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REVIEW ARTICLE

Tips to maximize learning in large group teaching sessions for health professions educators: A narrative review

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Objective This study aims to explore effective strategies and considerations for enhancing learning outcomes in large group teaching settings for health professions educators.

Methods A comprehensive review of literature was conducted to identify key factors influencing learning effectiveness in large group teaching within health professions education. Various pedagogical approaches, technological tools, and instructional methodologies were examined to determine their impact on maximizing learning in large group settings.

Results The findings highlight the importance of incorporating active learning techniques, fostering student engagement, and utilizing artificial intelligence (AI) to optimize learning outcomes in large group teaching. Strategies such as interactive lectures, group discussions, case-based learning, and simulation exercises were identified as effective methods for promoting active participation and knowledge retention. Additionally, creating a supportive learning environment, providing timely feedback, and encouraging collaborative learning were found to enhance student satisfaction and overall learning experiences.

Conclusions To achieve optimal learning outcomes in large group teaching for health professions educators, it is essential to adopt a comprehensive approach that combines inventive teaching methods, AI learning aids, and a nurturing educational atmosphere. Further research is needed to explore long-term impact of these strategies and to identify additional approaches for enhancing learning in large group teaching settings.

Keywords Active learning, Lecture, Artificial Intelligence.

INTRODUCTION

The traditional lecture remains one of the most commonly utilized teaching approaches in higher education (Fortanet-Gómez and Ruíz-Madrid, 2014). It has a rich history as the predominant teaching method[1] in medical schools (Murphy and Sharma, 2010). Over the past two

decades, there has been a plethora of literature examining the lecture-based instructional format[2] (Pérez-Llantada and Ferguson, 2006; Deroey and Taverniers, 2011[4]; O'Callaghan *et al.*, 2017)[5], illustrating its varied functions[3] across diverse knowledge domains (Steinert and Snell, 1999; Dolnicar *et al.*, 2009; Stacy, 2009; Tanahoung *et al.*, 2009; Özcan, 2013)[6] and emphasizing students' favorable perceptions[9] of this[7] teaching method[8] (Bates *et al.*, 2017[11]; Buchanan and Palmer, 2017)[10].

Critiques of conventional[12] lecturing as a pedagogical approach trace back to 1931, when Hamilton Holt characterized the lecture as "that mysterious process by means of which the contents of the professor's notebooks are transferred by means of the fountain pen to the pages of the student's notebooks without passing through the minds of either" (Honan, 2002)[13].

Opinions regarding the efficacy of this teaching method vary, ranging from endorsing its effectiveness in both small and large groups to questioning its utility (Steinert and Snell, 1999; Kramer, 2017). Others assess its impact on students'[6] listening and[14] note-taking skills (Meyer and Hunt, 2017)[15].

Lecturing to a large audience often leans towards passive teaching rather than active learning. Nonetheless, certain interactive techniques can be integrated (Cantillon and Wood, 2010; Steinert and Snell, 1999)[6]. While it allows for the dissemination of a substantial amount of information to a sizable group of students within a short timeframe, it is considered "cost-effective" when compared to alternative teaching methods, appealing particularly to administrators due to its minimal resource utilization. These factors likely contribute to the enduring popularity of traditional lectures as an instructional tool.

Alternatively, the primary drawback of a traditional lecture lies in its tendency to render students passive participants (Amin and Hoon Eng, 2003)[16], resulting in limited retention of information: typically, students recall only 5 – 10 % of what they hear in such settings.

In conventional face-to-face instruction, a significant portion of class time is dedicated to transferring information from an expert to novice learners. Although engagement levels vary, small-group instruction offers opportunities for direct interaction between learners and instructors, facilitating immediate feedback and clarification. However, larger group sessions, such as lectures, often lack personalization (Roopa *et al.*, 2013)[17].

Moreover, traditional lectures tend to focus on lower-level cognitive functions, neglecting higher-order skills such as analysis, synthesis and application. To justify their place in the curriculum, lecturers must strive to enhance student learning outcomes and ensure greater value from attendance.

A systematic review conducted by Tronchoni and colleagues (2022)[18] explored the current state of lecturing in contemporary university teaching by analyzing 45 articles spanning various fields of knowledge across five continents. This review identified two primary research questions emerging from the articles, focusing on the viability of continuing the traditional lecture format and suggesting potential enhancements. These questions were formulated as follows: "(1) Is there a desire within the international research community specializing in university teaching methods to innovate the lecture format? and (2) What improvements to the lecture format do the reviewed articles propose within the framework of interactive learning communication?" While the reviewed articles proposed certain modifications, they lacked contextual cues on how to implement these changes effectively and conceptualize them beyond mere information retrieval.

The authors concluded that it was challenging to discern the specific characteristics of the lectures targeted for intervention and their correlation with other teaching and learning methodologies across the analyzed articles. However, there was a notable inclination towards enhancing the utilization of technological advancements in knowledge dissemination, employing interactive strategies and integrating participative techniques and tasks. Despite the prevalent advocacy for interactive learning, the literature often fell short in providing guidance on the necessary adjustments to teaching methodologies (Tronchoni *et al*., 2022)[18].

Our narrative review was conducted to synthesize and critically evaluate the existing literature on the suggested tips to maximize and improve learning in large group context in medical education. The methodology employed followed a structured yet flexible approach to ensure a comprehensive understanding of the topic while allowing for interpretative synthesis and the review aimed to explore the evidence-based teaching strategies that enhance student engagement, participation and comprehension in large group settings, focusing on actionable tips for educators to design and deliver lessons that are inclusive, engaging and effective for large group dynamics. The primary goal was to provide a cohesive summary of current knowledge, identify trends and highlight gaps in the literature.

Therefore, this article aims to offer a set of recommendations to enhance the effectiveness of large group teaching, emphasizing practical strategies to address the limitations of traditional lecturing and illuminating the

advantages of employing artificial intelligence in large group instructional settings.

Tip 1: Face your fears:

While many lecturers acknowledge the theoretical advantages of interactive lectures, numerous factors prevent their adoption. Fear constitutes a significant barrier, stemming from concerns about losing control over either the students or the material (Huxham, 2003)[19]. Other anxieties include apprehension about being unable to answer student inquiries or receiving minimal responses to posed questions. There's also apprehension that a dominant subset of students might dominate the discussion (Steinert and Snell, 1999)[6]. Moreover, time constraints often deter educators from embracing interactive lectures as they worry about not covering all required content (Lammers and Murphy, 2002)[20].

However, fear is not entirely unwarranted. Understanding the benefits of interactive lecturing and equipping oneself with effective teaching strategies can help mitigate concerns and address the fear of the unknown. For instance, emphasizing the significance of student queries and promptly forming small groups for discussions, with or without technological aids, can be beneficial. Developing contingency plans for unexpected scenarios can alleviate anxiety and provide opportunities for students to demonstrate their understanding and capabilities. Examples of these plans include use of gamification, Think-Pair-Share and reflective journals as methods to engage non-interested students. Another example to manage due to noise or overcrowding is the use of breakout groups to divide the class into smaller groups for discussions or activities, the use of interactive tools like polling or audience-response systems (e.g., Poll Everywhere) as well as classroom agreements to establish clear guidelines for behavior and participation (Marzano, 2003)[21].

Furthermore, employing certain strategies and techniques can render lectures interactive without compromising the lecturer's sense of control or the lecture's structure and content. For example, utilizing simulations, role-plays, or discussing clinical cases presented through paper or video can enhance relevance, foster problem-solving and increase engagement. This approach also mitigates concerns about unexpected student queries regarding clinical experiences, while allowing the lecturer to maintain control over the classroom environment.

Tip 2: Prepare a well-planned lesson:

Lecturers must acquaint themselves with their audience's background, prior knowledge and requirements. This facilitates delivering lectures at an appropriate level, avoiding both excessive complexity and oversimplification.

Establishing clear objectives and segmenting the lecture ensures a structured approach. Similar to a movie, lectures should possess a discernible beginning, middle and end (Dimizo, 2008)[22]. Defining learning objectives and outlining lecture segments provides students with a roadmap of what to expect. This can be achieved by briefly discussing objectives and major topics using presentation slides, aiding students in understanding the lecture's purpose.

When crafting lecture content, it is essential to pinpoint key concepts and principles underlying the material. Identifying challenging concepts that students may struggle with is equally crucial. These areas merit special attention in lectures and can be elucidated through effective analogies, examples and opportunities for student engagement to assess comprehension.

Adhering to the principle of "less is more," it's imperative to review lecture content and streamline it to its essential components (Dimizo, 2008)[22]. This ensures clarity and focus, enhancing the effectiveness of the lecture delivery. It is also worth noting that lecturers should always have a back-up plan in case of equipment failure. Examples of pack up plans may include the use of printed handouts of lecture materials, shift to manual teaching tools such as whiteboards or flipcharts, offline pack up of presentations and verbal lecture delivery with supplemental activities (Brookfield, 2013 and Kemp, 2019)[23, 24].

Tip 3: Initiate a powerful start:

The initial moments of a presentation hold significant importance in capturing students' interest and providing them with a clear understanding of what to expect from the session. This can be achieved by implementing activities aimed at capturing students' attention early, as effective learning relies on their engagement (Bligh, 2000)[25].

Several well-known techniques include:

- Demonstrating enthusiasm, as studies indicate that students respond positively to instructors who display enthusiasm, leading to increased attentiveness (Bligh, 2000)[25]. Various methods can be employed to convey enthusiasm, with one simple approach being to actively engage with the audience by moving around the room.

- Utilizing 'signposting,' a technique where lecturers outline the learning objectives at the outset of the lecture, informing students of what they will be able to accomplish by the end. Additionally, providing a lecture outline at regular intervals during the session aids in clarifying the lecture's structure.

- Presenting students with a 'concrete' problem to solve at the start of the lecture encourages them to apply their existing knowledge and identify areas for further understanding, thereby enhancing their attentiveness.

- Incorporating videos or case presentations that illustrate key aspects of the lecture content informs students about the topics to be covered and encourages focused thinking.

- Administering a brief test or quiz at the beginning of the lecture allows students to assess their initial knowledge. Repeating the same quiz at the end of the session serves to demonstrate both to the students and the lecturer what has been absorbed (Bligh, 2000)[25].

Tip 4: Create a permissive environment that supports learning:

Teaching a large group can sometimes limit our creativity in utilizing the learning environment to achieve our teaching objectives. It is beneficial to consider how students can effectively learn within a specific environment before designing the optimal large group session. Regardless of group size, the learning environment should facilitate deep comprehension of the material. For instance, the conventional layout of a lecture hall with the lecturer positioned at the front and students arranged in rows can constrain creativity. However, educators should strive to maximize the use of space creatively. This can involve utilizing various areas of the room for displaying student-generated content, employing remote control for slide presentations to facilitate movement, encouraging student mobility during different learning activities and organizing students into pairs or groups. To foster collaboration within large groups, the seating configuration can be adjusted dynamically by instructing students to group according to assigned numbers. This approach, known as 'remixing,' enhances interaction and engagement among students (Jeffries and Huggett, 2010)[26].

Tip 5: Ensure students involvement:

According to educational research, active participation enhances students' learning outcomes compared to passive reception of knowledge (Marco-Fondevila 2022; Tight, 2020; Kamal, 2024)[27 - 29]. In the subsequent section, we propose methods to enhance student engagement:

- Questioning technique: This commonly employed method involves the lecturer posing questions to the class or encouraging students to ask questions. Employing the "ten-second rule" can alleviate students' reluctance to participate in large-group settings. This rule suggests a brief pause before prompting the audience for a response or volunteer. To maintain lecture organization, questions should be pre-planned and relevant to the lecture theme. The purpose of questioning is not to test knowledge but to identify weaknesses, draw attention to specific points and foster critical thinking. Thus, crafting questions and answers requires careful consideration. Questioning need not be confined to the lecture's conclusion; it can occur during, before, or after key concepts are presented (Amin and Hoon En, 2003)[16].

- Think-Pair-Share: This technique involves posing a thought-provoking question to students, allowing them a minute to contemplate individually. Students then discuss their thoughts with a neighbor for a minute before reconvening as a class to share insights (Cooper and Richards, 2017)[30].

- Buzz groups: This exercise entails dividing the class into small groups of four to six students, swiftly formed among neighboring peers. Dubbed "buzz" groups due to their animated discussions, students are tasked with answering challenging questions or solving problems. After several minutes of group work, the lecturer regains control of the class. To ensure meaningful engagement, the lecturer may ask selected buzz groups to report their findings to the class, promoting further discussion, consensus-building and representation of group perspectives. While the upper limit for group size in fixed-seating lecture theaters is typically eight, movable chairs allow for larger group formation (Hartly *et al.*, 2003; Cooper and Richards, 2017)[30].

Tip 6: Stimulate attention and motivation:

While some scholars argue that the decline in attention span varies significantly (Wilson and Korn, 2007)[31], others contend that even with a dynamic presentation, student focus in lecture theaters may diminish notably within 10 – 15 minutes (Bligh, 2000; McKeachie and Svinicki, 2006; Jeffries, 2014)[25, 26, 32]. Research in education underscores the correlation between heightened attention and motivation and enhanced memory retention (Gage and Berliner, 1991; Mannison *et al.*, 1994; Meyers and Jones, 1993)[15, 33]. Increased arousal and motivation are deemed crucial for learning and often outweigh intelligence in terms of retention. Studies on attention span indicate a significant drop in student interest and attention after approximately 20 minutes of traditional lecturing (Frederick, 1986; Foley and Smilansky, 1980; Stuart and Rutherford, 1978)[34, 35].

Below are methods to stimulate students' attention:

- Demonstrating commitment to the topic through expressiveness: This entails exhibiting enthusiasm, friendliness, humor and charisma, which are conveyed through eye contact, gestures, facial expressions and vocal tone.

- Utilizing a mixture of modes for explanation: Incorporating narrative, conceptual and anecdotal modes of explanation can effectively sustain student interest and understanding. Starting with narrative mode, integrating anecdotes and concluding with a conceptual summary is suggested for optimal engagement.

- In-class quizzes: Brief quizzes administered and corrected during class time serve various purposes, including capturing attention at the beginning and assessing comprehension at the end of a lecture (Cantillon and Wood, 2010)[37].

- Simulations and role plays: These activities immerse students in real-life scenarios within a safe environment, enhancing attention, clinical relevance and engagement.

- Using concrete examples: Integrating real-life applications and controversial issues motivates students to further explore and learn, facilitating understanding and recall by linking new content with existing knowledge.

- Class debates: Structured debates on contentious topics encourage critical thinking and engagement, fostering attention and comprehension among students.

- Use of written materials: Well-designed handouts aid in organizing key concepts, promoting retention and alleviating pressure on the lecturer. The timing of handout distribution depends on its purpose, with pre-lecture distribution aiding student preparation and early distribution facilitating engagement during the session.

Tip 7: Promote a higher level of thinking:

Interactive lecturing, when implemented correctly, has been shown to foster higher levels of cognitive engagement (Lowman, 1984; Michaelsen *et al*., 1982; Ramsden, 1992)[37-39]. This encompasses analytical and synthetic thinking, application to diverse contexts and critical evaluation of presented material. Interactive lecturing also facilitates problem-solving, decision-making and communication skills development.

This can be achieved through the following strategies:

- Utilizing clinical cases: Integrating clinical cases into lectures adds relevance and promotes effective problem-solving. It enhances student engagement, encourages clinical reasoning and lends authenticity to medical learning.

- Brainstorming: This exercise involves prompting students to generate ideas or solutions to a problem or topic. The lecturer records students' responses without commentary on a visual aid such as a whiteboard or flipchart. Brainstorming concludes with the lecturer organizing and summarizing the ideas contributed by students. It serves as an effective technique for stimulating student thought before presenting the lecturer's perspective.

Tip 8: Create audiovisual aids:

Film clips or videotaped vignettes can serve as catalysts to initiate discussions or prompt critical thinking among students. For instance, a brief segment captured on video can depict a complex patient interview, prompting students to provide reactions and reflections. It is advisable for films or videotapes used for this purpose to be concise, capturing only a portion of a scenario, thus encouraging further exploration and dialogue (Steinert and Snell, 1999)[6].

When utilizing any visual aid, the following considerations should be taken into account:

- Simplicity: Each visual aid, whether it's a transparency, flip chart, or slide, should focus on conveying a single main point, accompanied by supporting details presented in a bulleted format. This approach aids students in retaining essential information.

- Relevance: It is essential to utilize current videos and slides that effectively convey information and demonstrate skills in accordance with best practices.

- Focus: Visual aids should be meticulously crafted to align with the learning objectives and emphasize key points (WHO, 2005)[40].

Tip 9: Maintain positive nonverbal communication:

Nonverbal communication occurs frequently in our interactions, extending beyond verbal exchanges. While individuals may articulate one message verbally, their body movements often convey a different meaning. Nonverbal communication encompasses all forms of language conveyed without words. Research suggests that up to 90 % of communication is nonverbal (Zhou and Zhang, 2008)[41].

Here are some strategies to enhance the connection between lecturers and students through nonverbal communication:

- Maintain eye contact with the students, avoiding fixating on a single individual to prevent distraction.
- Utilize body language, facial expressions and tone of voice to convey enthusiasm and engagement.
- Engage with different sections of the audience by periodically scanning the room. If feasible, move around the lecture theater to address various points, ensuring visibility of visual aids from all angles.
- Employ appropriate gestures to enhance the presentation and sustain audience attention (Babad, 2009)[42].

Tip 10: Manage time effectively:

Using a variety of techniques to make the lecture interactive should not affect the time available for the lecture. Effective planning will lead to effectively managing the lecture time. Starting with a short introduction, then going through the body of the lecture and finally finishing the lecture on time is one of the most important things that should be followed when delivering an effective lecture even in the case of a late start (Taat *et al.*, 2020)[43].

Tip 11: Get feedback during the session:

Lecturers can assess students' satisfaction by observing their engagement during the lecture. If students appear confused or uncertain, the lecturer should pause and offer clarification. Moreover, feedback from students' responses to questions posed during the lecture can provide valuable insights. Due to the diversity of students‟ paces in learning, their understanding tends to vary as others would be fast learners whilst others are slow or moderate learners, which could be a misled point to the lecturer or instructor to believe majority understand or do not understand. Understanding of this concepts becomes key for them to navigate through the whole lecture session which either leads to participation, interactivity and a sense of belonging or vice versa of all the mentioned. Therefore, real-time feedback is a key to achieving the positive of that. Without receiving regular and real time feedback, it becomes difficult for them to understand and or comprehend materials being taught. Strategies to receive real time feedback include index cards, sticky notes and one minute paper (Mogwe, 2018)[44]. A skilled lecturer is attentive not only to verbal communication but also to nonverbal cues indicating agreement, attention, interest, or the need for clarification (Miller, 2005)[45].

Tip 12: Conclude the session with a summary:

Generally, lecturers give a summary at the end of a presentation, providing a review of the presentation's main points. When course topics are complex, it is preferable to use periodic summaries throughout the lecture to ensure that students understand before moving ahead to new material or a new topic. In addition, summaries can be used effectively before demonstrations or breaks that interrupt the presentation. The summary should be brief, highlighting the main points and involving the students (Naegle KM, 2021)[46].

The following are summary techniques:

Asking the students if they have questions: This gives students an opportunity to clarify their understanding.

- Asking the students questions: This helps students to focus on the major points of the presentation.
- Administering a practice exercise or test: This gives students an opportunity to demonstrate their understanding of the material. After the exercise or test, use the questions as the basis for a discussion by asking for correct answers and explaining why each answer is correct.
- Using a game to review main points: One popular game is to divide students into two teams, give each team time to develop review questions and then allow each team to ask questions of the other. Moderation is by judging the acceptability of questions, clarifying answers and keeping a record of team scores. This game can be highly motivational and can serve as an excellent summary at the same time (WHO, 2005)[40].

Tip 13: Benefit from AI in face-to-face and online large group teaching:

Teaching methods in pre-clinical medicine, covering the foundational sciences, are often viewed as rigid and pose challenges for integrating pre-clinical and clinical curricula (Gaur *et al.*, 2020)[47]. Artificial Intelligence (AI) presents an opportunity to facilitate this transition through virtual interactive patient cases and improved bedside teaching (Varma *et al.*, 2023)[48].

In essence, AI, or the emulation of human cognitive abilities by computers, can be conceptualized as machines exhibiting intelligent behavior such as perception, reasoning, generalization and learning from experience (Nilsson *et al.*, 1998)[49]. An advantage of AI lies in its capacity to provide personalized one-on-one teaching while minimizing human resource utilization. Thus,

instead of relying solely on small group teaching to address this challenge, AI offers a potential solution enabling more tailored learning experiences (Varma *et al.*, 2023)[48].

The integration of AI into medical education is expanding rapidly (Sun *et al.*, 2023)[50], with various applications including recording teaching videos, virtual inquiry systems, medical distance learning and management. Additionally, AI can enhance the humanistic aspects of medicine and analyze vast datasets to identify patterns aiding healthcare professionals in making accurate decisions (Mir *et al.*, 2023; Chaudhry and Kazim, 2021)[51, 52].

Furthermore, AI can personalize the learning journey for each learner, identify optimal teaching methods and automate routine tasks for instructors, thereby promoting more efficient and effective learning experiences (Seo *et al.*, 2021)[53]. Large language models (LLMs) like GPT and BERT are pivotal in generative AI, capable of processing extensive text data and generating conversational responses, making them valuable as virtual teaching assistants (Lee *et al.*, 2023)[54].

AI can also streamline administrative tasks such as scheduling, grading and attendance tracking, allowing lecturers to focus more on teaching and student support (Luckin, 2017)[55]. Additionally, AI systems can enhance collaboration and presence in virtual environments, as demonstrated by virtual avatars and facial analytics (Heidicker *et al.,* 2017; Aslan *et al*., 2019)[56, 57]. However, it is crucial to evaluate how students and lecturers perceive the impact of AI systems (Zawacki-Richter *et al.*, 2019)[41].

While AI is prominent in undergraduate medical education, its use in continuous medical education is limited due to the absence of structured curricula. Limitations of AI for learning include the necessity for structured curricula to serve as a knowledge base and concerns regarding feedback quality, necessitating systems equipped with expert domain knowledge for contextually driven education (Imran and Jawaid, 2020)[58]. Additionally several limitations that must be addressed to fully integrate AI into teaching and learning. These limitations span technological, ethical and practical domains. While AI excels in analyzing large datasets, it may struggle to provide truly personalized learning experiences for individuals with unique learning needs or preferences, also regulatory bodies and accreditation standards for medical education may not yet fully accommodate the use of AI. Regarding ethical concerns, the use of AI in medical education raises ethical issues, including concerns about data privacy, student surveillance and informed consent which in turn may limit the use of AI by students and educators due to fears about misuse of data or lack of transparency in AI decision-making processes (Gordon, 2024)[59].

Tip 14: Ensure valid student-instructor interaction in online learning sessions:

The five-factor model offers a useful lens for interpreting interactions between students and their instructors in online learning. The five factors are as follows:

Communication between learners and instructors: Instructional communication (Q and A) about topics directly related to learning content.

- Support: in the form of Instructional management by instructors, this includes supporting learning materials and providing feedback directly related to learning content.
- Presence: Perceived connectivity between students and instructors during the learning process.
- Guidance: Instructors provide encouragement and positive reactions that are not directly related to learning contents.
- Social intimacy: Social interaction, such as greetings, introduction and exchange of personal information that are not directly related to learning contents (Kang and Im, 2013)[60].

Additionally, it takes meticulous preparation and the application of techniques that encourage participation and engagement to conduct interactive online courses. To keep students engaged, lecturers should first set up a clear agenda and schedule time for interactive exercises like surveys, tests, or breakout room discussions (Major *et al.*, 2021)[61]. Instructors can use features like screen sharing, chat capabilities and virtual whiteboards to create an engaging atmosphere with Zoom, Microsoft Teams, or Google Meet. Furthermore, establishing expectations for participation at the start of the class guarantees that students know how they fit into the conversation. Maintaining a two-way flow of communication is facilitated by routinely assessing for understanding through formative evaluations, such as brief surveys or the use of open-ended questions (Martin and Bolliger, 2018)[62].

Limitations of the Study:

Although the study offers general guidelines for teaching big groups, it ignores particular nuances in different health professions, which may present particular instructional requirements and obstacles. Class size, cultural variety, institutional resources and student demographics—all of which were not particularly examined in this review—may have an impact on how effective the tactics presented are. Because studies with positive results are more likely to be published, the evaluated literature may be biased by publication bias, which could distort the recommendations. The authors' interpretation of the literature may add bias or

favor some tactics over others without conducting enough comparison analysis, which could have an impact on the recommendations made in this review.

CONCLUSION

In conclusion, maximizing learning in large group teaching for health professions educators requires a multifaceted approach that integrates innovative pedagogical strategies, technology-enhanced learning tools and a supportive educational environment. By embracing active learning techniques, fostering engagement through interactive sessions, leveraging technology for personalized learning experiences and promoting a culture of collaboration and inquiry, educators can effectively address the challenges inherent in large group teaching settings. Further recommendation include:

- Put Clarity and Structure First: To effectively lead students through the material, start each session with well-defined goals and a well-planned agenda.
- Improve Communication: Promote two-way communication by posing open-ended questions, guiding conversations and giving students the chance to clarify anything they don't understand.
- Encourage Inclusivity: Create exercises that take into account different learning preferences and foster an atmosphere in which all students can participate with ease.
- Assess and Modify: Get student input on instructional strategies and make ongoing improvements to better suit their learning requirements.

The potential of virtual reality and simulation-based tools to enhance clinical reasoning and decision-making abilities may be revealed by studies on their integration in large group settings. Another potential topic of future research is how cultural diversity and individual learning styles affect learner satisfaction and involvement in large group instruction. Lastly, in order to provide evidence-based recommendations for health professions educators, future research should concentrate on creating metrics to assess the long-term effects of these techniques on clinical competence and academic outcomes.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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