COVID-19: Strategies for Engaging Remote Learners in Medical Education

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Introduction

Any crisis in a nation will always leave its impact at all levels of education in many ways. Students' right to education is threatened at times of crisis developed due to natural disasters like earthquake, tsunami, cyclone, war, disease outbreak, etc. The COVID-19 outbreak across the globe has forced educational institutions including medical schools to suspend campus learning in order to curb the spread of the virus. This has forced the teaching community to think of new avenues and alternate strategies for engaging our students. Many institutes of higher education including medical colleges have shifted to online-mode to ensure continuity of teaching-learning and assessment processes. Online mode or e-learning mode is not just conducting videoconferencing sessions or sharing the PowerPoint slides, videos and documents to learners. Online education can be effective only if it promotes active learning in learners by providing opportunities to read, write, discuss, think, ask questions, solve problems, analyze and create new things depending on the learning content. In this context, it is time for us to think of 'flexible learning', a learner-centered

approach that offers rich learning choices to the students. In an online mode of flexible learning, students are provided with a variety of choices for their learning and allow them to take more responsibility for their own learning. In the current scenario of COVID-19 outbreak, many of the teachers working in medical colleges are new to online mode of teaching and hence, their apprehension towards active online engagement of their students is inevitable. This document discusses about the different strategies for ensuring higher levels of online student engagement in medical education.

Smart teaching using smart tools

- Online lecture sessions using software like 'Zoom', 'Microsoft Teams', 'Google Meet', etc. can be made more interactive by dividing the whole batch into sub-groups with a limited number of students. This will help teachers to monitor their students' participation and can actively involve them by questioning and soliciting questions.

- Software like 'Voxvote' can be used for conducting online quizzes, opinion polls on a daily basis.

- Online tests with multiple choice questions (MCQ) and other objective type tests may be administered daily using software like 'Testmoz', 'Google Forms' 'ClassMarker', etc.

- Since, unsupervised online exams have their own demerits, the validity and reliability of such unsupervised online

exams can be improved by increasing the number of tests with varying difficulty levels of different possible questions on the same topic instead of conducting one single exam for evaluation. Introducing varying time duration for the test and disabling 'copy and paste' option (in case of short answers) may be considered as anti-cheating mechanisms to foil cheating in an unsupervised online test environment.

- Teachers can assign topics for assignment to students and can ask them to submit before a deadline. Students can submit written assignments using email or other e-platform like 'Google Classroom', 'Canvas' and other similar applications. Students can either forward their scanned copy of the written assignment or directly post the electronically typed one.

- Teachers can use 'Google Docs' for engaging their students in collaborative writing where a group of students can contribute for a single topic both synchronously and asynchronously. The faculty moderator can monitor students participation and will also be able to identify and evaluate individual student contributions.

- *Reading exercises* –Teachers can post an article or suggest a book chapter as a reading exercise and ask their students to compile and post the key points based on their understanding. An activity sheet with exercises asking information on the title of the book, author(s), and chapters

read, their understanding on the core contents in the chapters, gist of their reading, muddy areas/points, etc. may be provided to the students as a learning task.

- *Listening exercises* - Podcasts are digital audio files made available on the Internet for downloading to a computer or a mobile device. Teachers can identify the best 'Podcasts' for their subject and recommend the same to their learners. Students can listen to the podcasts and finally answer a self-assessment questionnaire or a rubric. Podcasts of 'Medical Educator' are quite popular among medical students.

- *Watch and learn exercises* - Teachers can post a video lecture or a procedural video of a subject topic either created by them or provide a link to 'YouTube' and other sites like 'OnlineMedEd', 'Medical Institution', etc. and ask their students to give their comments with regard to their understanding about the topic and post their queries in the online platform.

- Teachers can announce a subject topic and ask their students to browse through the 'YouTube' or other similar sites to identify the most relevant educational videos available on the announced topic. After viewing the educational videos, students will have to share their comments or views for calling the identified videos as relevant educational video.

- Faculty can present a ‘virtual clinical case’ and instruct students to take part in the online discussion either synchronously or asynchronously.

- *Virtual learning environments* - Teachers can identify authenticated free virtual labs/virtual learning environments and direct their students to visit those sites and share their learning experience in the form of reflective writing.

- *Use of authentic clinical cases* – Teachers may post a mini clinical case or a case vignette and provide appropriate directions to elicit proper responses/views from their learners to link theory to practice. Here students will be directed to use the application of knowledge to the cases. This will also foster rational and creative thinking among students. This can be done either via ‘Google Groups’ or ‘Google Classroom’.

- Teachers can create video lectures/PowerPoints with voice over and slide notes and circulate them to their students followed by a self-administered online objective type test.

- Publishers like ‘Elsevier’ provide free online teaching-learning resources for the health professionals and students of health profession education. Teachers can identify such sites and can send the links of these free sites to their students as a learning resource and ask them to generate evidence for having used these sites for their learning.

- Organizations like ‘Medscape’ provide online medical simulations that offers real world scenarios and patient interactions where trainees can practice and learn in a safe, true-to-life environment.

Students as creators of learning resources

- Students may be asked to create their own educational videos or PowerPoint presentations with voice over and slide notes for a selected topic or for a topic of their own interest which may then be circulated among their peers and faculty for their understanding and comments.

- *Students as teachers* – Teachers can identify students who are interested and motivated to act as teachers and make them to identify topics they are more familiar with and entrust them with the responsibility of online teaching of a selected topic to a group of students identified for this purpose. Here students will have freedom to design and execute their own teaching-learning plan.

- Students could also be directed to prepare MCQs, clinical vignettes / case scenarios for a chosen subject content. Other students can involve themselves in vetting these resources after that they may be forwarded to their faculty for their comments and for future use. This will allow students to become familiar with their subject contents and foster higher order thinking.

- *Medical humanities* - Medical humanities provide unique opportunity to medical students to reflect on the meanings of health, disease and healing through arts, fine arts and social sciences. Students may be encouraged to write stories and poems on medicine, narratives, illustrate, draw and paint health care concepts, create cartoons for medical sciences, create crossword puzzles in medical sciences, create short videos/movies, design innovative approaches for Information, Education and Communication (IEC) in Public Health, etc.

- Teachers can encourage their students to create a variety of learning resources on the topics of their interest and these can be stored in a repository for anytime retrieval. This can be given as a group work or as an individual task.

- *E-portfolios* – Guidelines for generating/collecting evidences for students learning in the form of self-assessment reports, rubrics, teacher comments, reflective writing and student's contribution and participation in online activities may be issued in advance to the students. Students after collecting or documenting their learning evidence will reflect on selected documented learning evidence and forward it to the concerned faculty for appraisal. Showcasing of learning evidence may be done by scanning the manual portfolio and forwarding it to the concerned faculty or by using free e-portfolio platforms like 'Mahara', 'FolioSpaces', etc.

Students' e-learning circles

E-learning circles are teams of remote learners who are highly interactive and participatory in nature and use online media to acquire a deeper understanding of areas of shared interest.

Steps for organizing 'students e-learning circle':

- Divide the whole batch of students into a possible number of small sub-groups.
- Designate a faculty moderator for each sub-group.
- Allocate subject topic for each sub-group.
- Identify the student coordinator for each sub-group who will be responsible for coordinating with other members of their group in designing the online session, conducting the session and reporting on the learning outcomes. In short, the sub-group will be responsible for making their own online learning plan, execute their learning plan and finally show evidence for their learning.
- The faculty will observe the whole session by taking part as one of the participants and give his/her critical comments at the end of the session.

Online discussion forums

Using 'Google Groups' or 'Google Classroom' teachers can initiate online discussion on a chosen topic. This can be done by dividing the whole batch into sub-groups. Teachers can moderate by giving constructive feedback and finally help the participants to summarize the whole discussion with important learning points. The summarization by participants can also be done on rotation giving opportunity to all individual participants.

MOOCs

Massive Open Online Courses (MOOCs) are becoming more popular in higher education. Some of the popular MOOC providers are SWAYAM, NPTEL, Coursera, edX, Udacity, etc. These MOOC providers offer a variety of free and paid courses for learners of almost all disciplines. Teachers can identify relevant short term MOOC courses pertaining to medical sciences and recommend them to their students for enrollment. Students who produces a 'course completion certificate' may be awarded with appropriate academic credits and encourage them for further learning.

COVID-19 pandemic as a learning opportunity

COVID-19 pandemic has provided a doorstep learning opportunity to the medical and health profession community. This opportunity can very well be leveraged on to teach and learn about the disease using different educational strategies:

- Students may well be asked to put in writing a narrative of this public health emergency which could include: what did they learn out of the present pandemic? How will they use this experience for their future career? What suggestions can they offer to combat the situation? Any innovative ideas for controlling the pandemic, develop policy measures and develop new resources like medical equipment, diagnostic kits, etc.

- Students can be directed to gather newspaper or other news media items on the pandemic and compile the contents

incorporating their own thoughts and ideas. The information may be about the disease, resources used, outbreak statistics, manpower utilization pattern, logistics, screening of patients, medicines, etc. These collections can then can be submitted for their peer and faculty comments.

- Students may be directed to search for online journal articles related to COVID-19 and reflect on their understanding about the disease outbreak.

- Online group projects can be given to students on topics like collection of different nationwide COVID-19 data on infection rate, mortality rate, factors that influenced the recovery rate of COVID-19 patients, use of different combinations of medicines for treatment, prophylaxis that worked, etc. Projects on innovative ideas for designing PPEs, effective use of resources, planning and developing smart infrastructure, use of information and communication technologies (ICT) can also be assigned as group projects. These activities will widen students' mental horizon with respect to the disease and develop proper attitude towards medical sciences.

Remote clinical roles using telemedicine technology

Teaching hospitals that have telemedicine facilities can engage medical students for remote assistance in providing routine outpatient clinical care depending on their level of education. They can be engaged in teams for taking patient history, calling patients with laboratory test results, providing patient

education, documenting visits and answering questions about COVID-19 through helpdesk lines. Students can also be trained to provide care on inpatient services in wards that do not have patients with COVID-19 via telemedicine facility under the supervision of senior residents or consultants. This has many educational implications such as opportunity for early clinical exposure, acquiring communication skills and opportunity to learn the science and art of medicine. The team's primary goal should be focused on relieving the pressure from frontline health care providers like physicians and residents who will be caring for COVID-19 patients.

Collaborative learning

Collaboration with other medical colleges can be made by linking with the ongoing online education activities of other medical colleges. Teaching hospitals that have tele education facilities can share or extend their tele education services for the benefit of students of other colleges. This can be made by entering into a proper mutual agreement between the provider and user colleges.

Online mentoring

Mentor is a person who supports the learner in his or her growth through one-on-one coaching, learning support, guidance and counselling. Mentors can make use of this opportunity to mentor their mentees by providing online tasks such as asking the mentees to write their short-term and long-term learning goals and an action plan on how they are planning to achieve those goals. Mentors can guide their

mentees to update their learning portfolios with reflections on their selected actions or learning. After receiving the mentees responses mentors can complement and suggest areas for improvement. All these can be effectively done via online mode.

Online mental health services

Any pandemic would generate stress throughout the population and students are not an exception. Since the lockdown due to COVID-19 has forced medical colleges to suspend the classes and postpone exams, this would generate mental tension and disturb the study routine of some students and might also lead to confusion and disappointment among the students. Hence, a dedicated online mental health services exclusively for identifying and dealing with the mental health issues of medical college students should be established. The role of these online mental health services is to conduct online mental health education programmes and communicate with the students to provide guidance and counselling using suitable online chatting applications. 'Hangout' is Google's longest running messaging service that supports instant messaging, SMS, video calls and voice calls with clients.

Student blogging

Blogging offers many benefits for medical education students. Blogging promotes autonomous learning by providing opportunities for students to take more control of their learning. It motivates students to become better readers and writers and promotes discussion among students. Blogs allow students to

become experts in the area they are reporting. They force the students to move beyond simple recall of the information to a realm of analyzing and synthesizing it. Teachers can guide students to create their own blogs and motivate them to showcase their hidden talents and ideas. 'Blogger', 'WordPress' and 'Edublogs' are some of the well-known free blogging platforms available for creating educational blogs.

Organizing online competition

Arts and humanities have proved to develop higher levels of positive physician attributes like empathy, tolerance, wisdom and emotional intelligence among medical students. Teachers can organize online competition by planning suitable themes and rules for online contests. Contests on writing poems, short essay, drawing, painting, proposal for innovative ideas to combat COVID-19 can be included as categories for the competition.

Access to institute's online library

Uninterrupted online library services of the institute should be made available for the students during the lockdown period. The library should provide access to all of its digital collections like books, journals, etc. for online access by its students. Teachers can design appropriate library activities to ensure students' online library visit. Well-designed library activities depending on the content and level of learning will help the students to focus well on, what to read? How to organize their learning experiences? How to generate and document the evidences of their learning experiences?

Indicators for effective online engagement

In an online environment, student engagement is critical to learning which may be measured using a number of behavioural indicators. The behavioural indicators for online learners can be categorised as (i) observational learning behaviours and (ii) application learning behaviours. Observational learning behaviours include reading emails, reading discussion posts, viewing videos, viewing lecture notes, documents, continuous virtual presence, etc., and application learning behaviours includes posting to forums, writing reply mails, taking online quizzes and other tests, post questions, seek feedback, give feedback, seek clarification, post self-created resources, making learning visible, etc. Evidence for meaningful learning may also be established by doing a systematic interaction analysis of the contents generated in the online discussion using standardized tools.

Encouraging teacher-learner online participation

Incentivizing the achievements of learners and teachers with grades, certificate of appreciation, reward for group performance, gamifying with badges and certificates, providing timely constructive feedback, adding self-assessment rubrics, etc. will encourage more teacher and student participation in online education.

Conclusion

The COVID-19 pandemic has disrupted the routine learning schedule of the day-scholars. Due to COVID-19 lockdown across the globe, the active hours the day-scholars that they

would be spending in their college for learning is being spent at home which means they are left behind their routine learning activities. These online active teaching-learning and engagement strategies, if applied for teaching, learning and assessment purposes will help our learners to continuously involve themselves in the learning process and will also foster good study habits in them without compromising their professional attitudes. All these require faculty involvement, identification of appropriate digital learning platforms, designing of educational activities and proper planning and scheduling of activities based on the proposed learning experiences and expected learning outcomes. Though technology cannot fully substitute a good teaching or a teacher it can be used as an effective tool for actively engaging the students who would otherwise be missing their routine classes due to any unprecedented disaster like COVID-19. These strategies will not only help the students of medical colleges but also all higher education institutions to effectively overcome the educational crisis that emerges at times of situation like lockdown due to public health emergencies or any other disaster for this matter.

Suggested readings

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Suggestions and comments to improve this document may be forwarded to:
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