

Unwinding Teaching Strategies in Medical Pedagogy -A compelling requisite for execution to avoid stumbling blocks Nepal O

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ABSTRACT

Medical education is the pillar of the health profession, and proper scientific research is lacking to determine concrete results in Nepal. Basic medical science teachers equipped with knowledge and skills in teaching and learning methodologies are crucial players in the medical curriculum in the foundational years of young medical and allied health students. The importance of the instructional model for teaching medical students is shadowed in the health profession. Teaching strategies in the basic and clinical years of undergraduates have seen a sea of changes with the advancement of technology and is a huge challenge for Nepali Medical Schools to keep up with the world in this regard. Administrators of the University and medical schools must invest in medical education on time to avoid potentially disastrous consequences ahead. There has never been a better opportunity for rigorous practice of scientifically supported methods in medical education with rapid advancements in technology in teaching and research in recent years.

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KEY WORDS

Curriculum, Health educators, Instructional model, Leadership, Medical education

INTRODUCTION

The widely practiced didactic instructional model by medical teachers fostering passive learning habits in the basic medical course includes six key components, i.e. bridge-in, learning outcomes, pre-assessment, participatory learning, post-assessment, and summary but, active learning techniques for adults include problem-based learning, case-based learning, team-based learning, flipped classrooms, and simulation-based education.¹ Health educators must not remain oblivious that medical education, a specialized discipline within education, still follows principles applicable to any learning culture.² Among, the theories, 'constructivism' finds a place in medical education wherein; students build mental structures by connecting new ideas to what they already know, as medical education is built on Bruner's spiral curriculum that encourages relating theoretical concepts to real-world scenarios.³ Medical teachers and educators are essential components of scaffolding learning i.e. 'teacher gradually removes guidance and support as students learn and become more competent', which stands with a

foundation in Lev Vygotsky's social development theory.⁴ Certainly, not everyone is a born teacher thus to become a competent medical teacher one needs to develop relevant teaching skills.⁵ The shortage of medical teachers and few junior educators on the career ladder are growing concerns in medical education. An interprofessional education approach for students to motivate them young could be a pivot, in this regard.^{5,6} The lack of defined career pathways in teaching with an emphasis on research at the expense of teaching acts as a barrier to pursuing a career as a medical teacher for bright young students.⁷

Teaching strategies for undergraduates in clinical years

Students in medicine, unlike other students, depend highly on the teacher's guidance, and doctors or professors, are the student's model.⁸ We should realize that for a medical teacher to improve teaching skills, it is necessary to know the different learning styles and assessment methods to adapt one's teaching to different situations.⁹ Teaching strategies in clinical education include lecturing, piloting i.e.

using guiding questions, statements, or signals to ensure the student pays attention to and focuses on specific content, asking questions and answers regarding patient management, diagnosis, and treatment, and, prompting to think critically to consider alternative approaches.¹⁰ Supplementing with case studies and research articles, demonstrations of procedures and skills, and intervening when necessary to guide and correct students are also part of the clinical teaching methods. The recently advanced techniques for teaching and learning utilize digital platforms such as YouTube, osmosis, videoconferencing, and virtual reality platforms, also employed for the purpose are flipped classrooms for interactive discussions, problem-based learning to engage in real-world clinical problems, and simulation-based training for practicing clinical skills in a safe environment by the use of virtual reality and standardized patients.¹¹

Comprehending the stumbling blocks

Though the importance of medical education is acknowledged in medical schools the much-needed improvement of the medical education system cannot be further awaited to meet the standards of education in other regions of the globe. The active learning techniques for adult learners must be implemented from the early building years in basic medical science integrating vertically into the clinical training. However, the adequacy of the required number of educators, staff members, and essential logistics must not be overlooked while considering the implementation of the system. Improving medical education is quintessential for producing competent and well-rounded physicians but no research to date has accurately addressed the gaps existing in specialty-specific knowledge application and the impact of different instructional methods.¹² To complicate the matter further, the systematic review has highlighted that basic science knowledge diminishes over time in medical professionals but is considered critical for their ongoing learning and clinical reasoning. A study targeted for importance of biochemical concepts iterates, integrating knowledge of subjects, like biochemistry, of basic medical sciences with clinical skills becomes effective when taught vertically throughout the four-year curriculum and presented in a clinical context, using active learning strategies.¹³ It is well known among medical school teachers that effective teaching in medical schools is a tall order due to reasons, firstly, health profession educators rarely receive formal teaching education, and, secondly, the limited number of over worked teachers working in tightly scheduled hours with high expectations of accuracy and excellence on the expense of incompetent wage scale. This is further complicated by the high expectations of students from health educators, who are also focused on professionalism attributes that students do not value.¹⁴ And, these attributes of health educators differ across health disciplines. Nevertheless, all health profession educators require knowledge, skills, passion, and a thorough understanding of adult learning principles to

enhance their teaching abilities.¹⁵ Because adult learners have prior experiences of the learning process and are self-directed and goal-oriented, the teaching methods should be based on adult learning principles.

Deciphering the leeway

The time has come to write history again, revisit our policy, get involved in need-based assessment, and formulate new ways through evidence-based facts and figures.¹⁶ The knowledge of how to work on the problem is discussed here for educators, administrators and leadership position holders. Medical educators may benefit from keeping track of the learning styles of adult students that revolve around and are mixed with visual, auditory, and kinesthetic capabilities.^{8,9} As per preferred learning style the prowess of students varies, for example, visual learners would better grasp lectures using PowerPoint points filled with images, graphs, and videos, whereas auditory learners prefer to listen to information delivered as spoken lectures, podcasts, recorded lectures, case-based learning sessions with peers where students can articulate their thoughts or prefer to listen small group discussions loaded with quality materials of learning.⁸ Even in the clinics, the Visual Thinking Strategies (VTS) approach can serve as a vehicle to develop crucial clinical competencies, encouraging more in-depth visual analysis that could be applied when observing a patient.¹⁷ Similarly, kinesthetic learners prefer hands-on experiences and physical activities and by doing activities with direct involvement enjoy role-playing and simulations.¹⁸ Subjects related to technology for healthcare and research in medical curriculum is the necessity and no longer a distraction for young medical students and junior faculties to remain productive in the areas of basic medical science. The gravity of the instructional model for first-year medical students during basic medical courses should not be taken lightly, especially in those parts of the world where students enter college without prior exposure to premedical courses. Basic medical science teachers equipped with the knowledge and skill of teaching and learning methodologies through medical education courses or workshops are crucial players in the successful implementation of medical curriculum at this stage.

For the administrators and those in leadership in academic institutions, it is of utmost importance to identify teachers with special interests and focus on teaching-learning activities for students. Rewarding students for participation in teaching roles, encouraging medical teachers to publish research work about medical education, and grooming junior educators to prepare a pool of future educators should be ongoing among the regular activities.⁷ The consequences of idleness in fostering and supporting educational activities, updating essential infrastructures and logistics, and inadequacy in competent remuneration for teachers for academically associated initiatives or such activities must not be over looked before they become insurmountable to overcome. Enough examples are

evident that the extensive promotion of medical education has positively changed the behavior of junior educators of Nepal to stand shoulder-to-shoulder-competitively, in the international arena, for teaching and research. However,

the dissatisfying implementation of medical education in Nepali medical colleges warrants close examination to avoid disastrous consequences for the above-mentioned causes in the days to come.

REFERENCES

- Xu Z, Ge L, He W, Song G, Liu J, Hou L, et al. Developing a BOPPPS (Bridge-in, Objectives, Pre-assessment, Participatory Learning, Post-assessment and Summary) model combined with the OBE (Outcome Based Education) concept to improve the teaching outcomes of higher education. *Humanit Soc Sci Commun* [Internet]. 2024;11(1):1–13. Available from: <http://dx.doi.org/10.1057/s41599-024-03519-y>
- Kirch SA, Sadofsky MJ. Medical Education From a Theory–Practice–Philosophy Perspective. *Acad Pathol* [Internet]. 2021 Jan;8:23742895211010236. Available from: <https://linkinghub.elsevier.com/retrieve/pii/S2374289521000191>
- Dennick R. Constructivism: reflections on twenty five years teaching the constructivist approach in medical education. *Int J Med Educ* [Internet]. 2016 Jun 25;7:200–5. Available from: <http://www.ijme.net/archive/7/constructivist-approach-in-medical-education/>
- Shabani K. Applications of Vygotsky's sociocultural approach for teachers' professional development. *Cogent Educ* [Internet]. 2016;3(1). Available from: <http://dx.doi.org/10.1080/2331186X.2016.1252177>
- Thistlethwaite JE, Forman D, Matthews LR, Rogers GD, Steketee C, Yassine T. Competencies and Frameworks in Interprofessional Education. *Acad Med* [Internet]. 2014 Jun;89(6):869–75. Available from: <http://journals.lww.com/00001888-201406000-00017>
- van Diggele C, Roberts C, Burgess A, Mellis C. Interprofessional education: tips for design and implementation. *BMC Med Educ* [Internet]. 2020 Dec 3;20(S2):455. Available from: <http://dx.doi.org/10.1186/s12909-020-02286-z>
- den Bakker CR, Hendriks RA, Houtlosser M, Dekker FW, Norbart AF. Twelve tips for fostering the next generation of medical teachers. *Med Teach* [Internet]. 2022;44(7):725–9. Available from: <https://doi.org/10.1080/0142159X.2021.1912311>
- Buşan AM. Learning styles of medical students - implications in education. *Curr Heal Sci J* [Internet]. 2014;40(2):104–10. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25729590><http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4340450>
- Ralhan S, Bhogal P, Bhatnagar G, Young J, Green M. Effective teaching skills-how to become a better medical educator. *BMJ* [Internet]. 2012 Feb 8;344:e765. Available from: <https://www.bmj.com/lookup/doi/10.1136/bmj.e765>
- Dawes M, Summerskill W, Glasziou P, Cartabellotta A, Martin J, Hopayian K, et al. Sicily statement on evidence-based practice. *BMC Med Educ* [Internet]. 2005 Jan 5;5(1):1. Available from: <https://bmcmmeduc.biomedcentral.com/articles/10.1186/1472-6920-5-1>
- Challa KT, Sayed A, Acharya Y. Modern techniques of teaching and learning in medical education: a descriptive literature review. *Med Ed Publish* [Internet]. 2021;10(1):1–14. Available from: <https://mededpublish.org/articles/10-18>
- Albert FA, Seidu AA, Mason HM, Anderson E, Alele FO, Heggarty P, et al. A systematic review of medical practitioners' retention and application of basic sciences to clinical practice. *BMC Med Educ* [Internet]. 2024 Sep 13;24(1):997. Available from: <https://bmcmmeduc.biomedcentral.com/articles/10.1186/s12909-024-05952-8>
- Chaney SG, Pelley JW, Seifert WE. The Role and Value of the Basic Sciences in Medical Education (with an Emphasis on Biochemistry). *Int Assoc Med Sci Educ*. 2010;20(3):280–3.
- Ilic D, Harding J, Allan C, Diug B. What are the attributes of a good health educator? *Int J Med Educ* [Internet]. 2016 Jun 28;7:206–11. Available from: <http://www.ijme.net/archive/7/attributes-of-a-good-health-educator/>
- Kaufman DM, Mann KV. Teaching and Learning in Medical Education: How Theory can Inform Practice. In: *Understanding Medical Education* [Internet]. Wiley; 2010. p. 16–36. Available from: <https://onlinelibrary.wiley.com/doi/10.1002/9781444320282.ch2>
- Magar A. Need of Medical Education System Reform in Nepal. *J Nepal Med Assoc* [Internet]. 2013 Sep 1;52(191):I–II. Available from: <https://www.jnma.com.np/jnma/index.php/jnma/article/view/2314>
- Cerqueira AR, Alves AS, Monteiro-Soares M, Hailey D, Loureiro D, Baptista S. Visual Thinking Strategies in medical education: a systematic review. *BMC Med Educ* [Internet]. 2023 Jul 27;23(1):536. Available from: <https://doi.org/10.1186/s12909-023-04470-3>
- Hernandez JE, Vasan N, Huff S, Melovitz-Vasan C. Learning Styles/Preferences Among Medical Students: Kinesthetic Learner's Multimodal Approach to Learning Anatomy. *Med Sci Educ* [Internet]. 2020 Dec 27;30(4):1633–8. Available from: <https://link.springer.com/10.1007/s40670-020-01049-1>