International Journal of Research in Medical Sciences
Jayakumar K et al. Int J Res Med Sci. 2026 May;14(5):1893-1896
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20261323

Original Research Article

Fostering medical education: an affable approach to small group discussion in conventional settings

Karthi Jayakumar*, Amar Kumar G., K. Bhaskaran, Udhaya V., Sujitha M., Rupa Jayaprakash, Vengatesh L., Bharathi P., Udhayakumar S., Thilagavathi G., Nivetha A., Priyadharshini G., Parandhaman T., Asha A.

Department of Microbiology, Arunai Medical College and Hospital, Tiruvannamalai, Tamil Nadu, India

Received: 08 July 2025
Revised: 03 January 2026
Accepted: 08 April 2026

***Correspondence:**
Dr. Karthi Jayakumar,
E-mail: jayakumarkarthika900@gmail.com

ABSTRACT

Background: Competency-based medical education (CBME) marks a paradigm shift in Indian medical education, emphasizing active and learner-centric strategies over traditional didactic methods. The National Medical Commission (NMC) has recommended expanding small group discussion (SGD) hours to strengthen this learner-driven model. However, microbiology education in India remains largely lecture-driven. This study aimed to evaluate the implementation and effectiveness of four distinct SGD techniques-flipped classroom, escape room, distribute-discuss-develop (3D), and mind-mapping-in promoting engagement and deep learning among undergraduate medical students.
Methods: A cross-sectional study was conducted among phase II MBBS students (n=150) at a tertiary medical college. Participants were divided into ten groups. Four SGD modalities were implemented: a flipped classroom on immunoprophylaxis, a game-based escape room on atypical pneumonia, a 3D poster session on viral encephalitis, and mind mapping on transfusion transmitted infections. Faculty used validated checklists for performance scoring and Google forms for feedback.
Results: Overall participation was 100%. Quantitative analysis revealed that the Escape room received the highest median enjoyment score (5/5, IQR=4-5) and was preferred by 72% of learners. Faculty observed improved articulation and peer teaching behaviors during 3D and mind mapping sessions. Faculty evaluation scores showed a median of 8 (IQR=7-9) across all techniques.
Conclusions: Incorporating varied SGD modalities into the microbiology curriculum is feasible and effective. Techniques like flipped classrooms and escape rooms enhance academic engagement and promote core competencies such as communication and teamwork.

Keywords: Small-group discussion, CBME, Microbiology education, Flipped classroom, Escape room, 3D poster, Mind-mapping, Active learning, Medical students, India

INTRODUCTION

The landscape of undergraduate medical training in India is currently navigating a significant transition. Historically dominated by teacher-centric didactic lectures, the curriculum is shifting towards the learner-centric framework of CBME.[1] To reinforce this pedagogical evolution, the NMC has mandated an increase in allotted hours for SGD, recognizing them as a vital tool for interactive learning.[2]

Small group discussion is defined as a learning format where students actively engage in dialogue to construct concepts through effective communication, thereby fostering critical analysis. Unlike passive listening, SGD necessitates that the learner strengthens their educational

habits across the cognitive, psychomotor, and affective domains.[3] SGD is a learning process where learners actively discuss the topic, to develop concepts by effective communication within the group, cultivating critical analysis.[4]

The affective domain which includes attitudes, behavior and other soft skills and which are essential qualities for a professional handling the patients.[5] This also necessitates the learner to be an effective team member and a reliable contributing team player, which is an essential nobility in patient care for the evolving professional.[6] These qualities are nurtured in small group discussion, where discussion and learning happens among individuals by sharing ideas and concepts.[7]

Despite the clear benefits of collaborative learning-such as the nurturing of ideas and the sharing of concepts-conventional lecture formats continue to predominate microbiology instruction. To address this gap, our department integrated SGD into the scheduled timetable using varied active learning techniques.

The primary aim of this study was to implement diverse SGD methodologies for phase II microbiology students and to rigorously assess the learning outcomes and engagement levels through stakeholder feedback.

Aim

Aim was to implement SGD for phase II students in Microbiology, to assess the learning outcome among the students by their feedback.

Objectives

Objectives were implementation of SGD for phase II students, SGD to be implemented with different techniques, to align the teaching, learning and assessment process by their group activity and to collect feedback from stakeholders for further improvement.

METHODS

Study design and setting

A cross-sectional study was conducted between March and April 2025 in the Department of Microbiology at Arunai Medical College and Hospital, Tiruvannamalai.

Participants

The study population consisted of the entire batch of phase II MBBS students (n=150). The inclusion criteria encompassed all undergraduate students currently enrolled in the Phase II curriculum who were present during the study period. The exclusion criteria applied to students belonging to phase I and phase III, as well as any phase II students absent on the days of the specific interventions.

Intervention protocols

Topics for discussion were disseminated via class WhatsApp groups one week prior to the scheduled sessions. This interval provided learners adequate time to prepare, analyze learning objectives, and familiarize themselves with the subject matter. The batch was divided into 10 groups, each comprising 15 students. The following four SGD techniques were employed: The entire batch of 150 students were divided into 10 groups, with 15 students in each group.

Four different techniques were selected to implement the SGD: flipped class (2) escape room (3) 3D and (4) mind mapping

The different techniques adopted, was implemented as per the norms found in reference articles and literature reviews in medical education.[8]

Flipped class was conducted on immunoprophylaxis topic. It was a group based flipped classroom activity.[9] It is named so, as it is an inverted or flipped mode from the traditional educational pattern. it encourages on one-to-one conversation, to reflect on their learning experiences.[10]

The learners did the group discussion, following which the individual group did their power point presentation for the specific learning objectives, on the day of the scheduled class.

The best performed team was selected by two judges, with the checklist and winner was declared with the high scores secured.

Peer reviews were also obtained. The entire preparation done by the students was compiled as a book.

The second technique adopted was Escape room activity, topic given was “Atypical pneumonia”. It was a Game based learning process.[11] It provided fun and engaged the learner to reinforce medical knowledge by facilitating problem solving skills by solving questions or puzzle.[12]

The batch was provided with 10 stations, with clues in every station, making the identification of the infectious condition and the causative agent easier, within the stipulated time frame

The group of students, who identified the disease and the agent correctly with the provided clues in the ten individual stations, within the time frame, were declared as winner and permitted to ‘escape room’. Feedback was collected from the learners and peers.

The third teaching learning model for SGD was 3D: Distribute, discuss and develop.[13] The topic provided was: Viral encephalitis, the groups distributed the subtopics for discussion and developed the learning objectives and goals.

The 3D method is one example of SGD, that aids the student centric learning. It enhances the comprehension of complex facts among learners by group interaction, which in turn makes the future doctors to become more articulate and improve the communication skills.

The group discussion was transformed into a chart, which was presented in the scheduled class. The best group presentation was selected by the judges with a check list.

The fourth selected technique was mind mapping, for transfusion transmitted diseases. Mind mapping is a versatile tool in medical education that makes the students to organize information and ideas, that aids in the development of a map or the diagrammatic representation.[14]

RESULTS

A total of 150 Phase II MBBS students participated in the study, resulting in a participation rate of 100%. The mean age of participants was 20.4±0.8 years, with 68males (45.3%) and 82 females (54.7%).

The demographic and study characteristics of the participants are summarized in Table 1. The batch was divided into 10 groups, each consisting of 15 students.

Faculty performance assessment across all SGD techniques demonstrated a median score of 8 out of 10 (IQR: 7-9). Engagement and feedback outcomes are summarized in Table 2.

Among the four SGD modalities, the escape room technique was the most preferred, with 108(72%) of students rating it as the most engaging method. The median enjoyment score for the escape room activity was 5 out of 5 (IQR: 4-5).

Table 1: Demographic characteristics of study participants.

Characteristics	Value
Study setting	Department of microbiology, Tertiary Medical College
Study population	Phase II MBBS students
Total sample size (n)	150
Study design	Cross-sectional
Group allocation	10 Groups (15 students per group)
Study duration	March-April 2025
Mean age (in years)	20.4±0.8
Age range (in years)	19-22
Male	68 (45.3%)
Female	82 (54.7%)

Table 2: Study outcomes and feedback analysis.

Parameters	Results
Overall participation rate	100%
Median faculty assessment score	8 out of 10 (IQR=7-9)
Most preferred SGD technique	Escape room (72% of learners)
Median enjoyment score (escape room)	5/5 (IQR: 4-5)
Outcome: Flipped classroom	Production of a compiled handbook on immunoprophylaxis
Outcome: Mind mapping	Identification and remediation of knowledge gaps
Outcome: 3D and mind mapping	Observed improvement in articulation and peer-teaching behaviors

The flipped classroom activity resulted in the development of a compiled handbook on immunoprophylaxis. mind mapping sessions facilitated identification and clarification of knowledge gaps. Faculty observers noted improved articulation and peer-teaching behaviours particularly during the 3D and mind mapping sessions.

DISCUSSION

SGD represents a distinct shift from the passive information transfer typical of didactic lectures, maximizing the active learning process.[17] Our study demonstrated that SGD augments structured conversation under the supervision of a facilitator, thereby enhancing robust group dynamics through the sharing of ideas, perceptions, and concepts.[18] This collaborative environment aids in arriving at ideal conclusions and decision-making regarding the learning objectives. The results of this study align with existing literature suggesting that collaborative learning fosters active listening, fruitful discussion, and team spirit. These interactions lead to the development of interpersonal relationships that promote communication skills.[19] Furthermore, our findings confirm that SGD promotes better information retention due to interactions with peers in a non-threatening, effective learning environment. Students in our study were enthusiastic about participating in SGD, contrasting sharply with conventional classes; they were actively involved in the learning process and comfortable attaining their goals.[20]

Many students were able to identify their knowledge gaps and address them within their peer group with ease, facilitating deep learning[16]. Among the techniques employed, the game-based "escape room" was the most preferred. This live, action-packed activity required learners to encounter challenges via clues at different stations, leading teams to identify disease conditions and pathogens effectively. Similarly, Mind Mapping served as a visual representation of high-level metacognitive

learning, providing teachers with insights into the depth of knowledge gained by learners.[14] While the integration of these methods is promising, it is not without challenges. The planning of SGD requires significantly more time, infrastructure, and flawless technique to manage class activity effectively compared to traditional lectures. However, the investment yields a fruitful academic environment where learning is optimized.

Limitations This study has certain limitations. It was a cross-sectional study conducted at a single center with one batch of students, which may limit the generalizability of the findings. Additionally, the assessment of "enjoyment" and "engagement" relied primarily on subjective feedback and faculty observation. Long-term retention of knowledge gained through these specific SGD sessions was not assessed in this study design.

CONCLUSION

SGD in medical education encourages deep learning and engages all types of students, significantly augmenting their confidence. Unlike conventional teaching techniques where passive learning is common, SGD ensures active participation. Retention of knowledge is found to be higher as it involves active engagement rather than the teacher-centric sharing of information. Integrating multiple SGD modalities within routine microbiology teaching is feasible and well received. Adoption of escape room and flipped class formats can accelerate CBME goals by cultivating higher order competencies and teamwork. Adoption of structured SGD modalities can strengthen competency development in undergraduate medical education.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. National Medical Commission. UG curriculum volume II. Available at: https://www.nmc.org.in/wp-content/uploads/2026/02/12bCompetencyBasedMedicalEducationCBMECurriculum12092024.pdf. Accessed on 10 March 2026.
2. National Medical Commission. Implementation of competency-based medical education for undergraduate course. New Delhi: NMC; 2022. Available at: https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/Implementation.pdf. Accessed on 29 April 2026.
3. Spencer JA, Jordan RK. Learner centred approaches in medical education. BMJ. 1999;318(7193):1280-3.
4. Grijpma JW, Ramdas S, Broeksma L, Meeter M, Kusurkar RA, de la Croix A. Learning from the experts: stimulating student engagement in small-group active learning. Perspect Med Educ. 2016;5(5):291-9.
5. Hoque ME. Three domains of learning: cognitive, affective and psychomotor. J EFL Educ Res. 2016;2(2):45-52.
6. Babiker A, El Husseini M, Al Nemri A, Al Zamil F. Health care professional development: working as a team to improve patient care. Sudan J Paediatr. 2014;14(2):9-16.
7. Derosya V, Syukri D. Small group discussion and discovery learning in assessing "Satuan Proses." EAI Endorsed Trans e-Learn. 2021;8(26):e3.
8. Khatoon R, Jones E. Flipped small group classes and peer marking: incentives, participation and performance. Assess Eval High Educ. 2022;47(6):910-27.
9. Brown BA. Understanding the flipped classroom: types, uses and reactions to a modern pedagogy. St Cloud State University. 2016. Available at: https://repository.stcloudstate.edu/ed_etds/12. Accessed on 29 April 2026.
10. Irulappan P. The flipped classroom. Int J Innov Educ Res. 2014;2(6):1-7.
11. Veldkamp A, van de Grint L, Knipples MCPJ, van Joolingen WR. Escape education: a systematic review on escape rooms in education. Educ Res Rev. 2020;31:100364.
12. Nicholson S, Cable L. Unlocking the potential of puzzle-based learning. Thousand Oaks: Sage; 2021.
13. Jagzape AT, Kumar M, Ghritlahre N. Enhancing medical education through the "distribute, discuss and develop" method: a comparative study. Cureus. 2024;16(4):e59012.
14. Rajapriya M. Effectiveness of mind mapping in higher education. Int J Civ Eng Technol. 2017;8(4):975-81.
15. Babenko O, Daniels LM, White J, Oswald A, Ross S. Achievement goals of medical students and physicians. Med Educ. 2018;52(1):74-85.
16. Burgess A, van Diggele C, Roberts C, Mellis C. Facilitating small group learning in the health professions. BMC Med Educ. 2020;20(1):457.
17. Wolff M, Wagner MJ, Poznanski S, Schiller J, Santen S. Not another boring lecture: engaging learners with active learning techniques. J Emerg Med. 2015;49(5):710-7.
18. Badge A, Chandankhede M, Gajbe U, Bankar NJ, Bandre GR. Employment of small group discussions to ensure effective delivery of medical education. Cureus. 2024;16(1):e52655.
19. Aggarwal C. Group discussion: a comprehensive guide. New Delhi: Academic Press. 2024.
20. Iammeechai W, Srikulmontri T, Siritongtaworn P, Ratta-Apha W. Attitudes and confidence in communication skills of fourth-year medical students after online small group discussion and peer role play: a survey study. Acad Psychiatry. 2025;49(2):136-4.

Cite this article as: Jayakumar K, Kumar AG, Bhaskaran K, Udhaya V, Sujitha M, Jayaprakash R, et al. Fostering medical education: an affable approach to small group discussion in conventional settings. Int J Res Med Sci 2026;14:1893-6.