



Editorial

From chalkboards to chatbots: Bridging generations in medical education

Asitava Deb Roy^{1*} 

¹Dept. of Pathology, Mata Gujri Memorial Medical College, Kishanganj, Bihar, India

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1. Introduction

If someone had told me 25 years ago that students would “Google” their way through medical school, diagnose with AI-powered apps, and dissect human anatomy virtually instead of through cadaveric labs, I might have laughed them out of the dissection hall. Yet, here we are. Generation Z medical students—confident, connected, and tech-savvy—are learning in an ecosystem that is as different from ours as a stethoscope is from a smartwatch.

This editorial reflects on the sweeping changes in medical education, from the heavy tomes of yesteryear to touchscreen tablets today. While acknowledging the enormous progress made, it also explores the implications of these changes for educators, students, and ultimately, patients.

2. Learning Resources: Weightless Knowledge in a Digital World

During an Orientation Session for the fresh-faced, newly admitted first-year MBBS students, I casually asked them, “So, which books did you buy for Anatomy?” Expecting an enthusiastic chorus of “B.D. Ch...., Sir!”, I was instead met with crickets. Silence. A sea of blank faces. Finally, after what felt like an eternity, two brave students out of 150 hesitantly admitted to buying the textbook. The rest? They had subscribed to online resources instead.

In the past, learning medicine was a weight-bearing exercise—literally. Textbooks like Harrison’s or Robbins were indispensable companions, and the library was the only portal to knowledge. Updates came slowly, via print journals, often months behind cutting-edge developments.

Today, students access real-time knowledge through platforms like UpToDate, Medscape, and YouTube. Only a minority still buy traditional textbooks; most rely on e-books, podcasts, and apps. A 2019 survey revealed that over 90% of students use online videos and question banks regularly for studying.¹ This democratization of information is empowering but demands digital literacy and critical appraisal skills.

3. Pedagogy: From Passive Absorption to Active Engagement

Medical classrooms have transformed from professor monologues to student-centred learning hubs. The teachers who were “*sage on the stage*” have now become the “*guide on the side*.” Competency-Based Medical Education (CBME), adopted in countries like India since 2019, emphasizes skills and attitudes along with knowledge.²

Methods like problem-based learning (PBL), flipped classrooms, and case-based discussions are becoming standard. A meta-analysis found that flipped classrooms significantly enhance performance compared to traditional lectures.³ In pathology, for example, the shift from rote slide

*Corresponding author: Asitava Deb Roy
Email: asitavadr@gmail.com

identification to clinical correlation fosters deeper understanding.⁴

4. Technology: The Great Amplifier

Perhaps the most transformative change has been the integration of technology. Virtual dissection tables, 3D anatomy models, high-fidelity simulation mannequins, and virtual reality (VR) have reshaped how medicine is taught and practiced.⁵ AI-driven tools are now assisting students in diagnosis and tutoring.⁶

Digital pathology, through virtual microscopy, has democratized access to histological content. Students can now zoom in on high-resolution slides from anywhere, enabling asynchronous, self-paced learning.⁷ Simulation ensures students practice procedures in safe environments before performing on real patients—improving both safety and confidence.

Today's learners are no longer praised for cramming textbooks but for critically analysing information. Gen Z students are inquisitive, often verifying what professors say in real time.

5. Communication: Flattening Hierarchies in the Digital Era

Scroll down my WhatsApp messages, half of them would be from my students asking for clarification of doubts for things they did not understand in the class or seeking help for their depression/mental agony due to 'pressure' of studies. Do we remember any of us even talking to our Professor over the phone, leave aside messaging (text messages in those days!). Gone are the days when students would tremble before asking a professor a question. Messaging apps have overtaken email as the preferred academic communication tool, fostering both peer and student-faculty engagement.⁸

This flattening of hierarchies promotes open discussion, quicker doubt resolution, and more accessible mentorship. Yet, it also demands that boundaries and professionalism in communication be maintained.

6. Wellness and Work-Life Balance: From Martyrdom to Mindfulness

One day, after wrapping up my invigilation duty in the semester exams, I stepped into the elevator and ran into a student who had mysteriously not appeared for the exam that day. Being the ever-concerned teacher that I am, I asked him why. With the utmost sincerity—and absolutely no shame—he looked me straight in the eye and said, "Sir, I couldn't wake up on time for the exam." Ah yes, the unstoppable force

of medical education meets the immovable object of a good nap.

If that wasn't enough, another student recently approached me with a "very important" request—a 10-day leave. The reason? She needed time to attend the 13th death anniversary of her pet dog (yes, you read that right—13th!). Now, I love pets as much as anyone, but even I had to take a moment to process the sheer creative genius behind this leave request.

Now, let's rewind to our student days—a time when taking a vacation with family felt like a criminal offense, and attending social functions was a luxury reserved for post-exam celebrations (if we were lucky). We were expected to dedicate ourselves body, mind, and soul to medicine—long hours, sleepless nights, and an unwavering commitment to our studies.

A generation ago, burnout was a badge of honour.⁹ Today's students prioritize self-care, mental health, and work-life balance. Studies have shown that around 27% of medical students screen positive for depression, with 11% having suicidal thoughts.¹⁰ These alarming figures have prompted medical schools to introduce wellness programs, counselling services, and structured breaks.

This shift is not about entitlement but about sustainability. Resilient, healthy students are more likely to become compassionate and effective physicians.

7. Conclusion: Navigating the Past While Embracing the Future

Medical education has evolved beyond recognition—from blackboards to virtual dissection, from top-down instruction to collaborative learning, and from silent suffering to open dialogue on well-being. Yet, the mission remains unchanged: to prepare doctors who are skilled, ethical, and compassionate.

As educators, our challenge is to preserve the rigor and humanism of traditional training while leveraging the innovations of today. We must teach students not just what to learn, but how to learn—and just as importantly, how to care. If we succeed, we will have bridged not just a generational gap, but the gap between information and wisdom.

8. Conflict of Interest

None.

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