

E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025



14TH **INDES** 2025

ENVIRONMENTAL • SOCIAL • GOVERNANCE



E-BOOK OF EXTENDED ABSTRACT

THE 14th INTERNATIONAL
INVENTION, INNOVATION &
DESIGN COMPETITION 2025

Organized by:

Office of Research, Industry,
Community & Alumni Network
UiTM Perak Branch

© Unit Penerbitan UiTM Perak, 2025

All rights reserved. No part of this publication may be reproduced, copied, stored in any retrieval system or transmitted in any form or by any means; electronic, mechanical, photocopying, recording or otherwise; without permission on writing from the director of Unit Penerbitan UiTM Perak, Universiti Teknologi MARA, Perak Branch, 32610 Seri Iskandar Perak, Malaysia.

Perpustakaan Negara Malaysia

Cataloguing in Publication Data

No e- ISBN: 978-967-2776-52-9

Cover Design: Dr. Mohd Khairulnizam Ramlie

Typesetting : Georgia

EDITORIAL BOARD

Editor-in-Chief

MUHD SYAHIR ABDUL RANI

Managing Editors

NUR FATIMA WAHIDA MOHD NASIR

SYAZA KAMARUDIN

NORASYIKIN ABDUL MALIK

Copy Editors

SHEEMA LIZA IDRIS

AZURAWATI ZAIDI

HALIMATUN SAADIAH ABD MUTALIB

HALIMATUSSAADIAH IKSAN

IZA FARADIBA MOHD PATEL

MOHAMAD SAFWAT ASHAHRI MOHD SALIM

MUHAMMAD WAJIHUDDIN JOHARI

NAZIRUL MUBIN MOHD NOOR

NORAZIAH AZIZAN

NOOR AILEEN IBRAHIM

NOOR FAZZRIENEE JZ NUN RAMLAN

NOORLINDA ALANG

NURAMIRA ANUAR

NURDIYANA MOHAMAD YUSOF

NURSHAHIRAH AZMAN

NURUL FARHANI CHE GHANI

NURUL MUNIRAH AZAMRI

ONG ELLY

PAUL GNANASELVAM

SITI SYAIRAH FAKHRUDDIN

WAN FARIDATUL AKMA WAN MOHD RASHDI

WAN NURUL FATIHAH WAN ISMAIL

ZARLINA MOHD ZAMARI

AMIRUL FARHAN AHMAD TARMIZI

IMRAN TORIQ

TRIPLE “A” STUDY GAME BOARD

¹Muhammad Aqil Aniq Alfatih bin Yuhadi, ²Nurul Sahida Fauzi

¹Sekolah Kebangsaan Seri Iskandar, Jalan Ipoh Lumut,
32610, Bandar Baru Seri Iskandar, Perak Darul Ridzuan, Malaysia

²Programme of Real Estate Management, Department of Built Environment Studies & Technology, College of Built Environment, Universiti Teknologi MARA, Perak Branch, 32610, Seri Iskandar, Perak, MALAYSIA

ochidsahidafauzi@gmail.com, m-13391263@moe-dl.edu.my

ABSTRACT

Triple "A" Study Game Board is a creative adaptation of the traditional Snake and Ladder game. The idea was born out of the need to make learning more enjoyable and interactive, especially for students who thrive through play-based learning. Traditional teaching methods can sometimes limit student engagement, while gamification has proven to boost motivation and memory retention. The board game format maintains the fun of dice-rolling and progression, while integrating educational elements to promote deeper thinking and self-assessment. Players interact by answering questions categorized into various subjects, which are marked by specific colours: Red (Science), Blue (Mathematics), Green (General Knowledge), and Yellow (Bonus). Players must answer corresponding questions when landing on these tiles. Correct answers enable players to go up or gain bonus moves. This approach promotes active and interactive learning, strengthens understanding of academic content via repetition and discussion, and encourages collaboration, critical thinking, and peer evaluation. It is designed as an adaptable tool that teachers can use across multiple subjects and difficulty levels. Expected benefits through this game include increased motivation and participation, peer-assisted learning, and the flexibility to suit various educational environments.

Keyword: Active Learning, Classroom Innovation, Educational Board Game, Peer Assessment

1. INTRODUCTION

Triple "A" Study Game Board is a creative adaptation of the traditional Snake and Ladder game, developed to make learning more enjoyable and interactive, particularly for students who thrive through play-based approaches. Traditional teaching methods can sometimes limit student engagement, whereas gamification has been shown to enhance motivation and memory retention (Kapp, 2012; Deterding et al., 2011). This educational board game retains the excitement of dice-rolling and player movement while incorporating academic content to foster deeper thinking and self-assessment. The board features color-coded squares Red for Science, Blue for Mathematics, Green for General Knowledge, and Yellow for Bonus Questions. Each linked to a corresponding question that players must answer to move ahead. The game aims to promote active and interactive learning through play (Prince, 2004), reinforce understanding through repetition and discussion, and encourage collaboration, critical thinking, and peer evaluation (Topping, 2009). It serves as a versatile tool that educators can easily adapt to various subjects and difficulty levels. Among the anticipated benefits are increased motivation, higher participation, peer-assisted learning, and immediate feedback. Designed to be suitable for both formal and informal educational settings, Triple "A" Study Game Board is easily modifiable to suit a range of academic topics. Ultimately, it is hoped that this game can evolve into a multi-subject educational tool aligned with diverse school curricula, inspiring further innovation in game-based learning.

2. METHODOLOGY

The development of Triple "A" Study Game Board followed a structured approach combining game design principles with educational objectives. The project was developed in stages: conceptualization,

board and content design, gameplay testing, and refinement. The methodology focused on ensuring that the game not only engages players but also reinforces academic knowledge and promotes peer learning.

2.1 Game Design and Structure

The game board was designed based on the classic Snake and Ladder layout but enhanced with educational functions. It features a grid with interactive elements and color-coded squares, each corresponding to a specific question category:

- Red – Science
- Blue – Mathematics
- Green – General Knowledge
- Yellow – Bonus Questions

Each player uses a token and rolls a die to move across the board. When landing on a coloured square or the base of an element, the player must answer a question from a matching color-coded card deck. The cards are prepared based on curriculum-aligned content. A correct answer allows the player to go up or move forward if one is present or roll the die again in the case of a yellow bonus tile. Incorrect answers result in the player remaining in place. Responses are written on mini whiteboards or answer sheets and checked by other players, encouraging peer assessment and collaborative learning. The game continues until a player reaches the final square on the board and is declared the winner.

2.2 Gameplay Mechanics

The game board is designed with clear color-coded tiles and interactive elements to guide player movement. Question cards are divided into categories aligned with the colour coding on the board, allowing for organized question management. Additional tools include dice, player tokens, and whiteboard materials or answer sheets for players to write their responses.

2.3 Sustainability and Adaptability

Triple "A" Study Game Board is intentionally designed to be modular and adaptable, allowing educators to update and customize question decks based on different topics, subjects, or academic levels. This ensures the game remains relevant and usable across a range of educational contexts. It's simple, reusable format supports both formal and informal learning environments, promoting sustainability, cost-effectiveness, and continuous engagement in the classroom or beyond.

3. FINDINGS

Initial testing and classroom trials of Triple "A" Study Game Board demonstrated promising outcomes in terms of student engagement, motivation, and peer collaboration. Players showed increased enthusiasm for learning activities, with many expressing enjoyments in answering academic questions in a game format. The interactive and competitive nature of the game contributed to greater participation, especially among students who are typically less responsive in traditional classroom settings. Observations also revealed that the color-coded categorization of questions helped students focus on specific subject areas, reinforcing content through repetition and contextual application. Furthermore, the peer-checking mechanism fostered a sense of accountability and mutual support, enhancing critical thinking and communication skills. Teachers reported that the game was easy to integrate into lesson plans and served as an effective formative assessment tool to gauge students' understanding in a less formal, stress-free environment. Overall, the game encouraged an inclusive learning atmosphere, accommodating different learning styles while making academic content more accessible and enjoyable.

4. CONCLUSION

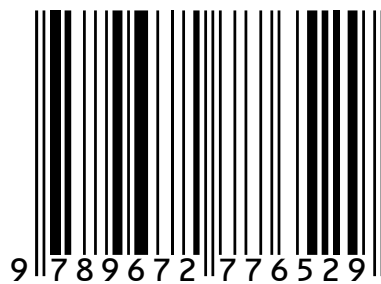
Triple "A" Study Game Board successfully demonstrates how educational content can be embedded into a familiar and engaging board game format to enhance learning outcomes. By integrating subject-based questions, color-coded game mechanics, and peer evaluation, the game offers a dynamic alternative to traditional instruction. It fosters active learning, improves student motivation, and cultivates key 21st-century skills such as collaboration, communication, and critical thinking. The game's flexible and modular design allows it to be adapted across subjects, grade levels, and learning environments, making it a sustainable tool for both classroom teaching and informal learning. Moving forward, Triple "A" Study Game Board holds strong potential to be expanded as a broader educational resource that supports curriculum goals while encouraging innovation in pedagogy through game-based learning.

REFERENCES

- Adelia, D., & Ilhami, A. (2025). Improvement of logical-mathematical skills through jumbo snake and ladder games in children aged 5–6 years. *International Journal of Education Research and Development*, 5(2), 95–110.
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining “gamification”. *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 9–15. <https://doi.org/10.1145/2181037.2181040>
- Ekaningtyas, N. L. D. (2024). Educational game innovation: Giant snakes and ladders with local wisdom to stimulate Pancasila values in early childhood. *Journal of Psychology and Instruction*, 8(1).
- Gee, J. P. (2007). *What video games have to teach us about learning and literacy* (2nd ed.). Palgrave Macmillan.
- Imroatus, S. (2022). *Pengembangan media pembelajaran game modification of snake and ladders menggunakan model pembelajaran teams games tournament (TGT) pada materi skala dan perbandingan* (Doctoral dissertation, UIN Raden Intan Lampung).
- Kapp, K. M. (2012). *The gamification of learning and instruction: Game-based methods and strategies for training and education*. Pfeiffer.
- Nachiappan, S., Rahman, N. A., Andi, H., & Zulkafaly, F. M. (2014). Snake and ladder games in cognition development on students with learning difficulties. *Review of Arts and Humanities*, 3(2), 217–229.
- Pertiwi, N. N. (n.d.). *Pengaruh penggunaan Snake and Ladder Math terhadap kemampuan komunikasi matematis siswa (Single Subject Research pada siswa pasif)* (Bachelor's thesis, FITK UIN Syarif Hidayatullah Jakarta).
- Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education*, 93(3), 223–231. <https://doi.org/10.1002/j.2168-9830.2004.tb00809.x>
- Puspita, D. M., & Surya, E. (2017). Development of Snake-Ladder game as a medium of mathematics learning for the fourth-grade students of primary school. *International Journal of Sciences: Basic and Applied Research*, 33(3), 291–300.
- Saputra, D. S., Yuliati, Y., & Rachmadtullah, R. (2019, November). Use of ladder snake media in improving student learning outcomes in mathematics learning in elementary school. In *Journal of Physics: Conference Series* (Vol. 1363, No. 1, p. 012058). IOP Publishing.
- Topping, K. (2009). Peer assessment. *Theory into Practice*, 48(1), 20–27. <https://doi.org/10.1080/00405840802577569>

E-Book of Extended Abstract THE 14th INTERNATIONAL INVENTION, INNOVATION &
DESIGN COMPETITION 2025

e ISBN 978-967-2776-52-9



Unit Penerbitan UiTM Perak

(online)