

THE USE OF GAME-BASED LEARNING TO ENHANCE STUDENT'S UNDERSTANDING AND ENGAGEMENT IN LEARNING

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Abstract: Understanding communication theory is a fundamental challenge for students, as it often involves abstract concepts that can be difficult to comprehend through traditional teaching methods. To address this issue, this innovation introduces a board game-based learning named Mastering Communication Theory Game or known as MASCOT Game, specifically designed to enhance student comprehension and engagement with communication theory. The rationale for this innovation is that many evidences suggesting that gamified learning approaches improve students' retention, engagement, and critical thinking skills. The purpose of this innovation is to provide an interactive and enjoyable learning tool that simplifies the complex communication concepts and makes them more accessible. The board game-based learning is a novel teaching approach, combining strategic gameplay with academic content. Students engage in problem-solving tasks, and knowledge-based challenges that mirror real-world communication contexts. By integrating theoretical models into the game mechanics, students do not only learn but also apply concepts in a dynamic environment. Preliminary results from pilot sessions with 102 undergraduate students indicate improved comprehension, increased engagement for the subject, and high perceived ease of use and perceived usefulness of the board game-based learning in the learning process. Participants demonstrated a measurable improvement in their ability to analyse and apply communication theories in both academic and practical situations. This innovation benefits society by fostering better-equipped graduates who possess a deeper understanding of communication dynamics, an essential skill in diverse professional and social settings. By transforming a traditionally challenging subject into an engaging and interactive experience, this approach contributes to the advancement of education and the broader goal of cultivating effective communicators for the future.

Keywords: Board Game-Based Learning, Comprehension, Gamification, Engagement, Perceived Ease of Use, Perceived Usefulness.

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INTRODUCTION

In today's rapidly evolving educational landscape, educators worldwide are searching for innovative approaches to engage students and enhance learning outcomes, particularly in language learning contexts. One of the most significant challenges facing education systems globally is the need to motivate and actively engage learners, especially in university settings,

where attention spans are shorter and traditional teaching methods may fail to capture student interest (Zainuddin et al., 2020). Research has increasingly turned to gamification as a solution to this issue. Gamification, the process of integrating game mechanics into non-game contexts, has shown considerable promise in promoting student engagement and improving learning outcomes (Meccawy et al., 2023).

By turning learning activities into interactive and enjoyable experiences, gamification helps combat disengagement and fosters a sense of motivation among students (Christopoulos & Mystakidis, 2023). Today's society is in constant transformation, significantly impacting the educational field. This transformation implies the need to update education to consider the different realities of the social context.

It has been suggested that educational games might improve learning results and student motivation. (Bressler et al., 2024; Küçükşen Öner et al., 2024). Game-based learning is a student-centered strategy to encourage and engage students with other players. It was highlighted that game-based learning was a method that combined established learning objectives with game rules (Lin & Wang, 2022; Plass et al., 2015). Numerous studies have demonstrated that using board games to teach improves the efficacy. The idea of using games to teach is the foundation of board games. Board games have been identified in several studies as a useful medium for presenting STEM education, or scientific education, to assist students in attaining a variety of goals, including motivation, cognitive abilities, and problem-solving abilities (Cardinot & Fairfield, 2022).

Results have been favourably and widely affected by game-based learning, including educational board games. Plass et al., (2015) suggested four elements which are cognitive viewpoint, motivational perspective, emotional perspective, and sociocultural perspective to develop and assess the efficacy of game-based learning. Learning outcomes, information retention, and conceptual understanding are all factors that are included in the cognitive viewpoint (Arztmann et al., 2023). The ideas of self-efficacy and self-determination form the foundation of game-based learning's motivating viewpoint. Educational games were assessed as a means of motivating and engaging students.

LITERATURE REVIEW

Game-based learning is defined as the use of board games in the classroom for information acquisition, skill development, and competency enhancement. According to constructivist ideas, employing games as instructional tools allows students to learn by doing and going through reflective processes. Playing, according to theory, enhances mediated learning (Vita-Barrull et al., 2024), which increases the significance of the learning process. Nowadays, we appreciate the need of using play styles that are often associated with amusement, such as board games. The idea is to develop levels of participation comparable to what games often achieve. Gamification's primary goals are to improve particular talents, create objectives that give learning a purpose, engage students, maximise learning, assist behaviour change, and socialise (Dichev & Dicheva 2017). Stimulated by the effects that game elements can produce, many researchers have investigated the impact of gamification in an educational context, yielding

positive results such as increased engagement, user retention, knowledge, and cooperation (Alsawaier, 2018).

It is evident that students in gamified courses outperformed their classmates by 40% because they can concentrate on their studies (Lo & Hew, 2020). Recent studies, for example, have proven gamification's ability to boost student motivation, engagement, and involvement in education while immersing students in experiential learning (Lopez and Tucker, 2019). Academic performance, motivation, and engagement are popular outcome metrics in gamification research (Zainuddin et al., 2024). Academic performance is a practical indicator of the success of gamification in boosting students' knowledge acquisition and application (Nguyet & Nguyet, 2023). Motivation matters because it impacts students' attention, perseverance, and effort in learning activities, while engagement demonstrates student's devotion to the subject and numerous responsibilities (Segura-Robles et al., 2020).

Additionally, board games can increase motivation for students to learn while decreasing their resistance to learning (Law & Chen, 2016). This is because the nature of board games is fun and this fun element is included in the board game which makes the learning process fun. Besides that, by using board game in the learning process, it can improve students' learning efficiency as they get to interact frequently with their friends in completing the board game challenges and obstacles. Two-ways communication, it can reduce the difficulty in learning of complex system concepts while decreasing their cognitive load (Anupam et al., 2017). On the other hand, the game challenges that the students encounter in the board game can foster their new skills such as critical thinking, problem-solving, teamwork, communication, and collaboration (Cheng et al., 2019). The usage of board games in teaching and learning offers several benefits and is hence preferred by many instructors (Wen, Lin & Liu, 2019).

Recently, gamification has become a popular approach by educators. This is because board game is versatile and practical as it can be used in many different courses. Hence, the educators can utilise this tool to create their own board games and suit it with their course learning objectives and outcomes.

METHODOLOGY

Research Design

This study employed a quantitative research design with the aim to investigate the effects of gamification on learning. The specific objective of this study is to examine the use of board game based learning in enhancing student's understanding and engagement in learning the Communication Theory subject.

Population and Sampling

The participants of this study were determined based on the total number of students in their First-Year of study, utilising a purposive sampling technique. The researcher utilised a purposive sampling type, these students have been chosen as they have a particular set of

characteristics which are (a) first-year of study, (b) Registering for the Communication Theory subject, (c) age between 20-23 years old and (d) no prior knowledge about the Communication Theory subject. This approach was adopted to guarantee that each student had an equal chance to take part, improving the findings' representativeness and generalisability. Altogether, there were 102 students involved in the study.

Procedure

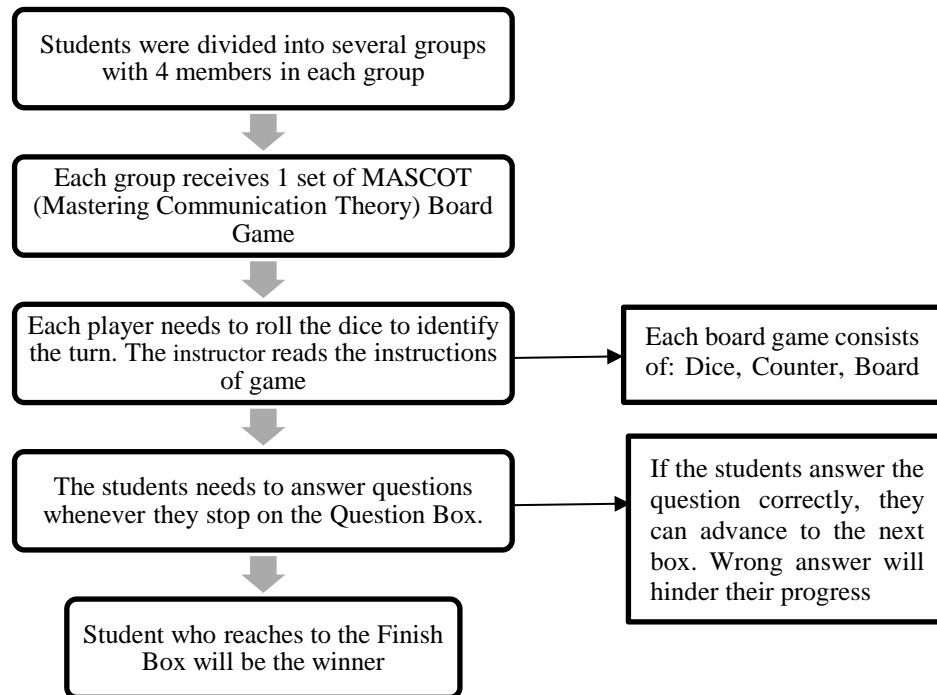


Figure 1 Procedure of playing MASCOT Board Game

Based on the Figure 1, there were 102 students recruited for this study. All students were divided into several group with each group consisting of four members. The leader of the group received a set of MASCOT (Mastering Communication Theory) Board Game. Then, the leader of the group has to determine the player turn based on the highest number that they get when they roll the dice. Each of the groups received a board game consisted of dice, counter and the board game. The instructor then read the instructions so that the players were aware of the game rule. Then, the students played the game until any of them reached at the question mark box, which required them to answer a question related to the Communication Theory subject. The correct answer enabled the player to move ahead to the next box, while the wrong answer hindered their progress as they had to move back one box. The player who reached the final box was counted as the winner.

Instrument

The students answered the 10-item questions on a five-point Likert Scale ranging from “strongly disagree” to “strongly agree.” The questions covered were related to comprehension,

engagement, perceived ease of use and perceived usefulness. There were three questions on comprehension, three questions on engagement, two questions on perceived ease of use and two questions on perceived usefulness.

Data Collection

The data was collected based on the pre and post-game survey. The pre-game survey was completed before the students played the board game, while the post-survey was completed after the students play the board game. The survey consisted of 10 items to measure dimensions related to comprehension, engagement, perceived ease of use and perceived usefulness of the board game to students. The measurement of the questions was based on the 5-point Likert Scale that range from 1= “Strongly Disagree” to 5 = “Strongly Agree”. Likert scales are widely used to examine attitudes, perceptions, beliefs, and other concerns in educational research. This is due to the fact that the majority of the variables of interest in educational research are evaluated by self-report measures that employ Likert rating scales since they cannot be directly seen (Hussain et al., 2022).

Data Analysis

The data were analysed using quantitative data analysis to investigate their comprehension level, engagement level, perceived ease of use and perceived usefulness. It was analysed using SPSS 26.

RESULTS AND DISCUSSION

Demographic background

Table 1 Demographic background

	Frequency (N)	Percentage (%)
Gender		
Male	68	66.7
Female	34	33.3
Age		
19	11	10.7
20	70	68.6
21	15	14.7
22	2	2.0
23	2	2.0
26	1	1.0
31	1	1.0

Post-Test

Table 2 Post-test results of MASCOT Board Game

Variable	Strongly Disagree (N)	Disagree (N)	Neutral (N)	Agree (N)	Strongly Agree (N)
Comprehension					
A1. I can understand the basic ideas of the knowledge taught on communication theory			2	41	59
A2. The game motivates the player to integrate the communication theory in practical life			3	33	66
A3. I want to know more about the communication theory			2	24	76
Engagement					
B1. The MASCOT Board game helps me connect with the content of knowledge in new ways			2	39	61
B2. The MASCOT Board game enabled me to participate in the learning activities in different ways			3	30	69
B3. I feel excited when participating in learning through MASCOT board games		1	5	30	66
Perceived Ease of Use MASCOT Board Game					
C1. The MASCOT Board Game is easy to use			5	35	62
C2. The MASCOT Board Game is an understandable game		1	7	30	64
Perceived Usefulness of MASCOT Board Game					
D1. MASCOT Board Game is useful to understand concepts in Communication Theory			2	38	62

D2. The MASCOT Board Game is relevant in learning the concepts in Communication Theory	1	3	34	64
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Based on the post-test results from Table 2 on the comprehension level, it can be reported that after students played the MASCOT Board Game, they could understand the basic ideas of the knowledge taught on Communication Theory (N= 100, 98.0%), the game has motivated them to integrate communication theory in practical life (N=99, 97.0%) and they want to know more about the communication theory (N=100, 98.0%). Regarding the engagement level, majority of them reported that the MASCOT Board Game helped them to connect with the content of knowledge in new ways (N=100, 98.0%), enabled them to participate in the learning activities in different ways (N=99, 97.0%), and they feel excited when participating in learning through MASCOT Board Game (N=99, 97.0%). Additionally, for perceived ease of use of the MASCOT Board Game, majority of them reported that the board game is easy to use (N=97, 95.0%) and the board game is an understandable game (N=94, 92.2%). Meanwhile, for the perceived usefulness of board game, majority of them reported that the MASCOT Board Game was useful to understand concepts in communication theory (N=100, 98.0%) and the MASCOT Board Game was relevant in learning the concepts in Communication Theory (N=98, 96.1%).

The results of this study show that gamified teaching strategies, including playing board game, greatly increase students' interest and engagement in learning the communication theory. This is consistent with other research indicating that gamification creates a fun and engaging learning environment, which enhances learning results (Zhang and Hasim, 2023). Gamification improves students' understanding by boosting motivation and lowering anxiety through active engagement.

According to the literature, teachers can utilize board games as an instructional technique to boost student participation in conventional classroom settings. Nevertheless, research has shown that while board games may help increase students' interest in their studies, they may also have the opposite effect (Lanarki & Wehkamp, 2020; Cheung & McBride, 2017). Teachers find it challenging to monitor and mentor every student at once while playing traditional board games (Chan et al., 2017). In other words, when kids ran into issues during games, they were unable to get professors' assistance right away. However, students' learning performance is greatly improved by teachers' direction and support.

CONCLUSION

This research suggested a board game to help students understand and participate in the study of communication theory. With the use of the MASCOT board game, educators may monitor and record the learning progress of their students while they play the game and help students conduct it. In order to investigate how first-year university students felt about the suggested board game, 102 of them were asked to play it after finishing a number of different topics. In addition, the educator looked into understanding, engagement, perceived usefulness, and perceived ease of use. Regarding the suggested board game, the study's findings show that

students had high levels of involvement and comprehension as well as favourable perceptions of its utility and convenience of usage. In addition, some limitations have to be mentioned. First, this study did not conduct a random selection to select the students to participate in the experiment. Second, the lack of generalisability is also a limitation of the experimental data as the sample size was not large. Third, the proposed board game can only support four students playing together. If the lecturer uses the board game in a large-scale class, they have to consider how to set the board game for all students.

REFERENCES

- Alkharusi, H. 2022. A descriptive analysis and interpretation of data from likert scales in educational and psychological research. *Indian Journal of Psychology and Education* 12(2): 13-16.
- Alsawaier, R. S. 2018. The effect of gamification on motivation and engagement. *The International Journal of Information and Learning Technology*, 35(1): 56-79.
- Anupam, A., Gupta, R., Naeemi, A., & JafariNaimi, N. 2017. Particle in a box: An experiential environment for learning introductory quantum mechanics. *IEEE Transactions on Education*, 61(1): 29-37.
- Arztmann, M., Hornstra, L., Jeurig, J., & Kester, L. 2023. Effects of games in STEM education: a meta-analysis on the moderating role of student background characteristics. *Studies in Science Education*, 59(1): 109-145.
- Bressler, M., Merk, J., Gohlke, T., Kayali, F., Daigeler, A., Kolbenschlag, J., & Prahm, C. (2024). A Virtual Reality Serious Game for the Rehabilitation of Hand and Finger Function: Iterative Development and Suitability Study. *JMIR Serious Games* 12: e54193.
- Cheng, P. H., Yeh, T. K., Tsai, J. C., Lin, C. R., & Chang, C. Y. 2019. Development of an issue-situation-based board game: A systemic learning environment for water resource adaptation education. *Sustainability*, 11(5): 1341.
- Cardinot, A., & Fairfield, J. A. 2022. Game-based learning to engage students with physics and astronomy using a board game. In *Research Anthology on Developments in Gamification and Game-Based Learning* (pp. 785-801). IGI Global.
- Chan, K. Y. G., Tan, S. L., Hew, K. F. T., Koh, B. G., Lim, L. S., & Yong, J. C. 2017. Knowledge for games, games for knowledge: designing a digital roll-and-move board game for a law of torts class. *Research and Practice in Technology Enhanced Learning*, 12: 1-20.
- Cheng, P. H., Yeh, T. K., Tsai, J. C., Lin, C. R., & Chang, C. Y. 2019. Development of an issue-situation-based board game: A systemic learning environment for water resource adaptation education. *Sustainability*, 11(5): 1341.
- Cheung, S. K., & McBride, C. 2017. Effectiveness of parent-child number board game playing in promoting Chinese kindergarteners' numeracy skills and mathematics interest. *Early Education and Development*, 28(5): 572-589.
- Christopoulos, A., & Mystakidis, S. 2023. Gamification in education. *Encyclopedia* 3(4): 1223-1243.

- Dichev, C., & Dicheva, D. 2017. Gamifying education: what is known, what is believed and what remains uncertain: a critical review. *International journal of educational technology in higher education*, 14: 1-36.
- Hussain, S., Raza, S., Zaidi, S. G. S., Zubair, M., & Ali, J. 2023. The impact of emotional intelligence on mitigating research anxiety among graduate students: a quantitative investigation. *The International Journal of Learner Diversity and Identities*, 30(2): 227-240.
- Küçükşen Öner, F., Cetin-Dindar, A., & Sarı, H. 2024. I arrived at the sun! Developing an educational board game with the collaboration of pre-service art and pre-service science teachers. *European Journal of Education*, e12629.
- Lanezki, M., Siemer, C., & Wehkamp, S. 2020. "Changing the Game—Neighbourhood": An Energy Transition Board Game, Developed in a Co-Design Process: A Case Study. *Sustainability*, 12(24): 10509.
- Law, V., & Chen, C. H. 2016. Promoting science learning in game-based learning with question prompts and feedback. *Computers & Education*, 103: 134-143.
- Lin, Y. -T., & Wang, T. -C. 2022. A Study of Primary Students' Technology Acceptance and Flow State When Using a Technology-Enhanced Board Game in Mathematics Education. *Education Sciences*, 12(11): 764. <https://doi.org/10.3390/educsci12110764>
- Lo, C. K., & Hew, K. F. 2020. A comparison of flipped learning with gamification, traditional learning, and online independent study: the effects on students' mathematics achievement and cognitive engagement. *Interactive Learning Environments*, 28(4): 464-481.
- Lopez, C. E., & Tucker, C. S. 2019. The effects of player type on performance: A gamification case study. *Computers in Human Behavior*, 91: 333-345.
- Meccawy, M., Alzahrani, A., Mattar, Z., Almohammadi, R., Alzahrani, S., Aljizani, G., & Meccawy, Z. 2023. Assessing EFL Students' Performance and Self-Efficacy Using a Game-Based Learning Approach. *Education Sciences*, 13(12): 1228.
- Nguyen-Viet, B., & Nguyen-Viet, B. 2023. Enhancing satisfaction among Vietnamese students through gamification: The mediating role of engagement and learning effectiveness. *Cogent Education*, 10(2): 2265276.
- Plass, J. L., Homer, B. D., & Kinzer, C. K. 2015. Foundations of game-based learning. *Educational psychologist*, 50(4): 258-283.
- Segura-Robles, A., Fuentes-Cabrera, A., Parra-González, M. E., & López-Belmonte, J. 2020. Effects on personal factors through flipped learning and gamification as combined methodologies in secondary education. *Frontiers in Psychology*, 11: 1103.
- Vita-Barrull, N., Estrada-Plana, V., March-Llanes, J., Sotoca-Orgaz, P., Guzmán, N., Ayesa, R., & Moya-Higueras, J. 2024. Do you play in class? Board games to promote cognitive and educational development in primary school: A cluster randomized controlled trial. *Learning and Instruction*, 93: 101946.
- Wen, J. M., Lin, C., & Liu, E. Z. F. 2019. Integrating Educational Board Game in Chinese Learning Environment to Enhance Students' Learning Performance and Flow Experience. *International Journal of Online Pedagogy and Course Design (IJOPCD)*, 9(4): 31-43.

- Zhang, S., & Hasim, Z. 2023. Gamification in EFL/ESL instruction: A systematic review of empirical research. *Frontiers in Psychology*, 13, Article 1030790. <https://doi.org/10.3389/fpsyg.2022.1030790>
- Zainuddin, Z., Chu, S. K. W., Shujahat, M., & Perera, C. J. 2020. The impact of gamification on learning and instruction: A systematic review of empirical evidence. *Educational research review*, 30: 100326.
- Zainuddin, Z., Chu, S. K. W., & Perera, C. J. 2024. *Gamification in the Flipped Classroom. In Gamification in A Flipped Classroom: Pedagogical Methods and Best Practices* Singapore: Springer Nature Singapore.