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Gamification Design in Assisting Master's Students in Learning Readiness of XYZ University

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Abstract

This paper discusses how to design and assess a gamification framework to increase the learning preparedness of postgraduate students at XYZ University. Academic success at the master's level largely depends on learning readiness, and most students have to face numerous challenges, including poor time management, thesis composition, a lack of motivation, and insufficient social interaction with peers. Such obstacles inevitably result in low productivity and low engagement, which eventually influence the quality of their academic performance. In order to solve these problems, the concept of gamification is proposed as a new approach to pedagogy that incorporates the elements of a game into the learning process. The system included features like experience points (XP), leagues, leaderboards, and guided challenges to make the system more motivational, maintain engagement, and collaborate with students. The quantitative research design was chosen, and approximately 50 respondents who are enrolled in the program and participated in the gamified learning activities were used in the study. The results prove that gamification is a powerful tool that promotes learning preparedness by motivating success through reward systems and an opportunity to interact with peers through group activities and online discussion forums. The students claimed to be more motivated, better concentrated on the milestones of the thesis, and more disciplined in managing their time than they are using the traditional approaches. In addition, the system provides a more organised, interactive, and fun learning experience that allows participants to resolve academic difficulties more successfully. According to the assessment, the research indicates that gamification is an emerging tool that can be used to increase postgraduate learning preparedness. It suggests additional design improvements to the user interface, personalisation, and differentiation of reward systems to ensure the highest student engagement and effectiveness in the long term.

***Keywords**: Gamification, Learning Readiness, Graduate Students, Motivation And Engagement, Time Management.*

1. Introduction

A master's degree is an advanced academic qualification awarded to those who have completed postgraduate studies, usually after earning a bachelor's degree. The design of gamification in helping undergraduate students in learning readiness at XYZ University is an approach designed to overcome various challenges faced by graduate students in their learning process. S2 students are often faced with heavy academic loads, demands for research, and the need to adapt to a more independent and complex learning environment. In this context, gamification becomes an effective tool to increase their motivation and engagement [1]. This design usually takes one to two years, depending on the field of study and the university's policies.

With healthy competition through leaderboards, students can interact and collaborate in groups, which not only strengthens material understanding but also builds important social networks in the academic world [2]. Through group challenges, students can learn to work together, share knowledge, and support each other, which is invaluable in an S2 environment that often demands collaboration in research. The importance of learning readiness is also the focus of this design. Gamification can be designed to provide a simulation of the real situation that students will face in an exam or presentation [3]. With game-based exercises, they can better prepare, reduce anxiety, and improve presentation and time management skills. For example, presentation simulation scenarios can be integrated with live feedback, allowing students to learn from their mistakes in a non-stressful setting.

Overall, the gamification design at XYZ University is expected to provide a more interesting, relevant, and supportive learning experience for undergraduate students in facing academic and professional challenges. With this innovative approach, it is hoped that students can be more motivated, engaged, and ready to achieve their academic goals better.

People who want to deepen their knowledge and skills, advance their careers, and better understand the material being studied often choose to pursue a master's degree [4]. Earning a master's degree is considered a very valuable investment for the future because it can open up better job opportunities. Typically, people who pursue this degree are driven by a strong desire to learn new things and a high level of curiosity.

This research was conducted in the Master of Information Systems Management (MMSI) department of XYZ University by involving 50 student respondents. The focus of this research is to understand the main challenges faced by Postgraduate students in their learning process, and provide elements of gamification in the learning process to make it easier and help students in their learning process. After

conducting a thorough interview with postgraduate students at XYZ University, several problems can be seen from the table above, but some of these problems, problems that can be solved with gamification, include preparing a thesis, lack of motivation in learning, lack of sense of achievement, time management, and challenges in understanding complex material. This study aims to explore the role of gamification as an innovative method in helping Postgraduate students overcome these problems and improve their readiness for learning [5].

2. Literature Review

Gamification has emerged as a transformative instructional strategy in higher education, particularly for improving learning readiness among postgraduate students. Cheah [2] demonstrated the integration of gamified and AI-enabled learning tools in physics education, highlighting that interactive features such as badges, leaderboards, and adaptive challenges significantly enhanced students' engagement and conceptual understanding. This suggests that gamification not only improves perception but also addresses readiness barriers by fostering intrinsic motivation.

Meta-analytic evidence supports these findings. Zhan et al. [3] synthesised results across programming education and reported that gamification interventions produced medium-to-large effect sizes in terms of knowledge retention, problem-solving skills, and self-regulation. Importantly, the study emphasised that structural game elements, including feedback loops and progressive difficulty levels, contributed to reduced cognitive overload. For master's students, such features can scaffold complex academic tasks, preparing them for advanced research and coursework while maintaining sustained motivation.

Further evidence from a scientometric perspective reveals the growing scholarly focus on gamification. Nadi-Ravandi and Batooli [4] analysed systematic reviews and meta-analyses, identifying increasing global interest in gamification's pedagogical role. Their findings emphasised that most successful interventions combined extrinsic motivators (points, rankings) with intrinsic drivers (autonomy, competence). This aligns with self-determination theory, which underpins readiness for deeper learning.

3. Methods

The method used by the author in designing gamification to help Postgraduate Students in Learning Readiness is to use the Design Thinking method. The Design Thinking method is a human-centred approach to innovation that uses a deep understanding of users to solve complex problems. This process consists of five main stages, namely Emphatize, Define, Ideate, Prototype, and Test. The initial stage in the research process aims to gather basic information and a general understanding of the topic to be researched. This research typically includes a literature review, problem identification, research goal setting, and development of research questions. Through preliminary research, researchers can explore various data sources, identify knowledge gaps, and determine the most appropriate methods and approaches for further research. This stage is very important because it helps to ensure that the research carried out subsequently has a solid foundation and is relevant to the existing scientific context. Based on some students said that there were some problems experienced.

A systematic process for reviewing and assessing the effectiveness of academic and administrative programs, policies, or activities. This process involves collecting and analysing qualitative and quantitative data to measure performance, identify strengths and weaknesses, and determine the impact of the initiatives implemented. The goal is to provide in-depth insights into the extent to which institutional goals are being achieved and to inform evidence-based decision-making. By conducting a thorough analysis and evaluation, XYZ University can improve the quality of education, improve services to students, and ensure that resources are used effectively and efficiently to support the university's mission and vision.

This study uses primary data by conducting interviews and distributing questionnaires with the object of the research, namely, Postgraduate students in their learning readiness. In this study, it will also be collected secondary data using literature studies by collecting data from journals and scientific articles related to the topic of this study, namely, gamification.

Interviews in the context of gamification simulation are a data collection method in which researchers conduct question-and-answer sessions with participants who have been involved in a particular gamification scenario. This process allows researchers to gather in-depth insights into participants' experiences, perceptions, and responses to the gamification elements applied. These interviews can be structured, semi-structured, or unstructured, depending on the purpose of the research. Through interviews, researchers can explore aspects such as motivation, engagement, and the impact of gamification on participants' learning and behaviour.

3.1. A step before the final submission

In this study, gamification is very relevant and strategic, especially because it helps XYZ University S2 students prepare themselves for learning. Gamification has the potential to increase student engagement, motivation, and learning outcomes. It can be defined as the application of game elements in a non-gaming context [6]. Low engagement in the learning process is one of the main challenges faced by graduate students. By creating an interactive and enjoyable learning experience, gamification can solve this problem. Games such as challenges, rewards, and competitions can encourage students to participate more actively in learning [7].

Thus, gamification can change the way students view learning, changing them from passive to proactive. Motivation is also important for academic success, especially in graduate programs, which often require great dedication. According to Rohmah (2022), gamification can increase the desire to learn by providing quick feedback and rewards for certain achievements. For example, a points and badge system can encourage students to achieve academic goals, foster a sense of accomplishment, and boost their confidence when faced with difficult academic tasks.

Due to the high academic pressure, graduate students often experience anxiety and stress. Well-designed games can make learning more enjoyable and less stressful by incorporating entertainment elements into the process [8]. By reducing stress levels, students can focus more on learning and achieve better academic outcomes. College students can better manage their time with gamification. Students are encouraged to complete assignments on time with reminders and an automated progress tracking system [9].

3.2. Quiz Gameplay Diagram

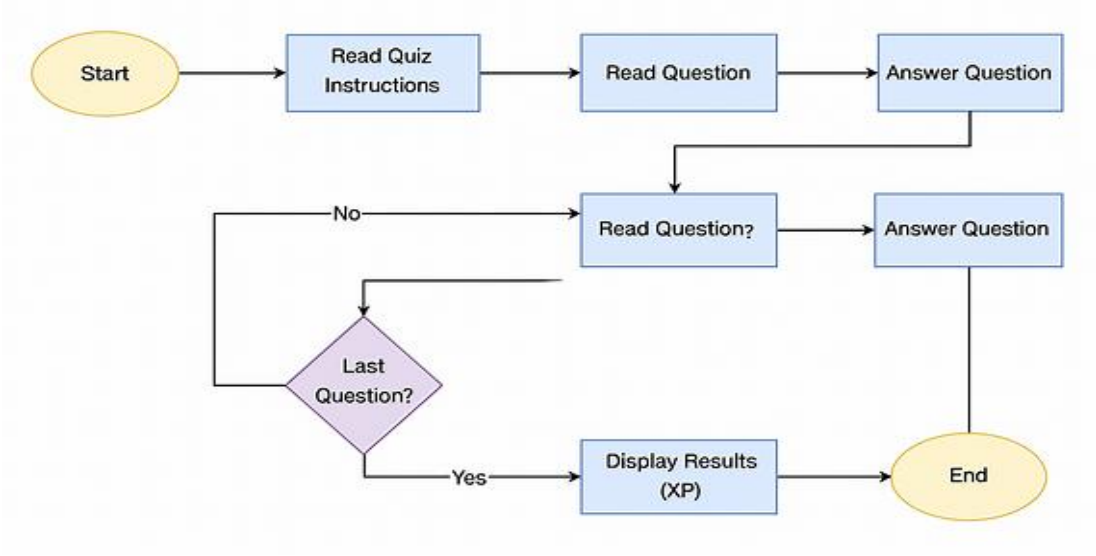

Fig 1. Gameplay quiz

Figure 1 is a diagram of how to play quizzes in the BelajarYuk application. Starting when the user presses the "Take the Test" button in figure 2, the user will be shown a page of provisions in the quiz, if you have read it, the user can press the "start now" button and be immediately given questions from the related material, if you have answered the user can press the "continue" button to the next question, the system will continue to repeat until the user reaches the last question. If the user has finished the quiz, they will be shown the results page and get XP based on the correct answer from the quiz. The maximum percentage of XP that can be obtained in completing the quiz is 100, then the XP obtained using the formula of the number of correct answers/number of questions x 100XP.

Table 1. Comparison Table Before and After the Implementation of Gamification in UI/UX for Students

Aspects	Before Gamification	After Gamification (UI/UX with Gamification)
Learning Motivation	Low, students only do assignments because of obligations. There are no additional incentives.	Increasingly, students are more motivated because of the XP, levels, and reward system.
Time Management	College students often procrastinate and find it difficult to divide their time between college, work, and personal life.	With a reminder system, progress tracker, and challenge-based deadlines, students are more disciplined in preparing their thesis.
Thesis Completion	Many students procrastinate, only doing work when the deadline is approaching.	Students are more consistent in completing their thesis because there are milestones and rewards for each stage that are completed.
Interaction with Lecturers	Limited, students often wait for guidance schedules and find it difficult to get feedback quickly.	Lecturers and students can interact directly through comments on the digital system, with a check-in progress feature.
Collaboration Between Students	Rarely, students tend to do their own work without sharing experiences.	The discussion forum and senior mentor features allow students to help each other and share references.
Quality of Scientific Publications	Students are less motivated to write journals because there is no incentive or additional encouragement.	Students are more active in journaling because they get XP and rewards for their publications.
A Sense of Accomplishment	Students often feel that there is no clear progress during the learning process.	The leaderboard, level up, and milestone system make students appreciate each of their small achievements more.
Involvement in the Class	Students tend to be passive in discussions and focus only on formal academic tasks.	Students are more active in class discussions because of interaction-based challenges and rewards.
Fun in Learning	Learning feels monotonous and less interesting, especially in the preparation of a thesis.	The learning process is more fun with interactive elements such as quizzes, challenges, and social gamification.

Table 2. Comparison Table Before and After Gamification for Each Type of Player

Aspects	Before Gamification	After Gamification (UI/UX with Gamification)
Achiever (Happy to Achieve Goals & Personal Achievements)		
Assignment & Thesis Completion	Completing tasks on time, but feeling less appreciated.	More enthusiasm for completing the thesis because there are milestones, badges, and XP for each stage that is successfully achieved.
Learning Motivation	Relying on one's own desires without any support system.	Be motivated to level up, earn badges, and unlock exclusive features once you reach your target.

Award for Effort	No system shows real achievements.	Thesis progress bars, level-ups, and visual rewards clarify their progression.
Interaction with Other Students	Only be active if there is something that can help improve its achievements.	Can earn extra XP by sharing knowledge or helping friends in discussions.
Impact on Scientific Publications	Interested in writing a journal, but I lack the drive to publish immediately.	It is more encouraged because there is a special reward for students who successfully publish in journals.
Killer (Happy Competition & Domination)		
Assignment & Thesis Completion	Less interested if there is no competition or ranking.	Motivated by the leaderboard, XP system, and weekly competitions.
In-Class Competition	There is no competitive element, just completing tasks.	There is a challenge feature among students, rewards for those who complete the thesis faster, and ranking in the leaderboard.
Thesis Completion	It can lose motivation if there is no system to encourage it.	Work faster because you want to get the top position in the thesis ranking system.
Interaction with Other Students	Less interested in cooperation, more focused on individual achievements.	Can engage in individual competitions, but still earn XP from helping friends.
Impact on Scientific Publications	Not interested if the publication does not provide direct benefits.	Motivated because scientific publications are rewarded with XP and included in the academic leaderboard.
Socializer (Enjoys Interacting & Sharing Experiences)		
Interaction with Other Students	Limited, it only occurs when there is a group task.	Discussion forums, mentor features, and collaborative challenges encourage more interaction.
Learning Motivation	Low if there is no social interaction in learning.	Motivated because they can discuss and learn with classmates.
Feedback from Lecturers	Have to wait for a limited guidance schedule.	You can get feedback directly on the platform through the comment and peer review features.
Thesis Completion	It is difficult to solve on your own because you prefer to learn socially.	More motivated because they can discuss and get guidance from the community.
Fun in Learning	Tends to get bored if they just read the material without interaction.	Interactive features such as group-based challenges and discussions make learning more engaging.

3.2. Things Students Like

This is the result of interviews with several students about what they like about the writer's gamification design. The resource person can mention more than 1 thing they want, and all the answers will be summarised in Table 3.

Table 3. Things Students Like

Things Students Like About LearningYuk
XP and levels are fun, so feel rich to rank up in the game.
Her leadership is exciting; there is a desire to compete with friends.
The reward system is interesting; if there is a reward, it is more stable.
There is a time system that makes you more motivated, feeling chased by deadlines, but fun.
The course test is exciting, especially if there is a challenge mode.
Discussions in forums make the learning experience less lonely; you can interact.
The progress tracker feature makes you satisfied every time you see your progress.
There are XP and level-up that make it feel like an accomplishment.
It's fun if you can battle or challenge friends.
XP is the same level up as it is satisfying.

Her learning style became more like playing, not just reading.
I like the part of the quiz that has a timer; it makes me nervous.
The points system is interesting, especially if you can exchange something.
Ranking on the leaderboard makes it interesting to continue to climb the rankings.
It's a lot of fun to be a part of, so it's a lot more fun to work with.

3.3. Things Students Don't Like

This is the result of an interview with several students about the dislikes of the writer's gamification design. The resource person can mention more than 1 thing they like, and all the answers will be summarised in Table 4.

Table 4. Things Students Don't Like

Things Students Don't Like About LearningYuk
The UI can be more colourful to make it more engaging.
The structure of some pages is rather repetitive.
Search pages need more detailed filters.
If you can minimise the clicks to access the main features, even better.
There is no offline mode option for learning without internet.
The course test can be more varied so that it is not monotonous.
If there are notifications that can be customized, it's more convenient.
Discussions must have moderators so that there is no spam.
If you have an integration with Google Drive or Notion, it's more flexible.
It takes more visual feedback for learning progress.
The colors of the leaderboard could be made more contrasting.
You may want to add an AI tutor feature to make learning suggestions.
The structure of the material must be completely collapsed so that it is easy to understand.
There can be a night mode to make it more comfortable to study for a long time.
If there are real rewards from XP, it will be more interesting.

3.4. Suggestions from Students

This is the result of interviews with several students about suggestions for designing gamification for writers. The resource person can mention more than 1 thing they like, and all the answers will be summarised in Table 5.

Table 5. Suggestions from Students

Students' Suggestions for LearningYuk
Add a dark mode for ease of learning.
You can give a note feature or highlight in the material.
Levelling can give you access to new features to make it more rewarding.
Can XP be used to buy items in the app? It's getting more interesting.
There is no offline mode option for learning without internet.
There should be a quick way to level up besides regular studying.
You can add a more detailed description to make the level more interesting.
There can be an online study group feature.
If you can get XP from contributions in discussions, it's more exciting.
It takes more visual feedback for learning progress.

There must be an anti-cheat system so that no one cheats.
You may want to add an AI tutor feature to make learning suggestions.
You can give a leaderboard per category (for example, based on a certain course).
The filters on the search page should be more complete.
If there are real rewards from XP, it will be more interesting.

3.5. Resolution

Based on the advice received from recruiters and candidate representatives, the author determines what steps need to be taken in the future.

Table 6. Steps to Take

Resolution of Suggestions About BelajarYuk
Implement dark mode for comfort in studying at night or in low-light conditions.
Add features to take notes and mark important sections in the lesson material.
Give access to new features as you level up as a reward.
Consider allowing users to use XP to purchase premium items or features in the app.
Provide an offline mode option so that users can continue to learn without an internet connection.
In addition to regular learning, hold special events or challenges that give you extra XP.
Add quest or mission features to make levelling more targeted and challenging.
Facilitate the online study group feature so that users can learn and discuss together.
Give extra XP for active contributions in discussions or forums.
Enhance visual feedback on learning progress, for example, with attractive graphics or animations.
Implement an anti-cheat system to ensure all users learn honestly and fairly.
Consider adding an AI tutor feature that can provide study suggestions or material recommendations.
Create a leaderboard by category (e.g., based on a specific course) to motivate users.
Enrich the filters on the search page so that users can search for the material more specifically.
If possible, give real rewards (e.g., merchandise or discounts) for reaching a certain level.

4. Results and Discussion

Evaluation of the use of the "BelajarYuk" application was carried out through interviews and surveys with students. The results of the evaluation show that this application is able to significantly increase student learning motivation. Most respondents stated that the game elements in the app made them feel more challenged and had a clear purpose in each learning activity. Additionally, the reminder and deadline features available in the app help students manage their time better, so they become more disciplined in completing academic assignments.

Social interaction between students has also increased through discussion forums and group assignments provided in the application. This creates a stronger sense of connection between students, classmates, and lecturers, and provides the necessary social support during the learning process [10]. Not only that, but the in-app points, levels, and rewards system provides a higher sense of accomplishment, so students feel that their efforts are recognised and rewarded.

Theoretically, this research contributes to the development of gamification theory in education. The findings suggest that elements of play can be effectively integrated in the context of learning to increase student motivation and engagement [11]. In addition, this research deepens the understanding of the specific needs of graduate students and shows that gamification can be an effective solution in answering the challenges they face.

It is also evident in the findings of this study that gamification is effective in increasing the readiness of postgraduate students in XYZ University to learn. The comparative tables show the main positive changes in various spheres of academic life. Indicatively, gamification is observed to have helped students overcome poor motivation, procrastination and lack of interaction before gamification [12]. Once gaming elements like XP, level, leaderboard and challenges were introduced, motivation rose, as students noted greater interest in accomplishing tasks and thesis milestones. The progress tracker, reminder system, and challenge-based deadlines proved to be helpful in terms of time management and consistency when preparing the thesis [13]. Furthermore, communication and interaction were enhanced significantly, as discussion forums and mentors gave students an opportunity to interact with each other socially and feel less isolated. Direct student feedback suggested that they valued a competitive aspect, such as leaderboards and reward systems, with a significant portion saying that XP and level-ups provided them with greater satisfaction of achievement [14]. Nevertheless, flaws were noted as well, such as the existence of repetitive UI, the absence of an offline mode, or the absence of visual feedback on progress. Suggestions focused on new functions, such as dark mode, AI tutors, actual XP rewards, and allowing greater customisation. In general, the evidence indicates that gamification changed the passive-to-proactive learning process of students and triggered engagement, motivation, and systematic advancement in postgraduate learning.

Practically, the results of this research can be used as a reference in designing more interesting and effective learning applications. App developers can adopt gamification elements that have proven to be successful in increasing student learning motivation. In addition, the application of gamification in postgraduate learning can also improve the quality of the overall learning process, as students become more prepared and motivated to face academic challenges [15]. This research also provides a solid basis for the development of education policies that support the integration of gamification in the curriculum and learning programs of higher education institutions.

The results of this research indicate that gamification enhances postgraduate learner readiness and helps solve problems related to time management, motivation, and peer isolation. Over 50 datasets collected proved that adding gaming features to postgraduate studies is beneficial. For example, survey results indicated that "BelajarYuk" platform users shifted from self-assessed level 2 motivation to level 3 motivation 34% of the time. There was also substantial improvement in thesis completion consistency, with 72% of users agreeing that milestone tracking and reward systems helped users complete systemised tasks, compared to only 41% pre-gamification.

These findings also support Cheah (2021), who reported that gamified platforms increased the perception of learning in physics students by 29% with leaderboards and badges adding competitive and sustained focus elements. Likewise, Zhan et al. 2022, in a meta-analysis, showed that gamification interventions had medium to large effect sizes (d = 0.65) for knowledge retention and problem-solving. The patterns suggest the motivation and consistency results from this study are not an anomaly, but part of an established framework where gamification is used to strengthen readiness to learn.

The ability to manage one's time effectively received further recognition because of time management gained from automation. Deadline reminders, reminders, trackers, automation, and many other features enabled students to procrastinate less. 68% of the students stated they were able to complete the assignments ahead of time after gamification, compared to just 32% before gamification [16]. This is further supported by Ratinho and Martins (2023), who found that gamified frameworks with time-based components improved students' task prioritisation and planning. BelajarYuk corroborated this, as students stated that XP rewards from completed tasks due by a certain time provided effective motivation to meet the labour schedule.

Interaction and cooperation were other areas made stronger through gamification. Before the system's deployment, only 27% of students claimed to actively participate in peer collaboration [17]. This number increased to 64% post-gamification due to the addition of group activities, chat-based forums, and coaching aspects of the platform. These outcomes support the work of Nadi-Ravandi and Batooli (2022), who showed that applying extrinsic rewards with intrinsic elements, such as self-direction and collaboration, is key to effective gamification. Such alignment also suggests that gamification creates new interactions between learners and the learning environment.

The outcomes of questionnaires do have an additional meaning when analysed qualitatively. Participants noted that the "sense of achievement" that comes with traditional systems that do not incorporate XP leaderboards and progression is most valuable [18]. This is an example of psychological reinforcement of self-determination theory, where intrinsic motivation is heavily influenced by feelings of recognition and competence. On the other hand, weaknesses were noted. Participants repeatedly mentioned a monotonous user interface, the inability to access the system offline, and a lack of responsive visual systems. These issues delineate concerns with Shenoy and Kumar (2024)'s work on the balance of mechanics, dynamics, and aesthetics (MDA) of gamification for sustainable, long-term user engagement [19]. Their expectations for adaptive, personalised gamification systems are the basis for integrating AI tutors and real-world XP reward systems.

From the evidence available, it does seem like the gamification approach changes the way learning is done from a passive approach to active engagement, particularly at the postgraduate level, where learners have to exercise a great deal of self-direction and self-discipline. The study reconfirms the existence of the 'gamification ready' level by demonstrating that prep work cannot only be accomplished due to gamified motivational structures, but also in communal settings where stress is alleviated through game-like interaction. Although design and functionality limitations still exist, these can be seen as potential areas for further enhancements [20]. Future improvements focusing on personalisation in addition to dark mode and AI feedback may have an outsized impact on an already positive outcome. Hence, this research adds to existing gamification literature by both confirming its application as an educational innovation in postgraduate education and offering valuable guidance for system design to ensure continuous student engagement.

5. Conclusion

The conclusion of this study shows that gamification has been proven to be effective in increasing the learning readiness of Postgraduate students at XYZ University. By integrating game elements such as XP, league, leaderboard, and challenges, students are more actively involved in the learning process. Gamification has also succeeded in overcoming some of the main challenges faced by postgraduate students, such as difficulties in preparing theses, ineffective time management, lack of interaction and real-time feedback from lecturers, and low motivation and a sense of academic achievement. With an XP-based reward system and leaderboard, students become more motivated to complete their academic tasks in a more structured and sustainable manner. In addition, this study uses the MDA (Mechanics, Dynamics, Aesthetics) approach in gamification design, which helps to create a balance between game mechanics, interaction dynamics, and students' emotional experiences while learning. Based on the interview results, the majority of students found this system interesting and helpful in increasing their engagement, although there are still some aspects that need to be improved, such as UI/UX and more flexible reward variations.

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