

Evaluation of Reading Interest Based on Octalysis Gamification

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Article Info	ABSTRACT
Article history: Received January 11, 2024 Revised January 29, 2024 Accepted February 14, 2024 Keywords: Literacy Improvement Gamification Octalysis Framework Reading Motivation User Engagement E-learning Indonesia Literacy	An abstract is often presented separate from the article, so it must be able to In the rapidly evolving information and technology era, literacy remains a crucial factor for a competitive and innovative society. Despite its significance, Indonesia faces a severe literacy challenge, evidenced by low reading interest and poor performance in international assessments like PISA. This issue is exacerbated by data from UNESCO and global literacy rankings, revealing that only a minimal fraction of the population engages in regular reading. With the advent of Industry 4.0, the ability to access and analyze information through reading has become increasingly vital. This study aims to address this challenge by leveraging gamification to enhance reading motivation and engagement. Specifically, it employs the Octalysis Framework by Yu-kai Chou to design a gamified system tailored to intrinsic user motivations. The research has three main objectives: identifying user profiles using Octalysis to understand individual reading motivations; designing and implementing gamification elements in the "Codex Horizon" app, including points, achievements, and community features; and evaluating the effectiveness of these elements in increasing reading engagement. The study seeks to provide insights into how gamification, grounded in Octalysis Framework, can be utilized to improve literacy in Indonesia, offering practical guidance for developers, educators, and policymakers. <i>This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.</i>
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1. INTRODUCTION

In the rapidly advancing information and technology era, literacy is a key factor in shaping a competitive and innovative society. However, ironically, reading interest in Indonesia remains extremely low. This is evidenced by various studies and international surveys placing Indonesia at the lower end of literacy rankings. For example, the 2018 Programme for International Student Assessment (PISA) survey placed Indonesia at the lowest values for mathematics, reading, and science [1]. This result indicates a serious issue in Indonesia's education system, particularly in developing reading interest and skills.

Furthermore, data released by UNESCO presents a more alarming fact. Out of 1,000 Indonesians, only 1 person is a regular reader, or just 0.001% of the total population [2]. This figure is far behind compared to high-literacy countries. In fact, a study titled "World's Most Literate Nations Ranked" by Central Connecticut State University in 2016 ranked Indonesia 60th out of 61 surveyed countries [2]. This ranking not only reflects

low reading interest but also highlights the quality and accessibility of reading materials and the need for improved educational infrastructure.

The low reading interest is a crucial issue, especially as the world enters the 4.0 industrial revolution or the fourth global industrial revolution. In this era, technology has become the foundation of human life, influencing all aspects of life, including the economy, politics, culture, arts, and especially education [3]. In this context, the ability to access, understand, and analyze information through reading becomes increasingly important, not only for academic success but also for understanding and adapting to the rapid changes brought by the digital age.

One innovation that has emerged as a response to this challenge is the use of technology in education, particularly e-learning. However, despite offering flexibility and accessibility, issues of motivation and user engagement remain challenges. This is where gamification presents a potential solution. Gamification, which involves applying game elements, mechanics, and aesthetics to non-game systems, has proven effective in enhancing motivation, experience, and user engagement [4].

In the context of education and e-learning, gamification has shown potential to increase learning motivation, engagement, and outcomes [4]. Game elements such as experience points, badges, and leaderboards are often implemented in online educational environments [5]. However, the effectiveness of gamification relies not only on these elements but also on how they are designed and implemented according to the context and user profiles.

This is where the Octalysis Framework, developed by Yu-kai Chou, becomes highly relevant. The Octalysis Framework divides human motivation into eight "Core Drives": Epic Meaning & Calling, Development & Accomplishment, Empowerment of Creativity & Feedback, Ownership & Possession, Social Influence & Relatedness, Scarcity & Impatience, Unpredictability & Curiosity, and Loss & Avoidance [6]. This framework allows gamification designers to identify user profiles and design gamification elements that align with their intrinsic and extrinsic motivations [4].

In the context of increasing reading interest in Indonesia, utilizing the Octalysis Framework in designing gamification is highly intriguing. By understanding what motivates individuals to read—whether it is a sense of achievement, social influence, ownership, or fear of missing out—we can design systems that not only offer external rewards but also tap into users' intrinsic motivations. This is crucial because, while external rewards like points or badges can boost short-term engagement, intrinsic motivations such as achievement or creativity are necessary for fostering long-term reading habits.

This study aims to evaluate reading interest using the Octalysis gamification method, focusing on understanding and leveraging users' intrinsic motivations. The study has three main objectives: first, to identify user profiles using the Octalysis Framework to understand individual motivations for reading, particularly within the context of Indonesian society with low literacy levels. Analysis of the eight Core Drives of Octalysis will be used to understand whether users are motivated by achievement or social influence. Second, to design and implement gamification elements in the "Codex Horizon" app based on Octalysis analysis results. These gamification elements include a points system, achievements, titles, personalized borders, and a book discussion community. Unique features such as real-time collaborative storytelling will be added to enhance user engagement.

Overall, this research aims to provide new insights into how technology, specifically gamification, can be used to improve literacy. By integrating the Octalysis Framework, we are not only applying gamification but doing so in a human-centered way, understanding and leveraging users' intrinsic motivations. The results of this study are expected to offer guidance for app developers, educators, and policymakers in designing more effective interventions to enhance literacy in the digital age.

2. METHOD

Figure 1 illustrates the stages in the research process undertaken. Starting from literature review, needs analysis, designing solutions, discussing evaluation results, drawing conclusions, to implementing the design. Each of these stages is interconnected and crucial for achieving the research objectives. Further details about each stage are provided in the following sections.

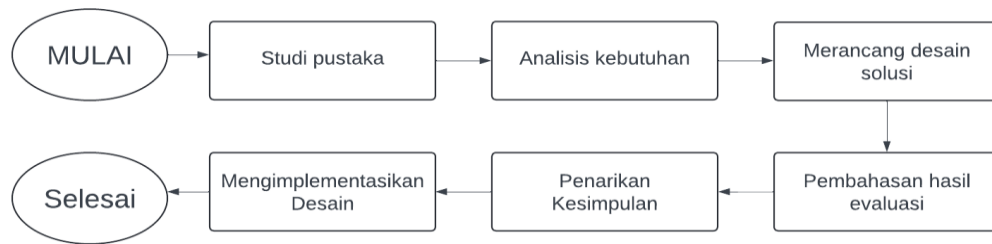


Figure 1. Research Flow

2.1. Literature Review

The literature review was conducted by examining various sources such as books, scientific articles, journals, conferences, and digital publications. The aim of this stage is to establish a theoretical foundation that includes User Experience (UX), the application of gamification, the Octalysis framework, Human-Centered Design, and the evaluation of user experience (Technique User Experience Evaluation for E-Learning (TUXEL)).

2.2. Requirement Analysis

This stage evaluates the functional and non-functional requirements of the application, as well as identifies user characteristics using the Octalysis Framework. In gamification project development, it is essential to undergo the process of understanding the gamification audience, identifying gamification goals, and designing a gamification system that reflects the audience's characteristics [12].

The target users for this research are communities or groups of people aged 15–30 years. Specifically, this group consists of 40 individuals for identifying user profiles using the Octalysis Framework. The needs analysis for functional and non-functional aspects is conducted with stakeholders.

2.2.1 Functional Requirements

The specifications for the application's functional and non-functional requirements are listed in Table 1. This table outlines the basic requirements to be implemented in the solution design.

Table 1. Functional and Non-Functional Requirements

No	Functional Requirements	Non-Functional Requirements
1	Register and login to an account	Security
2	Search for stories	Reliability
3	Read stories	Performance
4	Write stories	Usability
5	Create a profile	Scalability
6	Interact with other users	Accessibility
7	Manage the library	Internationalization capability
8	Adjust settings	
9	Manage communities	
10	Manage points	
11	Manage statistics	

2.2.2 Gamification Profile Identification

The process of determining the gamification profile uses the *Octalysis Framework*, developed by Yu-Kai Chou in 2015, which is considered one of the most effective frameworks for developing gamification projects in educational contexts [12]. The results of the user's motivational or core drives analysis using the *Octalysis Framework* are illustrated in Figure 2.

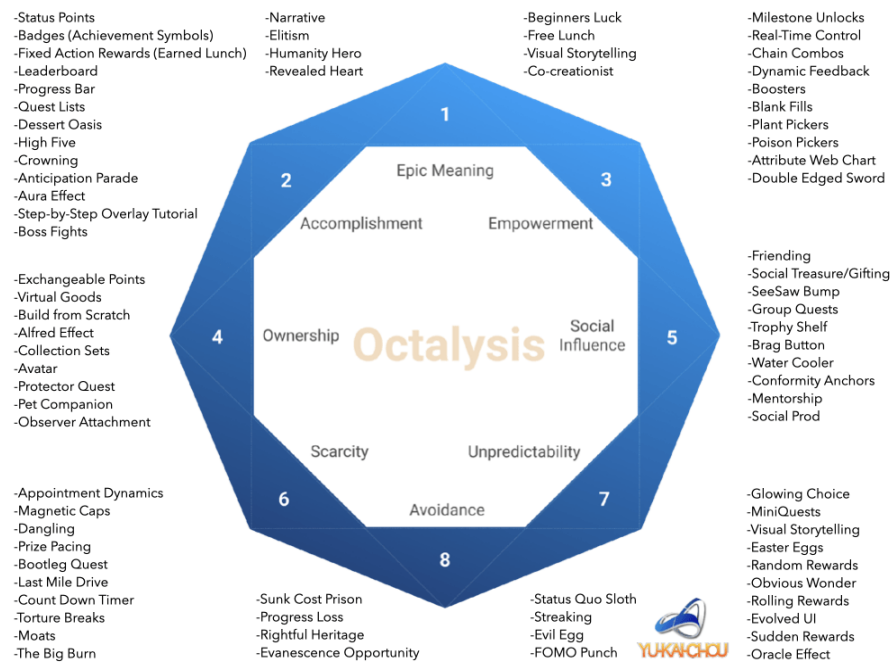


Figure 2. User Core Drives Profile

2.3. Gamification Design Development

The design solution development will begin by creating a high-fidelity prototype with a clearer display using Figma. The tool that will be used to create the high-fidelity prototype in this research is Figma. The solution design will be based on the key features of the functional requirements that have been outlined.

2.4. Design Solution Evaluation

The solution design created in the previous stage will be evaluated using TUXEL. This evaluation aims to assess aspects of usability, pedagogical usability, and measure the success level of the user experience in the gamification project within the learning system. The dimensions of usability and pedagogical usability are organized in the form of a questionnaire divided into several categories. However, in the user experience (UX) dimension, the questionnaire is based on the User Experience Questionnaire (UEQ) method, with two additional comment columns containing critiques and suggestions to gather more comprehensive feedback on the Learning Management System (LMS). The explanation of each category in the usability, pedagogical usability, and user experience aspects can be seen in Table 2. The questionnaire will be given to respondents after users complete specific tasks. Each defined task must ensure it meets every category in the usability aspect and covers the gamification elements in the core user drives that have been added. The explanation of these tasks can be seen in Table 3.

Table 2. TUXEL Evaluation

Category	Criteria	Key
Usability Inspection	Ease of use, efficiency, clarity, and learnability.	Is TUXEL easy to use, efficient, clear, and easy to learn?
Pedagogical Usability	Alignment with learning objectives, learning support, motivation.	Does TUXEL align with learning objectives, provide good support, motivate?
User Experience Evaluation	User impression, satisfaction, and aesthetic value.	Does TUXEL leave a positive impression, satisfy users, and have good aesthetics?

Table 3. Respondent Tasks

No.	Task	Key
1	Searching for books	Find a book by title, author, or genre.
2	Adding books to the library	Add a found book to the user's library.
3	Reading a book	Start reading a book added to the library.
4	Giving a rating and review	Rate and review the book that has been read.
5	Sharing books with friends	Share the book that has been read with friends or the community.
6	Following authors or communities	Follow authors or communities of interest.
7	Writing a story	Start writing a new story.
8	Saving a story draft	Save the draft of the story being written.
9	Editing a story	Edit a previously written story.
10	Publishing a story	Publish the story that has been written.

2.5 Conclusion Drawing

The final stage of this research is to compile conclusions from the entire process that has been conducted. In this conclusion, answers will be discussed for each point outlined in the problem formulation. Additionally, suggestions for further development will be provided so that future research can proceed smoothly. These suggestions include methods that can be used in subsequent research.

3. RESULTS AND DISCUSSION

3.1. Gamification Elements

The design of gamification elements, which is based on the analysis of users' core drives, can be seen in Figure 3.

The design of gamification elements based on the analysis of users' core drives is shown in Figure 3. The gamification elements applied include: Epic Meaning, Accomplishment, Ownership, Scarcity, Avoidance, Unpredictability, Social Influence, and Empowerment.

3.2. Prototype Design

In this stage, the researchers have successfully created an initial model that illustrates the application's interface in more detail. This initial model allows users to interact with the core features and navigation within the Codex Horizon app in a simulated manner.

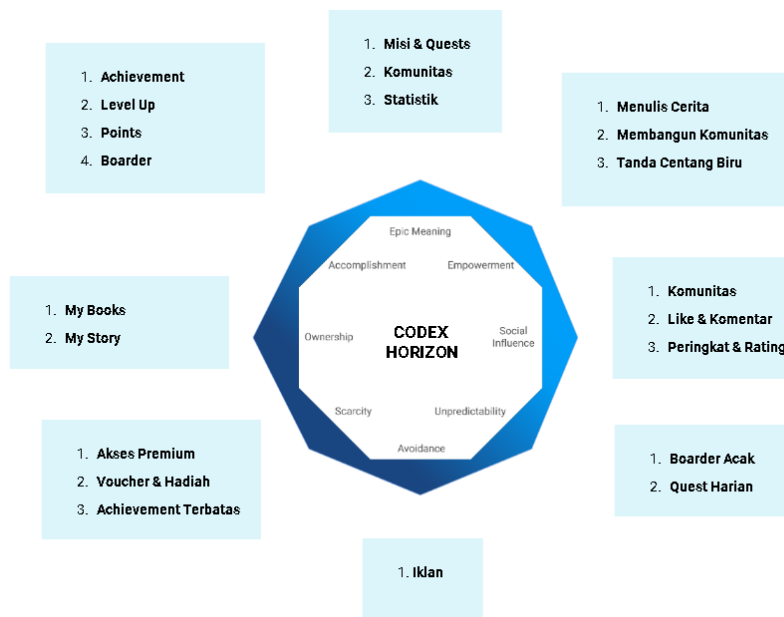


Figure 3. Gamification Elements

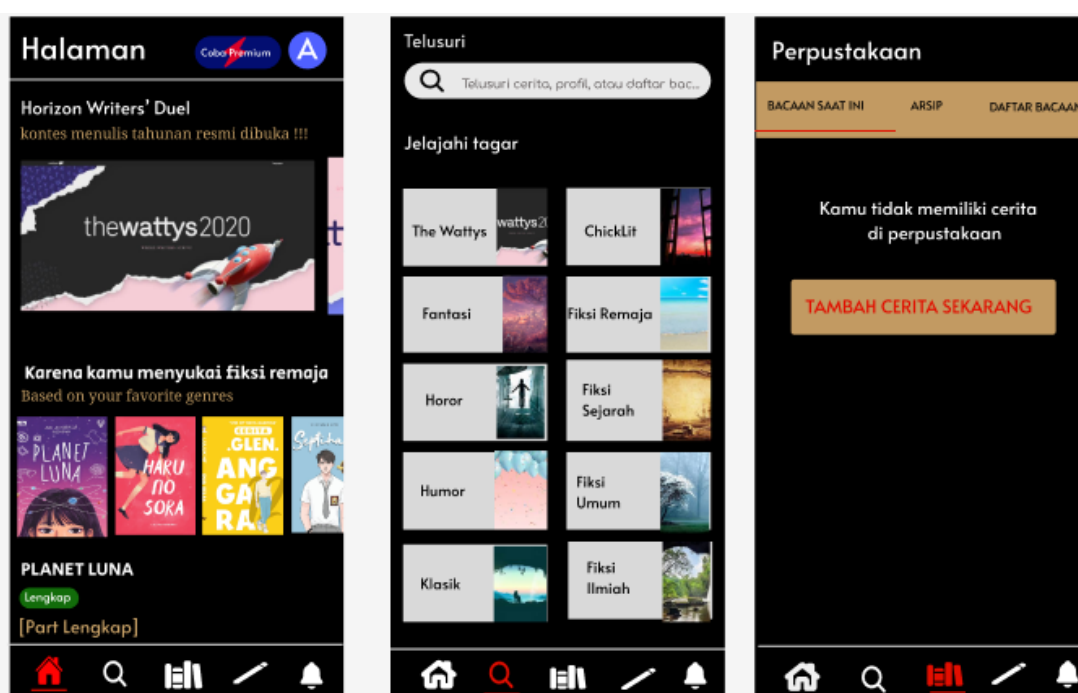


Figure 4. Example of Codex Horizon Prototype

3.3. Evaluation

Based on the data analysis results from Table 4, it can be concluded that the average respondent ratings indicate a high level of agreement with the features offered by the application, with average scores ranging from 3.825 to 4.475. The analysis reveals that features such as Points, Achievement, and Quests have a significant motivational effect on users to continue writing and sharing their work. These features are also considered to help users improve the quality of their writing, provide freedom in choosing the type of content to share, and enhance their sense of responsibility toward their accounts.

Additionally, features like Quests generate curiosity and motivation for users to try them out and keep checking to stay updated. Writing contests are also effective in maintaining user engagement, although they have slightly lower scores. Achievement is proven to be highly effective in showcasing the writers' accomplishments and encouraging them to maintain or improve their writing quality.

Table 4. Core Drive Evaluation Table

Core Drive	Total Score	Scale	Target
C.D.1 Epic Meaning and Calling	174	4.35	10
C.D.2 Development and Accomplishment	166	4.15	10
C.D.3 Empowering of Creativity and Feedback	159	3.975	10
C.D.4 Ownership and Possession	174	4.35	10
C.D.5 Social Influence and Relatedness	164	4.1	10
C.D.6 Scarcity and Impatience	161	4.025	10
C.D.7 Unpredictability and Curiosity	153	3.825	10
C.D.8 Loss and Avoidance Refers	179	4.475	10

Overall, the results of this analysis suggest that the application includes beneficial and effective features for motivating users to continue writing and sharing their work. Detailed results can be seen in the table above. Further details are illustrated in Figure 5 below.



Figure 5. Distribution of Application Feature Evaluations

This study produces findings that align with previous research while offering innovative solutions to enhance user engagement through gamification. Here is a comparison of the findings with previous studies:

- [6] found that reading interest in Indonesia is very low, as indicated by the 2018 Programme for International Student Assessment (PISA) survey. They emphasize the need for an educational system that can spark reading interest. The gamification application attempts to address this issue by providing features that attract users to read and write.
- [7] reported that out of 1,000 Indonesians, only 1 person is a regular reader. This study offers a solution to increase reading interest in a fun and challenging way, differing from traditional methods that may be less engaging for the majority of the population.
- [8] reviewed the importance of accessing, understanding, and analyzing information in the era of Industry 4.0. This application is designed to support these needs through gamification features that encourage users to enhance their literacy skills in a digital context.
- [9] found that elements like leaderboards and badges can increase student motivation in gamified learning applications. Similarly, the results from this gamification application show that features like Achievements and Quests have a comparable impact on motivating users.
- [10] researched the implementation of gamification in education and found that gamification elements can enhance engagement and active learning. This application, with features designed to promote active participation in writing, aligns with these findings, demonstrating that gamification can be adapted to various learning contexts.

Thus, this study not only demonstrates the success of gamification design in this application but also reinforces previous research findings that gamification can be an effective tool for increasing interest and literacy skills. The features provided by this application have proven to motivate users to engage more actively in their literacy activities.

5. CONCLUSION AND RECOMMENDATIONS

This study demonstrates that gamification, using the Octalysis framework, can be an effective solution for increasing the reading interest of the Indonesian population, which remains relatively low. The implementation of the "Codex Horizon" application successfully designed and tested various gamification elements such as points, achievements, titles, personalized borders, and book discussion communities.

Evaluation results from 40 respondents show that these gamification features significantly motivate users. Features such as Points, Achievements, and Quests have proven effective in encouraging users to continue writing and sharing their work. Additionally, these features help users improve the quality of their writing, provide freedom in choosing the type of content to share, and enhance their sense of responsibility towards their accounts.

Overall, this application successfully demonstrates that gamification can enhance user engagement in reading and writing activities. These findings align with previous research indicating that gamification elements such as leaderboards and badges can boost student motivation and encourage engagement and active learning [6]-[10].

Thus, this research not only highlights the success of gamification design in this application but also reinforces previous findings that gamification can be an effective tool for improving literacy interest and skills. The features provided by this application have proven to motivate users to engage more actively in their literacy activities.

Recommendations for future research include broader evaluation methods involving more respondents and various demographic groups to obtain more comprehensive data. Additionally, considering the development of additional features that further personalize the user experience and integrate new technologies such as artificial intelligence may enhance the application's effectiveness in the long term.

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