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Implementation of Gamification in M-Learning English Apps using Octalysis Framework (Sase Study: MTS Development UIN Jakarta)

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Abstract

Studying and mastering the English language is highly important in the current era of globalization. Considering that the influence of globalization has expanded into various fields such as technology, economy, politics, trade, and more. Technology plays a crucial role in understanding and keeping up with changes in the era of globalization. It helps us acquire information, communicate, enhance productivity, expand opportunities, and adapt to changes. The advancement of information technology has entered various aspects of life, including the field of education. Smartphones are one of the widely favored information technology devices, and Android, as the most widely used smartphone operating system, holds a global market share of 70.48%. There are various learning applications on the Google Play Store, but these apps tend to have monotonous and less interactive content, leading users to quickly feel bored. To address these challenges, this research proposes a solution through the implementation of gamification in English language learning applications. Gamification is a concept aimed at enhancing motivation and learner engagement. The researcher uses the Octalysis Framework as a method or framework for designing effective gamification. The researcher selects Madrasah Tsanawiyah Pembangunan UIN Jakarta as the testing ground for the created application. The User Acceptance Testing (UAT) results reach a score of 83.7, interpreted as 'Very Good.' Post-application usage evaluation also indicates an 18% increase in student motivation. These results show that the M-Learning English application with a gamification approach using the Octalysis Framework can facilitate the learning process, meet the needs of teachers at Madrasah Pembangunan UIN Jakarta, and enhance student motivation and interest in learning.

Keywords: *Gamification, Octalysis Framework, M-learning (Mobile Learning), Multimedia Life Cycle Development (MDLC)*

1. Introduction

Currently, we have entered the era of globalization. According to Joseph Stiglitz [1], no country can escape the influence of globalization. Therefore, building networks becomes crucial in this era, covering all aspects of life, including economics, culture, social, political, education, and others [2].

In this era, the English language plays a crucial role as a global communication tool. According to the Ethnologue survey in 2021, English ranks first as the most widely used language globally, with approximately 1.35 billion speakers. It is recognized as the official language in 53 countries and also officially or de facto acknowledged in many international organizations [3]. Therefore, it is important for us to learn English as a fundamental asset to compete and engage with foreign countries.

Technology plays a vital role in understanding and keeping up with changes in the era of globalization. It helps us acquire information, communicate, enhance productivity, expand opportunities, and adapt to changes. The progress of information technology has entered various aspects of life, including education. The use of information technology in education aims to make learning media more interesting, non-monotonous, and facilitate the delivery of learning material more effectively [4]. One widely favored information technology device today is the smartphone, known for its versatility and portability.

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Based on observations on the Google Play Store, educational applications have lower download rates compared to applications with other themes. One application popular among youth is gaming-themed applications or games [7].

A game is an activity or form of entertainment that usually involves participants in competition, challenges, or specific interactions. In games, users are provided facilities to manage resources provided in the game to achieve goals [8]. People can spend a lot of time playing games without getting bored due to the deep and engaging experiences offered by the games.

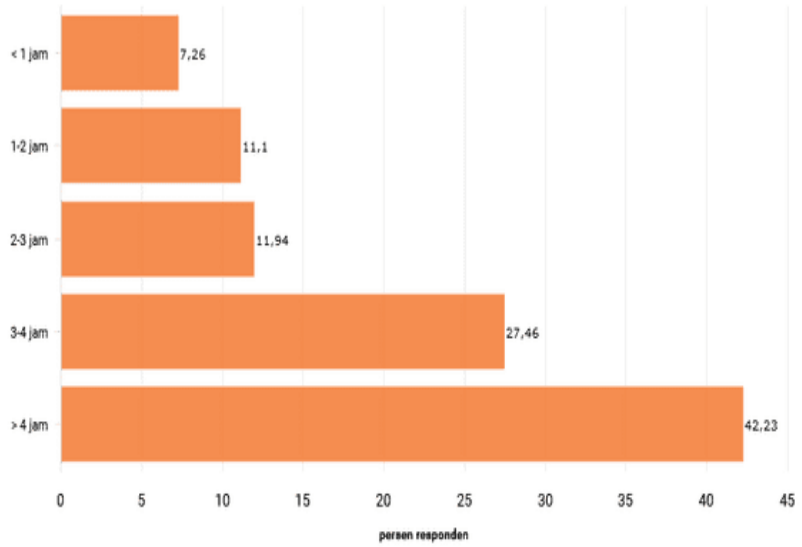

Figure 1. APJII Survey: Average User Game Play Time [9]

According to a survey by the Association of Internet Service Providers in Indonesia (APJII) on 8,510 respondents in Indonesia, data shows that people spend a significant amount of time playing games every day. 7.26% of respondents play games for less than 1 hour, 11.1% play for 1-2 hours, 11.94% play for 2-3 hours, 27.46% play for 3-4 hours, and most notably, 42.23% play games for more than 4 hours a day [9]. This finding reflects the high interest and involvement of the Indonesian community in the gaming world, indicating that many people are continuously captivated by the experiences offered by these games without experiencing boredom.

There are several gamification frameworks that can be used, including Octalysis, MDA (Mechanics, Dynamics, Aesthetics), MDE (Mechanics, Dynamics, Emotional), and SGD (Sustainable Gamification Design) [10]. Meanwhile, according to Hamari et al. [11], Octalysis is considered the best framework due to its ability to analyze core drives in human motivation.

The reason for choosing Madrasah Pembangunan UIN Jakarta as the research object is that this institution has adopted digital technology as its learning approach. Students there are provided with smartphones or tablets as tools in the learning process. This makes it convenient for the researcher to integrate the developed application directly into the educational institution.

Based on the above description, the researcher aims to design an English language learning application that provides diverse learning materials, interactive quizzes, and various learning task assignments with a gamification approach accessible through Android smartphones. The hope is that through this application, it can aid in the learning process, enhance student motivation and interest, and meet the needs of teachers at Madrasah Pembangunan UIN Jakarta in assigning and monitoring tasks.

Based on the above background, the researcher intends to conduct a study with the title "Implementation of Gamification in English Language M-learning Application using Octalysis Framework."

2. Methods

2.1. *Data Collection Methods*

Researchers carried out three methods in collecting data, including literature studies, field studies, and similar literature studies.

2.2. *Gamification Methods*

In this research, the researcher employs the Octalysis Framework gamification method developed by Yu-kai Chou. In this phase, the researcher determines the game mechanics used in the application.

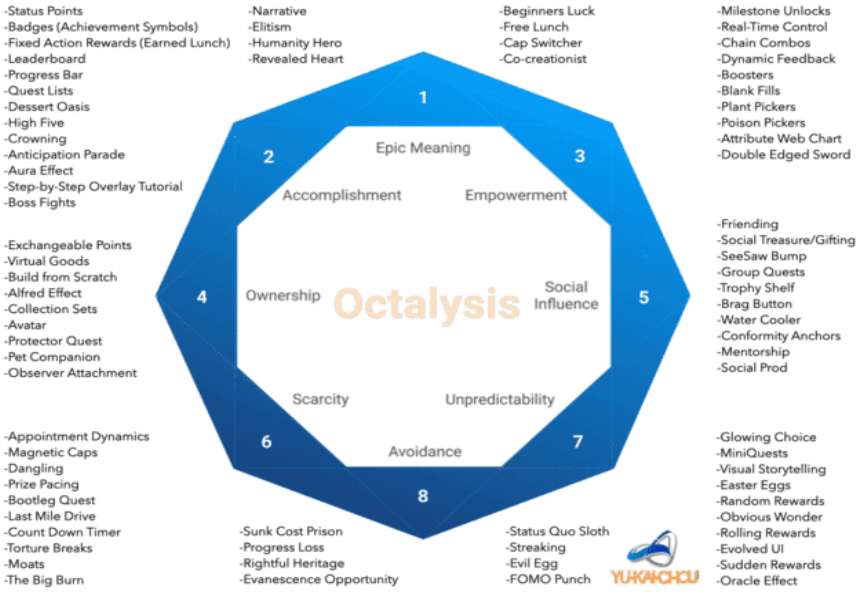

Figure 2. Octalysis Framework [12]

These game mechanics are created based on the 8 core drives of the Octalysis Framework, which include the following:

1) Epic Meaning & Calling:

This core drive is related to the emergence of an individual's motivation towards a calling or involvement in something significant or grand.

2) Development & Accomplishment:

This drive arises when someone feels they have grown, developed, or achieved something. Individuals tend to engage more deeply in activities that provide a sense of accomplishment or personal progress.

3) Empowerment of Creativity & Feedback:

Motivation arising from the freedom, exploration, and satisfaction of using creativity to solve a problem either in a new way or by trying different combinations.

4) Ownership & Possession:

This drive refers to the impulse that arises when someone feels they own or can control something. When someone feels ownership, their natural drive is to enhance and improve what they possess.

5) Social Influence & Relatedness:

Motivation arising from social relationships, a sense of interdependence, and influence from or on others.

6) Scarcity & Impatience:

Drive arising from the desire to obtain something rare or hard to get, as well as impatience to acquire it immediately. The fact that one cannot get something now can be a strong motivator to keep thinking about it throughout the day.

7) Unpredictability & Curiosity:

Motivation arising from uncertainty, surprises, and curiosity about what will happen next. Humans are naturally drawn to things they cannot predict with certainty. Uncertainty can create tension and a strong sense of curiosity, driving people to participate or continue interacting with a system or activity.

8) Loss & Avoidance:

Drive arising from the fear of losing something already possessed or avoiding losses. This makes users more cautious about each task or challenge, motivating them to be more serious and committed in doing it.

2.3. *System Development Methods*

1) Concept Stage:

This is the stage where the researcher explains the concept of the created application, such as the

application's name, type, description, main target, and more.

2) Design Stage:

This involves the detailed specification of the game application, accomplished through interface and system design.

a) Interface Design

Interface design helps in planning and visualizing the display within the application.

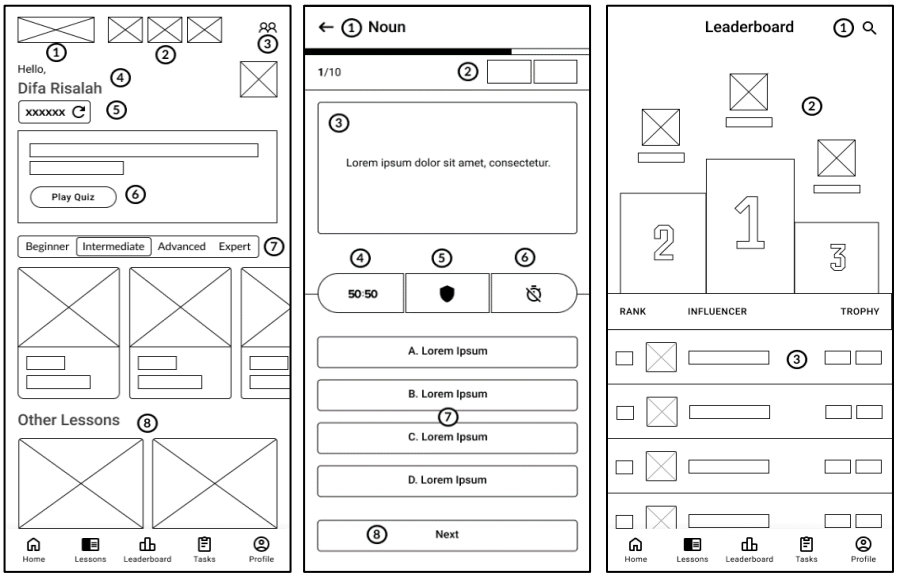

Figure 3. Design Wireframe

The researcher created a wireframe design to detail the structure, layout, and navigation of the application.

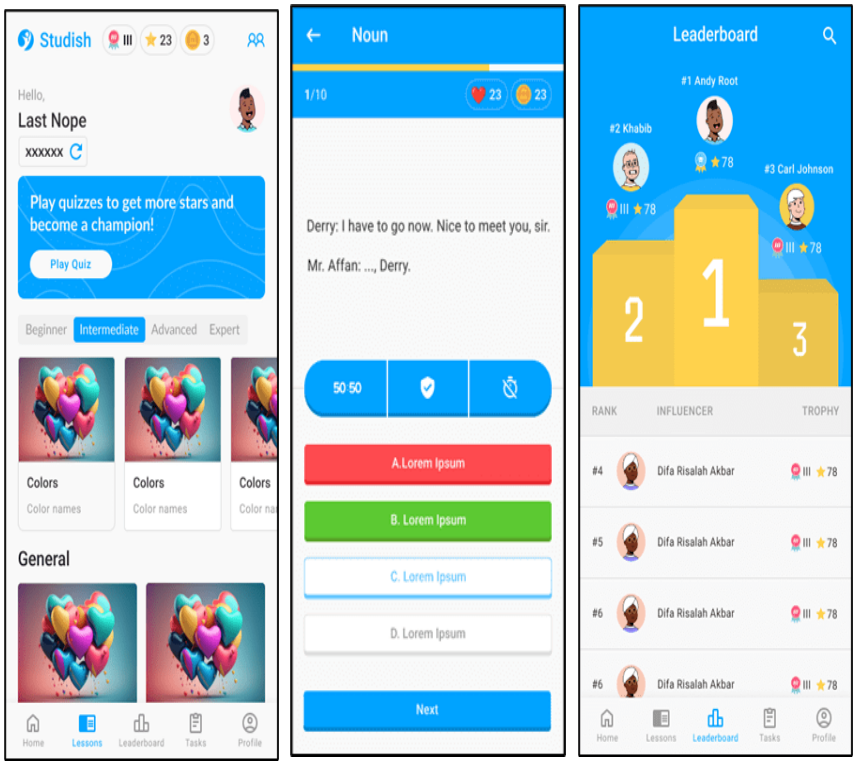

Figure 4. Design Mockup

3. Result and Discussion

3.1 Shortcomings of English Learning Applications on Play Store

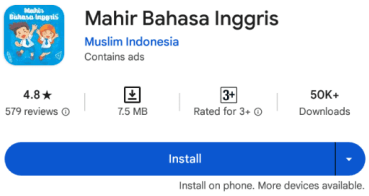

Figure 5. "Mahir Bahasa Inggris" App on Play Store

The "Mahir Bahasa Inggris" ("Proficient in English") application provides English learning materials and quizzes. However, there are several shortcomings in this application that can make it less engaging for learning activities. The following are detailed explanations:

1) Learning materials consist only of written elements

Figure 6. Learning Materials on the "Mahir Bahasa Inggris" App

The presentation of learning materials is limited to text only, without the support of other media such as images or videos.

2) Interactive features lacking in learning quizzes

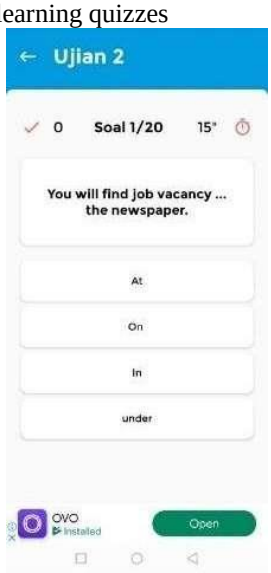

Figure 7. Learning Quiz on "Mahir Bahasa Inggris" App (1)

The learning quizzes in this application are considered less engaging and interactive. The quizzes only provide questions and answer options without supporting elements such as life features, help features, animations, sound effects, and others.

3) Monotonous and less varied learning quizzes

Figure 8. Learning Quiz on "Mahir Bahasa Inggris" App (2)

The learning quizzes in this application are limited to multiple-choice formats, without including various types of other questions. Diversity in questions, such as involving speaking, listening, and writing skills, needs to be added to prevent user boredom in learning English.

4) Lack of connection with other users

Figure 9. Home page of the "Mahir Bahasa Inggris" App

This application does not provide a system to connect with other users. This can make users feel lonely and bored.

5) No rewards or prizes for users

Figure 10. Learning Quiz Results on the "Mahir Bahasa Inggris" App

The absence of rewards or prizes can result in a lack of motivation for users to complete tasks or achieve learning goals.

6) Lack of clarity about user progress and objectives

Uncertainty about progress and objectives can lead to boredom and a lack of user engagement because they do not have a clear understanding of the direction and progress achieved.

7) No mechanism to impose losses or disadvantages on users

The lack of a mechanism to impose losses or disadvantages can be a strong motivational factor, as it can encourage users to avoid negative consequences. For example, providing a deterrent effect to users who lose in quizzes can lead to a decrease in performance. This mechanism can make users more serious about playing quizzes because they want to avoid potential losses or a decline in performance that may occur.

3.2 Implementation of Gamification in the Studish Application

In this section, the researcher discusses in detail the game mechanisms used in the application. The game mechanics are based on eight Octalysis Framework core drives, which include the following:

1) Core Drive 1: Meaning & Epic Calling

The game mechanics applied to this core drive are Narrative and Free Lunch.

Narrative

'Narrative' is a game mechanism that aims to give users a high sense of importance and involvement in an application through a narrative.

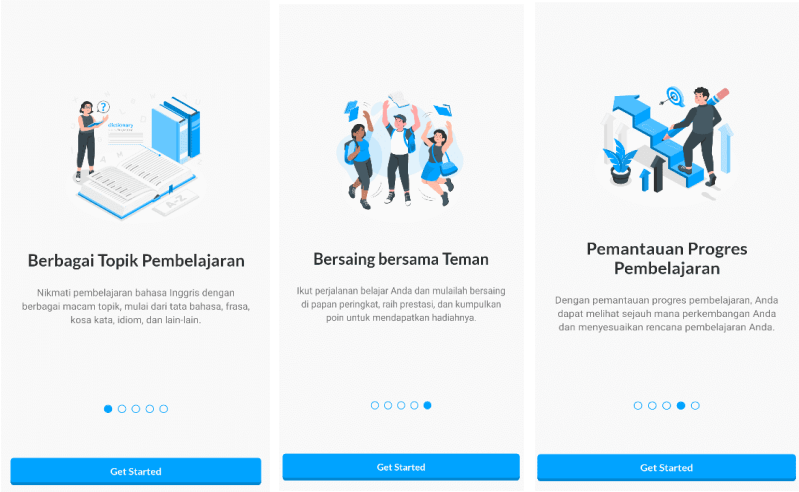

Figure 11. Game Mechanics Narrative

The Studish app provides an in-depth explanation of the various features it has and the benefits users can gain when they actively contribute to the use of the app.

This aims to create a high level of engagement, arousing user motivation to explore all the benefits the application has to offer.

Free Lunch

The game mechanic of 'Free Lunch' is to provide rewards or benefits to the user without requiring any effort. This game mechanic is implemented by giving initial points in the form of free coins and stars to users who have just registered their account, as an initial incentive to take the first quiz.

This can help them feel appreciated and motivated to engage further in the game or app.

2) Core Driver 2: Development & Achievement

In this core drive, researchers implemented several game mechanisms such as Progress Bar, Achievement, Status Points.

Progress Bar

Progress Bar game mechanics are implemented to track learning progress and achievements. The following is a detailed explanation of learning progress and achievements.

Learning Progression

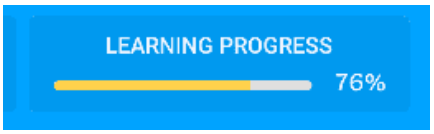

Figure 12. Progress Bar Game Mechanics: Learning Progress

Learning progress visualization is designed to provide an overview of the extent of the user's learning achievements.

Achievement Progress

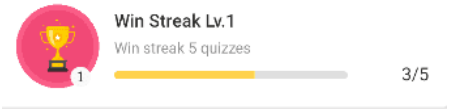

Figure 13. Progress Bar Game Mechanics: Achievement Progress

Achievement progress serves as a visual representation that shows users how far they have progressed in the points they collect towards the badges available in the achievements.

If users achieve the maximum score, they will earn badges and prizes.

Through this 'Progress bar' game mechanism, users can gain a clear understanding of their progress, as well as feel a boost of motivation to complete the learning progress to achieve rewards.

Achievement

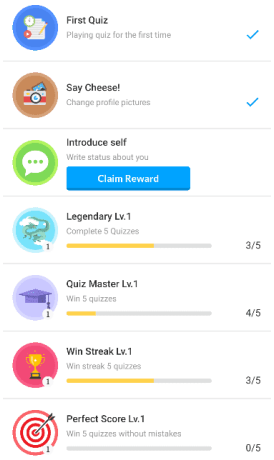

Figure 14. Game Mechanic Achievements

The ‘Achievement’ game mechanic serves to reward users through the implementation of various challenges that can be completed in the application.

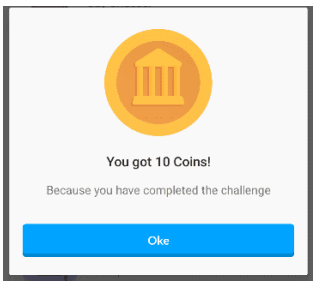

Figure 15. Game Mechanics Reward Achievement

After successfully completing one badge, users will receive a reward or prize as a form of appreciation for their achievement in completing the challenge. This can create an experience that is challenging, satisfying, full of achievements, and gives a sense of pride in the efforts that have been made. Apart from that, achievements can also trigger healthy competition between users, encouraging them to participate more actively in content or activities in the application.

3.3 Application Testing Results

There are two tests that will be carried out, namely User Acceptance Testing and evaluating the user's motivation level. The answers provided will use a Likert scale consisting of five answer choices with a weight of 1 to 5. The following is a description of each answer choice.

Table 1. Questionnaire Answers with Likert Scale [13]

Answer	Weight
Strongly Disagree	1
Disagree	2
Indecisive	3
Agree	4
Strongly Agree	5

1) User Acceptance Testing

Researchers distributed 10 questions to 20 class VIII students at Mts Pembangunan UIN Jakarta to conduct user acceptance testing (UAT). Following are the results of the questionnaire and calculations obtained

Table 2. Calculation of questionnaire data results on UAT

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	Score = (sum*2)
R1	5	4	5	4	4	4	4	3	5	5	86
R2	4	4	4	4	4	4	5	4	4	4	82
R3	4	5	4	3	3	3	4	3	5	5	78
R4	5	5	4	4	4	4	5	2	4	5	84
R5	4	3	5	5	5	5	5	3	5	4	88
R6	4	4	3	4	3	3	3	2	5	4	70
R7	5	5	5	5	3	4	4	4	3	4	84
R8	4	5	5	5	4	4	5	4	5	5	92
R9	4	4	4	4	5	4	4	3	4	5	82
R10	5	4	5	4	5	5	5	5	5	4	94
R11	5	4	4	5	4	4	5	2	5	5	86
R12	4	4	3	5	5	4	4	5	4	5	86
R13	4	5	5	4	5	3	4	3	5	4	84
R14	4	3	3	5	2	2	5	2	5	5	72
R15	5	4	4	4	4	3	4	3	5	4	80
R16	4	4	5	4	4	5	4	3	5	4	84
R17	5	4	3	5	5	4	4	4	4	5	86
R18	5	5	4	4	4	5	5	4	5	5	92
R19	5	4	4	5	3	4	4	5	3	5	84
R20	4	5	5	3	2	3	5	4	4	5	80
Total Score											83.7

Table 3. UAT Score Interpretation [13]

Presentase	Interpretation
0-20	Very Bad
21-40	Bad
41-60	Quite Good
61-80	Good
81-100	Very Good

From the results of the calculations that have been carried out, the UAT Score Percentage is 83.7. Based on the score interpretation table, it can be concluded that the Studish application meets the feasibility aspects of the User Acceptance Testing carried out, and received the 'Very Good' interpretation category.

2) Evaluate Students' Level of Motivation and Interest in the Application

Researchers evaluated students' motivation levels before and after using the application by giving a questionnaire containing 10 questions to class VIII A students at Mts Pembangunan UIN Jakarta. The following are the results obtained by researchers.

Table 4. Calculation of questionnaire data results in evaluating student motivation levels

	Before Using The Application						**After Using The Application**					
	P1	**P2**	**P3**	**P4**	**P5**	**Score**	**P1**	**P2**	**P3**	**P4**	**P5**	**Score**
R1	4	3	3	3	3	16	5	5	4	4	4	22
R2	4	4	3	4	3	18	5	4	4	4	3	20
R3	3	3	3	3	2	14	4	4	4	4	3	19
R4	4	3	4	4	3	18	5	4	4	4	4	21
R5	3	3	3	4	3	16	4	4	4	5	4	21
R6	3	3	2	3	3	14	4	4	4	4	3	19
R7	5	4	4	4	3	20	5	5	5	5	4	24
R8	3	3	3	3	3	15	4	4	4	4	4	20
R9	3	3	3	3	2	14	4	3	4	4	3	18
R10	3	3	3	3	3	15	4	4	4	4	4	20
R11	2	2	3	3	1	11	3	3	3	3	3	15
R12	4	3	3	3	2	15	4	4	4	4	3	19
R13	3	3	3	3	3	15	5	4	4	4	3	20
R14	5	4	4	3	3	19	5	5	4	4	4	22
R15	4	3	3	3	3	16	5	4	4	4	5	22
R16	4	4	3	3	3	17	5	4	4	4	4	21
R17	3	3	3	3	2	14	4	4	4	3	3	18
R18	3	2	2	2	2	11	4	3	3	3	3	16
R19	3	3	2	2	2	12	4	4	4	3	3	18
R20	3	3	3	3	3	15	5	4	4	4	3	20
	Total Score					305	Total Score					395

Based on the scores obtained, it is known that the total score before using the application was 305, while the total score after using the application was 395. To assess the effect of gamification on motivation, researchers will then carry out calculations between these two scores. The following is the formula that will be used.

$$score\ Percentage = \frac{Total\ Score}{Highest\ Total\ Score}\ x\ 100\% \quad (1)$$

$$\text{PreTest Score Percentage} = \frac{305}{500} \text{ x } 100\% = 61\% \quad (2)$$

$$PostTest\ Score\ Percentage\ =\ 395/500\ x\ 100\%\ =\ 79\% \quad (3)$$

From the calculation results, it can be seen that the score percentage before using the application was 61%, while after using the application it increased to 79%. The increase from 61% to 79% reflects the positive impact of implementing gamification elements in the English language learning context. These results indicate that gamification features in the application have the potential to increase the level of student engagement and enthusiasm in the learning process.

4 Conclusion

The researcher developed an application aimed at supporting the teaching and learning processes for eighth-grade students and teachers at the Madrasah Tsanawiyah Pembangunan UIN Jakarta. This comprehensive application includes features such as learning materials, interactive quizzes, and the provision and monitoring of student assignments. Notably, the application adopts a gamification approach utilizing the Octalysis Framework, with the goal of not only providing information but also fostering

students' motivation and interest in the learning process.

Upon examining the calculation results, the User Acceptance Testing (UAT) Score Percentage for the Studish application reached an impressive 83.7%. This indicates that the application successfully met the feasibility criteria during User Acceptance Testing, earning it a 'Very Good' categorization.

The evaluation conducted revealed a noteworthy outcome: following the implementation of the English language learning application with gamification elements, there was a substantial increase in student motivation, rising from an initial percentage of 61% to 79%. This finding underscores the positive impact of incorporating gamification features in the application, contributing to a heightened level of engagement and enthusiasm among students participating in learning activities.

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