

Leveraging Health Education through Integrating Gamification into Traditional Teaching: Learnings from Leadership and Management Program

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Summary

Education has evolved from the traditional Gurukul system to formal, teacher-led classrooms, and now incorporates modern tools such as PowerPoint and role-play. With shifting learner preferences, the use of game mechanics in nongame contexts has emerged as a strategy to boost engagement, motivation, and retention. The International Public Health Management Development Program (IPHMDP) integrated gamification principles derived from the aforementioned frameworks into its training modules by employing a variety of gamified strategies, including contests, competitive games, and interactive tasks designed to promote engagement and active participation among healthcare professionals. Gamification improved participation, collaboration, motivation, and knowledge retention, supporting capacity-building objectives in public health training. The IPHMDP experience demonstrates its potential to enhance learning outcomes, making it a valuable approach in professional training for health practitioners.

Key words: Gamification, leadership, management, training

The evolution of education has experienced significant transformations, starting from the personalized and holistic Gurukul system, where students received tailored and practical education in a residential setting, to a more formalized classroom model dominated by a more theoretical teacher-centric approach.^[1] Even with the latest technological innovations in education, including artificial intelligence, today's learning environment strongly emphasizes passive learning and lecture-based approaches, providing little chances for active participation and critical thinking.^[2] As educational needs and learning styles have diversified, interactive and engaging methods such as gamification began gaining traction. Gamification, although modern, is inspired by ancient practices like the Gurukul system, where students were engaged in skill-based activities such as memorization, astronomy, horse riding, yoga, sculpting, meditation, debates, archery, and achievements were rewarded with praise, status, and added responsibilities, similar to the prizes and incentives found in contemporary gamified learning environments.^[3]

Gamification uses game design features and principles in non-game settings to improve engagement, motivation, and participatory learning, which makes educational activities more interactive and enjoyable. Gamification can be categorized into structural and content types; structural gamification introduces external game elements, such as points, badges, and leader boards without altering the core content; whereas content gamification transforms learning material into game-like experiences through storytelling, problem-solving, and interactive challenges.^[4]

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The gamification concept has gained popularity in a variety of industries, such as educational settings for student engagement,^[5] business for promoting competitiveness and motivation,^[6] banking and marketing for customer engagement, and environmental projects to encourage sustainable behavior.^[7] The origins of gamification in health care can be traced back to the early 20th century when public health campaigns used the concept to provide visual aids and incentives to encourage practices like hygiene, tobacco control, physical activity and vaccination.^[8] Thereafter, with the advent of fitness-oriented devices and applications, such as pedometers and Fitbit, group challenges and rewards (pointers) promoted physical activity. Finally,

advancements in smartphones and AI during the 2010s enabled more personalized digital health gamified experiences.

The International Public Health Management Development Program, established in 2016 by PGIMER Chandigarh as a flagship initiative under the Indian Technical and Economic Cooperation program by the Ministry of External Affairs, Government of India, is dedicated to empowering mid- and senior-level healthcare professionals on diverse management and leadership skills including team building, change management, conflict management, communication, emotional intelligence, crisis management, quality management, motivation, planning, human resource management, organizational behavior, budgeting and decision-making.

Table 1: Application of theoretical frameworks in the International Public Health Management Development Program

| Game | Description of game | Gamification framework used | Gamified approach | Lesson learnt |
|--|---|---|---|---|
| Blindfold and rope challenge | Participants work as a team to shape a 10-m rope into specific forms, like a square, within a set time while blindfolded | Octalysis framework and self-determination theory | Point score for leaderboard | Planning, team dynamics, verbal communication, self-leadership |
| Split pipe challenge | Participants to transfer marbles through split pipes without touching the pipes while an opposing team uses distractions to disrupt their efforts | Mechanics-dynamics-aesthetics framework and octalysis framework | Badge for best leader and distractor | Focus, verbal communication, team building, managing high pressure situations |
| Tower building exercise | Participants had to build a freely standing tallest tower with the given resources | Mechanics-dynamics-aesthetics framework | Point score for leaderboard | Critical problem-solving, time management and effective resource management |
| Ad-mad game | Participants are split into two groups one responsible for pitching and selling a product, while the other acts as critics, countering the sales pitch by highlighting reasons not to buy the product | Octalysis framework and self-determination theory | Narrative-driven simulation, role play | Emotional intelligence, negotiation, persuasive communication, advocacy |
| Chinese whisper game | Participant has to send the message by whispering from one person to the next in a line. Each player can only say the message once, and no repetitions are allowed. By the time the message reaches the last person, he says the message loudly. The final version is then compared to the original | Octalysis framework, and self-determination theory | Social interaction, social engagement | Communication, organization dynamics |
| The marshmallow challenge | The participants using tape, spaghetti and marshmallow have to make structure where marshmallow is the highest. The tallest structure with marshmallow at the top wins | Mechanics-dynamics-aesthetics framework | Competition, problem solving | Iterative design, agile thinking, leadership |
| Out of box thinking game | Participants to think creatively and step outside conventional frameworks to solve problems | METUX framework self-determination theory | Storytelling, award for the winner | Creative design, hidden leadership innovative and agile thinking |
| Frenzy | Participants race against time to collect balls. The goal is to collect all the balls in the hula hoop, of their team | Octalysis framework | Problem solving, social interaction, challenges | Adaptive communication, non-verbal understanding, team synchronization |
| Rings and straw | It is a relay game in which participants have to pass rings from one to another using only a straw held in their mouths. The team that transfers all the rings the fastest wins the game | Mechanics-dynamics-aesthetics framework | Challenges | |
| IPHMDP contests such as digital influencer, cultural maestro | Different contests that happen during the program | Octalysis framework and self-determination theory | Awards for winning the contests | Social media impact, leadership development, problem-solving, cross-platform communication skills |

IPHMDP: International Public Health Management Development Program

IPHMDP has created a global network of 1400 healthcare leaders from 95-plus countries who continue implementing innovative solutions in their respective regions.

A defining aspect of IPHMDP is its adoption of “gamification” as a core pedagogical element. The program transforms conventional training by embedding game-based activities that enhance engagement and learning retention. These activities simulate real-world health scenarios, helping participants develop skills such as strategic thinking, teamwork, and communication. For example, the Blindfold and Rope Game builds team dynamics as participants form a shape while blindfolded, relying on trust and verbal communication. The Tower-building Challenge fosters problem-solving and resource management, whereas the Egg Drop Challenge encourages innovation and decision-making under pressure. Awards, points, badges, leader boards, achievement streaks, mystery challenges, time-based bonuses, and team-versus-team battles keep participants engaged and striving for top ranks. At its core, IPHMDP redefines leadership training by blending traditional insights with modern learning theories, thus fostering a global network of healthcare leaders. The detailed list of activities, gamified frameworks used, and approaches involved is provided in Table 1. The introduction of gamified learning in the IPHMDP has had a noticeable positive impact on academic participation. Participants appeared more motivated to engage with course materials, driven by the competitive yet collaborative nature of gamified elements like leaderboards and progress tracking. From a learning and engagement perspective, the gamified approach made

the educational experience more interactive and enjoyable. Participants responded well to scenario-based challenges that mirrored real-world public health issues, which allowed them to apply concepts in a meaningful way. After the program, participants reported significant improvements in their leadership capabilities, and most have successfully implemented at least one organizational change based on their IPHMDP learning [Table 2]. Gamification has proven to be a transformative approach in enhancing engagement, motivation, and skill development across various domains, particularly in healthcare education. Gamified methods used in IPHMDP have successfully fostered critical competencies such as leadership, communication, adaptability, strategic thinking and confidence to drive meaningful change in their healthcare systems. To further leverage gamification’s potential, future efforts should focus on personalizing experiences, integrating technologies such as AI and VR, and embedding assessment mechanisms.

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Conflicts of interest

There are no conflicts of interest.

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Table 2: Feedback of the participants received during the program

“The frenzy wasn’t just a game - it was a revelation. I discovered true leadership is about creating a symphony of trust, communication, and collective intelligence. Our primary health centre is now a testament to the power of teamwork” - participant, Tanzania

“Building a tower with newspapers taught me more about leadership. Resources are not about quantity but about creative adaptation. We’ve transformed our health centre from surviving to thriving through innovative thinking.” - participant, Zimbabwe

“The split pipe challenge helped me manage disruptions, maintain focus, and stay adaptable - these are the real skills of a public health leader.” - participant, Morocco

“The Chinese Whisper game revealed how a single misinterpreted message could compromise patient safety. We’ve since then created a communication ecosystem that prioritizes clarity, verification, and active listening in our hospital.” - participant, Egypt

“IPHMDP showed me that leadership transcends borders. Our diverse cohort became a global family united by a shared mission to transform healthcare. Every challenge was an opportunity to learn, grow, and connect.” - participant, South Sudan

“True healthcare leadership is about understanding human potential. These games taught me that every challenge is an opportunity to build trust, foster collaboration, and unleash collective potential.” - participant, Argentina