Implementing web-based language learning to improve grammar skills of junior high school students: grammar monster

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Abstract. This research aims to determine the effectiveness of web-based language learning (WBLL) in improving junior high school students' grammar. An experimental quantitative study method was applied in this research among 50 junior high school students from experimental and control groups. The data collection technique used grammar test questions consisting of 25 questions. All students will take the pre-test and post-test, and WBLL will intervene the experimental group after the pre-test is conducted. The grammar website used in this study is Grammar Monster. The findings from statistical analysis show that the experimental and control groups demonstrate significant differences. The experimental group experienced an increase after the intervention using web-based language learning compared to the control group, which experienced a decrease in the post-test score. The results of the independent sample t-test showed a sig 2 (tailed) of 0.002, which is smaller than 0.05. It can be interpreted that WBLL, especially Grammar Monster web, can improve the mastery of grammar in English learning. The study found significant improvements in grammar skills in the experimental group, demonstrating WBLL is effectiveness. This research addresses the gap in the literature regarding the underutilization of WBLL tools in junior high education.

1 Introduction

Grammar skills support strong writing abilities because writing abilities involve comprehending rules and structures that directly connect to grammatical concepts. Functional grammar supports an approach to language and structure as meaningful components that work together to create meaning in sentences and discourse [1]. Our grammatical frameworks and views are closely related to how we think about grammar [2]. This indicates that students can express themselves well while following grammar rules.

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As described by [3], a student's speaking proficiency is heavily influenced by their understanding of grammar. Those who are confident tend to participate more in daily communication, idea sharing, or even classroom discussions and other activities. Nevertheless, grammar can be a valuable communication tool, especially regarding the productive skills of speaking and writing; as [4] stated, grammar should be taught and assessed as a part of communicative skills and outcomes. If students' curiosities and interests are involved, this will lead to how well the students will understand the materials. Students' learning interests and engagement must be stimulated in such ways.

One method to encourage student participation in the learning process is through the use of technology. According to [5], due to technological improvements, there are many options for learning grammar in context and emphasizing meaning. Web-Based Language Learning (WBLL) is one of the programs that has been implemented to help grammar learning. According to [6], implementing internet-based and multimedia programs for language instruction is closely related to web-based language learning. Online resources can provide helpful information and materials to language learners, integrating the target language into the learning process [7].

The research has shown that online language learning helps with grammar proficiency. It has been shown that students' speaking, translating, and grammar knowledge all improve with online instruction. This theory is in line with the research findings of [8], which reported the beneficial effects of web-based language learning on students' grammar. Moreover, it involves learners constructing their knowledge and engaging with other learners; web-based language learning is a very useful tool in language learning [9].

Existing literature on Web-Based Language Learning (WBLL) highlights several strengths. Web-based learning has the ability to enhance traditional learning models and develop a broader range of learning activities [10]. Online learning has a larger number of learning activities, which lead to the learner enjoying a match with their learning style. This flexibility enables learners to go for exercises they feel comfortable with, hence creating a more personalized and engaging learning experience, according to the study carried out by [11], which revealed that students of different proficiency levels had consistent and homogeneous results demonstrating positive effects, high levels of engagement, and a higher sense of satisfaction towards web-based language learning. The use of web-based language learning can motivate students to have more opportunities to practice their language skills through collaborative learning [12]. Web-based platforms can facilitate communication and collaboration among learners and practice their language skills in real-world contexts. This can be done via online activities and group projects. In line with Khan, cited in [13], web-based language learning provides opportunities to build powerful, learner-centered, affordable, interactive, efficient, and flexible e-learning systems. This indeed points out the importance of a properly designed e-learning environment. This environment should be designed in such a way that it puts the needs and goals of individual learners as the top priority.

Many studies prove the effectiveness of web-based language learning in improving grammar skills. However, it does not match its implementation, as junior high school teachers often do not take advantage of this resource. This observed gap between the benefits of web-based language learning and the lack of implementation in junior high school education motivated the need for this study. By investigating the reasons behind the underutilization of web-based language learning tools for grammar improvement, this study aims to identify barriers and develop strategies that can encourage more teachers, especially at the junior high school level, to incorporate these practical digital resources into their teaching practices. The hypothesis of this study was formulated with the assumption that there is a statistically significant difference between the pre-test and post-test results of using web-based language learning toward junior high school students’ grammar mastery.

2 Research Method

The efficacy of web-based language learning on students' grammar skills was investigated using quantitative research. This quantitative study used an experimental design to assess web-based language learning's impact on grammar skills. [14] pointed out that quantitative research focuses on investigating the relationship between variables to verify objective theories. This scenario took grammar monster as the independent variable, whereas grammar proficiency was dependent. According to [14], in selecting the research approach framework, researchers used experimental research to determine whether a specified treatment had a noticeable effect on a particular outcome. Thus, this research aimed to determine how well the students performed grammar based on the pre-test and post-test scores and the improvement of the knowledge of grammar from before and after using web-based learning. A quasi-experimental design that utilized a randomized control group setup was important for measuring the experimental group's performance, which involved web-based language learning, as opposed to the non-intervention control group [14]. The study included 50 students from a junior high school in the outskirt of YogyakartaMu, who were divided into seventh grade as the experimental group and eighth grade as the control group.

The study aimed to determine whether the use of web-based learning could be effective in improving grammar mastery. The web used to develop grammar mastery was the Grammar Monster Web (https://www.grammar-monster.com). This web presented complete materials, tests, and games about grammar.

[15] stated that structured questions were a type of question that presented a question to participants and provided predetermined answer options. The data collection technique used the multiple-choice test that tested their prior knowledge of grammar as well as their progress after the intervention. The test consisted of 25 items, which were given in printed form and focused on the simple present tense, adjective, action verb, and adverb of frequency. The kind of response given was multiple choice, which helped to check the students' grammatical skills ideally. As seen in [16], the use of multiple-choice questions made it easy to code responses and count frequencies, which gives a quick analysis of the responses. Pre-tests and post-tests, consisting of 25 multiple-choice questions on essential grammar topics, measured students' proficiency.

Ethical considerations included obtaining consent from students and teachers, ensuring anonymity, and providing equal learning opportunities. Data were analyzed using SPSS to compare pre-test and post-test scores between groups. The test carried out is normality to see whether the distribution between the pre-test and post-test is normal and determine whether the next test uses a parametric test or non-parametric test. The next test is the homogeneity test to see whether the two tests' variants are the same. The final test to determine whether web-based language learning is effective in developing grammar skills is an independent sample t-test.

3 Result and Discussion

The study that implemented web-based language learning to improve students' grammar levels answered the research question. The data collection technique used tests consisting of pre-test and post-test. The pre-test was used to determine the ability of the students' grammar level, and the post-test was used to see the progress of the students after the intervention using web-based language learning. The following are the results of the tests that have been conducted.

Table 1. Mean Score of the Pre-Test

Category		N	Mean	Std. Deviation	Std. Error Mean
Pre-test	Experimental	24	40.17	13.679	2.792
	Control	26	53.08	14.380	2.820

The pre-test results table shows that the experimental group scored 40.17 on average, with a standard deviation of 13.679 and a standard error of the estimated mean of 2.792. The average score for the control group was higher, 53.08, with a standard deviation of 14.380 and a standard error of the estimated mean of 2.820. This indicates that the experimental group was less proficient in grammar than the control group.

Table 2. Mean Score of the Post-Test

Category		N	Mean	Std. Deviation	Std. Error Mean
Post-test	Experimental	24	41.33	10.462	2.136
	Control	26	52.31	12.995	2.548

According to the following post-test data, the experimental group's average score was 41.33, with a standard deviation of 10.462 and a standard error of the estimated mean of 2.136. The control group's score was 52.31, with a standard deviation of 12.995 and a standard error of the estimated mean of 2.548. The experimental group scored lower than the control group. Nevertheless, the experimental class improved in the post-test after the intervention using web-based language learning.

Table 3. Tabel of Statistic Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Post-test	Equal variances assumed	3.743	.059	-3.272	48	.002	-10.974	3.354	-17.718	-4.231
	Equal variances not assumed			-3.301	47.161	.002	-10.974	3.325	-17.663	-4.286

The independent sample t-test analysis showed a significant difference between the experimental and control groups after the web-based language learning intervention.

This can be seen in the sig (2-tailed) score, which is less than 0.05, precisely 0.002. This proves there was an increase in the experimental group, although the difference in value was slight, from 40.17 to 41.33. This can happen because of the limited time available, so it cannot optimize the use of web-based language learning to improve grammar mastery. On the other hand, the control group decreased from an average of 53.08 in the pre-test to 52.31 in the post-test.

The results of this study have shown that the application of web-based language learning of English greatly enhances grammar skills. The pre-test revealed that the control group had better grammar knowledge before the intervention. Likewise, the experimental group showed improvement in grammar proficiency after the web-based language learning intervention. Their average post-test score increased, showing the positive impact of web-based language learning. From the results of the independent t-test, it can be said that there is a statistically significant difference between the pre-test and post-test on the results of using web-based language learning on junior high school student's mastery of grammar because the significance level is 0.002. [17] stated that if the sig 2(tailed) <0.05, then the alternative hypothesis is accepted. Therefore, this study has answered the alternative hypothesis that has been proposed.

4 Conclusion

The use of the web-based approach in language learning has proven effective in improving the grammar mastery ability of junior high school students. The difference between the pre-test and post-test scores of the experimental group indicates a noticeable change. The students' understanding of the present tense, adjectives, verbs, and frequency adverbs increased significantly after the intervention through the use of the Grammar Monster web. Consequently, it is shown that web-based language learning has been proven effective in developing junior high school students' grammar skills. As a result, web-based language learning has been proven to be a powerful tool for students to acquire and become proficient in English grammar, especially in present tense, adjectives, action verbs, and adverbs of frequency. The implementation of web-based language learning can provide real benefits in grammar learning at the junior high school. The increase in mastery of grammar after the intervention using the Grammar Monster web confirms that web-based language learning makes a real contribution to improving students' language skills.

The analysis of these studies reveals both strengths and weaknesses. On the positive side, web-based language learning provides innovative teaching methods that complement traditional classroom instruction, making learning more engaging and effective [8], [9]. However, the lack of comprehensive training for educators and insufficient infrastructure in many schools limit the practical application of these technologies. Additionally, the existing literature often overlooks the importance of integrating web-based language learning into the broader curriculum, focusing instead on isolated interventions [12].

Nonetheless, several limitations in this study may affect the generalizability and interpretation of the findings. First, the study's relatively small sample size of 50 students limits the ability to generalize the results to a broader population. Future studies employing larger sample sizes would yield more robust data and enhance the reliability of the conclusions.

The duration of the web-based language learning intervention was limited. Extending the intervention period could potentially produce different outcomes and provide a more comprehensive understanding of web-based language learning's long-term effects on grammar acquisition. Furthermore, this study was confined to a single junior high school, which may not reflect the diversity of educational contexts. Variations in

technological infrastructure, teacher preparedness, and student familiarity with digital learning tools across different settings could influence the applicability of the results.

In addition, the scope of the assessment was restricted to grammar skills measured through multiple-choice questions. A more integrated evaluation incorporating writing, speaking, and other language competencies would offer a deeper understanding of web-based language learning's efficacy. Additionally, the effectiveness of web-based language learning is contingent upon students' access to technology and the internet. Disparities in technological access among participants could have influenced the study's outcomes and subsequent interpretation. These limitations underscore the necessity for a cautious interpretation of the findings. Addressing these limitations in future research will provide a more comprehensive and accurate assessment of web-based language learning's impact on language learning.

The study contributes to the field of web-based language learning and language learning in several significant ways. It addresses the gap in existing literature regarding applying web-based language learning in junior high school settings. Most prior research has focused on higher education or adult learners, leaving a critical need for studies targeting younger students. This research offers insights into how web-based language learning can be effectively integrated into secondary education, thus broadening the scope of web-based language learning's applicability. In addition, the study highlights the benefits of incorporating digital resources into traditional language instruction. The interactive and engaging nature of web-based language learning platforms enhances students' learning experiences, offering personalized and flexible learning opportunities often lacking in conventional classroom settings. The study encourages educators to embrace technological innovations in language teaching by providing empirical support for these benefits. Moreover, the research identifies and discusses critical barriers to the successful implementation of web-based language learning, such as inadequate teacher training, limited resources, and unequal access to technology. By acknowledging these challenges, the study offers practical recommendations for overcoming them, thus contributing to developing more effective and equitable web-based language learning practices.

In conclusion, this study makes a meaningful contribution to the field of language learning by providing evidence of web-based language learning's effectiveness and offering practical insights for its implementation. By addressing the existing gaps in the literature and proposing strategies to overcome barriers, the research paves the way for more widespread adoption of web-based language learning in junior high school education, ultimately enhancing language learning outcomes for students.

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