

Rewriting the Blueprint: Anatomy Assessment for AI-ready medical student

Varuni Tennakoon

The rapid expansion of generative artificial intelligence (AI) has reshaped the learning landscape in higher education, and its presence in medical schools worldwide, is now impossible to ignore (1). Anatomy, a discipline long rooted in precision, visual reasoning, and structured assessment finds itself at the forefront of this transformation. At this time, the highly capable AI tools can generate labelled diagrams, complex structures, and instant explanations with a level of clarity once provided only by expert educators. As these tools become ubiquitous, educators must reconsider not only how anatomy is taught, but how learning is meaningfully assessed for a generation of AI-ready medical students.

In anatomy education, AI's influence is already substantial. Students increasingly use AI tools to clarify difficult regions, generate mnemonics, summarise and customise study material, and even simulate multiple-choice and viva-style questioning. While these tools can provide valuable analogue explanations and accessible multimodal content, studies show that AI-produced diagrams and descriptions often contain subtle inaccuracies, especially in spatial relationships, in diversity and variability and in certain clinical contexts (2,3).

DOI: <https://doi.org/10.4038/slaj.v9i2.295>

Sri Lanka Anatomy Journal 2025; 9(II): 3-5

Varuni Tennakoon

Editor

E-mail: varuni@sjp.ac.lk

 <https://orcid.org/0000-0002-7263-2459>

CC BY 4.0



This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 license (unless stated otherwise) which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited. Copyright is retained by the author(s).

These errors, when unrecognised, risk embedding misconceptions in early learners. Nonetheless, AI can also reduce cognitive load, promote engagement, and support students requiring additional scaffolding (4,5). The task for educators is to ensure that AI enhances, rather than replaces, the deep processing essential for anatomical competence.

Assessment is the area where AI exerts the greatest pressure. Traditional testing formats such as labelling exercises, short-answer questions, and low-complexity factual tasks are now easily solvable by AI. This does not diminish the importance of foundational knowledge, but it calls for assessments that evaluate skills beyond what AI can generate: spatial interpretation, integration of structural knowledge with clinical scenarios, and reasoning based on authentic anatomical variation (5).

In AI-inclusive assessments where students critique AI-generated diagrams, identify inaccuracies, or evaluate AI-produced anatomical basis on clinical scenarios promote higher-order cognition and essential AI literacy (6). AI-virtual dissections help mitigate long-standing challenges such as limited cadaver resources in some settings. Further, for educators, AI-assisted question generation can streamline the development of item banks, marking guides, and personalised formative feedback, reducing staff workload. More importantly, AI may allow educators to direct their efforts toward the interpretive and conceptual elements of anatomy, and by shifting students from passive consumers to

critical evaluators, most meaningfully to shape future clinical performance of students.

Despite these benefits, significant challenges remain. Inconsistent AI accuracy can cement flawed concepts (7). There is apparent threat to academic integrity, particularly in unsupervised context and equity issues when students have unequal access to AI tools or varying familiarity with them. Furthermore, educators must understand the evolving capabilities of AI platforms while navigating institutional expectations, ethical considerations, and policy constraints.

As AI becomes a constant presence, anatomy assessments will increasingly rely on hybrid models in many medical schools, globally. Blending AI-supported learning with human-centred evaluation, the aim shall be to design assessments that distinguish human understanding from algorithmic output (8). For anatomy educators, the imperative is clear: embrace AI as a catalyst for innovation while preserving the discipline's integrity, rigour, and clinical relevance. In doing so, we prepare AI-ready medical students not to be overshadowed by technologies, but to think critically ensuring that anatomical knowledge continues to underpin safe, thoughtful, and competent medical practice.

References

1. Saroha S. Artificial Intelligence in Medical Education: Promise, Pitfalls, and Practical Pathways. *Advances in Medical Education and Practice*. 2025 Dec;31:1039-46.

2. Lazarus MD, Truong M, Douglas P, Selwyn N. Artificial intelligence and clinical anatomical education: promises and perils. *Anatomical Sciences Education*. 2024 Mar;17(2):249-62. <https://doi.org/10.1002/ase.2221>
3. Eldesoqui M, Albadawi EA, AlQumaizi KI, Radwan MN, Ebrahim HA, Elsaid MA. Assessing the Anatomical Accuracy of AI-Generated Medical Illustrations: A Comparative Study of Text-to-Image Generator Tools in Anatomy Education. *Clinical Anatomy*. 2025 Sep;38(6):712-7. <https://doi.org/10.1002/ca.70002>
4. Pandurangam G, Gurajala S, Nagajyothi D. Artificial intelligence in anatomy teaching and learning: a literature review. *National Journal of Clinical Anatomy*. 2024 Jul;1;13(3):158-63.
5. Abdellatif H, Al Mushaiqri M, Albalushi H, Al-Zaabi AA, Roychoudhury S, Das S. Teaching, learning and assessing anatomy with artificial intelligence: the road to a better future. *International journal of environmental research and public health*. 2022 Oct 31;19(21):14209. <https://doi.org/10.3390/ijerph192114209>
6. Afzal I, Torralba A. Cognitive Skills Development through AI Tools: Critical Thinking and Pedagogics Design in Modern Education. [https://doi.org/10.13140/RG.2024;2\(34811.53281\)](https://doi.org/10.13140/RG.2024;2(34811.53281)).
7. Joseph TS, Gowrie S, Montalbano MJ, Bandelow S, Clunes M, Dumont AS, Iwanaga J, Tubbs RS, Loukas M. The Roles of Artificial Intelligence in Teaching Anatomy: A Systematic Review. *Clinical Anatomy*. 2025 Jul;38(5):552-67. <https://doi.org/10.1002/ca.24272>
8. Leng L. Challenge, integration, and change: ChatGPT and future anatomical education. *Medical education online*. 2024 Dec; 31:29(1):2304973 <https://doi.org/10.1080/10872981.2024.2304973>