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Gamifying Medical Ethics and Law Education: Enhancing Student Engagement, Knowledge Retention, And Motivation through Charades

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Abstract

Medical ethics and law are fundamental in healthcare education, equipping future physicians with the knowledge to navigate ethical dilemmas and legal responsibilities. However, students often struggle to retain abstract ethical and legal concepts due to a lack of engagement and meaningful reinforcement. Traditional flipped classroom approaches, while effective for active learning, have shown limitations in sustaining motivation and deep learning. This study introduces an innovative gamified charades activity to enhance engagement and retention in medical ethics education. The intervention involved over 200 medical students, divided into groups, using a charades-based game to reinforce key concepts related to brain death and organ donation. Grounded in Self-Determination Theory (SDT) and Cognitive Load Theory (CLT), the game was designed to increase autonomy, competence, and relatedness while reducing cognitive overload. Students had to act out and guess key ethical and legal terms, followed by discussion prompts reinforcing understanding. Evaluation through open-ended feedback identified three main themes: (1) Increased engagement, as students described the activity as fun and interactive; (2) Improved knowledge retention, with many reporting enhanced recall of definitions and principles; and (3) Challenges in preparation and time constraints, indicating areas for refinement. This study highlights gamification's potential in medical education, particularly for abstract subjects like ethics and law. Despite its benefits, ensuring student preparation, refining session timing, and balancing engagement with depth remain key areas for improvement. This innovation serves as a scalable, adaptable strategy for increasing student motivation and reinforcing complex ethical and legal concepts in medical training.

Keywords: Medical Ethics, Medical Law, Gamification, Game-Based Learning, Charades, Active Recall, Student Engagement, Self-Determination Theory, Cognitive Load Theory

Background & Need for Innovation

Medical ethics and law play a crucial role in medical education, shaping physicians' moral decision-making, professional conduct, and legal responsibilities. Ethics provides a framework for values and patient care decisions, while medical law outlines the legal duties of doctors and protects patient rights (MMC, 2019). Recognizing their importance, the

Malaysian Qualifications Framework (MQF) Level 6 and national standards mandate the integration of medical ethics and law into the curriculum, ensuring that students develop a strong knowledge base, critical thinking skills, and professionalism. Such training not only enhances legal awareness but also fosters cultural sensitivity in patient care, particularly in Malaysia's diverse society (MMC, 2019; Sim et al., 2019; Nasri, 2024). By aligning with MQF learning outcomes, this approach ensures future physicians are both clinically competent and ethically responsible. A flipped classroom model has been used in tutorials, where students study cases at home and present their findings in class while lecturers facilitate discussions. This model encourages interactive, student-led learning and promotes deeper engagement (Bishop, 2013). However, students often struggle with motivation and engagement, particularly when discussions lack enthusiasm. Additionally, retaining ethical and legal concepts has proven challenging, as these topics can feel abstract compared to clinical knowledge. Traditional rote memorization methods fail to provide meaningful reinforcement, making it difficult for students to apply ethical principles in real-world scenarios. Research in cognitive psychology highlights that working memory is limited, making it difficult for students to retain large amounts of information without structured reinforcement. Self-Determination Theory (SDT) suggests that students are most motivated when they experience autonomy, competence, and relatedness in their learning (Ryan, 2000). Gamification and game-based learning strategies address these needs by providing choice, progress tracking, and teamwork, fostering motivation and deeper engagement (Hamari, 2014). Research supports the effectiveness of gamification in improving learning outcomes, with a meta-analysis of 41 studies finding significant performance improvements in gamified environments (Sailer,2020). Additionally, gamification has been linked to moderate increases in motivation and engagement (Hamari, 2014). While initially popular in children's education, game-based learning has shown strong potential in higher education, particularly in improving problem-solving skills, knowledge retention, and collaboration (Clark, 2016).

Research suggests that working memory can retain only 7–9 unrelated pieces of information at a time, making knowledge retention a challenge (Ebbinghaus, 1913). Ebbinghaus' Forgetting Curve demonstrates that without reinforcement, nearly half of newly acquired information is lost within days, and up to 70% within weeks. However, structured review methods, such as spaced repetition, significantly improve long-term retention. Active recall, quizzing oneself instead of passively rereading notes—has been shown to strengthen memory and reveal knowledge gaps (Larsen, 2009). Self-testing enhances retention and comprehension by reinforcing neural connections and improving memory consolidation (Roediger, 2011). Similarly, spaced review at intervals forces information back into the learner's mind before it fades, ensuring better retention over time. Meaningful association further enhances recall. Linking new ethical and legal concepts to prior knowledge or clinical experiences makes them more memorable (Purves, 2012). Retrieval practice, actively recalling learned material through quizzes, flashcards, or case-based questions, also aids retention by breaking down complex ethical and legal information into smaller, manageable chunks. These strategies align with Cognitive Load Theory, which emphasizes that excessive information can overwhelm working memory, hindering learning (Sweller, 1988). Regular retrieval practice reduces cognitive overload, reinforcing knowledge in stages and improving comprehension. Applying these methods to Ethics and Medical Jurisprudence education can enhance student engagement and retention. By incorporating active recall, spaced repetition,

and real-world associations, educators can ensure that students not only remember ethical principles but also apply them confidently in clinical practice.

Charades, a word-guessing game, has gained recognition as an educational gamification tool, particularly in language learning. A semi-systematic review highlights its effectiveness in enhancing vocabulary retention and communication skills through active engagement, body language, and cognitive association (Mardhiah, 2013). Unlike passive rote learning, Charades promotes interactive learning, improving comprehension through repeated exposure and active recall [Sari, 2017; Sanchez, 2020). It also fosters teamwork, enhances intrinsic motivation, and reduces cognitive fatigue by creating a relaxed yet stimulating learning environment [Zainuddin, 2020; Hitchens, 2018). The benefits of Charades align with established learning theories. According to Self-Determination Theory (SDT), the game satisfies autonomy (allowing students to take control of their learning), competence (providing immediate feedback through peer recognition), and relatedness (encouraging social interaction) (Ryan, 2000). Additionally, Cognitive Load Theory suggests that using gestures and real-time interaction helps break down complex concepts, reducing cognitive overload and making learning more manageable (Sweller, 1988). While Charades is primarily used in language learning, its application in Ethics and Medical Jurisprudence represents a novel approach. Traditional methods, such as case-based discussions and lectures, can be passive and disengaging. Gamifying ethical scenarios through Charades can enhance concept retention by encouraging students to act out dilemmas, legal principles, or bioethical terms. This approach supports decision-making, ethical reasoning, and collaborative learning in a stress-free environment, enabling students to actively debate, analyse, and apply ethical concepts.

Goal of Innovation

Previously, the tutorial on brain death and organ donation was conducted using a flipped classroom approach, where students were assigned case studies to review beforehand and later present in class. However, this method often lacked engagement and active participation, with students struggling to retain key definitions and concepts. Recognizing these challenges, an innovative teaching approach was introduced, a gamified Charades activity designed to enhance motivation, memory retention, and critical thinking. This aligns with Self-Determination Theory by fostering autonomy (allowing students to take charge of their learning), competence (providing immediate feedback and reinforcement), and relatedness (encouraging teamwork and peer interaction) (Ryan, 2000). It also applies Cognitive Load Theory by breaking down complex information into short, interactive recall exercises, reducing cognitive overload while reinforcing knowledge through repetition (Sweller, 1988).

The charades activity was deliberately structured to satisfy students' autonomy, a core tenet of Self-Determination Theory. In medical education, autonomy support (providing learners with choice and control) is linked to higher intrinsic motivation and engagement (Lee, 2025). During the game, students had agency in directing their learning, for example, they took turns voluntarily acting out concepts and could decide to pass on overly challenging terms, exercising choice in how to approach the task. This design let learners feel in charge of their learning process rather than being passive recipients. By allowing creative, student-led demonstrations of ethical and legal concepts, the game created a sense of ownership over

learning, which is known to bolster motivation and knowledge retention [Lee, 2025). Such autonomy-supportive elements align the activity with SDT's recommendations for fostering deep, self-motivated learning in medical training (Triebner, 2024)

The charades game was equally attentive to students' need for competence by providing clear goals and instant feedback on performance. Each round required participants to recall and apply medical ethics and law knowledge under time constraints, and every correct guess or accurate follow-up answer was met with immediate positive reinforcement (points and peer recognition). Educational psychology suggests that timely feedback and achievable challenges are key drivers of perceived competence, enhancing learners' self-efficacy (Lee, 2025). In our tutorial, the rapid cycles of guessing and explanation functioned as mastery experiences: students could see the results of their knowledge in real time, reinforcing their confidence with each success. This immediate feedback loop and the progressive challenge of tackling multiple terms in a limited time helped students gauge their level of mastery and motivated them to improve, consistent with SDT's principle that feeling effective in learning tasks sustains intrinsic motivation (Ratinho, 2023; Lee, 2025). By the end of the session, participants had repeatedly practiced core definitions and principles, leaving them with a heightened sense of competency in ethical and legal reasoning.

The gamified tutorial was inherently collaborative, addressing the SDT need for relatedness by fostering social interaction and teamwork throughout the learning process. Students were organized into teams, and success in charades depended on effective communication and mutual support as they collectively interpreted gestures and answered questions. This peer engagement helped build a sense of community and belonging in the classroom, an aspect shown to enhance motivation and reduce anxiety in medical education (Triebner,2024). The lively, team-based nature of charades meant that learners were not studying ethics in isolation but were learning from and with each other, discussing interpretations and rallying around shared goals. Such a supportive group environment aligns with SDT's relatedness component, as students feel connected and understood by their peers (Lee,2025). In the context of ethics and law, this relatedness is pedagogically valuable: grappling with dilemmas in a group setting exposes students to diverse perspectives and encourages collaborative reasoning, thereby enriching their understanding of complex moral issues while keeping them highly engaged (Mianehsaz, 2023).

Although charades is a playful activity on the surface, its use in our tutorial was designed to engage higher-order cognitive processes essential for ethics and law education. The act of pantomiming an ethical or legal concept forces the "actor" to analyze the concept's key features and think creatively about how to convey its meaning non-verbally, a cognitive exercise in abstraction and interpretation rather than rote memorization. Simultaneously, the students guessing must rapidly recall their knowledge and apply it to interpret the clues, which mirrors real-life problem-solving under pressure (for example, recognizing an ethical issue from subtle clinical cues). Each charade was immediately followed by a context question (such as defining the term or explaining criteria), requiring learners to articulate their reasoning and apply the concept to a clinical or legal scenario on the spot. This blend of active recall and immediate application helps move knowledge from recognition to usable understanding. Educational research indicates that active learning strategies like role-play and simulation can improve learners' critical thinking and analytical skills, especially in

domains like ethics where reasoning is key (Mianehsaz, 2023). Moreover, the game's low-stakes, gamified context provided a risk-free environment for decision-making, allowing students to practice ethical reasoning and make mistakes without real consequences (Krishnamurthy,2022). This safe space to debate and try out answers encourages intellectual risk-taking and deeper inquiry, countering the notion that gamification is merely superficial. In essence, by embedding analysis, application, and quick reasoning into a fun format, the charades activity functioned as serious learning disguised as play, engaging students' higher-order cognitive processes while they were highly motivated and enjoying the experience.

Steps Taken for Development and Implementation of Innovation

Prior to the session, students were instructed to review the guidelines on brain death and organ donation, ensuring that the charade reinforced reading, memorization, and rapid recall. Then, in this redesigned tutorial, over 200 students were divided into four groups, each facilitated by a lecturer from the Medical Ethics and Law department. Within these groups, students were further split into teams of 10. A student from each team would act out a pre-selected word related to brain death and organ donation, drawn from 49 actable terms sourced directly from the relevant guidelines. If their team correctly guessed the word, they were immediately challenged with a related follow-up question, such as defining brain death or naming a diagnostic criterion. Correctly answering both the charade and follow-up question earned 5 points, whereas failing to answer the follow-up question reduced the score to 3 points. If another group successfully answered the missed question, they received 2 points, fostering active listening and participation throughout the session. Each team had five minutes to guess as many terms as possible, with the option to pass if a term was too difficult to act out. By incorporating gamification elements, this method transformed passive learning into an engaging, high-energy quiz-like experience, leveraging rapid recall, peer learning, and spaced repetition to improve knowledge retention and application in clinical practice.

Evaluation of Innovation

To assess student perspectives on the tutorial, open feedback was collected at the end of the session. Responses were overwhelmingly positive and categorized into three key themes: engagement and interactivity, knowledge retention, and session structure and timing. Engagement and interactivity were the most frequently mentioned aspects. Students described the session as "fun," "interactive," and "exciting," noting that the game-based approach was more engaging than traditional tutorials. Many reported that the interactive format helped them stay focused and actively participate, particularly in larger groups or during late-day sessions. Knowledge retention was another key theme. Students highlighted that acting out medical terms and answering follow-up questions reinforced key concepts, improving their ability to recall definitions and important terms. Some noted that the format supported short-term memory and quick recall, suggesting that gamification effectively aids retention. Session structure and timing emerged as the third theme. While most students appreciated the interactive format, some suggested providing study materials earlier to improve participation and understanding. A few also recommended extending the session or allowing more time per round to enhance learning. Overall, students found the Charades-based tutorial highly engaging, effective for reinforcing knowledge, and beneficial for active participation. Minor suggestions for earlier material distribution and timing adjustments indicate areas for improvement. Many students expressed enjoyment and a greater investment in the content, aligning with research showing that gamified learning enhances

motivation and meets psychological needs (Baah, 2024). The game provided clear goals and instant feedback, sustaining student involvement, which is known to optimize learning outcomes (Krishnamurthy, 2022). Gamification also fostered active participation, positive feedback, and an immersive learning experience, reinforcing prior findings that game-based learning enhances motivation and educational outcomes (Xu, 2023). The Charades activity transformed a traditionally dry subject into an engaging session, significantly increasing enthusiasm and participation compared to conventional teaching methods.

Outcomes of Innovation

Implementing charades-style gamification in the Medical Ethics and Law course significantly enhanced student engagement and motivation. Students were more active and enthusiastic compared to traditional lectures, supporting evidence that game-based learning (GBL) improves engagement (Xu, 2023). This aligns with Self-Determination Theory (SDT), which suggests that intrinsic motivation increases when learners' needs for autonomy, competence, and relatedness are met (Baah, 2024). Charades fostered competence through successful guessing of ethical concepts and relatedness through teamwork, strengthening motivation. Unlike passive learning, the activity gave students agency, reinforcing SDT's principle that autonomy enhances engagement (Baah, 2024). Beyond engagement, charades improved knowledge retention by incorporating active recall, requiring students to retrieve and apply ethical and legal concepts through performance and guessing. This aligns with Ebbinghaus' Forgetting Curve, which shows that without reinforcement, nearly 50% of new information is lost within an hour and up to 70% within 24 hours (Gupta, 2024). Each round acted as a retrieval practice session, strengthening memory and counteracting rapid forgetting (Krishnamurthy, 2022). Additionally, the gamified approach managed cognitive load, particularly in a subject with complex legal terminology. Cognitive Load Theory (CLT) emphasizes that breaking down content prevents memory overload (Sweller, 1988). Charades naturally "chunked" information into digestible units, making learning more manageable and improving comprehension (Baah, 2024). The low-stakes, playful nature of the activity likely reduced stress, freeing up mental resources for learning (Baah, 2024). Many students noted they "didn't realize how much they were learning" because the session felt more like a game than a study exercise. This combination, enhancing memory through retrieval practice while minimizing cognitive overload, led to better short-term recall and long-term retention of Medical Ethics and Law concepts. These findings align with research showing that well-designed gamified learning improves motivation, reduces cognitive strain, and enhances knowledge acquisition (Baah, 2024). By simplifying complex ideas into interactive actions while maintaining engagement, charades proved to be an effective tool for reinforcing ethical and legal concepts in medical education.

Challenges and Areas for Improvement

While the gamified approach significantly enhanced engagement and knowledge retention, certain challenges require refinement to optimize its effectiveness. A major limitation was the reliance on pre-class preparation. The game assumed students had foundational knowledge of ethics and law, but those who skipped pre-reading struggled, leading to frustration and reliance on peers. Gamification cannot replace baseline knowledge. To address this, a pre-game review or a mini-quiz can ensure all students begin with essential understanding. Implementing a flipped classroom model with graded preparatory tasks will promote accountability and reinforce memory through retrieval practice. Future iterations

will include a pre-class online quiz to strengthen student preparation and maximize the effectiveness of charades. Gamified activities require setup, rule explanations, and multiple rounds, making time management challenging. The excitement of the game occasionally led to overextended rounds, forcing instructors to rush through key concepts. This issue is common in active learning methods, which are less predictable than traditional lectures. To improve efficiency, stricter time limits, visible countdown timers, and a refined selection of high-yield concepts should be implemented. Additionally, discussions can be consolidated after several rounds rather than following every charade. Literature supports that well-structured gamification can efficiently cover broad topics (Krishnamurthy,2022). These refinements will ensure the game enhances learning without compromising curriculum coverage. A key concern was the potential for prioritizing entertainment over depth. While charades simplified concepts into brief performances, some students focused more on humour than on deeper ethical reasoning. Though this aided recall, students noted that complex ethical dilemmas required further discussion. To prevent superficial learning, future sessions will integrate follow-up case studies or debates, allowing students to apply and analyse ethical principles beyond the game. Gamification literature emphasizes aligning game elements directly with curricular objectives (Wang,2024). Strengthening post-game debriefs and linking charades terms to real-world ethical scenarios will ensure that learning remains both engaging and substantive. Some students hesitated to perform in front of peers, limiting participation. To foster a more inclusive environment, instructors can emphasize the low-stakes nature of the activity and allow students to act in pairs, reducing performance anxiety. Creating a supportive atmosphere will encourage quieter students to participate actively. Despite these challenges, the charades activity proved highly effective in increasing engagement and knowledge retention. By refining preparation strategies, time management, depth of learning, and inclusivity, we can preserve the strengths of gamification while minimizing its limitations. These improvements will ensure that active learning remains an impactful tool in medical ethics education, fostering both enthusiasm and deeper understanding.

Implications for Medical Education and Future Applications

The success of this gamified approach suggests its potential for broader use in medical education, though challenges remain. One key opportunity is scalability. Charades and similar game-based methods have been effectively applied in physiology and neurology, showing their versatility across disciplines. Given the high engagement and improved knowledge retention observed, this approach could be particularly valuable in traditionally less engaging subjects. Gamified learning can also extend beyond small groups, with large classes divided into breakout teams or online charades adapted for remote learning. Students have shown enthusiasm for innovative teaching methods and have expressed interest in further integrating gamification into their training (Rojas 2014). With institutional support, including formal curriculum integration and resources, the impact of this approach could be significantly enhanced. Another major opportunity is blended learning integration. Instead of a standalone activity, charades can complement structured e-learning, where students learn foundational concepts before class, allowing tutorials to focus on application and discussion. Research suggests that combining online and in-person active learning improves retention compared to lectures alone (Vallée, 2020). Additionally, game-based learning can serve as a gateway to case discussions or simulations, reinforcing key concepts before deeper ethical analysis. As research increasingly supports multi-modal learning, integrating games, case

studies, and simulations could better cater to different learning styles and enhance knowledge retention. Despite its potential, barriers to gamification adoption remain. One key challenge is faculty resistance. Some educators worry that gamification trivializes serious subjects or lack familiarity with its implementation. This scepticism is common in higher education, where traditional methods dominate. To overcome this, evidence of improved engagement and retention should be shared, and small-scale trials introduced to build faculty confidence. Faculty development workshops on gamified teaching methods can also encourage adoption. Institutional support, particularly formal syllabus integration, would legitimize gamification as a credible educational tool. Another concern is alignment with assessment objectives. For gamification to be effective, it must directly contribute to learning outcomes assessed in exams and licensing evaluations. If the game prioritizes recall over deep understanding, students may perform well in activities but struggle with complex ethical reasoning. To prevent this, follow-up quizzes and reflective assignments should be used to reinforce critical thinking. Research highlights the importance of ensuring gamified learning is tightly integrated with curricular goals and assessment frameworks. Further research is needed to evaluate the long-term effectiveness of gamification. A controlled study comparing gamified learning with traditional lectures in medical ethics could provide stronger evidence on knowledge retention. Prior reviews on educational games in medical training have called for more rigorous studies to confirm their effectiveness (Akl, 2010). Additionally, research should assess whether gamification improves real-world decision-making. While quiz scores indicate knowledge acquisition, a key goal is to determine whether students apply ethical reasoning better in clinical practice. Another consideration is sustaining engagement over time. While initial enthusiasm for gamification is high, interest may decline if the novelty wears off. To maintain engagement, diversifying game formats, such as rotating between charades, digital quizzes, and scenario-based challenges, could help sustain student motivation. By continuously refining and iterating gamification strategies, educators can ensure these methods remain both engaging and pedagogically effective in medical ethics education.

Conclusion

In conclusion, the charades gamification in our Medical Ethics and Law teaching proved to be an effective innovation with clear strengths (engagement, active participation, and improved retention) that align with educational theory and the growing gamification literature. It managed to turn a traditionally theory-heavy subject into an interactive experience, demonstrating that fun and learning can coexist productively. At the same time, we identified weaknesses (time constraints, reliance on preparation, potential superficiality) that we are actively addressing through better planning and integration. There are rich opportunities to extend this approach across the medical curriculum and to combine it with other learner-centred strategies, which could enhance medical training in various domains. As medical education evolves towards more active learning, activities like charades can play a part in cultivating not only knowledge but also teamwork and communication skills in our future healthcare professionals. We must remain mindful of the threats – particularly the need to convince stakeholders of its value and to keep games tightly tied to learning objectives. By rigorously evaluating outcomes and sharing best practices, we can ensure that gamification strategies gain credibility and complement traditional methods rather than compete with them. Ultimately, the experience from this gamified ethics session supports a shift in medical education toward greater interactivity and student engagement. It suggests

that with thoughtful implementation, game-based learning can be a powerful tool in producing physicians who not only understand medical ethics and law but also retain and apply these principles effectively throughout their training and careers.

This innovation contributes theoretically by reinforcing the applicability of Self-Determination Theory and Cognitive Load Theory within medical ethics education, demonstrating that learner autonomy, competence, and relatedness, when operationalized through gamified strategies, can meaningfully enhance motivation and knowledge retention. Contextually, the study adds to the limited body of work on gamification in Malaysian medical education, particularly within ethics and law, where abstract principles are often perceived as less engaging. By translating complex content into interactive learning experiences, this article supports a culturally relevant pedagogical shift that balances educational rigor with student-centred engagement. It highlights how gamification can align with national curricular outcomes and offers a replicable model for other institutions seeking to revitalize traditionally passive subjects through evidence-based innovation.

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