Learning Pathology Through Play: A Perspective on Gamification

Shraddha Khanke[1], Anamika Singh Thakur[2]* and Ashwini Sonwane[3]

[1]Assistant Professor Department of Pathology Dr.D.Y.Patil Medical College Hospital and Research Centre. Pimpri Pune India

[2]Assistant Professor Department of Pathology Dr B K Shah Medical College Sumandeep University Vadodara India

[3]Senior Resident Department of Pathology Dr.D.Y.Patil Medical College Hospital and Research Centre. Pimpri Pune India

Received: 6 January 2026

Accepted: 13 August 2026

*Corresponding author: samsann24@gmail.com

DOI 10.5001/omj.2027.44

Dear Editor,

Medical education has evolved immensely, from didactic lectures to PowerPoint presentations. To keep up with the current generation of students, medical teachers must always stay up to date with new technology.[1,2] As these students have everything at their disposal, such as YouTube lectures, soft copies of the books on their iPads, and numerous artificial intelligence apps, simply taking didactic lectures won't keep them engaged. To increase students' engagement in lectures and to enhance critical thinking and clinical reasoning, medical teachers will have to adopt innovative teaching methods.[3,4] One of which is Gamification, defined as 'the use of game design elements in non-game contexts'.[5]

Different pedagogical modalities that can be used in pathology education for both MBBS and MD students include serious games, escape rooms, board and card games, simulation games, interactive platforms, and video-game style modules.[3] Serious games can be digital and outcome-driven, like diagnostic workflows including virtual slide review with timed challenges, clinical scenarios, and integrated ancillary test selection. For educational escape rooms, the pathology content can be put into sequential puzzles, e.g., interpreting a peripheral blood film to obtain a code, identifying histologic features to unlock a case file, or detecting pre-analytical errors in a simulated lab report. Board and card games are suitable for recall and learner enjoyment, and have been adapted for micro-learning of morphological patterns, immunohistochemical panels, and differential diagnoses. High-fidelity simulations and virtual lab platforms allow trainees to practice macroscopic examination, specimen triage, autopsy steps, and analyzer troubleshooting. Virtual microscopy repositories combined with gamified features (leaderboards, badges, level progression, adaptive quizzes) provide continuous formative assessment and motivate repeated practice.

Trainees often describe the learning experience as more enjoyable and engaging, which translates into higher overall satisfaction with the program. Beyond making learning fun, these game-based approaches have also shown potential educational benefits, with early evidence suggesting improved knowledge retention and better academic performance. To maximize the gamification benefits in pathology, the interventions should be explicitly aligned with competency-based learning objectives (morphology, diagnostic reasoning, laboratory systems); incorporate validated assessment endpoints (diagnostic accuracy, time to correct diagnosis, retention at delayed intervals); and include faculty development so educators can facilitate debriefing and translate game experiences into clinical learning.

We conclude that the thoughtful design, empirical evaluation, and integration with existing curricula will be essential to realizing its potential to improve diagnostic performance and prepare trainees for modern digital pathology practice.

References

1. Bhat A, Bhat S, Manjunath J. Perceptions of MBBS Phase II Students on Gamification. J Med Sci Health 2023 Dec;9(3):251-255 .

2. Attaway CC, Mani MM, Fortuna D. Are you ready to play Pathology Pyramid? An exploration of an alternative method of learning through gaming in pathology resident education. Acad Pathol 2022 Apr;9(1):100033.

3. Lee CY, Lee CH, Lai HY, Chen PJ, Chen MM, Yau SY. Emerging trends in gamification for clinical reasoning education: a scoping review. BMC Med Educ 2025 Mar;25(1):435.

4. Al Kindi R, Al Mashari M, Al Hadhrami A, Al Shaqsi J. Knowledge, Attitude, and Perception of Artificial Intelligence in Healthcare Among Postgraduate Residents: A Cross-sectional Survey. Oman Med J [Internet]. 2025 [cited 2026 Jan 5]; Available from: https://www.omjournal.org/articleDetails.aspx?coType=2&aId=4053

5. Wang YF, Hsu YF, Fang KT, Kuo LT. Gamification in medical education: identifying and prioritizing key elements through Delphi method. Med Educ Online 2024 Dec;29(1):2302231.