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REFLECTIONS

Theme - Gamification in Medical Education

Transforming learning through Play, Purpose, and Performance

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Editorial

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Gamification : Transforming Teaching and Learning in Medical Education

Medical education is constantly changing to meet the needs of modern learners and the healthcare system. While lectures and textbooks remain important, they are often not enough to keep students fully engaged or to help them apply knowledge in real clinical situations. In this context, gamification has gained attention as an effective teaching approach. Gamification means using game-like elements in education to improve student motivation, participation, and learning outcomes.

Medical students today face a heavy academic load and high levels of stress. Keeping them motivated and engaged is a challenge for faculty. Gamification helps address this problem by making learning goal-oriented and rewarding. In medical education, gamification can be as simple as a quiz competition during a lecture or as advanced as virtual patient simulations. When students see their progress through scores, levels, or achievements, they feel encouraged to continue learning.

Gamification also supports active learning, where students think, discuss, and apply knowledge rather than simply memorizing facts. This is especially important in medicine, where understanding, decision-making, and problem-solving are essential skills. Another advantage is that gamification fits well with competency-based medical education (CBME), by breaking learning into small tasks and milestones and gamified activities help students understand what is expected of them and allow faculty to monitor progress more easily

Tools like Kahoot, Quizizz, or Socrative turn revision sessions into interactive quizzes. Digital platforms and mobile apps using quizzes, 3D models and Virtual patient simulations are few examples which can be used across different subjects and stages of medical training. Gamification supports several important learning principles like active participation, decision making, immediate feedback, motivation and safe learning environment to shape the learners' careers as future doctors.

Not all students enjoy competition, and too much focus on scores can distract them from learning. Faculty should ensure that gamified activities are aligned with learning objectives and encourage teamwork rather than unhealthy competition. Access to technology and faculty training are also important. Institutions should support teachers by providing resources and guidance on how to use gamification effectively. When used appropriately, it makes learning more engaging, interactive, and effective without compromising academic standards.

For medical faculty, gamification offers an opportunity to connect better with students, promote active learning, and support competency-based education. By starting small and focusing on educational goals, faculty can successfully integrate gamification into their teaching practices.

In the words of Albert Einstein, "Play is the highest form of research". Perhaps its time we let playfulness take its rightful place in medical education - not as a distraction, but as a catalyst for deeper understanding, empathy, curiosity and lifelong interest in learning.

Dr. Shubhada Deshmukh ***Dr. Anjali Bhure***

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DEAN
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Medical Education has moved from being teacher-centered approach to being learner centered. Now the challenge is to make it engaging and as interactive as possible. The thing "Gamification in Medical Education" highlights the power of innovative teaching-learning strategies that can enhance motivation, critical thinking, skill refinement and lifelong learning.

It underscores the importance of learner centered and outcome based educational strategies. It also has the advantage of being used in formative assessment without the fear of examination.

Gamification in Medical Education is about integrating game based elements into medical training. This can transform many complex concepts into meaningful experiences which are enjoyable at the same time. Gamification can complement some Pedagogical methods, a strategy which may have great appeal to the students in their initial years of medical education as they will find it engaging.

An important feature of gamification is that there is no compromise on academic rigor and clinical relevance of medical topics. As an institute we aim to nurture competent, motivated yet compassionate, and confident healthcare professionals.

I commend the Medical Education Unit for exploring this important theme and encourage faculty to embrace innovative teaching learning strategies that enrich learning experiences.

Dr. Madhur Gupta
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Reflection, the medical education mouthpiece of NKP SIMS & RC & LMH, Nagpur has always dealt with topics of interest for faculty and students. I am very happy that this issue talks about gamification in medical education.

Gamification refers to using game attributes in a non-gaming context. The use of game design elements to enhance academic performance (e.g., learning attitudes, learning behaviours and learning outcomes) is known as gamification or 'gamified learning' .Gamification in medical education may improve learning, motivation, and engagement.

Gamification is rapidly becoming a trend in health professions education. This is at least suggested by the number of peer-reviewed scientific publications on gamification in this field, which has increased almost tenfold over the past 5 years.

At the same time, there seems to be little shared understanding of what constitutes gamification and how this concept differs from other, related concepts. Furthermore, according to education literature, there is still no clear understanding of when and why gamification can be an appropriate learning and instructional tool.

Resistance and comprehensive assessment are challenges. However, game-based learning can make medical education more engaging and effective for instructors, students, and patients

I must compliment the Editorial Board for this comprehensive education on this important emerging topic.

Dr. Anne Wilkinson
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Gamification in Medical Education

When you read or hear the word "gamification" what comes to your mind- mobile games or probably video games! We turn to these games when we are bored of routine. In the same way the trend of Gamification in Medical Education probably came about to make the current medical education learning more meaningful by using interesting ways to teach topics, so that students will be more engaged and enjoy the learning process ,and , at the same time (although time consuming), the medical teachers will also come up with more interesting methods to teach.

Various methods of Gamification are already in use in medical education and more maybe introduced.

This edition of Reflections will give an insight on the use of Gamification in Medical education.

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Gamification in Medical Education: Learning Medicine through Play

Medical education has long been known for its intensity, heavy workload, and high expectations. From memorizing complex biochemical pathways to mastering clinical reasoning and procedural skills, medical students often face learning fatigue and burnout. In recent years, **Gamification** has emerged as an innovative approach to address these challenges by making learning more engaging, interactive, and effective.

Gamification refers to the use of **game design elements in non-game settings**, such as education. In medical training, it would be enhancing learning through challenges, simulations, and immediate feedback. When designed thoughtfully, gamification transforms passive learning into an active and motivating experience.

One of the key strengths of gamification is its ability to **increase student engagement**. Traditional lectures often rely on one-way communication, whereas gamified learning encourages participation. For example, case-based quizzes, team competitions, or virtual patient simulations require students to apply knowledge rather than simply recall facts. This active involvement improves concentration and promotes deeper understanding.

Gamification also supports **clinical reasoning and decision-making**, which are critical skills for future physicians. These simulated environments provide a safe space to make mistakes, learn from feedback, and refine clinical judgment without risking patient safety.

Another important benefit is **improved knowledge retention**. Game elements such as repetition, rewards, and progressive difficulty reinforce learning over time. Studies suggest that students often remember information better when learning is enjoyable and interactive. Tools like spaced-repetition apps, anatomy games, and pharmacology challenges help convert overwhelming content into manageable learning tasks.

Team-based gamification is particularly valuable in medical education, as healthcare is inherently collaborative. Activities like quiz bowls, escape rooms, or problem-solving challenges encourage communication, leadership, and teamwork skills essential for clinical practice. These activities also foster a sense of community among students, reducing stress and promoting peer learning.

However, gamification is not without limitations. Overemphasis on competition may discourage some learners, and poorly designed games can distract from educational objectives. Not all students are motivated by points or leader boards, and excessive gamification may risk oversimplifying complex medical concepts. Therefore, gamification should be used as a **complement to traditional teaching**, not a replacement.

The success of gamification depends on **clear learning objectives, clinical relevance, and meaningful feedback**. When aligned with curriculum goals, gamified learning can enhance both enjoyment and educational outcomes. Medical educators must focus on mastery and understanding rather than simply winning or scoring high points.

As medicine continues to evolve alongside technology, gamification represents a promising tool for modern medical education. For medical students, it offers a more engaging way to learn, revise, and apply knowledge in preparation for real-world practice. Learning medicine will always be challenging but with gamification, it can also be motivating, interactive, and even enjoyable.

By embracing innovative learning strategies today, we prepare better physicians for tomorrow.

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Gamification in Medical Education

" You can take the camel to the water, but you cannot make it drink" is now an age old dictum. The challenge for the present teacher is to reframe this as "You can take the camel to the water and make him so thirsty that he is forced to drink".

Task of an educator has always been to increase the intrinsic motivation of a student to learn. Yes, learning should come from within but we as educators have a role to play in instilling a desire to learn by making the classroom more engaging, subject more relevant, more interesting and to increase the will and the desire to learn.

Medical education is changing at a rapid pace. In this era of technology and now with Artificial Intelligence it is challenging for a teacher to keep the attention span of the student in control. Teaching learning methods are changing and evolving. Using only traditional methods like didactic lectures may reduce the attention of students due to monotony. There is a need to increase students' engagement and interaction by modifying or changing or adding innovation to existing didactic teaching. Using technology and digital tools help the teachers in increasing student interest.

Can I create a nonthreatening environment in the class?
Can I create an engaging environment in the class?
Can I create energy in the class that boosts the intrinsic motivation of a student?

As an "add on" to didactic and other methods of teaching, Gamification could be the answer, though, as for any teaching learning technique it comes with a bag of challenges.

In recent years, gamification has emerged as a developing paradigm in education, integrating game design, game elements, and educational strategies to enhance learners' motivation and performance. In healthcare education where academic success is directly linked to patient outcomes, gamification has been recognized for its potential to improve clinical reasoning skills among trainees. The rapid advancement of digital technology has created unprecedented opportunities to integrate game-based elements into healthcare education. These innovations hold promise for overcoming traditional barriers in medical curricula, particularly learner engagement and knowledge retention.

Gamification, defined as the application of game-based methods and processes in educational or training environments, aims to increase learners' intrinsic motivation for voluntary learning activities. In educational settings, this approach translates into the integration of points, levels, badges, leader boards, and storylines into learning activities, making them competitive and engaging. Gamification has been used in healthcare education as a tool to improve knowledge acquisition, advance clinical skills, and enhance professional competencies.

Gamified learning environments support the development of clinical skills and reasoning by providing realistic, safe, and controlled settings that foster active learning and critical thinking. However, its efficacy depends on contextual factors such as game design quality, instructional alignment, and learner characteristics.

Examples include simulations, escape rooms, and team-based competitions that create a risk-free environment for practice and promote active learning.

Researchers have demonstrated several benefits to gamification:

Motivation and engagement: Gamification leverages a desire for competition, achievement, and recognition to make learning more attractive and to combat the monotony of traditional lectures.

Skill development: It fosters active participation and helps students develop essential skills such as problem-solving, clinical reasoning, communication, and teamwork.

Risk-free practice: Game-based simulations allow students to practice clinical skills in a low-stakes environment, which can increase proficiency and confidence before working with real patients.

Knowledge retention: Integrating game-like elements helps students retain information more effectively and can deepen their understanding of complex topics.

Few examples of gamification in classroom setup:

Socrative, an app to assess and engage students while visualizing learning progress in real-time with instant results. This can be accessed at Socrative.com. Create a Socrative teacher login and then the MCQs can be incorporated in the Socrative quiz. The MCQs can be administered using the instant feedback method. Groups can be made based on the seating arrangement of students. The MCQs can be of different difficulty levels. The 40 minute didactic lecture can be followed by gamification for the last twenty minutes using this app.

Slido is an interactive tool which can be used to create surveys, word clouds, quizzes, questions and answers, live polls and analytics about audience. This can be accessed at slido.com.

Crossword can be created using bookwidgets.com by subject experts. The prints of the crossword can be given to student in groups of 10 and the team that solves the crossword fastest with the most accurate answers can be rewarded.

Google forms with multiple choice questions can be prepared by subject experts. Images can also be incorporated in a few questions. The link is shared with students and students asked to answer this in the form of a quiz. The top scorers are rewarded

Escape rooms are simulation-based activities where small groups solve puzzles and challenges to complete educational objectives, promoting collaboration and communication.

Interactive quizzes with immediate feedback, leader boards, and badges can be used to track progress and motivate students.

Longitudinal Games can span an entire academic year, with teams earning points for completing various tasks like quizzes, assignments, and procedure logs.

Educational platforms like Osmosis use gamified elements such as badges, points, and interactive quizzes to make learning more effective and fun.

These activities can be conducted following the didactic lecture and a discussion of the activity.
Several teachers are in fact carrying out several such small interventions several times in their classrooms not realizing that they have just used gamification in education. Its time they share such activities as publications and put it in public domain.

As with all teaching learning methods gamification can also have its own challenges.

Most important is Unhealthy competition when competitive elements like leader boards can sometimes lead to discontentment if not implemented carefully.

Secondly there is debate about whether gamified elements might shift the focus from intrinsic love of learning to external rewards like points or badges.

And lastly overcoming the traditional mindsets that may be resistant to incorporating technology and advanced technology in education could be a hurdle.

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Use of Error Rooms and Escape Rooms in Health Professions Education: A Beginner's Guide

Introduction

Gamification has emerged as an influential strategy in health professions education to build learner engagement. It has also been used to provide experiential learning to students, as well as for the safe acquisition of complex competencies. Broadly defined, gamification involves the application of game elements such as challenge, rules, feedback, and collaboration to non-game educational contexts. Within the context of competency-based medical education, gamification aligns well with the need for active learning, formative assessment, and reflective practice.[1]

Among the various gamified strategies now being explored, error rooms and escape rooms have gained particular attention. Both formats immerse learners in realistic, time-bound scenarios that encourage teamwork, observation, problem-solving, and reflection. Error rooms focus primarily on patient safety and hazard recognition, whereas escape rooms emphasize clinical reasoning and collaborative decision-making.[2-4] Despite increasing interest, many educators remain uncertain about how to design and implement these activities. This short guide introduces the concepts, pedagogical rationale, evidence base, and practical considerations for using error rooms and escape rooms in health professions education.

Basic Concepts and Educational Rationale:

Error Rooms

Error rooms (also called rooms of errors, rooms of horrors, or rooms of improvement)are simulation-based learning environments designed to help learners identify latent and active patient-safety hazards. Typically, a clinical setting such as a ward, intensive care unit, or pharmacy is staged with multiple intentional errors related to medication safety, infection control, documentation, equipment, or communication. Learners are asked to observe the environment, identify hazards, and discuss potential consequences.

Error rooms are grounded in experiential learning theory and human factors engineering. They promote situational awareness, systems thinking, and error recognition. These are skills that are difficult to develop through traditional didactic teaching.[5-6] Importantly, error rooms provide a psychologically safe space in which learners can identify and discuss errors without fear of blame, making them particularly relevant for patient-safety education.[7]

Escape Rooms

Escape rooms have been adapted from recreational escape games. These place learners in a scenario where they must solve a series of puzzles or challenges to “escape” within a fixed time. In medical education, escape rooms are designed around curricular objectives such as diagnosis, interpretation of investigations, treatment planning, or crisis management. Progression through the game requires collaboration, application of knowledge, and effective communication.[2-3]

Escape rooms draw upon constructivist learning principles and self-determination theory, fostering autonomy, competence, and relatedness.[3] The narrative context and time pressure enhance engagement, while teamwork encourages peer learning. Unlike error rooms, which emphasize observation and hazard detection, escape rooms demand active problem-solving and synthesis of information.

Table 1 provides a comparison of error rooms and escape rooms as gamified learning strategies

Table 1: Comparison of error rooms and escape rooms as gamified learning strategies in health professions education

Feature	Error Rooms	Escape Rooms
Primary purpose	Patient safety education and hazard recognition	Clinical reasoning, teamwork, and problem-solving
Core learning focus	Identification of latent and active errors; systems thinking	Application and synthesis of knowledge under time pressure
Typical learner task	Observe a staged clinical environment and identify safety hazards	Solve sequential puzzles to progress through a scenario
Nature of activity	Exploratory and observational	Interactive and task-oriented
Common learning objectives	Medication safety, infection control, communication failures, equipment errors	Diagnosis, interpretation of investigations, management decisions, teamwork
Pedagogical underpinning	Experiential learning, human factors, patient safety science	Constructivism, self-determination theory, collaborative learning
Level of fidelity required	Low to moderate; simple props often sufficient	Low to moderate; puzzles can be paper-based or digital
Time required	10–15 minutes activity + structured debrief	20–45 minutes including gameplay and debrief
Role of debriefing	Central; primary site of learning and reflection	Essential; links game tasks to clinical reasoning and teamwork
Assessment use	Best suited for formative assessment and reflective discussion	Primarily formative; limited role in summative assessment
Strengths	Promotes safety awareness, systems thinking, and psychological safety	High engagement, motivation, teamwork, and learner enjoyment
Common pitfalls	Overcrowding with too many errors; inadequate debrief	Overly complex puzzles; focus on “winning” over learning
Best suited contexts	Patient safety training, orientation programs, interprofessional education	Active learning sessions, revision exercises, team-based learning

Designing Beginner-Friendly Error and Escape Rooms

Both formats are flexible and can be implemented with modest resources. High-fidelity simulation is not essential, particularly for first-time users.

The first step is identifying clear learning objectives aligned with curricular competencies. For error rooms, objectives commonly relate to recognizing patient-safety hazards, understanding system-based errors, or applying safety principles.

A basic error room can be created in a skills laboratory or classroom by planting 10 to 15 common errors, such as incorrect medication labels, missing patient identifiers, breaches in infection control, or faulty equipment. Learners work in small groups for a limited time (typically 10 to 15 minutes) to identify hazards. The debrief is central to learning and should focus on categorizing errors, understanding contributory factors, and linking observations to real clinical practice.[6-8]
(See Box 1 for an example of an error room. You can see from the example that this feels real, is low-cost, and directly maps to patient safety competencies.)

BOX 1:
Example of an Error Room in the Medicine Ward:
"Spot the Hazards Before Harm Happens"

Setting: A staged medicine ward bed-space with a simulated patient chart and medication trolley.
Learners: 46 learners/team (you can also use a mix of students from medicine and nursing).
Task (10 minutes): "You have just taken over this patient. Identify as many safety hazards as you can."

Planted hazards (pick a few):
1.Patient wrong name on bed card
2.Allergy documented in history ("penicillin allergy") but amoxicillin prescribed
3.Insulin charted but no bedside glucose record for the day
4.IV fluid running with no date/time label and unclear rate
5.Potassium chloride vial left in open tray (high-alert med stored unsafely)
6.Warfarin prescribed without recent INR in chart
7.Oxygen on, but no prescription / target saturation not documented
8.Foley bag touching floor; catheter care checklist incomplete
9.Central line dressing dated 7 days ago; insertion site erythematous
10."Nil by mouth" order, but meal tray present at bedside
11.Similar-sounding meds stored adjacent (e.g., hydralazine/hydroxyzine)
12.Handover sheet contradicts chart (e.g., DNR status unclear)

Scoring (simple):
- 1 point per hazard identified
- +1 if they articulate a plausible harm ("could cause hypoglycaemia")
- +1 if they propose a system fix ("standard high-alert storage," "two-identifier check")

Debrief (15 to 20 minutes):
- Categorize hazards: medication, infection control, documentation/communication, equipment/environment
- Discuss why errors occur (workload, interruptions, look-alike/sound-alike, poor labeling)
- End with 3 actionable "tomorrow on rounds" habits (ID check, allergy cross-check, high-alert med rule)

Escape rooms require a clear storyline and structured progression. Challenges may include interpreting ECGs, matching drugs to indications, decoding laboratory results, or solving communication-based tasks. Simple tools such as printed clues, lockboxes, QR codes, or online platforms are sufficient. Over-complexity should be avoided; clarity and alignment with learning objectives are more important than novelty.[3]
(See Box 2 for an example of an escape room which shows how a high-stakes, guideline-driven pathway is gamified and how it makes teamwork visible.)

BOX 2:
(Example of an Escape Room in Emergency Medicine):
"Prevent the Collapse: Chest Pain to Cardiac Arrest"
Setting: Skills lab / classroom; can be paper-based with monitor printouts. Optional manikin.
Learners: 46 per team.

Narrative: "A 56-year-old man with chest pain is deteriorating. You have 25 minutes to stabilize him and 'unlock' the final treatment pathway."**Game flow:**Make four sequential stations; each correct decision unlocks the next clue.

Station 1: Triage & Initial Assessment
Clue: Triage sheet + vital signs + brief history.
Puzzle: Choose the correct triage category and immediate actions (ABC, IV access, ECG within 10 minutes, aspirin).
Unlock: A code from the "ECG envelope" is released when they list key first steps.

Station 2: ECG Interpretation
Clue: ECG printout with STEMI pattern (e.g., inferior STEMI).
Puzzle: Identify STEMI territory + 2 contraindications to thrombolysis
Unlock: The "cath lab pager number" is hidden in a matching exercise (match territory to artery).

Station 3: Medication and Dosing
Clue: Medication chart fragments (aspirin, statin, heparin, nitrates) with distractors.
Puzzle: Select correct meds and doses; avoid unsafe options (e.g., nitrates if right ventricular infarct/hypotension).
Unlock: A lockbox opens with a 4-digit code derived from correct doses.

Station 4: Complication: ventricular fibrillation (VF) Arrest
Clue: Rhythm strip shows VF.
Puzzle: Sequence ALS steps (shock → CPR → adrenaline timing → amiodarone) using a card-sorting activity.
Final unlock: A "Return of Spontaneous Circulation" card reveals the exit code.

Debrief (15 to 20 minutes):
- What cues mattered? Where did anchoring or confirmation bias appear?
- Teamwork reflection: role allocation, closed-loop communication
- Link to guidelines and local protocols; reinforce "must-not-miss" decisions

Evidence of Effectiveness
Scoping and systematic reviews suggest that escape rooms enhance learner engagement, motivation, teamwork, and short-term knowledge acquisition across medical, nursing, and allied health education.[2-4] Learners consistently report high satisfaction and perceive escape rooms as enjoyable and memorable learning experiences. Evidence from studies on error rooms indicates improvements in hazard recognition, situational awareness, and patient-safety attitudes.[5-8] Error rooms have been used successfully in undergraduate, postgraduate, and interprofessional settings, with some studies demonstrating sustained improvements in safety awareness months after the intervention.[8] However, the current evidence base has limitations. Many studies rely on self-reported outcomes, small sample sizes, or short-term evaluation. There remains a need for more robust research examining long-term retention, transfer of learning to clinical practice, and impact on patient outcomes.[2-4]

Common Pitfalls and Practical Tips
Poorly designed gamified activities risk prioritizing entertainment over learning. Common pitfalls include unclear objectives, excessive puzzle complexity, and inadequate debriefing. Learning occurs primarily during structured reflection, rather than during gameplay itself.

Faculty development is essential, as facilitators must be skilled in guiding discussion, managing group dynamics, and maintaining psychological safety. Time, space, and logistical constraints should be considered early. Virtual or hybrid formatssuch as online escape rooms or video-based error identificationmay be particularly useful in resource-constrained settings. Importantly, both formats are best suited for formative learning rather than high-stakes assessment.[1,3]

The Way Forward
Error rooms and escape rooms offer immersive, learner-centred approaches that align well with contemporary goals of

Health professions education, particularly patient safety, teamwork, and systems-based practice. For beginners, starting with a small-scale pilot can build confidence and institutional support.

With thoughtful design, clear objectives, and reflective debriefing, these gamified strategies can transform errors into learning opportunities and challenge learners to think critically in safe environments. As gamification continues to evolve, error rooms and escape rooms are likely to play an increasingly important role in preparing healthcare professionals for complex clinical practice.

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Perceptions of MBBS Phase II Students on Gamification

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ABSTRACT

Introduction: Traditional didactic lectures make classes monotonous and lead to reduced student engagement and interaction. Gamification can be used to break the monotony. Use of game elements in a non-gaming context is gamification. Simple digital tools can be used for gamification. We conducted this study to evaluate the student perceptions on gamification in medical education. Methodology: This study was carried out in the department of Pathology. MBBS phase II students who attended all the gamification sessions were included in the study. Gamification was done for sub-topics on Neoplasia, using digital tools like Slido, Socrative, google forms and crossword. Student perceptions were taken on validated questionnaire on a 5-point Likert scale. One open-ended question was given. Statistical analysis was done using frequency, percentage, mean and standard deviation. Results: A total of 72 students responded to the questionnaire. Students liked google forms the most followed by Slido. The findings of the study showed that students felt that gamification increases knowledge retention, understanding, improves engagement and satisfaction, enhances motivation, and improves overall learning experience. Students felt that gamification increases opportunities for interaction with faculty. For the questions on perceptions, the highest mean score was 4.33 and the lowest score was 3.97. Students recommended more quizzes with images and gamification for other subjects and classes too. Conclusion: Gamification was well-received by the students. Students perceive that gamification improves their learning and retention. Gamification can be used in teaching to make classes more interesting and to increase student motivation. KEY WORDS: Gamification, Medical Education, Teaching, Learning, Perceptions, MBBS.

STRENGTHS OF THE STUDY

1) **Title of the study**- appropriate.
2) **Study Background**- properly explained. Importance of the topic well mentioned in the background.
3) **Objectives**- Objectivesare clearlymentioned**.**
4) **Methodology**-study was planned properly.

- **Study design**-Descriptive Cross sectional was conducted.
- **Sampling method-**nonprobability convenient sampling method.
- **Participant consent and ethical considerations**: informed consent was obtained and Institutional Ethical Clearance was obtained (IEC).
- **Data analysis**: data was analysed in the form of Frequency, percentage, mean and standard deviation.
- **Study instrument**-google form were created and validated by subject experts. 5-point Likert scale was used to assess perceptions of students regarding gamification. Cronbach's alpha was calculated.

5)Discussion-Comparative and contradictory findings discussed.

6) Results and conclusions -Results and conclusions are matching with the objectives.
7)References-Vancouver style is used for citation of references.

WEAKNESS OF THE STUDY

- Title-study design is not mentioned in the title.
- Study design-mentioned as prospective interventional study. But Actual study design is a cross sectional study.
- Single centre study. Results of the study cannot be generalised to the population.
- Non-probability sampling method was used.
- Sample size was not calculated in the study. Study is conducted on only 72 participants. Sampling method is not mentioned.
- Response rate of the participants was found to be low (62%)
- Number of gamifications sessions were related to only few topics.
- Software used for statistical analysis is not mentioned in the methodology.

Siddhi Naringe
2021batch Final year

"Medicine is a demanding branch, it asks for your time, your discipline ,your resilience and your patience". That single sentence summed up everything I had heard about the profession before entering medical school. I was prepared for the long study sessions, the endless tests and the towering stacks of books that would accompany this journey. Yet my first year turned out to be far different from what I had imagined, Within the very first month the Department of Anatomy introduced demonstration sessions into our timetable making the study of bones and the human body unexpectedly engaging. Frequent group discussions prepared us for vivas and helped us grasp concepts with remarkable ease. Beyond academics my favourite moment from the year was the "Class Apart" workshop, which strengthened my oratory skills and supported my overall personality development. These simple workshops and demonstrations reshaped the way I viewed medical learning. Only later did I realise that this approach had a name : gamification, and that it was quietly transforming medical education.

Gamification incorporates game-based elements such as time-bound challenges and leader boards to make learning more engaging, interactive and effective. It turns routine subjects into enjoyable, active learning experiences that boost motivation and deepen understanding. Beyond academics, gamified activities foster confidence, teamwork, quick decision-making and critical thinking. Whether it is quizzes, poster-making, debates or even a rangoli competition designed to help memorise histology diagrams, each method has made learning more dynamic and student-centred.The skills lab, with its hands-on training using mannequins, further enhances practical understanding. Together, these techniques complement traditional teaching beautifully making the often daunting world of medical education feel far more approachable and achievable.

Embracing gamification ensures that future medical professionals are not only knowledgeable , but also prepared to think critically, collaborate effectively and respond under pressure. It stands not merely as a teaching tool but as a true investment in the quality of tomorrow's healthcare professonal.

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Gamification of Education: A Surgical Resident's Perspective

Introduction

When learning meets play, something magical happens. Training surgeons has always been putting in of long hours, concentrated effort, and repetitive training. For the last few decades, the apprentice model of "see one, do one, teach one" has been the way by which residents learned their trade. However, due to the increased scarcity of operating room time, there has been a shift toward learning through simulation or technology. In this process, one area that has immense potential to ensure that learning becomes an engaging, motivating, and measurable experience has been gamification.

Gamification is simply the application of the principles of game design, such as points, levels, leader boards, and badges, in contexts other than gaming. When properly applied, this leverage taps into our fundamental drives for achievement, competition, and optimization. In medical and specifically surgical training, the application of gamification can turn mundane practice activities into thrilling challenges.

Why Gamification is Important for Surgical Education

Today, the surgical resident has a challenging training route. With restricted duty hours, limited operating experience, and low patient exposure and availability of effective non-surgical treatment options, the surgical trainee no longer enjoys the same degree of abundant operating experience that was a hallmark of previous training models. Simulators and web-based training systems offer irreplaceable service, yet maintaining enthusiasm for ritualized technical training sometimes becomes problematic.Gamification fills the gap by introducing purpose, progression, and play in practice. Rather than thinking about practicing skills as boring, residents can monitor scores, achieve levels, as well as compete or work together with their co-residents, thus engaging with practice in the desired manner.
Gamification and the Importance of the Learning Process in Surgery.

Gamification is not about making medical training classes any less serious. Rather, it is actually about making it more effective. The components of engagement that games have, like challenge, feedback, progression, and reward, actually complement adult learning theory and surgery perfectly.

Gamification of Tasks

1.Challenge: Every surgical technique has a learning curve.
2.Gamified Modules: These offer levels of escalating difficulty - just like progressing from basic knot-tying to knot-tying via laparoscopy.
3. Feedback: Performance information such as time, accuracy, and errors is provided, which allows residents to correct themselves.
4. Progression: Seeing progress through visual bars or rankings can provide great motivation.
5. Reward: Badges can be used to award achievement and even reward regular activity.

Findings from previous research have always supported the capability of gamification in improving engagement, knowledge retention, and even decision-making skills among those who used it. According to a *2021 systematic review by van Gaalen et al.*[1], gamification led to improved motivational and learning behaviors among those in health-related professions. *Gentry et al.'s (2019)*[2] research proved that serious games were able to improve cognitive and psycho-motor skills for medical students and residents.

Advantages of Using Gamification in Surgical Practice

1.**Increased Engagement and Motivation:**Traditional lecture-type learning or skill exercises usually lack engagement. But when leader boards and progress are incorporated, the level of engagement increases significantly.For example, some surgical residency programs now offer “simulation leagues” in which residents accumulate points for successfully completing technical maneuvers. Suddenly, practicing suturing becomes not only obligatory but also enjoyable .

2. **Knowledge Retention and Decision Making:**Case-based learning modules in a gamified format, such as online quizzes or decision trees, encourage active recall and critical thinking. Unlike traditional learning methods, these modules require decision-making skills and offer immediate consequence feedback, closely resembling reality when operating.

3. **Improved Procedural Skills by Simulation:**"Gamified" simulators like virtual laparoscopic trainers and simulation modules on robotic surgery systems may be able to quantify performance parameters like precision, speed, and movements. By associating performance criteria with levels and achievements, the residents are motivated to optimize their performance so as to "unlock" levels. Recent research (e.g., *Tabrizi et al., 2025*[4]*; Masoumian Hosseini et al., 2023*[5]) indicates improved technical skills and knowledge recall achieved in gamified surgery simulations as opposed to the control groups.

4. **Safe and Risk-Free Deliberate:**"One of the biggest advantages of gamification is that it is possible to repetitively rehearse a low-frequency, high-stakes scenario in a risk-free way. It might be bleeding a patient in a trauma game, for instance, or directing a resuscitation in a 'escape room' scenario.

5. **Objective Assessment & Real-Time Feedback:**The systems are also data-driven in their assessment criteria. All attempts, scores, and errors are recorded in the system, allowing for objective progress to be measured. This feature of the system enables autonomous improvement, which is a vital skill in lifelong learning in surgery.

6. **Teamwork and Communication Skills:** All gamification learning experiences need not be competitive in nature. There are cooperative team games that call for success through communication, which can improve non-technical skills that are critical in the operating room, including situational awareness, leadership, and communication in patient transfers.

7. **Scalability and Accessibility:** Gamification can also make top-notch surgical training widely accessible. Online modules are available anywhere and at all times - perfect for residents with hectic workloads in actual clinical practice.

8. **Promoting Well-being and Preventing Burnout:** Another, perhaps even more important, benefit is emotional. Through the creation of a game atmosphere in the process of acquiring a skill, residents get more pleasure and have less fatigue. Setting goals and positive reinforcement can offset the repetitiveness and stresses associated with training.

Practical Implementation: Small Starts
Gamification does not need elaborate VR labs and expensive software. Here are simplified methods through which surgical Departments could use game design:

1.Leaderboard Challenges: Measure the simulation times for suturing or tying knots and provide incentives for progress over mere speed.

2. Weekly Case Quizzes: Create “missions” where correct answers lead to higher difficulty cases.

3. Surgical Skills Badges: Provide digital badges in surgical skills such as hand tie, instrument care, and/or laparoscopic tryout.

4. Escape Room Scenarios: Utilize team-building crisis simulation exercises involving attempts to solve problems under timed conditions.
The trick is to ensure that each game component is tied back to a learning goal. The aim is not necessarily entertainment but engagement for a larger purpose.

Picture this: a lap simulator that adjusts levels of difficulty on your previous performance or rewards you instantly with haptic feedback.

My experiences with gamification in medical education

As a PG resident, I feel maintenance of daily duty hours along with adequate patient care is already excess stress for anyone, combining that with the amount of study (both theory and practical) that need to be done makes it a tiring experience. Gamification brings a fresh air to the already boring traditional methods for studying. During our training when we were given role playing case scenario based exercises and were divided into teams we had a much better understanding on the given topic and the way to counter the said problem. SOPs for specific diseases are also much more better to understand when done in a competitive fashion where students are awarded extra points for better knowledge on the given topic. Healthy competition fuels healthier effort by the students. Overall these little modifications will bring about excitement among the residents, thus increasing productivity.

Key Takeaways for Surgical Residents and Teachers

1.Start small, think big: Even simple leader boards or case-based quizzes can trigger the motivators. Align games with goals: Each challenge needs to enforce a particular skill.
2.Measure and reflect: Apply performance data for personal feedback and monitoring progress.
3.Put the learner at the forefront: Fun is a way to get engagement, but it cannot be the end goal.
4.Collaborate: Work with educators, simulation experts, and colleagues to create relevant gamified content.

A new way to play, A new way to learn Gamification is no gimmick it is an education paradigm shift. By leveraging competitiveness, feedback, and personal growth, it fosters intentional practice and engagement. For surgeons, where repetition, reflection, and refinement are key, gamification can help transform drudgery into play that is worth playing. As residents, we already have enough problems in the O.R. to contend with. It only stands to reason that we should also make our preparation as engrossing and rewarding as possible. For that matter, who says surgery can't be serious AND fun?

References

1.van Gaalen AEJ et al. Gamification of health professions education: a systematic review. Advances in Health Sciences Education. 2021.
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3.Xu M et al. Game-based learning in medical education: a systematic review. Frontiers in Public Health. 2023.
4.Tabrizi NS et al. Gamification to enhance clinical and technical skills in surgical education. BMC Medical Education. 2025.
5.Masoumian Hosseini M et al. Gamified surgical instrument training improves retention and engagement among residents. BMC Medical Education. 2023.
6.Aster A et al. Game design elements of serious games in medical education: current evidence and future trends. Medical Teacher. 2024.
7. Huang WD et al. A systematic review grounded in the SOLO taxonomy: gamified learning in health sciences. BMC Medical Education. 2024.

FACULTY DEVELOPMENT PROGRAMS

24th March 2025 Faculty Development Program for Sensitisation to MOODLE LMS. Faculty-Dr. Sharjeel Khan, Associate Professor Forensic medicine and MEU memberTotal 28 faculty members All the relevant questions were answered and the demonstration of the steps and the follow up of activities which are being undertaken by the departments on MOODLE were done. The efforts taken for the program was appreciated by Dean DrSajalMitra, MEU Director DrMadhur Gupta and Secretary MEU Dr Anne Wilkinson

8th April 2025 A Lecture on "From Good to Great: How FAIMER can transform educators"was taken by**Dr**. **Devashis Barick**, Professor Dept**.** of Orthopedics and FAIMER fellow. 94 faculties attended the session. He gave an impressive talk on how FAIMER (Foundation for Advancement of International Medical Education and Research) programs equips educators with expertise in various teaching and learning methods, allowing them to develop innovative and effective educational approaches.

22nd, 23rd& 24th July 2025: Basic Course in Medical Education(BCME) in MET. Faculty of NKP SIMS & RC and LMH, Nagpur. for 30 participants. 10 Faculty from various departments served as resource persons. The program concluded with a post-test and retro-pre feedback, reflecting participant engagement and learning. Overall, the BCME provided a structured and enriching platform to equip faculty with tools for effective implementation of CBME

2nd to 4th September 2025: Faculty Development Program: Using MS Word with Styleswas attended by 26 faculty members from different departments.The resource person for the program was Dr. Manish Sawane, Professor and Head, Department of Physiology, NKPSIMS and RC, Nagpur. The main objective of the workshop was to enhance faculty skills in preparing academic and research documents using MS Word with advanced formatting tools and style features

PROGRAMS FOR RESIDENTS

24th January 2025 "EXPRESSIONS 2025" Interdepartmental College level Power Point Presentation Competition. Topic: SIMULATION BASED MEDICAL EDUCATION First Prize: Dr. Devi Kulkarni Dept. of Anaesthesia, Second prize: Dr.Ritaka Agrawal Dept. of Paediatrics, Third Prize: Dr.Kumari Anju Rani, Dept of Microbiology.Judges were Dr.Arti Kasulkar Prof. Forensic Medicine, Dr.Rakhee Tirpude Asso. Prof. Physiology & Dr.Shubhada Deshmukh, Professor Emergency Medicine of our Institute.

31st Jan 2025 "EXPRESSIONS 2025" National Level Online Power Point Presentation Competition for Medical PG Students. TOPIC: Simulation Based Medical Education
1st Prize-Dr.Z Kamaludin, HBTMC & Dr. R.N. Cooper General Hospital, Mumbai
2nd Prize-Dr. Dharmendra Kumar Gupta, Burdwan Medical College, West Bengal
3rd Prize- Dr. Devi Kulkarni, NKP SIMS & RC and LMH, Nagpur.
Judges were Ms. Bincy KP,Asso. Prof. & HOD of Child Health VSPM MDINE, Dr.Vivek Harkare Prof. & Head Dept. of Otorinolaryngology NKP SIMS & RC and LMH, Nagpur & Dr.Shilpa Chourasia, Prof.& HOD, Dept. of Musculoskeletal PhysiotherapyV.S.P.M.'s College of Physiotherapy

22nd & 23rd April 2025"Resident as a Teacher" a two full days workshop was held for Residentsof various departments of NKP SIMS & RC and LMH. 30 Residents participated in the interactive workshop which included sessions on combination of didactic instruction, practical exercises, and reflective activities designed to enhance residents' skills in teaching, microteaching and feedback.

19th to 20th August 2025: "Resident as a Teacher" Two-day**Resident as Teacher Basic Workshop in Educational Methodology** for physiotherapy residents .30 Residents participated in the interactive workshop which included sessions on combination of didactic instruction, practical exercises, and reflective activities designed to enhance residents' skills in teaching, microteaching and feedback.

.WORKSHOPS FOR UG STUDENTS

4th and 5th February 2025 Workshop on presentation skills -2024 batch MBBS students. Initially the students were briefed about the program which included content, audience analysis and style during presentation. Topics were allotted and the students were given 15 days for preparation. After the 5-minute presentation in small groups on the allotted day, inputs were given for improvement in their presentation. A total of 175 students participated in this activity.

17th March 2025"Class Apart -2025:Full day workshopto equip students with soft skills not taught in class. 30 FirstMBBS students were trained on soft skills like Goal Setting, Team building, Communication skills, Leadership, Attitude & Sensitivity. These skills are crucial for students, enhancing their academic performance, employability, and overall development, making them better equipped for both personal and professional success.

26th August 2025: Orientation course for the BPMT students. The program provided 45 students with a holistic introduction to their academic journey, professional responsibilities, and personal well-being

FOUNDATION COURSE FOR MBBS STUDENTS

28th October 2025: Orientation to the Course- MBBS 2025 batchfor151 students. The session was organized by theMedical Education Unit (MEU)and delivered byDr.Madhur Gupta, Professor and Head of the Department of Biochemistry, and Director, MEU.

28th October 2025: Guest Lecture on History of Medicine for First MBBS 2025 batch. The session was attended by 151 students and was coordinated by the Medical Education Unit (MEU). The lecture was delivered by Dr.VivekPande, Professor, Department of General Medicine, who provided an insightful overview of the evolution of medicine from ancient to modern times

29th October 2025: Orientation and Demonstration of Basic Life Support (BLS)for First MBBS batch. The session was attended by 151 students and was coordinated by the Medical Education Unit (MEU) of the college

30th October 2025:Session on Universal Precautions and Vaccinations for First MBBS 2025 batch. The session was attended by 152 students. The program was coordinated by the Medical Education Unit (MEU) of the college.

30th October 2025: Session on Patient Safety and Biohazard Safety for First MBBS 2025 batch. The session was attended by 152 students. The program was coordinated by the Medical Education Unit (MEU) of the college and delivered by Dr. RashmiMahalle, Associate Professor, Department of Microbiology

31st October 2025: Sessions on Health Care System, National Health Programmes, and A series of sessions on "Health Care System and Its Delivery," "National Health and Policies," and "Principles of Primary Care (General and Community-Based Care)" were conducted for the First MBBS 2025 batch The sessions were attended by 180 students and coordinated by the Medical Education Unit (MEU) of the college.

31st October 2025: National Health Programs and Policies for First MBBS 2025 batchThe session was attended by 180 students

4th November 2025:Session on Lifestyle Modification in the 21st Century for First MBBS 2025 batchThe program was attended by 180 students and was coordinated by the Medical Education Unit (MEU) of the college. The session was delivered by Dr. Bhawna Bhirud, Assistant Professor, Department of Physiology,

7th November 2025: Session on "Substance Abuse and Mental Health" for First MBBS Students. 225 in number by Dr. SushilGawande, Professor of Psychiatry, under the coordination of the Medical Education Unit (MEU) of the college. The session aimed to create awareness about the growing problem of substance abuse among youth and its adverse effects on mental health, academics, and personal relationships.

12th, 14th, 19th& 21st November 2025: Skill Training in Basic Life Support (BLS)for First MBBS Students. The program was attended by 229 students and was coordinated by the Medical Education Unit (MEU). The training was organized by the Department of Anaesthesiology under the leadership of Dr. Anjali Bhure, Professor and Head Department of Anaesthesiology, and Dr.Shilpa Deoke, Professor, Department of Medicine.

22nd November 2025: Session on Introduction and Importance of Research for First MBBS Students. The program was attended by 182 studentsand wascoordinated by the Medical Education Unit (MEU). The session was delivered by Dr.AjeetSaojifrom theDirectorate of Research, who provided an insightful overview of the role of research in medical education and healthcare advancement.

03/12/2025: Guest Lecture onPrevention of Sexual Harassment (POSH) Act for MBBS 2025 Batch231 MBBS 2025 batch students under the MEU. The session was delivered by Advocate Shilpa Barbate, who provided an insightful overview of the legal framework, definitions, and implications of sexual harassment in educational and healthcare settings. She emphasized the importance of maintaining a safe, respectful, and gender-sensitive environment within medical colleges and hospitals. The talk highlighted the role of the Internal Committee (IC), procedures for filing complaints, and the rights and protections available to students. Adv. Barbate also discussed real-life scenarios to help students understand appropriate professional behaviour and boundaries during clinical training.

MENTORSHIP PROGRAMS

"Anubandh"- Mentorship Program for UG's

20th Jan and 15th Feb 2025: UG Anubandh First Meeting (Second -MBBS 2023 Batch)

12th December 2025: Mentor Orientation Program Session 2025-26.

3rd to 8th March 2025: Second meeting Anubandh for 2024 batch First - MBBS Students

"GURUKOOL" - Mentorship Program for PG's

30/06/2025: PG Mentorship Faculty Development Program: Gurucool for the coordinators and mentors of PG"s.

OTHER PROGRAMS

Publications of MET

a) Journal of Education Technology & Health Sciences (JETHS) 3 Issues of 10th Volume were published in April, August and December 2025

b) Splash: A Quarterly campus News letter -3 Issues were published.

c)Reflections: Annual MET News Bulletin Volume 23 was released on August 15th 2025

Activity	Total number held
CBL / PBL	40
OSCE / OSPE	45
Syndicate Seminars	60

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