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Developing the Educaplay grammar assessment for tenth graders of senior high school in Kediri

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ABSTRACT

Teaching English as a Foreign Language (EFL) faces challenges in engaging students with grammar instruction. Grammar is a critical component of language education that underpins effective communication and comprehension. This study aims to develop an Educaplay-based grammar assessment tool for tenth-grade students at Senior High School 5 Taruna Brawijaya in Kediri, Indonesia. The instruments used for data collection included a grammar test, validated by experts to ensure content validity, and a questionnaire for expert feedback. The Research and Development (R&D) method was employed, following the steps outlined by Borg and Gall (1983), which involve product development, validation, and iterative revisions. Data analysis involved assessing the validity, reliability, difficulty index, and item discrimination of the grammar test. The findings indicate that the tool is valid and reliable, with a Cronbach's Alpha of 0.884, although there is a need for more challenging items to better cater to a range of student abilities. It is concluded that Educaplay provides an effective and engaging alternative to traditional grammar assessments. These results are expected to provide valuable insights into how digital platforms such as Educaplay can be used to improve grammar teaching and student learning outcomes, not only in Indonesia but also in other countries facing similar challenges. The study recommends further development of the tool to incorporate more complex items and suggests exploring the long-term effects of using digital tools like Educaplay in grammar education.

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INTRODUCTION

Grammar is a critical component of language education that underpins effective communication and comprehension. It serves as a foundation for fluency in both written and spoken language, making it essential for academic success. According to Brown (2001), grammatical competence is a major element of communicative competence, providing the structural framework necessary for forming sentences and conveying meaning. However, many tenth-grade students face

significant challenges in mastering grammar, particularly when it comes to understanding and applying complex rules. Despite its importance, teaching grammar remains a significant challenge in many educational contexts, including Indonesia. Traditional teaching methods often rely on rote memorization and repetitive exercises that fail to engage students or foster deep understanding. These difficulties are compounded by traditional methods of instruction that often fail to make grammar relevant or engaging for students (Harmer, 2015). Consequently, students frequently struggle with grammatical concepts, hindering their ability to express ideas fluently in both written and spoken forms (Pamilu, 2022). In Indonesia, this problem is particularly evident in the context of senior high school education; national standards for language proficiency are set high, and these challenges are particularly evident. Despite government efforts to reform education, many students struggle to meet these standards due to outdated instructional practices that do not cater to their needs.

Existing studies highlighted that traditional grammar assessments, such as paper-based exams, were often less engaging for students and tended to provide delayed feedback. Traditional grammar assessments, such as paper-based tests and rote memorization exercises, often emphasize the mechanical aspects of language rather than encouraging meaningful understanding. Ameliani (2019) described grammatical correctness as the analysis and explanation of sentence structure, highlighting that without a solid grasp of grammar, learners may struggle to express their thoughts and ideas accurately. These methods not only disengage students but also provide delayed feedback, hindering their ability to make timely corrections and improvements. Immediate feedback is crucial for helping students understand their mistakes and build a stronger grasp of grammar (Chappuis & Stiggins, 2002).

The limitations of traditional grammar instruction highlight the urgent need for more interactive tools that align with contemporary pedagogical approaches. As noted by Pamilu (2022), students who lack knowledge of grammar struggle to express their ideas freely, leading to poor academic performance. Recent studies emphasize integrating technology to create engaging learning environments (Hossain & Younus, 2024). Platforms like Educaplay, which offer customizable and interactive grammar activities, provide innovative solutions. By allowing students to engage with grammar in a dynamic and gamified manner, Educaplay has been shown to enhance student motivation and understanding (Mykytka et al., 2022). This aligns with Indonesia's educational reform goals, particularly the Kurikulum Merdeka, which promotes student-centered and inquiry-based learning approaches. This highlights the urgent need for more interactive learning tools that align with both the curriculum and students' needs for practical, engaging learning experiences.

In response to this gap, Educaplay, a digital educational platform, provides a solution by offering interactive and customizable tools for teachers to create grammar assessments and activities. With features that allow educators to design quizzes, games, and exercises tailored to specific learning goals, Educaplay enables students to engage with grammar more dynamically and enjoyably. Its key advantage is the ability to deliver immediate feedback, allowing students to correct their mistakes in real time, thus enhancing their learning experience (Educaplay, 2021). This platform is especially relevant in Indonesia, where the integration of technology into education has been increasingly prioritized, particularly in response to the challenges posed by the COVID-19 pandemic, which has accelerated the shift to digital learning (Kompas, 2022).

In recent years, research on grammar instruction and assessment has explored various innovative strategies to enhance student engagement and learning outcomes. Educaplay directly addresses the gaps in traditional grammar instruction by making the learning process interactive and gamified. For example, Castillo-Cuesta (2020) demonstrated the effectiveness of digital games in improving grammar and vocabulary retention in EFL learners. Similarly, studies like those by Hossain & Younus (2024) emphasized the motivational impact of gamified platforms like Kahoot in higher education grammar courses. Despite these advancements, many studies focus primarily on the broad use of gamification rather than its application in formative assessments tailored to specific learner needs. Additionally, while platforms like Educaplay have been identified as effective in interdisciplinary education (Graça et al., 2022), their potential to address grammar-specific challenges in Indonesian high schools remains underexplored. The platform's ability to combine learning with fun provides a refreshing alternative to the rote learning methods still prevalent in many

Indonesian schools. This research addresses this gap by developing an Educaplay-based grammar assessment tailored for tenth-grade students in Indonesia, thus aligning with curricular demands and technological advancements.

This study departs from the assumption that grammar is boring learning. Therefore, this study aims to develop an interactive grammar assessment tool using Educaplay, specifically designed for tenth-grade students in Indonesian senior high schools. By incorporating Educaplay into the classroom, the research seeks to evaluate how effectively the platform enhances students' comprehension of grammar and increases their motivation to engage with the subject. Given the growing integration of technology into Indonesian education, this research is timely and aligned with the government's broader efforts to modernize the national curriculum. The results are expected to provide valuable insights into how digital platforms like Educaplay can be used to improve grammar instruction and student outcomes, not only in Indonesia but also in other countries facing similar challenges.

METHOD

This study used the Research and Development (R&D) method proposed by Borg & Gall (1983). It is designed to develop materials for use in English education. The instruments used in this study included a grammar test, which experts evaluated as part of the validation process. The grammar test collected detailed feedback from experts to ensure that the product met pedagogical and technical standards and was then tested and also refined through iterative cycles of validation and revision, ensuring its effectiveness and alignment with the study's objectives. In this study, R&D was used to produce finished products such as textbooks, audiovisual games, training manuals, tools, etc., that can be used in educational programs (Borg and Gall, 1983). Such as grammar assessments using Educaplay games for use in schools as guided by the framework of Borg & Gall (1983).

Adaptation is done by modifying the process steps based on the problems found, research objectives, and time constraints in conducting this study. This study followed an adaption model that included: First, research and information collection. In this stage, the researcher conducted the research and information collection during a one-month observation of teaching and learning in the Tenth Grade of Senior High School 5 Taruna Brawijaya in Kediri. Those include identified challenges in grammar instruction, students' needs, a literature review, and report writing preparation.

Second, Preliminary product development. At this stage, a reference study was also carried out, theories were researched and used to guide development. These theories include the concept of learning grammar in senior high school and the use of Educaply games as a test media. The development process itself comprised some stages adapted from those proposed by Borg & Gall (1983) and Harris (1969). As a result, the test will be the final product of this study. Multiple cycles need to be completed to build the test in the Harris (1969) approach. Test planning, test item, instruction preparation, test review, test pretesting, and test analysis are the subsequent cycles.

Third, test validation was the next stage of the development process. At this stage, the researcher's tests were evaluated by an English teacher at Senior High School 5 Taruna Brawijaya Kediri. The evaluation is performed to determine whether the test developed meets the criteria for a good test or not.

The fourth is revision, in this stage, the author revises what has been corrected by the validator and follows all the directions suggested by the validator. A validation sheet was used to obtain data from an expert (English teacher) as the research instrument. The results of the questionnaire are recorded and used to improve the product. The validation sheet consists of (1) Content validity, (2) Language and writing of questions, and (3) Feasibility of questions.

The fifth step is the try-out, which has been known as empirical validation. The goal has been to determine whether the revised test is effective for students and whether it has truly helped students master reading comprehension skills. This trial has primarily been designed to gather data on the appropriateness of the test, including its level of difficulty, usefulness, effectiveness, and the attractiveness of the test display for students. Finally, the final product has been published. The final product must be an educational tool that can support the English teaching and learning process.

During the field trial, the researcher used the Educaplay games application to collect data through test questions. The test covered several topics, with questions designed to clarify specific areas, such as: (1) asking students to identify one part of speech in a sentence, (2) asking students to identify example sentences from one part of speech, (3) asking students to identify example words from one part of speech, (4) asking students to match the correct part of speech to a sentence based on a picture, and (5) requiring students to change words in brackets according to the instructed part of speech.

The data collected in this study has been essential in determining the validity and applicability of the tests developed. For the initial data, the researcher observed the teaching and learning process in the eleventh grade at one of the senior high schools (SMAN) in Kediri. The second set of data was obtained through consultation with an expert or teacher regarding a reading comprehension test based on the Educaplay games. The third set of data, which consisted of test data, was gathered through observation and implementation of the test. Expert validation data was collected using a questionnaire as the research instrument, and the results were recorded and used to improve the product.

In addition, data gathered from preliminary observations during research and information collection has been analyzed to describe the actual needs of students in the target context. This description has served as a guide in determining the adequacy of the test. Any remaining deficiencies or discrepancies in the test were identified, and the data has been utilized as a guide for revisions.

RESULTS AND DISCUSSION

Results

This section presented the results of preliminary research and information collection, expert validation, and the tryout results. After the draft had been developed, it was given to the expert for validation and revision and was then tried out with students. A questionnaire was provided to the expert, and a grammar assessment test using Educaplay games was given to the students to gather evaluations and suggestions for improvement.

The Result of Preliminary Research and Information Collecting

As previously mentioned, preliminary research and information collection were conducted through observation of the teaching and learning process. The results of this preliminary research showed that understanding English grammar was essential for students, especially for proficiency exams such as TOEFL tests and writing assessments. However, paper-based tests tend to bore students, making them reluctant to engage with the text or answer the questions. Additionally, teaching methods and learning media used by teachers had typically been monotonous, lacking innovation or use of internet-based tools, which reduced students' motivation for grammar tests. Students reported difficulties in understanding the vocabulary used in the tests, limited knowledge of the material, a lack of interest in the test format, and a delay in receiving test scores.

To address these issues, the researcher designed a preliminary product with multiple-choice questions, allowing students to choose the correct answer by selecting A, B, or C. These questions focused on parts of speech material relevant to tenth-grade students, with a variety of question types about basic grammar.

The result of Expert's Validation

After the preliminary product was developed, it was validated by an expert. Following the drafting of the grammar comprehension test, it was provided to an experienced English teacher for validation. A questionnaire containing seven aspects with nine statements was used to collect data, with each statement assigned a score of one.

The experts' scores largely indicated agreement with the developed materials. In terms of language and question formulation, the test was considered fairly clear and complete. The vocabulary

level, language, structure, and conceptual level were appropriate for the students, though there were suggestions for some additions and improvements. The content validity was deemed clear and understandable.

The developed test included various interesting topics related to parts of speech, aiding students in developing grammar knowledge. It covered both knowledge and skills, with a representative number of questions per area. The instrument as a whole met the required objectives, with each item requiring only one specific answer, and the adapted scale was appropriate. Additionally, the test's display was suitable for the content, and it was easily accessible via smartphones, allowing students to take the test online, akin to playing a game. The test was also noted to be less monotonous and more enjoyable. The total expert validation score reached 158. The data was then calculated using Formula 1 provided by Sugiyono (2008) to determine the level of validity.

$$Percentage = \frac{\Sigma\,(\text{response} \times \text{weighting on each response}}{N \times weighting\ the\ highest\ response} \times 100\% \quad (1)$$

$$Percentage = \frac{158}{5 \times 42} \times 100\% = \frac{15800}{210} = 75.24\%$$

According to Leatamia (2008), if the score is above 71%, it means that the development materials are eligible to be used by the users. From the data above, the calculation indicates that the developed tests were classified using appropriate criteria. Based on the teacher's validation feedback, the developed tests were generally suitable for use as the grammar assessment test for the tenth grade. However, some points required revision. The validation suggested providing a clear sentence related to the test question on numbers 3 and 19. Next, the instructions needed to be revised to change the part of speech. Furthermore, some typos should be corrected in the Educaply games.

After the draft of the developed test was revised based on the expert's validation, it was administered to students in the tenth grade at a senior high school in Kediri. It was conducted on May 2nd, 2024. The trial was conducted to determine the students' understanding and knowledge of the topics covered in the developed test. It was conducted to create tests that are appropriate for students. During the trial, the researcher served as the teacher. The tryout went well. The students appeared to be motivated as they participated in the trial. Furthermore, the atmosphere was quite conducive because the students were eager to follow the tryout. The test was carried out smoothly. Then, based on the data collected, the researcher calculated using SPSS 26 to check the validity and reliability.

Validity Testing

To check the validity, the researcher has compared the r-table and r-value. If the r-value > r-table, the item is declared valid; If the r-value ≤ r-table, the item is declared invalid, and items with a correlation coefficient greater than 0.3 are considered valid. From the comparison, it is found that there are 18 valid questions demonstrating strong validity with correlation coefficients above 0.5 and 2 invalid questions. The results of the validity test are presented in Table 1 below.

Table 1. The result of the Validity Test

No.	Item	Pearson Correlation	Validity
1	X01	0.747	Valid
2	X02	0.515	Valid
3	X03	0.722	Valid
4	X04	0.439	Valid
5	X05	0.532	Valid
6	X06	0.532	Valid
7	X07	0.665	Valid
8	X08	0.459	Valid
9	X09	-0.079	Invalid
10	X10	0.533	Valid
11	X11	0.451	Valid
12	X12	0.223	Invalid
13	X13	0.529	Valid
14	X14	0.501	Valid

No.	Item	Pearson Correlation	Validity
15	X15	0.509	Valid
16	X16	0.499	Valid
17	X17	0.615	Valid
18	X18	0.478	Valid
19	X19	0.441	Valid
20	X20	0.587	Valid

Reability Testing

Furthermore, to check the reliability of the test, there is a formula: If alpha >0.60, the item is declared reliable. However, if alpha ≤ 0.60, the item is declared unreliable. The reliability of the test was measured using Cronbach's Alpha. A value above 0.7 indicates good reliability. The results of the reliability test are presented in Table 2 below.

Table 2. The Result of the Reliability Test

No.	Cronbach's Alpha	N of Items
1	.883	20

Based on Table 2 above, the alpha coefficient is 0.884. The correlation result means the test is reliable because the alpha is >0.60.

Item Difficulty

Item difficulty is a more important technique for item analysis for selecting and rejecting the test items, which is utilized by research scholars in the present study (Gul et al, 2022). The researcher uses Microsoft Excel to determine the item difficulty and item discrimination scores in addition to verifying the test's validity and reliability. The level of difficulty of the questions is presented in Table 3 below.

Table 3. The Criteria of Item Difficulty

No.	Difficulty Index (P)	Description
1	P < 0.3	Difficult
2	0.3 < P < 0.7	Moderate (Optimal)
3	P > 0.7	Easy

The calculation of the item difficulty score shows that there are 1 question categorized as Easy (numbers 1, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20) and 4 questions as Moderat (numbers 2, 4, 9 and 16).

Item Discrimination

The last aspect to be considered is the score of item discrimination. It follows the criteria as presented in Table 4 below.

Table 4. The Criteria of Item Discrimination

No.	Discrimination Index (D)	Description
1	D < 0.2	Poor
2	0.2 < D < 0.3	Fair
3	0.3 < D < 0.4	Good
4	D > 0.4	Excellent

The discrimination indices for the test items range from 0.13 to 0.67. Items with high discrimination indices, such as X01 (0.67) and X07 (0.47), are effective in distinguishing between high-performing and low-performing students. Conversely, items with low discrimination indices, such as X09 (0.13), are less effective.

Items with high discrimination indices are particularly valuable for assessments as they can differentiate between students who have mastered the material and those who have not. Items with low discrimination indices should be reviewed and potentially revised to enhance their ability to

discriminate between different levels of student performance. Improving these items will help in making the test a more effective tool for measuring student learning outcomes.

Discussion

The finding shows the analysis of the Educaply-based grammar assessment for tenth-grade students at Senior High School 5 Taruna Brawijaya provides valuable insights into the test's effectiveness and areas for improvement. The findings of this study revealed that the Educaplay-based grammar assessment tool demonstrates strong validity and reliability as an effective educational instrument. Of the 20 test items developed, 18 were found to be valid, indicating that they align well with the intended grammatical learning objectives. Reliability analysis using Cronbach's Alpha yielded a coefficient of 0.884, suggesting internal consistency among the test items. Furthermore, item discrimination analysis showed that the majority of test items could effectively differentiate between high- and low-performing students. However, the item difficulty analysis revealed that most items were categorized as easy, highlighting the need to incorporate more challenging items to ensure a balanced assessment that caters to diverse student abilities.

Educaplay is a potential grammar-based assessment that improves motivation and engagement among students. This is noted by the finding that game-based activities led to significant improvements in grammar acquisition (Alrwais, 2024). It occurs since digital games have been found to enhance grammar skills among EFL learners by making the learning process more engaging and interactive (Khan et al., 2024). By increasing student engagement, improving grammar proficiency, and receiving positive feedback from learners, Educaplay aligns well with the benefits observed in game-based and interactive learning studies.

These findings directly align with the main objective of this study: to develop an interactive grammar assessment tool using Educaplay, specifically designed for Indonesian senior high school students. The positive validation results and the ability of Educaplay to provide immediate feedback align with previous studies highlighting the benefits of digital and gamified learning tools. For instance, Castillo-Cuesta (2020) demonstrated that digital games significantly enhance grammar comprehension and student engagement in EFL contexts. Similarly, Graça et al., (2022) reported that platforms like Educaplay facilitate interactive and engaging learning environments. Furthermore, Educaplay-based learning can increase learning enthusiasm and concentration (Febrianti et al., 2024). Overall, the Educaplay-based gamification system has a positive impact on the quality of student learning. This study extends these findings by focusing specifically on grammar assessment, filling a gap identified in previous literature regarding the lack of context-specific applications of gamification for grammar learning (Mykytka et al., 2022). Besides, utilizing Educaplay for grammar assessments can help teachers improve the quality of their evaluation methods. It aligns with the development of teachers' language assessment literacy, which is crucial for the effective implementation of classroom-based assessments (Fitriyah et al. 2022).

Moreover, one of the key findings of this study is the importance of immediate feedback, which was central to the design and implementation of Educaplay. Hossain & Younus (2024) emphasized that real-time feedback plays a crucial role in sustaining learner motivation and improving learning outcomes. The immediate feedback feature of Educaplay was found to enhance student engagement, as it allowed them to correct their mistakes promptly and continue progressing through the grammar exercises. This directly supports the primary aim of the study: improving grammar learning through an interactive and engaging assessment tool, addressing the limitations of traditional assessment methods that often fail to engage students in meaningful ways. In addition, Educaplay offers assessments that apply ready-made templates and interactive tools. These facilitate teachers to implement the assessment despite the challenges they face in designing authentic assessments due to time constraints and lack of resources (Irsyad & Zaim, 2023). The use of Educaplay in grammar assessment is an important indication of the increasing implementation of technology in game-based assessment, which is certainly very popular with students (Blundell, 2021).

Despite the promising results, the study also identified areas for improvement, particularly regarding the difficulty level of the test items. The predominance of easy items suggests the need for more challenging questions to better differentiate between students with varying proficiency levels.

This limitation is consistent with findings from Kaosayapandhu (2023), who stressed the importance of developing balanced assessments that cater to a wide range of student abilities. Future revisions of the tool should incorporate more complex grammar tasks to ensure that all learners, regardless of their proficiency, are adequately challenged.

In conclusion, this research highlights the potential of Educaplay to address the gap in traditional grammar instruction and assessment methods. By developing and validating an interactive grammar assessment tool, this study contributes to the growing body of literature that advocates for the integration of gamification and technology into language education. The findings demonstrate that Educaplay can be an effective tool for enhancing grammar learning, not only in Indonesia but also in other educational contexts with similar challenges. Further studies should explore the long-term impact of such tools on grammar proficiency and assess their scalability across diverse educational settings.

CONCLUSION

In conclusion, the purpose of this study was to develop an Educaply-based grammar assessment for tenth-grade students at Senior High School 5 Taruna Brawijaya. The findings demonstrate that the majority of the test items are valid and reliable, making the assessment a generally effective tool for measuring students' grammatical proficiency. This research successfully bridges a critical gap in grammar instruction by integrating gamification and technology, offering practical solutions to traditional assessment limitations. The immediate feedback mechanism within Educaplay enhances students' ability to learn from their mistakes and stay motivated, making it a promising alternative to traditional grammar assessments. Moreover, its ready-made templates and interactive tools support teachers in overcoming common challenges in designing effective classroom assessments.

However, improvements are needed in item difficulty and discrimination to ensure a more balanced and comprehensive evaluation of student abilities. By addressing these areas, the Educaply-based grammar assessment can better support targeted teaching strategies and enhance students' understanding and mastery of grammar. The integration of educational games through Educaply proves to be a promising approach for engaging students and improving their language skills in a modern educational context.

Based on the conclusions, further studies are recommended to explore the integration of advanced technological tools like Educaply for grammar instruction, focusing on refining test items to achieve optimal difficulty and discrimination levels. Additionally, research should examine the long-term impact of game-based assessments on students' grammatical proficiency and overall engagement. For senior high school grammar teachers, incorporating Educaply into their teaching practices can provide an innovative and interactive way to assess and enhance students' grammar skills. Leveraging such tools is important so that teachers can create more dynamic and effective learning experiences that cater to diverse student needs and foster a deeper understanding of grammar. By adopting these recommendations, educational institutions can further harness the potential of game-based grammar assessments, improving learning outcomes and promoting more dynamic, technology-driven language education practices.

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