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Students' Perceptions on the Development of the ZEP Quiz as an Innovative Formative Assessment Tool in the "Grammar for TOEFL" Course

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Abstract

Mastery of grammar is a crucial component of students' success on the Test of English as a Foreign Language (TOEFL); however, grammar assessment that is still largely conducted through conventional methods may increase anxiety and reduce student engagement. ZEP Quiz, a metaverse-based assessment platform, integrates gamification, virtual avatars, competition, and immediate feedback into the evaluation process. This study aims to investigate students' perceptions of using ZEP Quiz as an innovative formative assessment tool in the Grammar for TOEFL course. A descriptive quantitative survey design was employed, involving 30 students from the English Language Education Program at Padang State University. Data were collected using a 30-item questionnaire based on a four-point Likert scale and analyzed using descriptive statistics. The findings indicate that students demonstrated a very positive perception of ZEP Quiz, with a grand mean score of 3.36. The enjoyment dimension received the highest score (M = 3.50), followed by motivation (M = 3.39) and overall perception (M = 3.38). These findings suggest that ZEP Quiz can enhance students' enjoyment and motivation in grammar assessment by providing an interactive, gamified,

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and feedback-oriented learning environment. This study concludes that ZEP Quiz has the potential to serve as an innovative formative assessment alternative for supporting Grammar for TOEFL learning in higher education. The findings contribute to the development of technology-enhanced language assessment and provide practical implications for lecturers in designing more engaging, interactive, and student-centered grammar assessment practices.

Keywords: Formative Assessment; Gamification; Grammar For TOEFL; Student Perceptions; ZEP Quiz

INTRODUCTION

English language proficiency is a strategic competency that is increasingly required of students in the era of globalization and international academic competition. One of the most widely used standard instruments to measure English proficiency is the Test of English as a Foreign Language (TOEFL). In various universities in Indonesia, TOEFL scores are used as a requirement for graduation, enrollment in postgraduate programs, as well as selection for national and international scholarships. In the TOEFL test, grammar proficiency, particularly in the Structure and Written Expression section, carries a significant weight in the overall score of the participants.

Grammar learning for the TOEFL still poses a challenge for the majority of EFL (English as a Foreign Language) students in Indonesia. Grammar is often perceived as a burdensome aspect of language because it involves mastering various complex grammatical rules, diverse sentence patterns, as well as a number of exceptions that must be understood and applied accurately. This situation is exacerbated by the evaluation models, which are still conventional, namely paper-based tests that tend to be monotonous, negatively competitive, and rarely provide meaningful feedback. Research by Horwitz et al. (1986) demonstrated that foreign language anxiety is a unique psychological construct that has a real impact on students' academic performance. Meanwhile, Krashen (1982) the Affective Filter Hypothesis, emphasizes that language acquisition will occur more optimally when students' affective anxiety levels are low.

In order to address these issues, technology-based formative assessment offers a more adaptive and student-centered alternative. Formative assessment is a process of collecting information on learning progress conducted continuously throughout the learning process with the aim of providing feedback for improvement (Black & Wiliam, 1998). Unlike

summative assessment, which only measures final outcomes, effective formative assessment can help lecturers and students identify gaps in understanding in real-time, allowing learning to be adjusted and enhanced. Hattie and Timperley 2007), in their meta-analysis, emphasized that feedback is the strongest factor influencing students' academic achievement. Taufiqulloh et al. (2023), who conducted research in the context of higher education in Indonesia, also found that technology-based formative assessment has a positive impact on language accuracy and student engagement in the EFL learning process.

Gamification is one of the innovative approaches that is increasingly being integrated into formative assessment. Kapp (2012) defines gamification as the use of game elements, game mechanics, and game-based thinking in non-game contexts to engage, motivate, and enhance learning as well as problem-solving. The application of gamification in English language learning has been proven to have a positive impact on students' motivation, engagement, and academic achievement. Zhang & Hasim (2023), in their empirical systematic review published in Frontiers in Psychology, identify that gamification has been widely applied in more than ten countries across various English language skills. Temel and Cesur (2024), in a quasi-experimental study published in SAGE Open, found that Web 2.0-based gamification tools such as Kahoot!, Socrative, Quizizz, and Mentimeter significantly enhance motivation and academic achievement of EFL students. Zhang and Crawford (2024), in their study in Education and Information Technologies, further found that gamification-based formative assessments foster EFL students' autonomy and sense of competence through mechanisms such as badges, leaderboards, and progress tracking. A systematic review by Zainuddin et al. (2020) in Educational Research Review also confirmed that gamification consistently improves students' motivation, engagement, and social interaction in the learning process.

ZEP Quiz is a metaverse-based assessment platform that offers a learning experience different from conventional gamification platforms such as Kahoot! and Quizizz. The platform integrates a three-dimensional virtual environment, customizable digital avatars, immersive virtual classrooms, player competition systems, real-time leaderboards, as well as immediate feedback after each response is given. Through the combination of these elements, ZEP Quiz has the potential to create an assessment experience that not only measures understanding but also enhances emotional engagement, intrinsic motivation, and the comfort of students during the evaluation process.

Although various studies have documented the benefits of gamification in English language learning, the majority of research still focuses on established platforms such as Kahoot! and Quizizz in general English courses. Delgado (2023) and Koç & Sütçü (2023) found positive effects of gamification on motivation and grammar mastery; however, neither specifically investigated the TOEFL context. Chan & Lo (2024), in their comprehensive review in Frontiers in Education, identified that research on new gamification platforms in the context of international standardized test preparation remains very limited. Therefore, there is a significant research gap concerning the use of ZEP Quiz as a formative assessment medium in the context of Grammar for TOEFL at Indonesian higher education institutions.

This study is grounded in four main theories. First, the Technology Acceptance Model (TAM) by Davis (1989) explains that user acceptance of technology is determined by perceived usefulness and perceived ease of use. Second, the Student Engagement Theory by Fredricks et al. (2004) emphasizes the importance of three dimensions of student engagement, namely behavioral, emotional, and cognitive. Third, the Self-Determination Theory by Deci & Ryan (2013) explains that intrinsic motivation increases when individuals experience competence, autonomy, and relatedness in learning activities. Fourth, the Gamification Theory by Kapp (2012) asserts that game elements can enhance motivation, participation, and the quality of the learning experience. The combination of these four theories provides a comprehensive conceptual framework for understanding students' perceptions of ZEP Quiz.

Based on this background, this study aims to investigate students' perceptions of the use of ZEP Quiz as an innovative formative assessment tool in the Grammar for TOEFL course, covering nine dimensions of perception: perceived usefulness, perceived ease of use, engagement, motivation, enjoyment, test anxiety, interaction, feedback, and overall perception. The results of this study are expected to provide theoretical and practical contributions to the development of gamification-based assessments in higher education, particularly in the context of learning Grammar for TOEFL in Indonesia.

METHODS

Research Design

This study uses a quantitative descriptive survey design. According to Creswell (2017), survey research is an appropriate method for systematically collecting data regarding

respondents' attitudes, perceptions, beliefs, and experiences towards a phenomenon. The descriptive survey design was chosen because this study aims to accurately and comprehensively describe the level of students' perceptions of the use of ZEP Quiz without manipulating variables. The quantitative approach allows the researcher to produce data that can be measured, compared, and interpreted objectively using descriptive statistics.

Research Context

This research was conducted in the English Education Study Program at Universitas Negeri Padang in the course Grammar for TOEFL. This course is designed to equip students with the grammar skills needed to face the TOEFL, particularly in the Structure and Written Expression section. The ZEP Quiz is integrated into formative assessment activities as a medium for reviewing material and evaluating understanding after the delivery of the material. Students access the ZEP Quiz through internet-connected digital devices and participate in a gamified virtual assessment environment. During the session, students interact with game features, receive scores instantly, and obtain immediate feedback after answering each question.

Participants

The research participants were 30 students who have taken the Grammar for TOEFL course in the even semester of the 2025/2026 academic year at Universitas Negeri Padang. A total sampling technique was used due to the limited number of the population, and all students participated in the use of ZEP Quiz during the learning process.

Table 1. Participant Profile

Characteristics	Frequency	Persentase (%)
Number of Participants	30	100
Gender	F: 9 M: 21	
Semester	6	
Study Program	English Education	100

Research Instruments

The instrument consisted of a 30-item questionnaire developed based on the Technology Acceptance Model (TAM) (Davis, 1989), Student Engagement Theory(Fredricks et al., 2004), Self-Determination Theory (Deci & Ryan, 2013), Gamification Theory (Kapp, 2012), as well as formative assessment and feedback

theories(Hattie & Timperley, 2007). Responses were measured using a four-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

Table 2. Questionnaire Blueprint

Dimension	No. Item	Theoretical Framework
Perceived Usefulness	1-4	Davis (1989)
Perceived Ease of Use	5-8	Davis (1989)
Engagement	9-12	Fredricks et al. (2004)
Motivation	13-16	Deci & Ryan (1985); Kapp (2012)
Enjoyment	17-19	Csikszentmihalyi (1990)
Test Anxiety	20-22	Horwitz et al. (1986)
Interaction	23-24	Vygotsky (1978)
Feedback	25-26	Hattie & Timperley (2007)
Overall Perception	27-30	Doll & Torkzadeh (1988)

Validity and Reliability

Content validity was conducted through expert judgment by lecturers who are experts in English language learning evaluation and educational technology. Reliability was tested using Cronbach's Alpha coefficient. George and Mallery (1999) stated that an alpha value above 0.70 indicates acceptable reliability, and above 0.80 indicates good reliability.

Data Collection Procedure

Data collection was carried out through four stages. First, the lecturer integrated the ZEP Quiz into learning activities as a formative assessment tool. Second, students participated in several grammar assessment sessions using the ZEP Quiz during the course. Third, after gaining sufficient experience, a perception questionnaire was distributed online. Fourth, the data were checked, coded, and entered into SPSS for analysis. All participation was voluntary, and the data were kept confidential.

Data Analysis Techniques

Data were analyzed using SPSS with calculations of mean, standard deviation, percentage, and Cronbach's Alpha. The mean value was used to determine perception categories based on the following interpretation table.

Table 3. Criteria for Mean Interpretation

Mean Range	Categori
3.26 - 4.00	Very Positive
2.51 - 3.25	Positive
1.76 - 2.50	Negative
1.00 - 1.75	Very Negative

RESULTS

Reliability Test Results

Before conducting descriptive analysis, the instrument was tested for reliability using Cronbach's Alpha through SPSS. The test results showed alpha values above the threshold set by George and Mallery (1999), indicating that all items are consistent and reliable in measuring students' perceptions of the ZEP Quiz.

Table 4. Results of the Instrument Reliability Test

Variabel	Jumlah Item	Cronbach Alpha	Kategori
Persepsi terhadap ZEP Quiz	30	0,9493	Reliabel

Overview of Student Perceptions

Descriptive analysis of nine perception dimensions shows that all dimensions obtained mean scores above 3.26, which falls into the very positive category. The overall grand mean reached 3.36.

Table 5. Descriptive Statistics of Each Dimension

No	Dimenstion	Mean	Categori
1	Perceived Usefulness	3.32	Very Positive
2	Perceived Ease of Use	3.37	Very Positive
3	Engagement	3.31	Very Positive
4	Motivation	3.39	Very Positive
5	Enjoyment	3.50	Very Positive
6	Test Anxiety	3.32	Very Positive
7	Interaction	3.29	Very Positive
8	Feedback	3.32	Very Positive
9	Overall Perception	3.38	Very Positive
	Grand Mean	3.36	Very Positive

Analysis by Dimension

Perceived Usefulness

Table 6. Analysis of Perceived Usefulness Items

Item	Mean
1	3.33
2	3.40
3	3.23
4	3.33
Mean Score	3.32

Students perceive the ZEP Quiz as a useful tool in supporting the understanding of TOEFL grammar material. Item 2 received the highest score (M = 3.40), indicating that students feel tangible benefits from the ZEP Quiz in enhancing the quality of learning review activities.

Perceived Ease of Use

Table 7. Analisis Item Perceived Ease of Use

Item	Mean
5	3.40
6	3.23
7	3.37
8	3.47
Mean	3.37

The results indicate that students found the ZEP Quiz easy to use. Item 8 received the highest score (M = 3.47), reflecting the ease of joining and navigating the assessment session. No students reported significant technical difficulties in operating the platform.

Engagement

Table 8. Analisys Item Engagement

Item	Mean
9	3.47
10	3.30
11	3.13
12	3.33
Mean	3.31

The ZEP Quiz has been proven capable of increasing student engagement during assessments. Item 9 received the highest score (M = 3.47), indicating active student participation. Item 11 received the lowest score in this dimension (M = 3.13), showing room for improvement in terms of deeper cognitive engagement.

Motivation

Tabel 9. Analysis Item Motivation

Item	Mean
13	3.40
14	3.30
15	3.33
16	3.53
Mean	3.39

Item 16 received the highest score in this dimension (M = 3.53), reflecting a strong drive to complete all questions and improve scores. The gamification elements in the ZEP Quiz, such as the points system and challenges, successfully fostered students' intrinsic motivation to participate optimally.

Enjoyment

Table 10. Analysis Item Enjoyment

Item	Mean
17	3.43
18	3.60
19	3.47
Mean	3.50

Enjoyment is the dimension with the highest score among all the dimensions studied. Item 18 recorded the highest value in the entire questionnaire (M = 3.60), indicating that students greatly enjoyed the assessment experience based on ZEP Quiz. This finding suggests that the integration of an immersive virtual environment in the grammar evaluation process can transform assessment from a stressful activity into an enjoyable learning experience.

Test Anxiety

Table 11. Analysis Item Test Anxiety

Item	Mean
20	3.13
21	3.50
22	3.33
Mean	3.32

Overall, students feel calmer and more comfortable when participating in ZEP Quiz-based assessments compared to conventional tests. Item 20 received the lowest score in this dimension (M = 3.13), indicating that the competitive aspects of the platform need to be managed so as not to create excessive pressure for some students.

Interaction

Table 12. Analysis Item Interaction

Item	Mean
23	3.27
24	3.30
Mean	3.29

Although the interaction dimension obtained the lowest mean value compared to the other dimensions, the value is still within the very positive category. This indicates that the interaction feature in ZEP Quiz is already functioning positively, yet its potential to facilitate richer social interactions can still be further developed.

Feedback

Table 13. Analysis Item Feedback

Item	Mean
25	3.37
26	3.27
Mean	3.32

Students gave positive assessments of the feedback feature in ZEP Quiz. Item 25 received a higher score (M = 3.37), indicating that immediate post-answer feedback is perceived as more useful compared to end-of-session summary feedback.

Overall Perception

Table 14. Analysis Item Overall Perception

Item	Mean
27	3.40
28	3.30
29	3.40
30	3.40
Mean	3.38

A high average score in the overall perception dimension reflects students' overall satisfaction with the experience of using ZEP Quiz. The majority of students stated their willingness to use this platform again and to recommend it to their peers for learning Grammar for TOEFL.

Table 15. Ranking of Student Perception Dimensions

Rank	Dimenstion	Mean	Categori
1	Enjoyment	3.50	Very Positive
2	Motivation	3.39	Very Positive
3	Overall Perception	3.38	Very Positive
4	Perceived Ease of Use	3.37	Very Positive
5	Perceived Usefulness	3.32	Very Positive
6	Feedback	3.32	Very Positive
7	Test Anxiety	3.32	Very Positive
8	Engagement	3.31	Very Positive
9	Interaction	3.29	Very Positive

DISCUSSION

Student Acceptance of the ZEP Quiz: A Study from the TAM Perspective

The perceived usefulness dimension (M = 3.32) and perceived ease of use (M = 3.37) both fall into the highly positive category. These findings indicate that students are not only able to operate ZEP Quiz easily, but also perceive real benefits from the platform in supporting Grammar for TOEFL learning. The high perception of usefulness shows that students view ZEP Quiz as a medium that helps them understand grammar materials more effectively, while the high perception of ease of use indicates that interaction with the system can be carried out without significant technical obstacles.

These results are consistent with the Technology Acceptance Model (TAM) framework introduced by Davis (1989), which explains that perceived usefulness and perceived ease of use are the two main constructs determining users' acceptance of a technology. According to this model, the higher a person's perception of the benefits and ease of a system, the greater the likelihood that the system will be accepted and used continuously. In the context of technology-based learning, ease of use also plays a role in reducing cognitive load, allowing students to focus more on the learning process rather than on the technical aspects of using the platform.

The findings of this study are also supported by various recent studies on gamification in language learning. A systematic review conducted by Zhang & Hasim (2023) indicated that gamification platforms could enhance students' positive perceptions of language learning because they offer a more engaging, interactive, and user-friendly learning experience. Furthermore, Chan & Lo (2024) emphasized that the successful implementation of gamification in the EFL/ESL context is greatly influenced by the platform's ease of use as well as the system's ability to create an enjoyable and meaningful learning experience for students. They also concluded that positive perceptions of technology contribute to increased engagement and success in language learning.

Furthermore, the study by Shen et al., (2024) found that the integration of gamification elements in online language learning has a positive impact on students' learning motivation and outcomes. These findings indicate that when students feel comfortable using a digital platform and perceive direct benefits from its use, they tend to exhibit higher levels of participation and engagement in the learning process. Similar results were also shown by the study by Yao & Liu (2025), which developed a TAM model for the use of AI-based

technology in EFL learning. The study found that perceived usefulness and perceived ease of use significantly contribute to students' learning motivation and metacognitive strategies.

Nonetheless, the differences in scores among the items within this dimension deserve attention. Items measuring basic operational ease scored higher compared to items related to navigation of advanced features. This indicates that although students generally accept ZEP Quiz very well, developers still need to refine the onboarding experience, user guides, and navigation design so that all available features can be optimally utilized by new users. Thus, the already high level of technology acceptance can be followed by a more comprehensive use of features to support Grammar for TOEFL learning.

ZEP Quiz as a Catalyst for Student Engagement and Motivation

The engagement dimension (M = 3.31) and motivation (M = 3.39) indicate that the ZEP Quiz successfully promoted active involvement and intrinsic motivation among students during the Grammar for TOEFL assessment process. These findings suggest that the applied gamification was able to create an engaging learning experience while simultaneously encouraging students to participate more actively.

These results can be explained through the Student Engagement Theory proposed by Fredricks et al. (2004), which divides student engagement into behavioral, emotional, and cognitive dimensions. In this study, students were not only actively participating in assessments but also demonstrated enthusiasm and cognitive effort in completing grammar exercises. These findings are consistent with the study by Bond et al. (2021), which states that the use of interactive learning technologies can enhance student engagement in various aspects of learning.

From the perspective of Self-Determination Theory, high motivation can be explained through the fulfillment of the needs for competence, autonomy, and relatedness(Deci & Ryan, 2013). The point system, leaderboard, and challenges in ZEP Quiz provide opportunities for students to demonstrate their abilities, organize learning strategies, and interact with classmates. According to Deci & Ryan (2013), the fulfillment of these three psychological needs is a major factor driving the emergence of intrinsic motivation in learning.

The findings of this study are also supported by various recent studies. Zhang and Crawford (found that the use of Quizizz increases the motivation of EFL students because

gamification elements make the learning process more engaging. Similar results were reported by Temel & Cesur (2024), who showed that gamification contributes to the improvement of students' motivation and academic achievement. In addition, Koç & Sütçü (2023) found that the use of online gamification tools can enhance student engagement as well as the achievement of grammar learning. On a broader level, systematic reviews by Zhang and Hasim (2023) and Chan & Lo (2024) also concluded that gamification consistently has a positive impact on students' motivation, engagement, and learning experiences in the context of English language learning.

Nevertheless, the slightly lower score on item 11 (M = 3.13) in the engagement dimension indicates that the game aspects need to remain balanced with the quality of academic content. Therefore, future development of ZEP Quiz should ensure that the entertainment elements continue to function as a means to reinforce the understanding of Grammar for TOEFL, rather than merely increasing learning enjoyment.

Transformation of Assessment Experience: From Anxiety to Enjoyment

The enjoyment dimension obtained the highest score in this study (M = 3.50), while the test anxiety dimension had an average score of 3.32. These two findings indicate that the ZEP Quiz successfully transformed the grammar assessment experience from an activity that often induces stress into a more enjoyable and comfortable learning experience for students.

The high enjoyment scores can be explained through the Affective Filter Hypothesis proposed by Krashen (1982). This theory states that affective factors such as anxiety, motivation, and self-confidence influence the success of language acquisition. When students are in a pleasant and non-threatening learning environment, the affective filter decreases, making the process of receiving and processing language input more optimal. In the context of this study, the virtual environment and game elements present in ZEP Quiz seem to be able to create a more relaxed assessment atmosphere, allowing students to participate in evaluation activities more comfortably.

This finding is also in line with the theory of foreign language anxiety developed by Horwitz et al. (1986), which identifies test anxiety as one of the primary sources of anxiety in language learning. The gamification format in ZEP Quiz allows students to receive immediate feedback without feeling excessive evaluative pressure. Furthermore, a

competition atmosphere presented in an enjoyable manner can reduce the fear of making mistakes and the fear of negative evaluation.

The results of this study are supported by recent findings on gamification in language learning. Amnouychokanant (2025) found that gamification platforms are capable of reducing EFL students' anxiety through real-time feedback and a safer learning environment. Similar findings were reported by Temel & Cesur (2024), who showed that gamification not only increases motivation but also creates a more positive learning experience and reduces academic pressure. Additionally, Chan and Lo (2024), in their comprehensive review, concluded that gamification consistently enhances learning enjoyment and fosters a more positive attitude towards English language learning. Zhang & Hasim (2023) also found that the increase in enjoyment is one of the most frequently reported effects in gamification research in the EFL context.

Nevertheless, the relatively lower score of item 20 (M = 3.13) indicates that some students still experience certain pressure during the assessment process. This suggests that an overly dominant element of competition has the potential to cause anxiety for students who are more introverted or have a high level of academic anxiety. Therefore, lecturers need to design ZEP Quiz activities in a balanced manner so that the competitive aspect can still enhance learning enjoyment without causing excessive pressure.

Social Interaction and Feedback from a Constructivist Perspective

The interaction dimension (M = 3.29) and feedback dimension (M = 3.32) received positive responses from students, although both were ranked relatively lower compared to other dimensions. These findings indicate that the ZEP Quiz has been able to facilitate interaction and the provision of feedback effectively; however, there is still room for development to optimize its pedagogical benefits.

From the perspective of the social constructivist theory developed by Lev Vygotsky (1978), learning occurs optimally through social interaction and collaboration with others. The real-time competition features, leaderboards, and shared activities in ZEP Quiz create a social learning environment that allows students to compare performance and reflect on their abilities. However, the relatively lower interaction scores indicate that this platform is still more competition-oriented than collaboration-oriented. These findings are consistent with the study by Zhang & Hasim(2023) , which states that most gamification platforms are more

effective in enhancing individual participation than in facilitating deep collaborative interaction.

In the feedback dimension, students' positive responses indicate that immediate feedback given after answering questions is perceived as beneficial in the learning process. This finding can be explained through the feedback model proposed by Hattie & Timperley (2007), which asserts that effective feedback helps students understand their current learning position and the steps needed to achieve learning objectives. In the ZEP Quiz, instant feedback mainly functions at the task level, providing information on whether an answer is correct or incorrect. Therefore, further development can be directed towards providing more in-depth conceptual explanations and learning recommendations, thereby strengthening its formative benefits.

The results of this study are supported by the research of Taufiqulloh et al. (2023), which found that technology-based formative assessments in Indonesian higher education help improve students' language accuracy and confidence through the provision of quick and continuous feedback. Similar findings were reported by Luthfiyyah et al. (2021), who showed that the use of digital formative assessments contributes to the improvement of EFL students' grammar mastery. Furthermore, Chan and Lo (2024) concluded that instant feedback is one of the most influential gamification elements on student engagement and learning experience, while Bond et al. (2021) emphasized that interaction and feedback are important factors in building student engagement in digital learning environments.

A higher score on item 25 compared to item 26 indicates that students value feedback given immediately after answering questions more than the performance summary at the end of the session. This finding suggests that the speed of feedback delivery is an important factor in gamification-based assessment. Therefore, future development of ZEP Quiz needs to maintain the instant feedback feature while enhancing the quality of interaction and explanations provided so that the formative assessment function can operate more optimally.

ZEP Quiz as the Implementation of Innovative Formative Assessment in Grammar for TOEFL

A grand mean of 3.36, which falls into the very positive category, combined with all dimensions also in the same category, provides empirical evidence that the ZEP Quiz is perceived positively as an innovative formative assessment tool in Grammar for TOEFL

learning. This finding indicates that students not only accept the use of this technology but also perceive its benefits in supporting the learning and evaluation process in a more engaging, interactive, and meaningful way.

From the perspective of formative assessment theory, the results of this study are in line with the ideas of Black & Wiliam (1998), who emphasized that effective formative assessment must provide feedback that helps students improve their learning, promote active engagement, and offer opportunities for students to monitor their own progress. The real-time scoring feature, immediate feedback, and game-based activities in ZEP Quiz support these principles by making assessment a part of the learning process, rather than merely a tool for measuring learning outcomes.

This finding is also relevant to the development of modern assessment practices, which increasingly integrate digital technology into the learning process. Timmis et al. (2016) emphasize that contemporary assessments need to be designed in a more interactive manner, student-centered, and capable of providing rapid feedback in order to support continuous learning. In this context, ZEP Quiz offers an assessment alternative that aligns with the characteristics of digital generation students who are accustomed to technology and dynamic learning environments.

The results of this study are supported by various recent studies on gamification in language education. Chan & Lo (2024) concluded that gamification consistently enhances student engagement, motivation, and learning experience in both EFL and ESL contexts. Similarly, Zainuddin et al. (2020), in their systematic review, found that gamification not only boosts learning motivation but also has a positive impact on cognitive learning outcomes. More specifically, Koç & Sütçü (2023) demonstrated that the use of online gamification tools can improve grammar mastery and student engagement, thereby supporting the utilization of ZEP Quiz in Grammar for TOEFL learning.

The advantage of ZEP Quiz compared to many other digital quiz platforms lies in the metaverse environment it offers. While platforms such as Kahoot! and Quizizz generally focus on screen-based two-dimensional quizzes, ZEP Quiz presents a three-dimensional virtual space that allows students to interact through avatars in a more immersive environment. This characteristic has the potential to create a more memorable and enjoyable learning experience. This finding is reflected in the high scores in the enjoyment dimension, indicating that students perceive assessments no longer as stressful activities but as engaging

learning experiences. This aligns with the experiential learning theory proposed by Da (1984), which emphasizes that learning experiences involving active participation and direct engagement can enhance understanding and knowledge retention.

Research Implications

This study provides a number of important implications for the development of both theory and practice in technology-based language learning. Theoretically, the research findings support the relevance of the Technology Acceptance Model Davis (1989), Student Engagement Theory Fredricks et al. (2004), Self-Determination Theory Deci & Ryan (2013), as well as the gamification theory proposed by Kapp (2012) in explaining students' acceptance, engagement, motivation, and learning experiences in the use of gamification-based assessment platforms. These findings also enrich the literature on digital formative assessment in Grammar for TOEFL learning, particularly in the context of higher education in Indonesia, which remains relatively limited. The results of this study are in line with the systematic review by Chan & Lo (2024) and Zhang & Hasim, (2023), which affirm that gamification has a positive impact on students' motivation, engagement, and learning experiences in English language learning.

Practically, the research results indicate that ZEP Quiz can serve as an effective alternative formative assessment in Grammar for TOEFL learning. The high scores in the dimensions of enjoyment and motivation suggest that this platform has the potential to be used as a warm-up activity, reinforcement practice, or review activity after lessons. These findings support the research of Koç & Sütçü (2023), which shows that gamification can enhance students' engagement and mastery of grammar, as well as the study by Temel & Cesur 2024), which found that the use of gamification contributes to increased motivation and learning achievement among EFL students. Therefore, lecturers are advised to design ZEP Quiz activities that are not only visually appealing but also require critical thinking and a deep understanding of grammar concepts.

Institutionally, the findings of this study can serve as a basis for consideration by study programs and universities in promoting the utilization of innovative assessment technologies. The development of digital assessments requires institutions to provide support in the form of technological infrastructure, adequate internet access, as well as programs for developing digital competencies for lecturers. Luthfiyyah et al. (2021)

emphasize that the success of educational technology implementation is greatly influenced by lecturers' ability to design and utilize technology pedagogically. Furthermore, Timmis et al., (2016) stress that the transformation of assessment in higher education requires sustained institutional support so that technology is not only used as an evaluation tool but also as a means to enhance the overall quality of the student learning experience.

Research Limitations

Although it produced positive findings, this study has several limitations. First, the research involved only 30 students from a single institution, so the generalization of the results should be done cautiously . Second, the use of a descriptive survey design can only depict students' perceptions and cannot yet explain cause-and-effect relationships or the effectiveness of the ZEP Quiz in improving Grammar for TOEFL skills. Third, the absence of a control group makes it difficult to separate the specific influence of the ZEP Quiz from other factors that also affect the learning process (Fraenkel, 2019). Fourth, the use of self-report questionnaires has the potential to generate social desirability bias, which is the tendency of respondents to provide answers that are more positive than the actual condition (Paulhus, 1991).

Based on these limitations, future research is recommended to involve larger and more diverse samples, use a mixed methods approach, and implement an experimental design to examine the influence of the ZEP Quiz on motivation, engagement, and mastery of Grammar for TOEFL more comprehensively. This recommendation aligns with recent gamification studies that emphasize the importance of combining perception data and learning outcome data in evaluating the effectiveness of educational technology (Chan & Lo, 2024; Zhang & Hasim, 2023).

CONCLUSION

This study shows that students of the English Education Study Program at Universitas Negeri Padang have a very positive perception of using ZEP Quiz as a formative assessment tool in the Grammar for TOEFL course, with a grand mean of 3.36. All dimensions investigated fall into the very positive category, with the highest score in the enjoyment dimension (M = 3.50), followed by motivation (M = 3.39) and overall perception (M = 3.38). These findings indicate that ZEP Quiz can create an enjoyable, motivating, and

supportive grammar learning assessment experience. Theoretically and practically, the results of this study reinforce the potential of gamification as an innovative formative assessment strategy in EFL learning. Future research is recommended to involve a larger sample and to use experimental or mixed methods designs to test the effectiveness of ZEP Quiz on TOEFL Grammar mastery more comprehensively.

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