Maria Thomas**, Professor

**Niket Verma**, Associate Professor

**Dinesh K Badyal**, Professor

**Cite this article:** Thomas M, Verma N, Badyal DK. Online monthly discussion module of simulation-based teaching: Effect on knowledge. *J Educ Technol Health Sci* 2021;8(2):48-52.