Active learning for competent medical graduates: Need of the hour

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What is active learning?

Active learning (AL) involves activities that engage learners in constructing knowledge and understanding, emphasizing higher-order thinking. An essential yet often implicit component is metacognition—learners' awareness of their learning processes—which connects activity with effective learning.[1] This approach is unique as it involves active participation and higher-level thinking from learners, unlike the traditional passive methods of lectures (listening and reading) and memorization.

Active learning encompasses various methods such as cooperative learning, problem-based learning, team-based learning, case-based learning, ability-based education, and assessment-as-learning. Strategies for AL in the classroom include: [2,3]

I.   Pause for reflection/ "muddiest" point
II.   Think, pair, share
III.   Harvesting
IV.   Figure analysis
V.   Polling Devices/Audience Response Systems (ARS)/Clickers
VI.   Peer review
VII.   Problem-based learning (PBL), team-based learning(TBL), case studies
VIII. Brainstorming/ "fishbone"
IX.   Hands-on technology
X.   Active review sessions (games/ simulations)
XI.   Role-playing/ "thinking hats"
XII.   Jigsaw discussion
XIII. Experiential learning (site visits)
XIV.   Forum theater
XV.   Online supplementation

By actively engaging with course materials and collaborating with peers, students develop essential skills like communication, problem-solving, and teamwork.[2] There is robust evidence that AL strategies improve educational outcomes concerning knowledge retention, thinking and writing skills, conceptual understanding, and knowledge transfer.[4]

Need of active learning in medical education

Active learning strategies were introduced nearly four decades ago, but their use in medical education remains limited. However, the benefits of AL are well-documented.[5] Most educational systems still follow traditional methods, which often rely on passive learning and rote memorization. These methods may not adequately prepare graduates for the complexities of modern healthcare practice.

Encouraging curiosity and exploration, while critically assessing and identifying

effective solutions to gaps in professional practice, adapting practices, and enhancing patient outcomes, are essential for lifelong learning in medicine.[5] This strongly advocates for the essential role of AL in medical education, which helps produce graduates who are knowledgeable, skilled, adaptable, and capable of providing high-quality patient care.[4]

With the advent of advances in healthcare, there is increased demand for competent medical professionals. However, the traditional methods of medical education, often rooted in passive learning and rote memorization, may not adequately prepare graduates for the complexities of modern healthcare practices. Therefore, it is a pressing need to incorporate AL methodologies within medical education to cultivate compassionate and competitive graduates who are well-equipped with knowledge, skills, and proficient in delivering high-quality patient care.

A shift from a traditional lecture-based approach towards a more dynamic and interactive learning environment in medical universities can bridge the gap between theory and practice. It can better equip students with the critical thinking, clinical reasoning, and communication skills essential for success in their future careers.

Through hands-on activities, collaborative problem-solving exercises, real-world clinical scenarios, case-based learning, simulation exercises, and clinical rotations, students can apply their knowledge in context, develop diagnostic and therapeutic skills, and gain confidence in their clinical abilities. Moreover, AL fosters a sense of responsibility and accountability that is essential for lifelong professional development. By working collaboratively with peers from diverse backgrounds, medical students learn to appreciate the perspectives of others, navigate complex clinical scenarios, and deliver patient-centered care that takes into account the unique needs and preferences of each individual.[6]

Role of teachers in active learning

In passive learning, teachers are considered as the source of knowledge and understanding. However, in AL the teachers play an important role as facilitators and guide the students as they construct their own knowledge and understanding. Teachers can utilize approaches such as: demonstrations, think-pair-share, minute papers, concept maps, flipped classrooms, problem-based learning, team-based learning, and case-based learning.[1] Teachers' quality significantly impacts the satisfaction of students and overall educational outcomes. Passionate and dedicated lecturers positively influence student satisfaction with the education process.[7]

Active learning strategies allow learners and teachers to interact and be more engaged with the subject matter in a manner that encourages discussion, critical thinking, develop problem-solving skills, and advanced clinical reasoning skills.[2] This dynamic and collaborative learning environment makes students feel valued and promotes deeper understanding and retention of course materials.

Role of students in active learning

The students take on a proactive role as active participants rather than passively receiving information. This learner-centered approach, also known as student-centered learning, inverts the classroom dynamic by putting learners at the center of their learning process and prioritizing their active involvement. The students are engaged in a variety of activities and are encouraged to ask questions, explore new ideas, contribute their perspective, share their insights and seek out solutions to real-world problems. This helps in uplifting their critical thinking, problem-solving, and collaboration with their peers. As active learners, students develop the skills and attitudes necessary for lifelong learning and success in their chosen field.[8]

Role of universities in active learning

Universities play a crucial role in implementing AL environments that empower students to become engaged and self-directed learners. Here are several key roles universities play in promoting AL:

a. Curriculum design: Universities should design content and curricula that incorporate active learning methods. Such structured courses make the learning environment dynamic and interactive. Furthermore, the curriculum should be periodically remodeled to meet the current need of the education system and produce competent manpower for the updated healthcare delivery.

b. Faculty development: Faculty development programs should be conducted by the universities in order to guide and support instructors in implementing AL strategies effectively. Knowledgeable, accessible, responsive, and skilled instructors can positively impact student satisfaction and learning outcomes.[9] Workshops, training sessions, and needful resources help the faculty members design engaging learning activities, facilitate discussions, and provide constructive feedback to students.

c. Technology integration: Universities should leverage technology to enhance AL experiences. Interactive multimedia offers learners different forms of media to match their learning style, grab their interests and level up their understanding, and provides personalization

of adaptive content delivery which enhances learners to learn effectively.[10] Learning management systems, interactive multimedia tools, and virtual simulation platforms enable students to access resources, and gain an improved quality of information. For the optimal use of technology in medical education for AL, both the teachers and learners need adequate technological proficiency.

d. Learning spaces: Flexible and interactive learning spaces including collaborative classrooms, maker spaces, and simulation labs are essential to support AL pedagogies. This provides students with opportunities to engage in group work, hands-on experiments, and real-world simulations that promote AL.

e. Assessment practices: Universities should implement assessment practices that should align with the objectives of AL. Formative assessments, peer evaluations, and project-based assessments allow students to receive timely feedback and reflect on their learning progress.

f. Support services: A range of support services is a need of the hour to help students succeed in AL environments. Academic advising, tutoring centers, writing labs, and career services provide students with the resources and guidance they need to navigate challenges, set goals, and pursue their academic and professional aspirations.

By embracing these roles, universities could create vibrant learning communities, fostering the development of critical thinking skills, creativity, collaboration with peers, and lifelong learning habits among students.

CONCLUSIONS

The implementation of AL methodologies in medical education is not just a preference but the need of an hour in present healthcare settings. By prioritizing hands-on experiences, problem-solving exercises, and collaborative learning opportunities, medical universities can ensure that graduates are provided with improved quality of information, well-equipped enough to meet the challenges of modern healthcare practice and deliver the highest standards of patient care. It is time to recognize AL as the cornerstone of medical education that can ensure the production of competent and compassionate medical professionals in the future.

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