Comparative Study of Gamified vs. Non-Gamified Learning Modules in Management Education

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Abstract- In this research we are going to explore the impact of gamified elements into online management courses like students' engagement, how well they learn, and their overall motivation with the courses. Which helps to understand the new way to keep students engaged and increase the participation to the courses.
Experimental research design was applied to 248 are in the same course. First group is control group where we have taken 124 students are having with non-gamified study material, and the experimental group of 124 students interacted with gamified content. In this study experimental group student experienced the gamified elements like points, badges, leaderboards, challenges, rewards, and storytelling to create an emotional connection with the contents.
Data collected by surveys and Learning Management System (LMS) analytics reports, providing a comprehensive understanding of student experiences. The two groups of learners control and experimental group Quantitative analysis compared participation, course completion, and performance between the two groups.
The result demonstrate that gamification improves the student engagement and motivation. Experimental group students are interested spend more time with gamified elements, with game element sense of achievement, and want to spent time and effort in learning. Additionally, gamified elements encouraged healthy competition and partnership, resulting in a more interactive and engaging virtual classroom.

Keywords- Gamification, Management Education in Online, Student Engagement, Motivation, Performance, Learning Management Systems

I. INTRODUCTION

RESEARCH OBJECTIVES:

1. To analyze the role of game-based elements in enhancing Student engagement.
2. To examine the extent to which gamified content improves Student participation and motivation.

SIGNIFICANCE OF THE STUDY:

The game-based elements in management education enhance student participation, performance, and motivation. With advances in artificial intelligence day after day, gamification is also on the rise; hence gamification has become a strong tool for transforming education into something interesting and effective. Gamification serves as a sort of engagement tool, attracting issues such as competition, rewards, and interactive challenges to the field of online education. This is especially applicable to management education, where theory must constantly be chained to applications dictated by the working environment. The study marked the challenges and opportunities offered by gamification in management education online, so that educators may design courses that engage students in both knowledge building and skills applications. The research covers gamification conceptually in terms of engagement and motivation, hence extending it to the digital learning arena. This finding will help institutions and instructors tailor productive and relevant work for this century, given that Student Engagement is the cornerstone of learning, with literature and research into digital learning showing an exponential increase with the onset of this century.

Conceptual Overview

Online Education:

More students have taken up online management courses during the pandemic than they did before the pandemic. Learning can also be delivered in blended formats which combines online and face-to-face methods. During classes held in a physical environment, it is usually challenging to assess each

student's progress on a one-on-one basis. In comparison, online education which integrates gamification can monitor and progress and give tailor-made responses almost instantaneously.

Accessibility and Flexibility:
Flexible schedule is an essential part of every learning activity in the world today. Zoom allows them to balance work and educational endeavors, which is notable.

Course Structure and Content:
Management constitutes strategic, financial, human, operational, and venture marketing as well as entrepreneurship. In every online course taken, relevant and pragmatic principles of actions central to effective management are provided.

Interactive Learning Experience:
To foster learning and sharing of knowledge, online management education uses interactive multimedia class resources like videos, which helps to keep students responsive.

Continuous Learning:
Except for the online modules, the programs are structured to include the reading materials most of which arise from interests gained in online study modules, webinars, or alumni network systems peculiar to an institution. Students should keep upgrading and relearning systems for more refined skills.

Self-Paced Learning:
Now the standards of management education have been elevated to align with current job demands. This is where the self-paced learning approach comes in. Locking out time for your studies while giving application opportunities through gamification is a great thing. Both self-paced learning and stress management are very important. In this case, learners have the freedom to choose how and at what pace they want to enter into learning content. That way, they can spend less time on familiar lessons and more on complex ones.

II. GAMIFICATION IN EDUCATION

Gamified learning systems incorporate competitive features that reward social interactions, thus diversifying educational environments within games, and using game-based management courses as a method of increasing learner engagement. This method resonates particularly well with online learners because it provides more enjoyable educational environments as opposed to the more traditional online learning methodologies.

Gamified elements is also able to adjust to different learner performance levels and learning preferences by allowing self-paced learning. Important aspects of gamification has the ability to sustain learner attention and interest. This is particularly the case when the learning activities involve games that present a mix of fun and challenging tasks. The more active engagement learners experience, the better their retention, and the more they improve critical thinking, and problem, and solution skills. In online learning environments, gamified systems produce a motivational pull by creating a motivationally charged atmosphere that rewards learners with a gamified sense of accomplishment. Self-tracking features that display points, badges, and levels are motivating as they celebrate progress, thus thoughtfully constructed systems reinforce learners' self-belief and inspire them to tackle new challenges and sustain their effort to improve.

Benefits and challenges of gamification in education:
Gamification can definitely spark interest among students. Having challenges, rewards, and friendly competition incorporated into the educational process can enhance the enjoyment factor of learning. When learners enter a gamified environment, they become focused, driven by the need for achievement, and learn. In management education specifically, gamification effectively bridges the theory-practice gap, improves divergent problem solving, and increases the retention of information. Through adaptive learning technologies, learners control the pace of their instruction, feedback, and the personalized tasks they complete.

In gamified learning environments, students become accomplishment driven, focused, and fully engaged in the learning material. Using adaptive technology, students have the ability to work at their own pace, receive instruction and feedback, and engage in personalized tasks.

In gamified learning environments, students Gamification really has the potential to engage students. Integration of challenges, prizes, and light competition into the educational experience can make learning much more pleasurable. Once learners enter gamified settings, their accomplishment motivation is driving, focusing, and learning the material much more than in traditional environments.

III. LITERATURE REVIEW

Previous studies on gamification in online education: (Bicen, Demir, & Serttas, The Attitudes of Teacher Candidates towards the Gamification Process in Education, 2022) - Student engagement was examined through six dimensions: competition, enjoyment, cognitive effort, anticipation of outcomes, impact on learning, and intention to use. The results show that students generally perceive gamification as having a meaningful positive effect on their learning process.

(Dimitrov & Kovatcheva, 2022) This study not only highlights the major providers of blended learning but also prompts readers to pose critical questions as they evaluate their choices. Before choosing a system, organizations and academic institutions should consider factors such as budget, student expectations, target audience, required features, and the overall purpose of implementing a Learning Management System (LMS).

(Achmad, Aftinia, & Eka , 2023) This study aims to design a gamified educational game for hydrocarbon learning and to evaluate it across three criteria: validity, practicality, and effectiveness. Validity is determined through expert assessments of the game, while practicality is explored via student questionnaire responses and observations of student activity during gameplay. Effectiveness is assessed by examining student learning outcomes, motivation levels from questionnaires, and retention rates.

(La , Mario, & Juliana, 2023) This review examines the use of gamification in online English learning and its impact on the learning outcomes of foreign language students. A total of 18 articles published between 2014 and March 2021 were analyzed to identify the key aspects of this research area. The findings indicate that gamification enhances the learning experiences of university students studying English as a Foreign Language (EFL). Elements such as enjoyment, attractiveness, motivation, and overall satisfaction were found to be particularly beneficial in gamified English learning environments. The review highlights that gamification supports not only the acquisition of language content but also increases Students' interest, motivation, and satisfaction with the learning process.

(Javier, Samuel, & Ricardo , 2023) This study looks at how the students' emotions and peer interactions affect their participation in online learning games and collaborative activities. It also researches how these factors shape students' perceptions of online classes and assessments. The findings reveal that students entertained a positive attitude toward online learning and felt support from their peers whenever they were engaged in online games and group work. These student groups considered themselves more satisfied with online classes and assessments.

(Ghai & Tandon, 2023) The purpose of the study is to investigate whether using games during online learning in order to make students more engaged and better quality of their learning. The gamification of education has found to create a stimulating atmosphere, therefore, it benefits both the students and the teachers as the learning process becomes more interactive and fun.

(Bovermann, , Weidlich, & Bastiaens, 2018) Technological explosion has greatly transformed the way education was imparted, and when talking about modern high-tech teaching aids, games come at first. Many students face being distracted in their online classes; the remote learning environment made it difficult for them to be engaged in coursework, and an uninteresting environment leads to eventually quitting. This is where the incorporation of gamification can actually turn around and render online education more fun and effective.

To evaluate its effectiveness, a study was conducted with students enrolled in a distance-learning bachelor's degree program. Data were collected through questionnaires and online surveys. The findings revealed that students with strong technological skills were more likely to be motivated toward self-directed learning. Similarly, students with a positive attitude toward gaming reported higher satisfaction with their studies. However, students with

weaker technological skills were less motivated. Interestingly, even some students who did not particularly enjoy games expressed increased enthusiasm for learning.

(Marvin, 2015) This study explored the potential of Learning Management Systems (LMS) as a profitable business opportunity in the future and examined their role in transforming learning at all levels. LMS platforms support flexible, technology-driven education by enabling access to learning materials anytime and anywhere through compatible devices.

(Juan , J, & Antonia , 2022)

During the COVID-19 pandemic, education adapted by incorporating game-based approaches, providing both students and teachers with new learning experiences. Gamification supported various aspects of education, including content delivery, teaching, and assessment. The results indicate that students showed greater interest and engagement in learning through these methods.

(Bicen, Demir, & Serttas, The Attitudes of Teacher Candidates towards the Gamification Process in Education, 2022) This study examined the perceptions of student teachers regarding the use of gamification in their training. Data were collected online during the COVID-19 pandemic from 67 prospective teachers, including 42 specializing in special education and 25 preparing for general education classrooms. Participants reflected on six dimensions of gamification: competition, enjoyment, busyness, anticipated outcomes, impact on learning, and intention to use in the future.

(Jayawardena, et al., 2022) Gamification has the potential to enhance online education, brand engagement, and interaction with information systems. This study aims to identify effective strategies for increasing online participation through the use of game-based approaches. The findings highlight several successful methods for improving engagement across education, digital branding, and information system use. These insights provide a foundation for future research on designing more engaging online experiences through gamification.

(kumaran, Shri, & Harini , 2023) Gamification in e-learning platforms plays an important role in creating engaging learning experiences for Students of all ages. This paper examines how gamification can enhance the effectiveness and performance of e-learning systems. By incorporating elements such as points, leaderboards, and badges, gamification motivates Students and sustains their engagement throughout the learning process. Overall, the use of gamification demonstrates a positive impact on both Student motivation and the overall performance of e-learning platforms.

IV. METHODOLOGY

Many research methodologies can be used. Here we can refer three commonly used methodologies that can be applied to investigate the research topic:

Experimental Research: In this methodology-controlled experiments can be perform to assess the impact of gamification on teaching and learning outcomes in online management education.

This can mean putting people into different groups, like one with games and one without, and seeing how they do in things like joining in, wanting to learn, understanding, and how well they do. Doing this experiment helps us figure out if using games in online management classes really makes a difference.

Survey Research:

Surveys are excellent information-gathering opportunities from the different online management students and teachers. The surveys might cover various areas with respect to their experiences, perceptions, and attitudes concerning the use of gamification as a teaching tool. Information of this sort would help to understand the extent, impact, and problems faced by online management education with gamification. It would be good if there options for open-ended questions as well since that would yield qualitative data and have some suggestions for improvements.

To Develop an understanding of possible contextual elements, issues, and triumphs pertaining to the use of gamification for the teaching-learning process in management education in the online environment.

However, I would like to use experimental research for my research.

V. RESEARCH QUESTIONS

1. In what ways are student engagement in online management education fostered by implementing gamification elements?
2. Does gamification increase student motivation in the context of online management education?
3. Are there ways for gamification that will allow students to understand concepts more easily?
4. How does gamified content facilitate faculty members in terms of teaching methodology and assessment?

HYPOTHESIS:

H_{01}- Gamification and performance are not associated.
H_{11} - There is an association between gamification and performance.
H_{02} - There is no association between the variables Gamification & Students Engagement.
H_{12} – There is an association between Gamification & Students Engagement.
Research Design:

Objective:

Over and above that research is designed to intervene with the determination of gamification as a teaching-learning tool for online management education. More specifically, the investigation aims at examining whether and how student engagement, student motivation, student knowledge acquisition, and student performances are changed by the variations with gamification elements.

Control Group: The group will experience the traditional mode of teaching without the element of gamification.

Experimental Group: This group will learn through methods that might incorporate points, badges, competitions, or entertaining activities.

Sample Selection:

Population: Students from a certain institution or program. Random Sampling: The participants are randomly assigned into control or experimental groups, so everyone gets an equal chance.

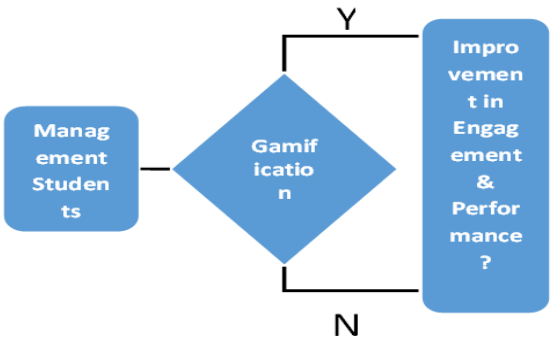
Variables:

Independent Variable:

In fact, we are comparing a teaching method with games for two groups, that is, one group uses games as a method, and the other does not.

Dependent Variables: Level of interest, motivation to learn, knowledge acquired, and performance.

Dependent Variables: Level of interest, motivation to learn, knowledge acquired, and performance. Dependent Variables: How interested students are, how much they want to learn, what they know, and how well they do.



DATA COLLECTION:

Pre-test: Before we start teaching differently, we'll check how interested, motivated, knowledgeable, and how well everyone is doing.

Intervention: Then, one group will learn in the usual way, and the other group will try out new ways with games.

Post-test: After that, we'll check again to see if anything changed in how interested, motivated, knowledgeable, or how well everyone is doing.

Data Collection Methods: We'll ask questions, do tests, and look at how everyone is doing to get numbers. Also, we'll talk to some people to understand how they feel and what they think.

DATA ANALYSIS:

Quantitative Analysis: Statistical techniques like t-tests, ANOVA, or regression analysis to see if there are any differences between the two groups and if using games changes how well students do.

Qualitative Analysis: We will look at what people say in interviews or group talks to find common themes and patterns about how they feel and what they think.

Data Analysis for Hypothesis

A. Association Between Gamification and Student Engagement

To examine whether gamification is related to Student engagement, a Chi-Square test of independence was conducted.

Observed Frequencies

Gamified or not	Yes (Improved Engagement)	No (Not Improved)	Row Total
Yes	87	37	124
No	28	96	124
Column Total	115	133	248

Step 1: Hypotheses

H_0 (Null Hypothesis): There is no association between gamification and Student engagement.
H_1 (Alternative Hypothesis): There is an association between gamification and Student engagement.
Step 2: Significance Level
$\alpha = 0.05$
Step 3: Expected Frequencies

$$E = \frac{(\text{Row Total} \times \text{Column Total})}{\text{Grand Total}}$$

Gamified or Not	Yes	No
Yes	57.5	66.5
No	57.5	66.5

Step 4: Chi-Square Statistic

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Gamified or Not	Yes	No
Yes	$(87–57.5)^2$ / 57.5 = 15.134	$(37–66.5)^2$ / 66.5 = 13.086
No	$(28–57.5)^2$ / 57.5 = 15.134	$(96–66.5)^2$ / 66.5 = 13.089

$\chi 2=56.44$

Step 5: Degrees of Freedom

Df= (2-1) (2-1) = 1

Step 6: Critical Value
At $\alpha = 0.05$ and df = 1, critical $\chi^2 = 3.841$.

Step 7: Decision
Since $\chi^2 = 56.44 > 3.841$, we reject H_0.

Conclusion: There is a significant association between gamification and Student engagement.

B. Association Between Gamification and Performance

Next, a Chi-Square test was used to examine the association between gamification and performance.

Observed Frequencies

Gamified or Not	Yes (Performance Improved)	No (Not Improved)	Row Total
Yes	96	28	124
No	14	110	124
Column Total	110	138	248

Step 1: Hypotheses

- H_0 (Null Hypothesis): There is no association between gamification and performance.
- H_1 (Alternative Hypothesis): There is an association between gamification and performance.

Step 2: Significance Level
$\alpha = 0.05$
Step 3: Expected Frequencies

Gamified or Not	Yes	No
Yes	55	69
No	55	69

Step 4: Chi-Square Statistic

Gamified or Not	Yes	No
Yes	$(96–55)^2$ / 55 = 30.56	$(28–69)^2$ / 69 = 24.36
No	$(14–55)^2$ / 55 = 30.56	$(110–69)^2$ / 69 = 24.36

$\chi 2=109.84$\chi^2 = 109.84$\chi 2=109.84$
Step 5: Degrees of Freedom

$$df=(2-1)\ (2-1)= 1$$

Step 6: Critical Value
At $\alpha = 0.05$ and df = 1, critical $\chi^2 = 3.841$.
Step 7: Decision
Since $\chi^2 = 109.84 > 3.841$, we reject H_0.
Conclusion: Significant association between gamification and performance.

LIMITATIONS:
Time Constraints: The study's duration may limit the observation period for measuring the long-term effects of gamification.
Contextual Factors: The findings may be specific to the chosen institution or program, and generalizability to other contexts may be limited.
Participant Motivation: Participant motivation to engage with the gamified elements may vary, which could affect the results.
Participants and sampling method:
The group of 124 Students in control group and 124 Students' experimental group. Both the group who have experienced the Gamified Learning and not gamified learning platforms for management courses.

VI. CONCLUSION

This study provides the enough evidence that gamification has a significant positive impact in online management education. When comparing students exposed to gamified learning with those in non-gamified settings, results show that game features encourage increased engagement, motivation, and performance in learning activities. A Chi-Square test indicated a statistically significant relationship between gamification and Student engagement ($\chi^2 = 56.44$, $p < 0.05$) and performance ($\chi^2 = 109.84$, $p < 0.05$). This indicates that gamification increase engagement and help to achieve better learning outcomes. This clearly identify the benefits of gamification in online management education. The rewards, achievements, and challenges provided by gamification-enabled learning activities led students to have deeper, meaningful, and delightful experiences that almost cemented the satisfaction and engagement of the students toward the course content. These results prove beyond doubt that gamification enhances the overall learning experience aside from improving the productivity. With the shift in educational practices to digital platforms, educational practitioners truly face the difficulty of keeping students on track and improving their educational outcome, thus making gamification one of the most important possible strategies that should be considered. This research fills in gaps in studies on online education, hinting at practical implications for educators, instructional designers, and policymakers. Future research should establish the exact game elements that deliver most effectiveness so that more precise and potent applications of gamification can be used to various educational contexts.

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