

SYSTEMATIC DEVELOPMENT AND VALIDATION OF A WEB-BASED GRAMMAR LEARNING PLATFORM FOR SENIOR HIGH SCHOOL STUDENTS: AN ADDIE FRAMEWORK APPROACH

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ABSTRACT

This study aims to develop a grammar learning website for senior high school students by applying the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The research addresses the challenges faced by students in learning grammar, including limited access to interactive learning media, low accessibility, and difficulties in understanding grammatical concepts through conventional teaching methods. This study employed a Research and Development (R&D) design. Data were collected through interviews, questionnaires, and expert validation. During the analysis stage, students' needs and learning difficulties were identified. In the design and development stages, a web-based grammar learning platform was created, integrating instructional materials, exercises, and multimedia features. The implementation stage involved testing the website with 22 students, while the evaluation stage focused on assessing the feasibility of the product through expert validation and students' perceptions. The findings indicate that the developed website is feasible and appropriate for use as a learning medium. The expert validation process, involving three experts (content, language, and design), resulted in an overall mean score of 3.17, categorized as "good." Meanwhile, students' perceptions yielded an average score of 3.55, also categorized as "good," indicating that the website is user-friendly, visually engaging, and effective in supporting students' grammar learning. The novelty of this study lies in the systematic development of a grammar learning website using the ADDIE model, which integrates students' needs analysis, instructional design principles, and digital learning features within a single platform. Unlike previous studies that generally focus on learning outcomes or student engagement, this research emphasizes the development and feasibility of a web-based grammar learning product specifically designed for senior high school students, thereby contributing practical value to technology-based language learning.

Keywords: grammar learning, website-based learning, ADDIE model, material development, feasibility.

1) INTRODUCTION

The rapid advancement of information and communication technology in today's digital age has compelled the field of education to adopt new and innovative approaches. Learning, which was once confined to the traditional classroom setting, is gradually

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shifting towards more flexible, interactive, and technology-based models. One of the key demands of this era is the development of modern yet effective learning media that can enhance students' understanding of academic material. In this context, web-based learning platforms have emerged as an innovative solution, particularly in the teaching of English.

As a global language, English plays a crucial role across various areas of life, and its mastery at the senior high school level serves as a foundational skill for future academic and professional pursuits. One of the most essential components in learning English is grammar. Grammar forms the system of rules that governs sentence construction. Harmer defines grammar as a description of how words can change form and be combined to form sentences in a particular language. In other words, a solid understanding of grammar is vital for students to use English correctly and effectively.

Web based learning media offer numerous advantages. Kamarudin states that web-based platforms allow for two-way interaction, flexible content delivery, and multimedia features that help increase student engagement and understanding. Similarly, research conducted by Lespita found that integrating website-based media into instruction can significantly improve student learning outcomes. These platforms provide students with access to learning materials anytime and anywhere, making them compatible with the learning habits of today's digital-native students.

Considering these issues, it is crucial to develop a website-based learning medium specifically designed to support students in mastering English grammar in a more engaging and effective manner. Therefore, this study employs the Research and Development (R&D) method to design and create a grammar learning website for senior high school students, particularly those at SMA Negeri 1 Palopo. This development is expected to serve as an alternative solution to overcome the challenges in grammar learning and to enhance students' overall academic achievement in English.

2) METHOD

The researcher chose the Research and Development (R&D) method with the ADDIE Model. The ADDIE model only consists of five main stages (Analyze, Design, Develop, Implement, Evaluate). The participants of this study were 35 students. Data collected were obtained from questionnaires and interviews given to samples and experts to obtain data related to the design of the grammar learning website. The time starts from the morning when the learning

process takes place. The subjects in this study were high school students, especially those in grade X.

3) RESULTS

Analysis stage

The results of the need analysis the questionnaire consisting of 6 statements, and the total number of respondents was 22 students.

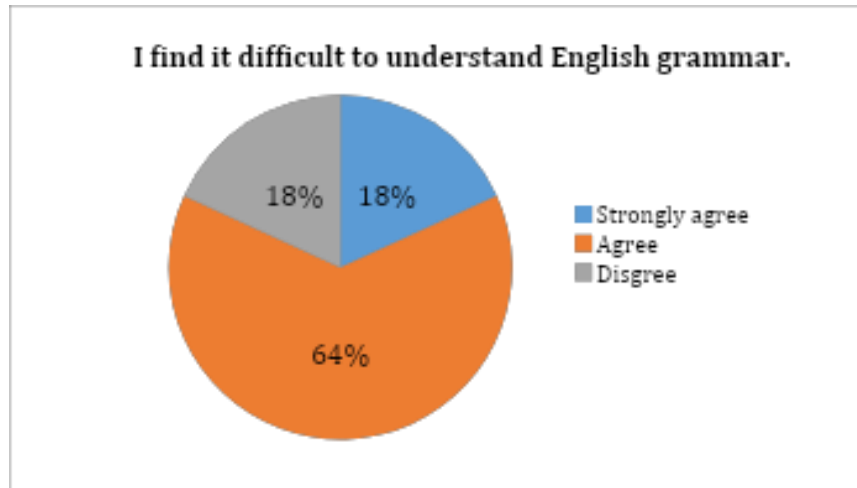


Chart 1. The students' difficulties in learning English grammar

The researcher's purpose in the question which can be seen in the chart 4.1 is to find out students difficulties in learning English grammar. The researcher gave three choices and choice B (agree) was the most popular choice with a score of 64%.

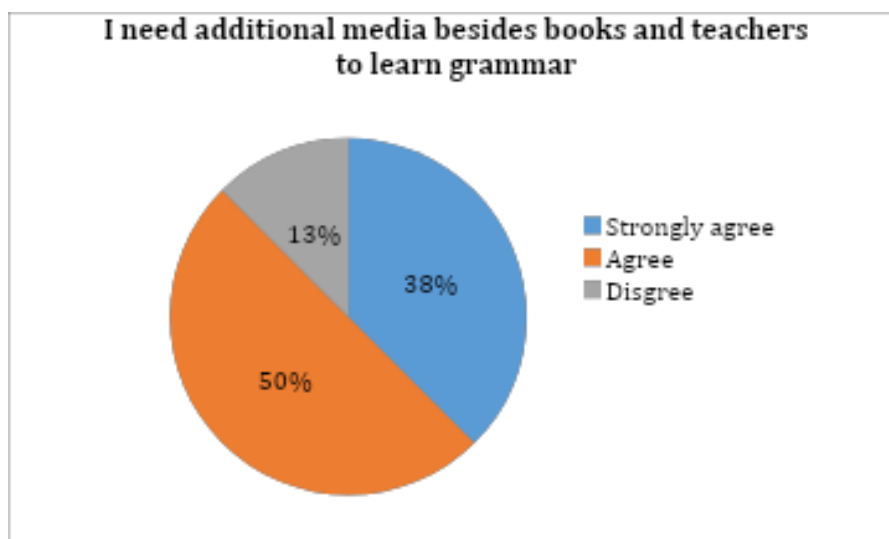


Chart 2. The students' need for additional media in learning English grammar

The researcher found that most students agreed with this statement, indicating that they felt the use of supplementary media could help them understand grammar more effectively.

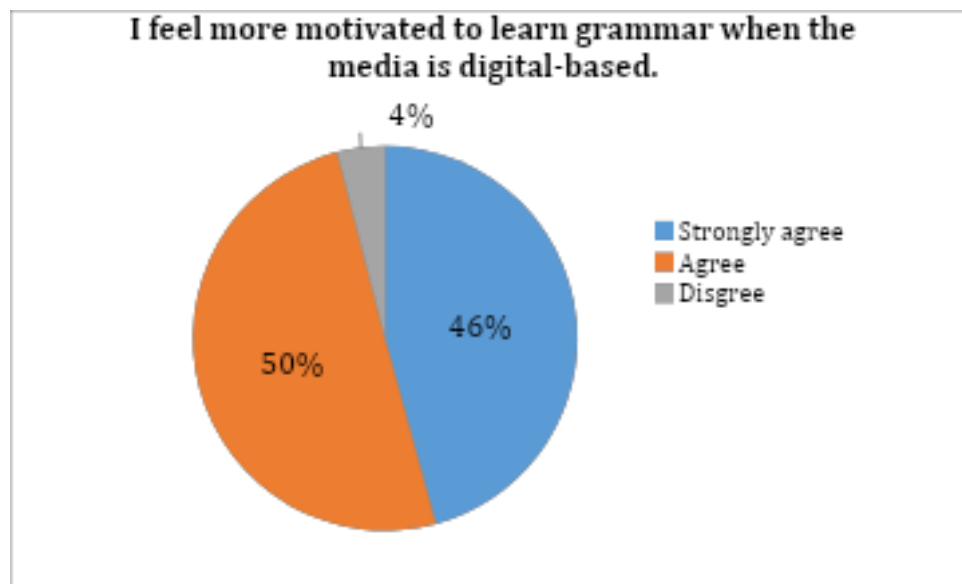


Chart 3. The students' motivation in learning grammar through digital-based media

The researcher found that most students agreed with this statement, indicating that digital media increased their interest and motivation in learning English grammar.

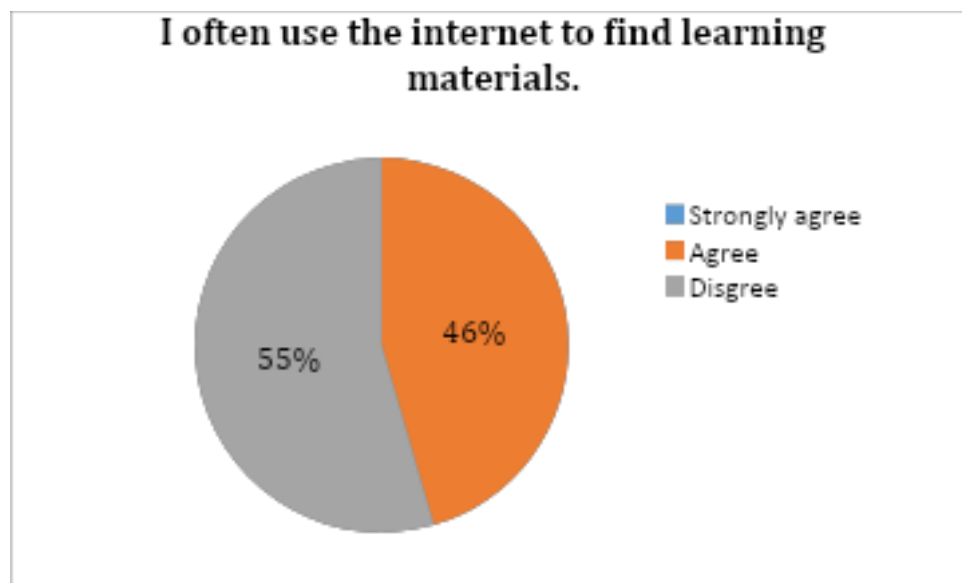


Chart 4. The students' frequency of using the internet to find learning materials

The researcher found that most students agreed with this statement, indicating that they frequently relied on online resources to support their English learning process, especially in improving their grammar skills.

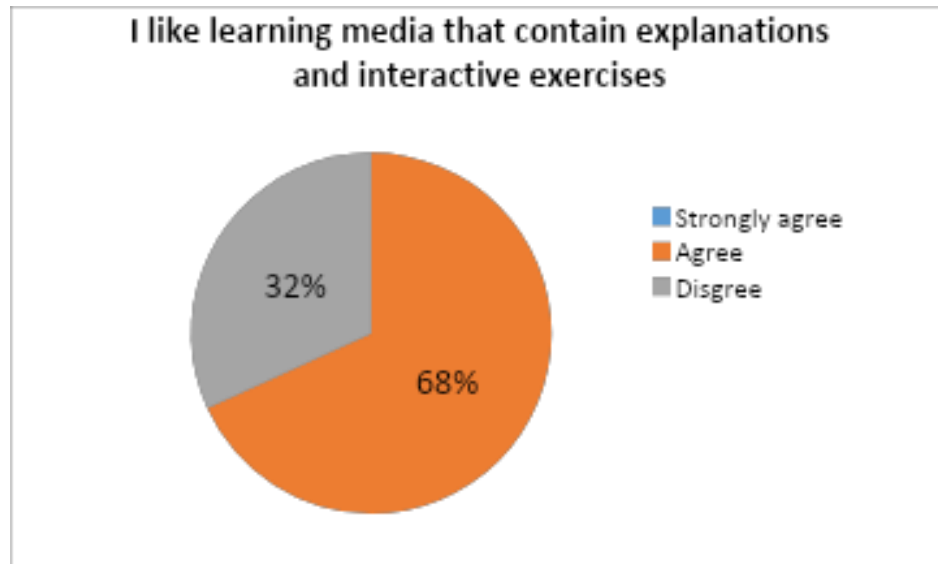


Chart 5. The students' preference for learning media with explanations and interactive exercises

The researcher found that most students agreed with this statement, indicating that they preferred learning media combining clear explanations with engaging, interactive activities to enhance their understanding of grammar.

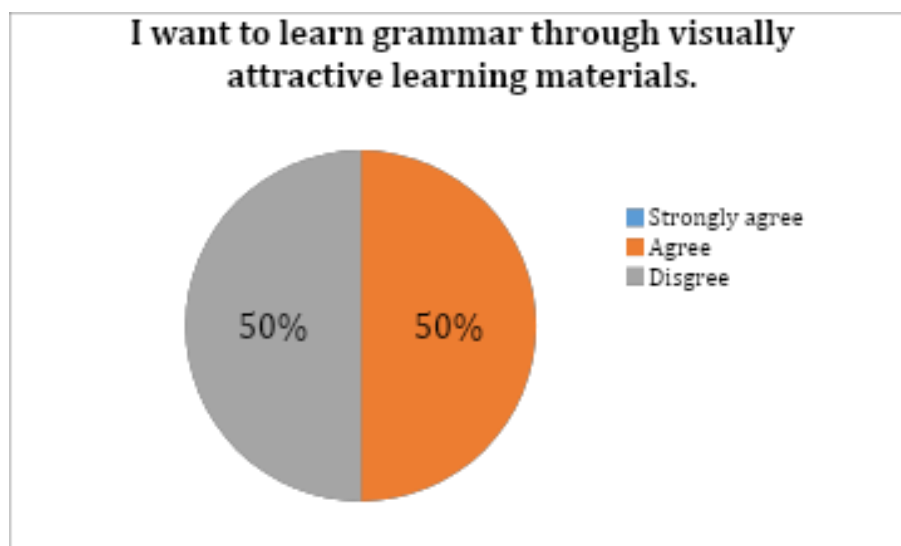


Chart 6. The students' interest in learning grammar through visually attractive materials

The researcher found that most students agreed with this statement, indicating that they were more interested and motivated to learn grammar when the materials were presented with appealing visual designs.

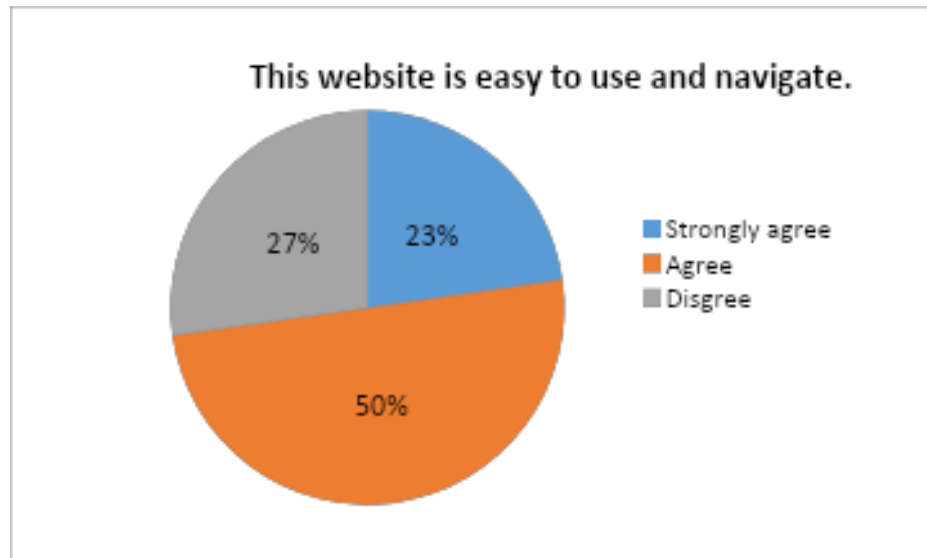


Chart 7. The students' responses toward the website's ease of use and navigation

The chart 7 above is used to identify students' responses toward the website's ease of use and navigation and the most popular choice among students is (Agree) with the highest score of 50%.

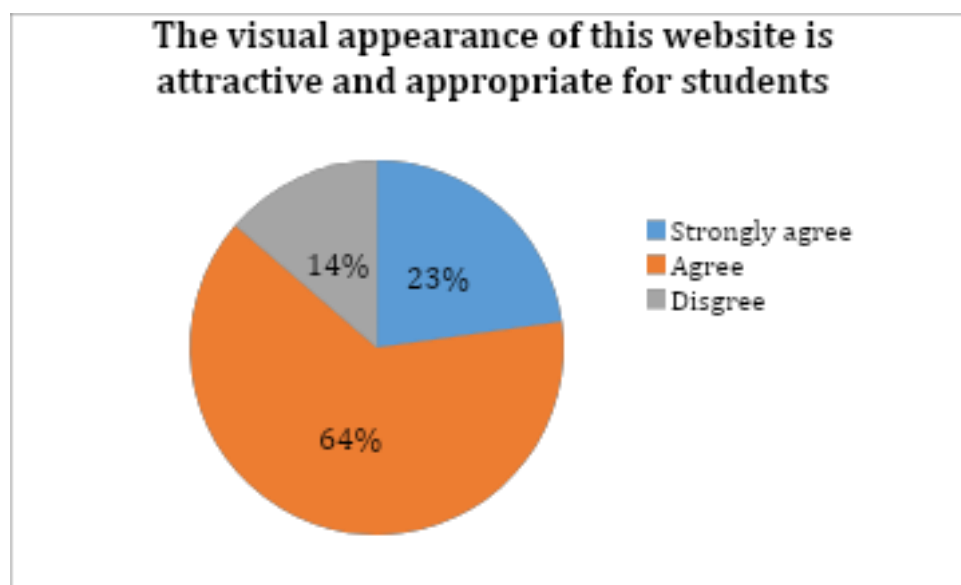


Chart 8. The students' responses toward the website's visual appearance and suitability for students

The researcher found that most students agreed with this statement, indicating that they considered the website's design visually appealing and suitable for their level as learners.

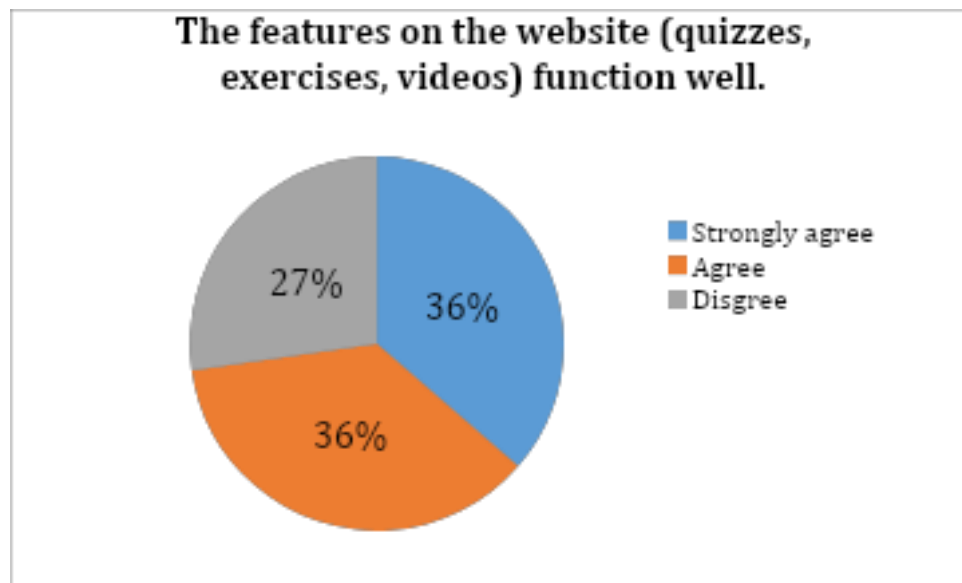


Chart 9. The students' responses toward the functionality of the website's features

The researcher found that most students agreed with this statement, indicating that the interactive features operated properly and supported their learning experience effectively.

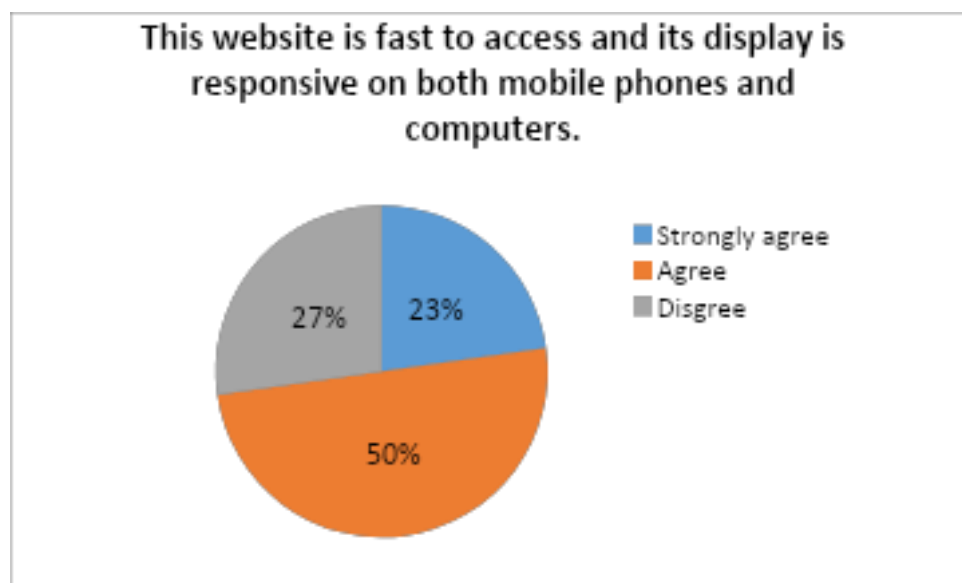


Chart 10. The students' responses toward the website's speed and responsiveness

The researcher found that most students agreed with this statement, indicating that the website provided smooth and efficient access across different devices, enhancing their learning experience.

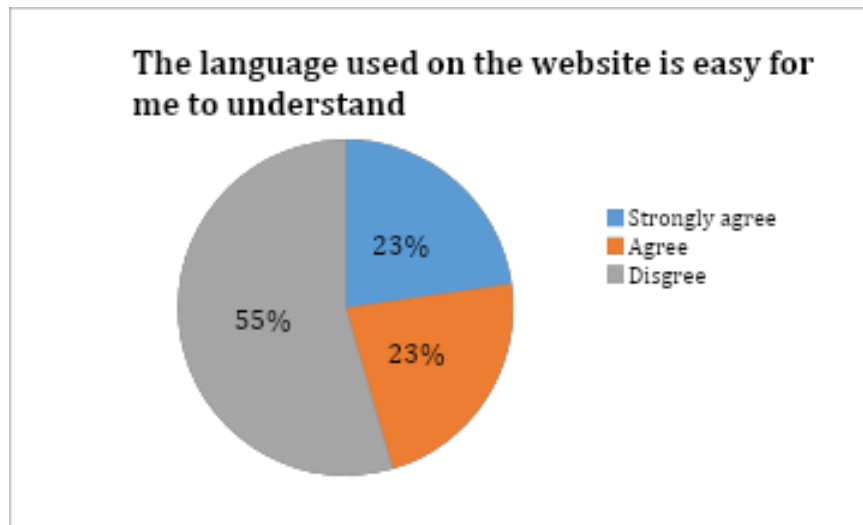


Chart 11. The students' responses toward the clarity and comprehensibility of the website's language

The researcher found that most students disagreed with this statement, indicating that they encountered difficulties in understanding the website's language, which affected the effectiveness of their learning.

Design stage

The design was based on observational data, interviews, and a needs analysis questionnaire. The design stage steps the following.

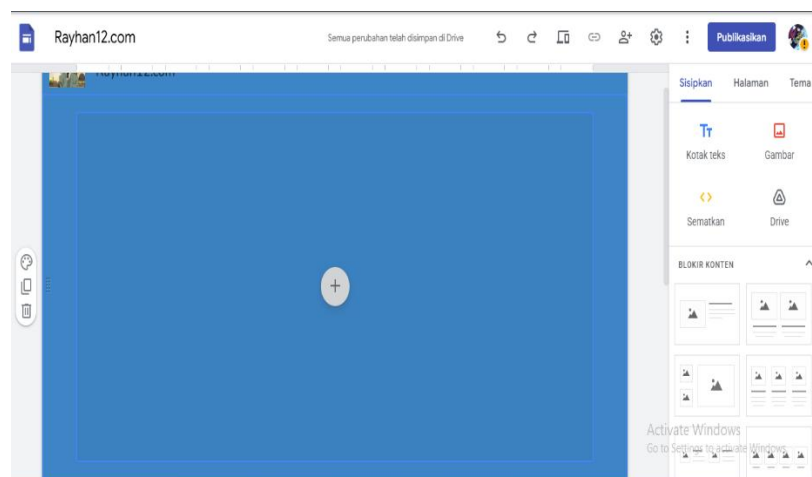


Figure 1. Website Before Adding Material

First I used Google Site media to create a website used in English learning, the initial display of Google Site like this still does not have an icon, material, header, image, layout, and even a name, this media can be accessed through the official Google Chrome application in the site menu section when we first run the application.

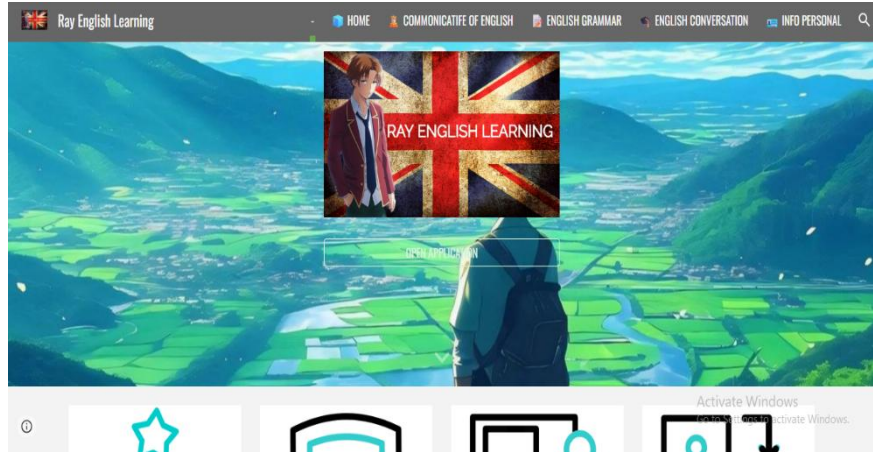


Figure 2. Initial Appearance Of The Website

The website has been added with various interesting images and combined with icons that explain the website, along with various layouts or initial website menus. The images used are made using AI and taken from Google sources in addition, there is a Call to Action button that says “Open Application” which functions as the main access for users to enter the learning system or available materials



Figure 3. Website Material Homepage

The initial appearance of the Ray English Learning website is designed as a homepage that serves as an introduction to the system and serves as a navigation center for all English learning

features. This design emphasizes clarity of information, ease of use, and visual appeal to support the learning process.

At the top of the page, there is a header containing the website's identity, the Ray English Learning name, and a main navigation menu consisting of Home, Communicative English, English Grammar, English Conversation, and Personal Info. This navigation menu aims to facilitate users' access to each learning feature in a structured and systematic manner.

The main section of the page (hero section) displays a visual illustration as a background, creating an educational and conducive learning environment. This section also displays the Ray English Learning title banner with a visual element of the British flag, reinforcing the website's identity as an English learning platform. Overall, the initial design of the website was designed with the characteristics of its target audience in mind: high school students. Therefore, the interface layout is simple, informative, and easy to understand, which is expected to increase learning interest and facilitate users' use of the website as a learning tool for English grammar and conversation.

Develop stage

Table 1. The Result of the Product Validation by the Material Expert

No	Indicators	Average	Categories
1	The grammar material presented is accurate and follows the correct rules of English grammar.	3	Good
2	The material is relevant to high school students' needs and aligns with the curriculum (K13 or Merdeka).	4	Excellent
3	The material covers important grammar topics for high school students (such as tenses, parts of speech, and sentence structure).	3	Good
4	The explanations are sufficiently detailed to support students' understanding and practice.	3	Good
5	The learning objectives of each section are clearly stated.	3	Good
6	The material supports students' understanding of grammar and can be used for independent study.	4	Excellent
7	The sequence of material presentation is logical and systematic, progressing from basic to advanced concepts.	3	Good
8	The material reflects the latest developments in English grammar teaching.	2	Average
Total Score		3,12	

The evaluation results show that the learning materials are in the Good category (3.12), where their main strength lies in their very high suitability with the high school curriculum (K13/Merdeka) and their ability to support students' independent learning. Although basic aspects such as grammatical accuracy, clarity of objectives, and systematic sequence of materials have been met to a good standard, there are significant weaknesses in the aspect of material up-to-dateness which is considered still lagging behind the latest developments in English language teaching. Overall, this material is very suitable for use but requires revision in updating methods or more modern examples to remain relevant to current educational trends.

Table 2. The Result of the Product Validation by the Language Expert

No	Indicators	Average	Categories
1	The use of grammar, spelling, and punctuation on the website is correct.	4	Excellent
2	The language used is easy for high school students to understand.	3	Good
3	The use of terminology and language format is consistent throughout the website.	3	Good
4	The language level is appropriate for high school students' proficiency.	3	Good
5	The explanatory sentences are organized logically and are unambiguous.	4	Excellent
6	The example sentences or contexts used are relevant to Indonesian culture.	3	Good
7	The language used is engaging and motivates students to read further.	3	Good
Total Score		3,28	

The assessment results show that this learning media has excellent overall quality, both in terms of content and language validation. In the Content aspect, the material received an average score of 3.12 (Good) because it was considered very supportive of independent learning and relevant to the high school curriculum, although it needs to be updated to better follow the latest developments in English language teaching. Meanwhile, in the Language Validation aspect, the use of language in this media is very strong because it has perfect grammatical and spelling accuracy, as well as logical and not confusing explanatory sentences for students (score 4 / Excellent). In general, the language used is consistent, communicative, and adapted to the ability level and cultural

context of Indonesian students, making this media very suitable and easy to understand for the teaching and learning proces.

Table 3. The Result of the Product Validation by the Design and Layout Expert

No	Indicators	Average	Categories
1	The visual design (colors, fonts, and layout) is consistent across all pages of the website.	3	Good
2	The website design is attractive and suitable for the characteristics of high school students.	4	Excellent
3	The font size, text color, and line spacing support readability.	2	Average
4	The menu structure and navigation buttons are easy to use and understand.	3	Good
5	Images or other visual elements support the explanation of the material.	4	Excellent
6	The website displays properly on various devices (computers, tablets, and mobile phones).	3	Good
7	The website design is accessible to all users without barriers.	3	Good
8	All links, buttons, and informational features function properly.	3	Good
Total Score		3,17	Good

The evaluation results show that this learning media has excellent linguistic and visual quality, with an average design score of 3.17 (Good). In the Language Validation aspect, the use of grammar, spelling, and punctuation on the website was assessed as perfect (Excellent), and supported by a logical and unambiguous explanatory sentence structure. Meanwhile, in the Design & Layout aspect, this media excels because it has a very attractive design for high school students and is supported by visual elements that effectively explain the material. Although in general the navigation and functionality of the features work well, there are notes of improvement in the readability aspect, particularly regarding font size and spacing between lines which are still assessed as average (Average)

Implementation stage

Table 4. Students Perception

No	Statement	Average
1	The grammar materials provided on the website are suitable for senior high school students.	3.55
2	The grammar topics on the website match the English curriculum taught at school.	3.68
3	The examples and exercises on the website help me understand grammar	3.77

	rules better.	
4	The layout of the Grammar Learning Website is attractive and well-organized.	3.64
5	The use of colors on the Grammar Learning Website is pleasant and easy on the eyes.	3.86
6	The website allows me to study grammar anytime and anywhere.	3.5
7	The website loads quickly and runs smoothly during use.	3.55
8	The website provides useful feedback on my grammar performance.	3.45
9	The Grammar Learning Website increases my motivation to study English grammar.	3.68
10	Overall, the Grammar Learning Website is useful for improving my grammar skills.	3.86
11	The website's design, materials, and usability are appropriate for high school students.	3.82
Total Score		3.55

The results of the student perception survey indicate that the grammar learning website for senior high school students received an overall average score of 3.55 (Good). Most aspects, including the suitability of grammar materials, alignment with the curriculum, examples and exercises, layout, color use, accessibility, feedback, and overall usefulness, were rated positively by the students. These results suggest that the website is effective and can be used with minor revisions to further enhance its usability and learning support.

Evaluation stage

The researcher revised the grammar learning website for senior high school students. The revisions were based on student questionnaires and expert feedback regarding the website as a learning medium. This stage was carried out to ensure that the product is accurate, effective, and meets the needs of senior high school students.

4) DISCUSSION

The research employed the Research and Development (R&D) method using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

At the analysis stage, the researcher conducted a needs analysis questionnaire involving 22 senior high school students. The results indicated that students experienced difficulties in understanding English grammar, particularly in constructing correct sentences and applying

grammar rules. Most students expressed the need for additional learning media beyond textbooks and teacher explanations. The data also revealed that students preferred digital-based and visually attractive materials, which increased their motivation and engagement in grammar learning. Interactive features, such as quizzes, exercises, and videos, were considered particularly helpful for reinforcing grammar concepts, although some students noted that time limits on quizzes sometimes caused pressure during the exercises.

In the Design and Development stages, the researcher developed the grammar learning website based on the students' needs and preferences identified in the analysis. The website includes comprehensive grammar materials covering topics such as tenses, parts of speech, and sentence structure. To enhance student engagement, the website also provides interactive quizzes, exercises, audio-visual content, and practice activities. The design focused on a visually appealing layout, consistent use of colors, readable fonts, and clear navigation. The website was developed to be fully responsive on multiple devices, including computers, tablets, and smartphones, allowing students to access the materials anytime and anywhere.

During the Implementation stage, the researcher conducted a trial of the website with 22 students to evaluate its effectiveness. Based on the Website Evaluation Questionnaire, students provided positive feedback regarding usability, visual appearance, and functionality. The website was considered easy to navigate, visually attractive, and functional. Students highlighted that the grammar materials were appropriate for their level, aligned with the English curriculum, and supported by examples and interactive exercises that enhanced comprehension. The digital and interactive features increased students' motivation, engagement, and interest in grammar learning. However, a portion of students reported difficulties understanding the language used on the website, suggesting that explanations should be clearer and more concise. Overall, the student perception survey produced an average score of 3.55 (Good), demonstrating that the website effectively met students' needs.

The results indicate that a well-designed grammar learning website can significantly support students' grammar acquisition by combining interactive, digital, and visually attractive elements. The website facilitates independent learning, improves access to learning materials, and enhances motivation and engagement. Minor revisions, particularly related to language clarity, will further improve usability and learning effectiveness.

5) CONCLUSION

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This research successfully designed a grammar learning website for senior high school students at SMA Negeri 1 Palopo. The website, focused on tenses, provides interactive, engaging, and curriculum-aligned materials. Using the R&D method with the ADDIE model, the website was developed according to students' needs, featuring digital-based, visually appealing content, interactive quizzes, exercises, audio-visual media, and easy navigation. The website's contents cover grammar topics such as tenses, parts of speech, and sentence structure. Its structure includes a header, title, menu, list of contents, interactive exercises, videos, images with audio, and a footer. The website is designed to be responsive on various devices, allowing students to access learning materials anytime and anywhere. Expert validation was conducted by three experts: a content expert, a language expert, and a design & layout expert. The overall validation score was 3.17 out of 4 (Good), showing that the website is suitable, accurate, and effective for senior high school students. Minor revisions were recommended, mainly to improve language clarity and readability. The trial implementation with 22 students showed that the website is functional, visually appealing, and supports students' grammar learning. The student perception survey resulted in an overall average score of 3.55 out of 5 (Good), confirming that the website increases motivation, engagement, and comprehension. However, some students reported difficulties understanding certain language explanations, indicating the need for clearer and simpler explanations.

In conclusion, this research successfully designed a grammar learning website that meets students' needs, aligns with the English curriculum, and provides interactive and visually attractive learning features. The website effectively supports independent grammar learning for senior high school students and can be recommended for broader implementation.

The result of this research hopefully gives a contribution to several parties, especially for the English teacher and other researcher. Here some of the suggestion from the researcher:

1. For the students

It is recommended that students at SMA Negeri 1 Palopo use the grammar learning website to complement classroom learning and practice grammar independently.

2. For the English teacher

Teachers can integrate the website as supplementary learning media to enhance engagement and motivation in learning grammar.

3. For further researcher

Researchers who wish to continue or develop this study can expand the website to cover other English skills, such as Listening, Reading, and Writing.

Future development should include clearer and simpler language explanations to improve comprehension, as well as features that accommodate students with different levels of technological access.

It is suggested to conduct interviews or collect data from both teachers and students to better tailor the website to learners' needs and preferences.

4. For Website Development

Consider regularly updating content to reflect the latest developments in English grammar teaching.

Enhance interactive features, including extended time for quizzes, to reduce students' pressure and improve the learning experience.

Maintain a visually appealing and accessible design while ensuring fast loading times and responsive performance across multiple devices.

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