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Developing a Nearpod Game-Based Assessment for Grammar Mastery in Elementary Learners

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Abstract

This study addresses the challenge of enhancing fifth-grade students' mastery of comparative and superlative degrees through a game-based assessment using the Nearpod platform. The primary research question investigates whether interactive and technology-based tools may enhance students' comprehension of these grammar concepts. The study employs a research and development (R&D) design based on a modified Borg and Gall model, involving phases such as needs analysis, development of product, validation by expert, revision, and field testing. Data were collected through classroom observations, questionnaires, expert evaluations, and a trial with thirty students. The assessment tool developed on Nearpod received strong validation scores from media and language experts and demonstrated reliable internal consistency. A total of seventy percent of the test items were found to be valid, indicating strong alignment with learning objectives, while others were revised to improve clarity and discriminatory power.The results confirm that Nearpod not only increases student motivation and enjoyment but also serves as a valid and reliable medium for assessing grammar skills. This study offers practical insights for educators seeking to integrate technology-enhanced assessments into grammar instruction at the elementary level.

Keywords: *elementary language assessment;game-based assessment; Nearpod; research and development; technology-enhanced learning*

Introduction

Mastering English grammar at the beginner level is often a significant challenge for students, largely due to interference from their first language. This interference causes students to apply the grammar rules of their native language when forming sentences in English, leading to confusion and incorrect sentence patterns (Magaba, 2023). As a result, they struggle with foundational concepts and make common errors that hinder their progress.

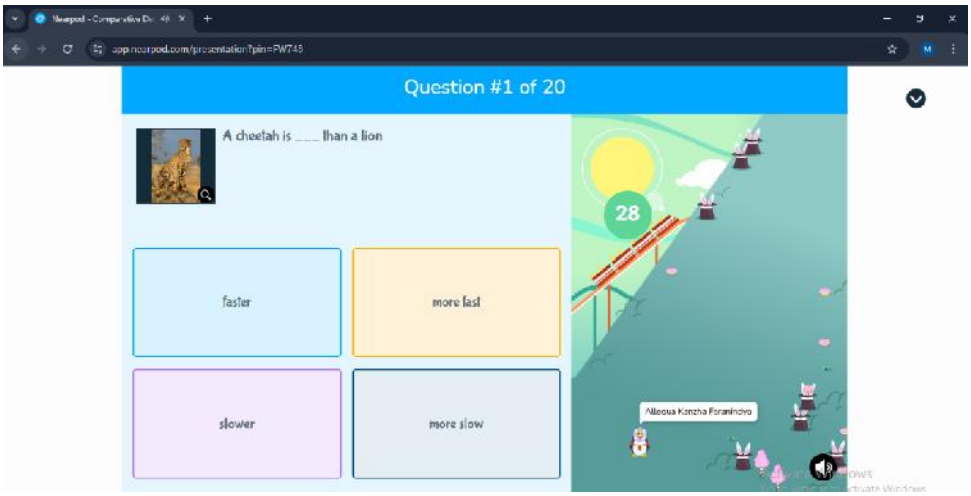
Another major challenge beginner learners face is their limited vocabulary, which makes it difficult to create sentences or understand grammar rules. Without a sufficient word bank, students often feel frustrated, and their motivation to learn English decreases. This lack of motivation exacerbates their struggles, creating a cycle in which learning grammar feels like a constant challenge (Putri et al., 2022).

Traditional grammar testing methods often fail to engage beginner learners effectively, especially when their motivation is low. Therefore, it is essential to explore more interactive approaches. Research shows that game-based platforms like Nearpod, which incorporate multimedia and interactive elements, are effective in making

grammar lessons more engaging and enjoyable (Feri & Zulherman, 2021). These methods not only improve student participation and retention but also reduce exam anxiety by making the learning process feel less formal (Azzmi et al., 2023).

One promising method is Nearpod-based game-based assessment, which integrates multimedia, interactivity, and real-time feedback into the learning process. Nearpod is an educational platform that allows teachers to create interactive lessons and assessments incorporating quizzes, polls, videos, and gamified activities (Feri & Zulherman, 2021). Its game-based features, such as "Time to Climb," provide students with a fun, competitive environment to apply grammar rules, making the learning process more dynamic and student-centered (Azzmi et al., 2023). These features not only increase motivation and engagement but also reduce test anxiety by offering a less formal, more supportive assessment environment.

Figure 1. Nearpod game-based assessment question using the "Time to Climb" feature



Interactive grammar learning methods are particularly beneficial for younger students, who learn more effectively through hands-on activities and games that cater to their cognitive and developmental needs. Such approaches help students overcome common difficulties, making the language-learning process more enjoyable and successful (Uyen, 2023)

Studies on game-based learning have demonstrated its beneficial effects on learning outcomes, motivation, and student engagement. Feri & Zulherman (2021) found that game-based assessments with elements like levels, points, and narratives increase student motivation and autonomy while fostering metacognitive skills like problem-solving. In the context of EFL, Uyen (2023) demonstrated that game-based approaches improve language learning outcomes by providing more opportunities to apply language skills practically. Jin et al., (2022)emphasized that games align well with elementary students' cognitive characteristics, making learning more enjoyable and less stressful. Traditional grammar tests often use methods like fill-in-the-blank or multiple-choice questions, which may not engage students effectively. In contrast, game-based assessments allow students to apply grammar rules in real-world contexts, such as comparing objects using comparative and superlative forms. Through platforms like Nearpod, this approach not only assesses knowledge but also strengthens the effective use of grammar in relevant situations.

This study assumes that students' mastery of comparative and superlative degrees can be enhanced through interactive, technology-based learning methods. Therefore, more research is needed to focus on developing a Nearpod-based game designed to assess proficiency in these grammar concepts among primary school students. In this study, the researchers did not create a completely new game from scratch but used an existing online platform called Nearpod to develop a game-based assessment. Nearpod is an interactive educational tool that allows teachers to design engaging activities such as quizzes and games. The researchers utilized the "Time to Climb" feature to create a quiz tailored for fifth-grade students, focusing on the application of comparative and superlative degrees in practical, real-life contexts. They designed the content by writing context-based multiple-choice questions, inputting them into the Nearpod platform, and customizing the game to be interactive and engaging. Once completed, the quiz link or access code was shared with students so they could participate using their own devices. While the platform was already available online, the quiz content and structure were developed by the researchers to support the learning objectives and research goal.The goal of this study is to create a game-based assessment that allows fifth-grade students to apply their understanding of comparative and superlative degrees in practical, real-life contexts, enhancing both engagement and retention.

The ultimate goal of this study is to demonstrate that a Nearpod-based game assessment can effectively enhance fifth-grade students' mastery of comparative and superlative degrees while increasing motivation and fostering a more positive and engaging learning experience, thereby addressing a critical need for innovative, interactive grammar assessment tools in elementary language education.

Method

The aim of this study is to develop Nearpod game-based assessment for assessing comparative and superlative degree mastery. This study uses research and development (R&D) as its method of study. Development research is the methodical study of designing, creating, and assessing programs that must satisfy the needs and efficacy of their users. (Setyosari, 2016). Instead of formulating or testing a theory as in fundamental research, the primary goal of R & D is to create useful products for educational use.

R&D aims to create final goods, such as training manuals, audiovisual games, textbooks, reading storybooks, etc. It is a procedure for creating and approving instructional materials(Borg & Gall, 1983:772). The design suggested by Borg and Gall (1983) was modified to meet the objectives of the R&D study. In order to adapt, the process stages are changed in accordance with the issues raised, the goals of the study, and the time limits of the investigation. The phase of information collecting and study, which is followed by the development ofa preliminary product, expert validation, product revision, field testing and try-out, revision, and final product, comprise the adaption model utilized in this study.

Over the course of three meetings in the fifth grade, the researchers conducted research and gathered information while observing teaching and learning. A study of the literature, in-class observations, and report writing preparation were all part of this research and information gathering process. After that, a reference study was also completed. These theories include using Nearpod as a test media and the idea of comparative and superlative degree in primary school.

The previously acquired concepts are used as the foundation for creating test products, which are subsequently used to create the initial written product. Some of the stages in the development were modified from those proposed by Borg and Gall (1983) and Harris (1969). It is why the exam that this study's final output will be is. Actually, there are several cycles that need to be completed in Harris's (1969) design in order to build the test. Planning, developing the test items and instructions, reviewing, pretesting, and evaluating the outcomes are the cycles into which the test is divided.

Test validation is the next stage in the development process. At this point, the tests was assessed by a person who is regarded as an expert on both comparative and superlative content and test development. Evaluation is done to demonstrate whether or not the created test satisfies the requirements for being a good test.

Performing a trial test is the next stage. Empirical validation is the term for this. The objective is to ascertain if students benefit from the new test and whether it actually helps them grasp the subject for comparative and superlative degrees. The main goal of this experiment is to collect information about the exam's appropriateness, including its degree of difficulty, practicality, effectiveness, and student appeal.

Adding test product-related queries to the Nearpod app is the last step in the test development process. An instructional tool that supports the teaching and learning process must be the final product. In this investigation, the researchers used Nearpod to develop a test for fifth-grade students at this school that focused on comparative and superlative degree material.

Three categories comprise the data collected for this study: first, information gathering and research data.It provides the framework upon which tests are built. Second, the data is supplied by specialists during the validation phase. It establishes if the test's design adhered to the underlying principle. Third, the information acquired throughout the research. The information is utilized to assess the test's suitability for this school's fifth-grade pupils throughout the 2nd semester.

Table 1:
The Development Stages

Stage	Description	Outcome
Information Gathering	Literature review, classroom observation	Research foundation
Preliminary Development	Creating initial test items (30 questions)	Draft assessment product
Expert Validation	Review by grammar and test experts	Validated test items
Revision	Improvements based on expert feedback	Refined test items
Field Testing	Pilot test with 30 students	Data on test effectiveness
Final Integration	Uploading items to Nearpod “Time to Climb” game	Interactive assessment tool

Results and Discussion

The findings of the initial investigation, data gathering, expert validation, and trial are presented in this part. Once the draft was finished, it was sent to the specialist for review and revision before being tested with the students. Students were given a Nearpod exam to assess and offer test-related comments, while the expert was given a questionnaire.

1. The Result of Preliminary Research and Information Collecting

As mentioned before, the teaching and learning process was observed while doing exploratory study and gathering data. The Nearpod platform is very important for students to evaluate their comprehension of comparative and superlative degree content, according to the findings of preliminary study and information gathering. However, paper-based assessment is boring and reduce students' enthusiasm for taking test.

As a result, the researcher made a needs analysis in the development of this research which was managed using Google Form for 5th grade consist of 30 students. The questions consisted of multiple choice questions, students chose A, B, C, or D to determine the answer according to their needs. Multiple choice questions include students' engagement and enjoyment of using Nearpod, positive impact on learning experience, features and mechanics, and comparison to traditional testing methods. Need analysis plays a crucial role in educational settings, as highlighted in various research papers. It entails determining the specific needs and interests of students to customize educational methods and assets appropriately.

2. The Result of Expert's Validation

After completing the preliminary product, the following stage was to validate it with the expert. A question validation sheet was given to the expert. There are two evaluation categories: media experts and linguistics experts. All of the nineteen item tests is valid. One of the questions is quite easy to understand and the remaining items are very easy to understand. There are seventeen item tests could be used without revision and the three numbers should revise based on the teacher's notes. The topics of the Nearpod test are also related to the level of students' grade.

The average scores of the media expert was 98,75 while the linguistic expert was 95,20. Below is a percentage of the expert validation :

$$\text{Percentage } (100\%) = \frac{98{,}75+95{,}20}{2} = 97\%$$

The expert validation results confirmed that the Nearpod test product was good and ready to use for 5th grade. The teacher's advice is to provide additional pictures to illustrate the question.

3. The Result of Try Out

After revising the first draft, the Nearpod test was given to the test takers. The test was given to students on 16th May 2024. The classroom environment was conducive, and student responses were enthusiastic. The test was conducted to assess the students' ability to grasp comparative and superlative material.

The researchers served as a teacher throughout this stage. The students received instruction before the tryout. After that, the teacher gave students the opportunity to ask questions on any difficult terms or vocabulary in the test. Test results were then collected and analyzed. The item discrimination and difficulty were assessed using Microsoft Excel. While validity and reliability were determined using SPSS 25.

a. Validity Testing

The table evaluates 20 items based on Pearson Correlation values compared to an r table value of 0.361 to determine validity. Items 1, 2, 3, 4, 6, 9, 10, 12, 13, 14, 16, 18,

19, and 20 are considered valid because the correlation values exceed 0.361, while items 5, 7, 8, 11, 15, and 17 are invalid as their correlation values fall below this threshold. Consequently, 70% of the items are valid and suitable for decision-making, whereas 30% are invalid and require review, revision, or removal to enhance the test's overall accuracy and reliability.

b. Reliability Testing

The reliability statistics indicate that the test, which comprises 20 items, has a Cronbach's Alpha value of 0.713. Internal consistency is measured by Cronbach's Alpha, showing how well the items in the test align to measure the same underlying construct. A value of 0.713 suggests that the test has good internal consistency, with items that are likely well-correlated and collectively effective in assessing the intended concept. Therefore, we can conclude that the test is reliable.

c. Item Difficulty

In this part, the researchers determines the item difficulty by using Microsoft Excel. The item difficulty follows the criteria below:

Table 2:
Criteria of Item Difficulty

Range	Category
0.25-0.30	Difficult
0.31-0.70	Medium
0.71-1.00	Easy

The result of item difficulty showed that there were several numbers include in the difficult category. There were 20 numbers of items or question assisted in the test. The difficult category was in item numbers 6, 7, 9, and 10. While, the medium category was the item numbers 3, 8, 14. For the rest item numbers were including the easy category.

d. Item Discrimination

Identifying the differences in performance between students in the high- and low-score groups is the goal of item discrimination.To accomplish this, the discriminating index is utilized to determine which pupils possess knowledge and which do not, hence exposing the highest and lowest scores for each item. Then, using item discrimination analysis, it is determined which pupils are knowledgeable and which are not by looking at how well they understand the contents being examined. The usefulness of each alternative option on multiple-choice items is finally assessed by the item discrimination.

The item discrimination score is the last factor taken into consideration. It fulfills the range shown in the table below:

Table 3:
Range of Item Discrimination

Range	Grade	Items
>0.39	Excellent	13, 16
0.30-0.39	Good	2
0.20-0.29	Average	1, 3, 4, 8, 11, 14, 18
0.00-0.20	Poor	5, 6, 7, 9, 10, 12, 15, 17, 19, 20
<-0.01	Worst	-

From the range of item discrimination above, the majority of the test items (ten out of twenty) are in the POOR category, indicating a need for review and possible revision to improve their quality. Seven items are rated as AVERAGE, one item as GOOD, and two items as EXCELLENT, suggesting a varying level of item difficulty across the test.

This study investigated the development of a Nearpod test specifically designed to assess 5th graders' understanding of comparative and superlative degrees. While the research didn't directly compare Nearpod's use in this context to existing applications in elementary schools, it aligns with previous findings that highlight Nearpod's potential to enhance student engagement (Abdullah et al., 2022; Chairunnas et al., 2022; Rivelia & Reinita, 2023). Similar to these studies, the current research confirms that Nearpod can effectively spark student interest and curiosity, potentially leading to improved learning outcomes.

However, this study delves deeper into Nearpod's application by focusing on the development of an assessment tool. The research identified areas for improvement in the Nearpod test, such as revising unclear items, incorporating visuals to enhance understanding, and conducting pilot tests with smaller student groups. These specific recommendations for test refinement weren't directly addressed in the reviewed studies on Nearpod. These prior studies explored Nearpod's application in a broader sense, using it as a learning platform or incorporating Nearpod-based multimedia into lessons (Abdullah, 2022; Chairunnas, 2022; Rivelia & Reinita, 2023). Their focus was on Nearpod's ability to create engaging learning experiences, whereas this current research emphasizes the need for careful test development to ensure accurate measurement of student knowledge.

This study shows that the Nearpod platform is effective in helping students understand and stay interested in learning about comparative and superlative degrees. This supports the findings of Feri and Zulherman (2021), who found that Nearpod-based modules are high quality in terms of content and design. The validation scores in this study (98.75% from media experts and 95.20% from language experts) confirm that the test is suitable for classroom use. The needs analysis also found that Nearpod is more engaging than traditional paper-based tests, which students often find boring. The test was shown to be reliable (Cronbach's Alpha = 0.713), although some test items need improvement, as ten were rated as poor. Overall, this study supports the use of Nearpod as a tool to make learning more effective and enjoyable for elementary students.

Similarly, Courtney and Graham (2019) found that students enjoyed learning through games, with 94% expressing a desire to play again and 88% acknowledging that the game helped them track their progress. Nearpod's interactive features, like those in educational games, make learning fun and engaging, increasing students' motivation regardless of their performance level. This study also highlights that Nearpod is more engaging than traditional paper-based tests, aligning with Courtney and Graham's observation that fantasy and emotional engagement are key motivators in educational activities. While Nearpod assessments may challenge students of varying abilities, as seen in 40% of Courtney and Graham's participants who found the game difficult, this challenge fosters growth and enthusiasm across both high and low achievers. Overall, the findings emphasize Nearpod's ability to create a positive and motivating learning environment, much like gamified educational tools.

This study demonstrates that the Nearpod platform effectively supports students in understanding and maintaining interest in learning about comparative and superlative degrees, highlighting its potential as a tool to make learning more interactive

and enjoyable. This aligns with findings from Courtney and Graham (2019), who emphasized the motivational benefits of gamified learning, as students found games engaging and beneficial for tracking progress. Similarly, Burmich, Mashkin, and Stepanova (2023) underscore the advantages of game-based assessments, which foster deeper understanding and improved memorization through interactive and stimulating methods. By integrating elements that promote engagement, such as peer review and personalized feedback, Nearpod reflects the principles of game-based assessment that adapt to different student needs while enhancing their knowledge and practical application. Both studies highlight that gamified and interactive approaches, like Nearpod, encourage enthusiasm across varying ability levels and create a learning environment that is both effective and motivating. Ultimately, these findings emphasize the growing importance of innovative educational tools that combine assessment with interactive, student-centered learning experiences.

Another advantage is that gaming ensures engagement in the learning process. When students enjoy gaming, they actively interact with the game, which enhances their understanding of the material presented. This applies universally across gender and ability levels, fostering a sense of enjoyment and inclusivity in learning. Moreover, Kim and Shute (2015) highlight that game-based assessments integrate authentic problem-solving tasks, encouraging students to put their knowledge and abilities in meaningful contexts, thereby improving construct validity. By aligning tasks with real-world challenges, these games foster deep comprehension and the ability to transfer knowledge to practical situations. Additionally, gaming supports the acquisition of fundamental abilitiessuch as strategic thinking, persistence, and collaboration. Its interactive and immersive nature enhances learning outcomes while boosting cognitive abilities like attention and memory retention. As players navigate through challenges and receive immediate feedback, they refine their approaches, reinforcing both their understanding and enjoyment. This dynamic interaction positions gaming as a powerful tool for educational advancement, seamlessly blending learning with fun to optimize student engagement and knowledge retention.

In essence, this study complements existing research on Nearpod. While the reviewed studies focused on Nearpod's role in fostering student interest and engagement during learning activities, this study emphasizes its potential for assessment. By combining these insights, educators can create a powerful learning environment for elementary school students. Using Nearpod features to capture student interest along with well-developed Nearpod tests can result in a more effective and engaging learning experience. This combined approach ensures that assessments accurately measure student knowledge while maintaining the benefits of Nearpod's engaging features.

This study had limitation related to the findings. Because this study only involved nearpod game-based assessment for testing mastery of comparative and superlative degrees, so the researchers have not found any previous studies related to comparative and superlative degree material. Future studies need to use nearpod as a media for testing in the context of comparative and superlative degree mastery

Conclusion

This study aimed to develop and evaluate a Nearpod-based game assessment to measure fifth-grade students' mastery of comparative and superlative degrees through a Research and Development (R&D) approach. The process included needs analysis, expert validation, and field testing to ensure the assessment's quality, validity, and reliability. Results

showed that Nearpod enhanced student engagement and motivation compared to traditional assessments. Expert validation confirmed the tool's relevance, with only minor revisions needed, while field testing indicated overall effectiveness despite some items needing improvement due to poor discrimination.

Based on the findings, teachers are encouraged to use Nearpod as an alternative assessment tool, especially in grammar topics like comparative and superlative degrees, to foster active learning and better understanding. The interactive and gamified features make it suitable for a range of learners. However, the study was limited by a small sample size, focus on one topic, and lack of comparison with other platforms. Future studies should broaden the scope by testing different subjects, age groups, and tools, and exploring the long-term impact on student learning outcomes.

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