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Vision of Teaching in Ensuring Continuity of Clinical Teaching in Medical Training Post COVID-19 and Beyond

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ABSTRACT

This article briefly addresses some teaching and learning approaches for medical and postgraduate medical training in Malaysia. The teaching approaches primarily used in clinical process include pedagogy, andragogy, heutagogy, peeragogy and cybergogy. The higher the standard of education, the more sophisticated the approach used for learning. Combining and assimilating the different strategies is the only way to meet optimal training objectives in a post-COVID-19 era.

Keywords: *Teaching, Clinical education, Online learning, Education quality*

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BACKGROUND

Clinical teaching and learning have taken a lot of methodological leaps. What were once very relevant methods a decade ago are now nearly irrelevant. With the progress of mobile learning and a new normal of working and studying from home, the progress of teaching and learning has evolved tremendously since the beginning of the century.

CLINICAL TEACHING APPROACH

Two decades ago, undergraduate medical students were often taught the magic phrase “see one, do one, teach one”. This means that you need a mentor to teach and

supervise the procedure, which you then need to teach to another person to reap the fruit of teaching. This concept is known as pedagogy learning, which is limited to the perspectives of the teachers, who will determine what, how and when anything can be thought. This might be best when the student cannot discern good from bad approaches and will just absorb the subject-focused, centred and planned “spoon-feeding”.

Problem-based learning (PBL) has also been implemented. It is a positive start in making the student attempt to think about and understand the medical concept and solution associated with a particular open-ended situation. However, one issue with the PBL approach is that the student might

lack the practical information required to appreciate the true purpose or goals of the PBL objectives. The open-ended nature of the activities can also lead to students being off track before or after the exercise has been accomplished.

Students have also been introduced to the concept of andragogy, in which clinical training is more focused on adult-independent learning (1). From this perspective, lectures, tutorials and other one-way teaching methods have become obsolete. Instead, students must gather all their knowledge about clinical procedures through self-experience. The lecturer has evolved to be a facilitator, with more consideration for the learning process and flexibility in teaching methods.

The tenth person principle is a useful guideline for teachers. The task of the tenth man is to question established and learned wisdom. The goals are to look at problems critically, separately and from a different viewpoint in order to consciously engage with the status quo and to rethink it (2). Tenth man clinical teachers look for insights and claims that run contrary to the clinical diagnoses of the various clinicians. To contradict a clinical diagnosis or at least to justify a re-examination, one anomaly is necessary. The tenth man perspective is in sync with the heutagogy concept, which stresses self-directed learning and the idea that there are always two sides to every argument and answer. In clinical teaching, for any diagnosis that you make, please reserve some doubt about the accuracy of your diagnosis, and take appropriate action to deal with errors as they arise.

A lecturer must be creative and accommodating to achieve learning sustainability (3). A beautifully written

proverb says “you might not be able to change the wind, but you can directly change the sail to get to the intended destination”. In 2018, the Malaysian Minister of Higher Education introduced the learning and teaching 4.0, in which the terms peeragogy and cybergogy are being introduced for incorporation into the educational system (4).

In clinical teaching, peeragogy entails co-learning clinical procedures (e.g., venepuncture, wound stitching) with your colleagues in the hope of perfecting the procedure and reducing the human errors that can lead to serious ethical and medicolegal consequences. Teachers, peers and students will co-learn and relearn together from their successes and failures to achieve a distributed, non-linear and enriched learning experience.

Cybergogy has gained its momentum in the post-COVID-19 era. Cybergogy encourages learner involvement in online environments and collaboration in virtual learning environments. From a clinical teaching perspective, this is the most difficult methodology for the medical lecturer to adapt. It is very difficult to teach a group of students on how to conduct a clinical examination without touching a real patient. With current technology, it is difficult to achieve adequate learning outcomes without a proper on-site, skin-to-skin clinical examination. There are a few medical schools with robotic patient simulators and virtual simulated environments for “enriched” online learning, but these are poor substitutes for the adrenaline and thrill associated with facing a living human, at least with the shortcomings of current technologies (Table 1).

Table 1: Suggested future learning platform

Original clinical teaching method/platform	Domains covered	Clinical assessment tool	Suggested future learning platform (heutagogy, peeragogy and cybergogy)
Teaching basic clinical science using a cadaver	C2	Objective structured clinical examination (OSCE)	Interactive and noninteractive OSCE using virtual reality and computer graphic imaging (CGI)
	C4		
	A3		
Clinical physical examination with simulated actors and true patients	C2	Short case clinical exam (physical examination, skills examination)	Video telephony method (e.g., FaceTime, Webex, Zoom) Massive open online courses (MOOC) Robotic and humanoid patients
	C4		
	A3		
	CTPS2		
Clinical medical clerking using simulated actors and true patients	C2	Long case clinical exam (combination of clerking, physical examination and viva examination)	Video telephony method MOOC Robotic and humanoid patients
	C4		
	A3		
	CTPS2		
Operation theatre teaching	C2	Operative skill practical exam	CCTV – assisted clinical teaching Drone – assisted clinical teaching Virtual reality, real-life videos and simulations
	C4		
	A3		
	CTPS2		

Notes: C2 (understand), C4 (analyse), A3 (value), CTPS2 (thinking skills).

Physicians tend to treat patients on a case-by-case basis. No two patients are the same; doctors are taught to rely on treating a patient's care individually, although multiple patients may have the same symptoms. The best medicine for one patient may not be best for another with similar findings or symptoms. Similarly, no two classes of students are similar, so the pace of learning should be handled accordingly. In other words, there is intragroup and intergroup heterogeneity in understanding the teaching and learning process. While one group is better taught using the heutagogy approach, there could be another group that will benefit the most from using only the pedagogy method. This is where artificial intelligence (AI) must come into play. Via AI and machine learning (cyberogogy), we can discover the right approaches to educating a group of students based on their previous outcomes or tests.

The expertise obtained from repeated skills training is crucial to development as a successful surgeon. Because a surgeon's error can lead to a loss of life, this knowledge is better shared and co-learned.

In the modern surgical environment, teaching in the operation theatre is accomplished either by students seated in the observation gallery or standing in the operation theatre, with minimal visibility of the case on the table. The issue with this method of viewing (from the gallery) is that the location of the involved portion of the operation is typically not adequately visualised. Hygiene and sterility may also be a matter of concern if too many students congest the operation theatre. This is where technologies can continue to simplify learning and make it more fun. CCTV with proper magnification, drone-assisted clinical learning or a surgeon wearing GoPro equipment (so that students can see from the surgeon's perspective) can improve clinical learning and understanding for students.

As a lecturer in the rapidly changing medical field, one must always stay up to date with the latest technology. You might well be updated with state-of-the-art knowledge now, but you may find that you are out of date tomorrow. This is where the tenth person principle comes into the picture.

No matter how good you are in a field, it is best to keep your mind open to the new knowledge and queries that your students may have. You will remember better once your knowledge is under challenge, which further supports the idea that a study group is always better than studying alone.

Some people may say that because Malaysia may not be ready for some kinds of advanced teaching technology, there is no need to learn about them. But for Muslim lecturers, it is the collective responsibility of one or multiple people (i.e., *fardu kifayah*) to acquire new knowledge, so that when society is able to embrace new knowledge, there is already a group of experts to help them master it. This is particularly true of e-learning, which was first introduced decades ago but only became popular and ultimately became a necessity during the COVID-19 pandemic.

CONCLUSION

A combination of the heutagogy, peeragogy and cybergogy methodologies is the best approach to getting the most out of students. Transverse and horizontal teaching methods must both also come into play in a manner that is not only efficient but also intuitive for clinical instructors and the people around them. A bad workman always blames his tools, but a drowning man will clutch at straws.

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