

E-BOOK OF EXTENDED ABSTRACT

THE 14TH INTERNATIONAL INVENTION, INNOVATION & DESIGN COMPETITION 2025



14TH **INDES** 2025

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Organized by:

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

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Perpustakaan Negara Malaysia

Cataloguing in Publication Data

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

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Typesetting : Georgia

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MacroVerse: A CENTRALIZED GAMIFIED LEARNING INNOVATION FOR ENHANCING MACROECONOMICS EDUCATION

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ABSTRACT

Macroeconomics remains seen as difficult and unengaging by undergraduate students, leading to low academic performance and motivation. To address these challenges, MacroVerse was developed as a centralized gamified learning platform tailored for the Macroeconomics course. It integrates various digital tools such as Wordwall, QuizWhizzer, Educandy, Blooket, and more, strategically aligned with the course's seven chapters. This platform aims to make learning more interactive, enjoyable, and student-centered, in line with Education 5.0 principles. This study investigates students' perceptions of MacroVerse and its impact on learning outcomes. Data were collected from 156 students at UiTM Perak Branch Tapah Campus using an online questionnaire with ten Likert-scale items. The results showed strong positive responses across all areas. Students rated the platform highly for increasing enjoyment (90.26%), developing soft skills (87.31%), and improving knowledge retention (87.18%). Other benefits included better understanding of concepts, higher motivation, and more engagement during class. Even the lowest-rated item - confidence in assessments - scored a positive 83.08%. Overall, the findings confirm that MacroVerse effectively enhances macroeconomics education through structured and engaging digital game-based learning. It offers a promising solution to improve both academic achievement and student participation in a traditionally challenging subject.

Keyword: macroeconomics, educational games, MacroVerse, E-MEG, digital educational games tools.

1. INTRODUCTION

Macroeconomics is a fundamental component of economics and business curricula; however, it consistently presents learning challenges for undergraduate students. Over the years, both physical classroom settings and online distance learning modes have revealed a persistent trend of underachievement in this subject. Students frequently report difficulty grasping theory concepts, which contributes to lower academic performance. Compounding this issue is the widespread perception that macroeconomics is dry or unengaging, leading to a noticeable decline in learner motivation and classroom participation (Lin et al., 2024). While digital game-based learning tools have been introduced to enrich the teaching and learning process, existing platforms remain disorganized, with content spread unevenly across topics and lacking pedagogical cohesion. This fragmented approach diminishes the potential of gamified learning, which, if well-structured, can stimulate student interest and deepen understanding (Nasir et al., 2024).

To address these limitations, MacroVerse was developed as a centralized and gamified learning ecosystem specifically designed for the Macroeconomics course. Aligned with the principles of Education 5.0, MacroVerse systematically integrates a diverse range of existing digital game-based tools, including Wordwall, QuizWhizzer, Educandy, Classtools.net, Gamilab, Blooket, and Oodlu. These tools are strategically embedded across all seven chapters of the syllabus, creating an engaging and interactive learning experience that supports both content mastery and student motivation. The primary goal of this innovation is to enhance academic performance, foster active engagement, and streamline access to educational games within a unified platform. By transforming the learning process

into a more interactive and student-centered journey, MacroVerse revitalizes interest in macroeconomics and promotes meaningful learning aligned with 21st-century educational goals (Zeng et al., 2024).

2. METHODOLOGY

This paper examines students' perceptions of MacroVerse as a learning tool and evaluates its effectiveness in improving academic outcomes, classroom engagement, and the overall quality of the learning experience. Data was collected through a structured online questionnaire distributed via Google Forms, which included demographic questions and ten perception-based items. The instrument comprised ten closed-ended statements rated on a five-point Likert scale, measuring different dimensions of learning effectiveness (Jia et al., 2024). A total of 156 students from UiTM Perak Branch Tapah Campus participated, with 156 having prior exposure to the MacroVerse platform as part of their macroeconomics coursework. The Likert-scale structure allowed researchers to quantify subjective experiences into measurable variables (Murillo-Zamorano et al., 2023). These items were carefully designed to measure different dimensions of learning effectiveness: comprehension of macroeconomic concepts, learning motivation, class engagement, retention of knowledge, application in real-world contexts, peer collaboration, soft skills development, confidence in assessments, and overall satisfaction with the gamified learning experience (Zeng et al, 2024). Descriptive statistics were used to analyze responses, identifying general trends in student perception and insights into the most and least effective aspects of the platform from the learners' perspective. The methodology was chosen for its efficiency in gathering large-scale perceptual data and its ability to support comparative and correlational analysis. The study focused on student-centered feedback to evaluate the pedagogical effectiveness of integrating gamification into macroeconomics education (Alonso-Sánchez et al., 2025). The collected data will inform future iterations of the MacroVerse platform and contribute to broader educational strategies incorporating game-based learning.

3. FINDINGS

Table 1 presents the descriptive analysis of students' perception toward the use of MacroVerse in learning macroeconomics. The results show a strong positive response, with all ten items receiving average scores above 4.00 on a 5-point Likert scale, indicating strong agreement and satisfaction.

Table 1: Descriptive Statistics Based on Mean Scores and Percentage Agreement

No.	Items	Mean	Percentage
1	MacroVerse enhances understanding of macroeconomics concepts.	4.28	85.51
2	Game-based activities in MacroVerse make learning more enjoyable.	4.51	90.26
3	Macroeconomics topics are easier to remember through MacroVerse.	4.36	87.18
4	MacroVerse increases engagement during macroeconomics classes.	4.35	87.05
5	MacroVerse boosts motivation to learn macroeconomics.	4.31	86.28
6	MacroVerse supports the application of macroeconomics in real-life situations.	4.19	83.72
7	MacroVerse promotes teamwork and peer discussions.	4.28	85.51
8	MacroVerse develops soft skills such as critical thinking and problem-solving.	4.37	87.31
9	MacroVerse increases confidence in facing assessments.	4.15	83.08
10	Overall, learning with MacroVerse is more satisfying than conventional methods.	4.35	87.05

The item that received the highest rating in the survey was the statement that game-based activities in MacroVerse make learning more enjoyable. It recorded a mean score of 4.51, which is equivalent to 90.26 percent. This result indicates that students greatly appreciated the interactive and engaging features of the platform, suggesting that enjoyment plays a significant role in shaping a positive learning experience. The second highest score was recorded for the development of soft skills such as critical thinking and problem-solving, which reached 87.31 percent. This highlights the potential of

MacroVerse to foster essential competencies that are relevant to modern education. The item regarding the ease of remembering macroeconomic topics through MacroVerse achieved 87.18 percent, showing that the tool effectively supports memory retention. In addition, the statements related to increased engagement during macroeconomics classes and overall satisfaction with the learning method both recorded 87.05 percent. These findings imply that students were more actively involved during lessons and found MacroVerse to be a more rewarding approach compared to conventional teaching methods. Other items in the survey also received encouraging responses, further affirming the value of MacroVerse in macroeconomics education. The item on motivation to learn macroeconomics received a favorable score of 86.28 percent, reflecting that the platform inspires students to take greater interest in the subject. The statement on enhanced understanding of macroeconomic concepts recorded a score of 85.51 percent, suggesting that the platform contributes meaningfully to conceptual clarity. Similarly, the promotion of teamwork and peer discussions achieved the same percentage, indicating that MacroVerse supports collaborative learning environments where students can engage and exchange ideas. The ability to apply macroeconomic concepts in real life situations was rated at 83.72 percent, demonstrating that students recognized the relevance of their learning beyond the classroom context. Finally, the statement on increased confidence in facing assessments, although the lowest among the ten, still achieved a commendable score of 83.08 percent. This suggests that while there is room for enhancement in assessment-related confidence, students generally felt better prepared through their exposure to the platform. Overall, the findings reflect a consistently positive perception of MacroVerse as a dynamic and effective learning tool.

4. CONCLUSION

In conclusion, the findings of this study highlight the effectiveness of MacroVerse as a centralized, gamified learning ecosystem for the Macroeconomics course. Developed in response to persistent challenges in student engagement, motivation, and conceptual understanding, MacroVerse has demonstrated strong potential in transforming macroeconomics education into a more interactive and student-centered experience. Survey responses from 156 students revealed consistently high levels of satisfaction across multiple dimensions, with the highest ratings reflecting increased enjoyment, soft skill development, knowledge retention, and overall engagement. Even the lowest-rated item, related to confidence in assessments, received a commendable score, indicating general approval of the platform's impact. These results affirm that when well-designed and pedagogically cohesive, game-based learning tools such as MacroVerse can play a meaningful role in enhancing academic performance and fostering active learning in line with 21st-century educational objectives.

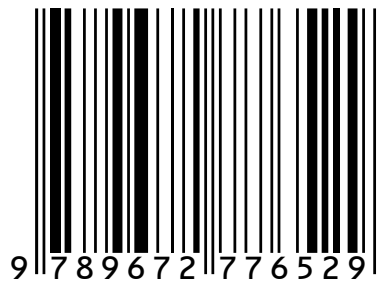
REFERENCES

- Alonso-Sánchez, J. A., Alonso, J. L., & Santana-Monagas, E. (2025). *Gamification in higher education: A case study in educational sciences*. TechTrends.
- Jia, X., Mohammad Shah, K. A., Li, W., Meng, N., & Shah Alam, S. (2024). Educational Tourism: A behavioral and perceptual analysis of Chinese students in Malaysian public universities. *Journal of China Tourism Research*, 21(2), 36.
- Lin, C. W., Dong, W. A., & Noor, N. M. (2024). The influence of gamification on student motivation and academic achievement: Insights from a pre-experimental study. *Quantum Journal of Social Sciences and Humanities*, 5(SI1), 214–225.
- Murillo-Zamorano, L. R., López-Sánchez, J. A., López-Rey, M. J., & Bueno-Muñoz, C. (2023). Gamification in higher education: The ECON+ star battles. *Computers & Education*, 194, 104699.
- Nasir, N. M., Ithnin, H. S., Nasir, Z. A., Kusairee, M. A. Z. A., & Ridzuan, A. R. (2024). Effectiveness of digital game-based learning (DGBl) tools usage in macroeconomics among tertiary

- education students: ARCS motivation model. *International Journal of Research and Innovation in Social Science*, 8(11), 5219–5230.
- Zeng, J., Sun, D., Looi, C. K., & Fan, A. C. W. (2024). Exploring the impact of gamification on students' academic performance: A comprehensive meta-analysis of studies from the year 2008 to 2023. *British Journal of Educational Technology*, 55(6), 2478–2502.
- Zeng, J., Sun, D., Looi, C.-K., & Fan, A. C. W. (2024). Exploring the impact of gamification on students' academic performance: A comprehensive meta-analysis of studies from the year 2008 to 2023. *British Journal of Educational Technology*, 55(6), 2478–2502.

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