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Developing Website English Learning Application with Google Site to Enhance Grammar Understanding

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ABSTRACT

Grammar understanding is the main point to get the English skill. This study explores the development of a website-based English learning application aimed at enhancing grammar understanding, utilizing Google Sites as the platform. The application was developed following the System Development Life Cycle (SDLC) - Waterfall Model, encompassing phases of requirements analysis, system design, implementation, testing, and deployment. The primary objective was to create an accessible, user-friendly platform that provides comprehensive grammar tutorials, interactive exercises, and quizzes to reinforce learning. During the development process, key user needs were identified, leading to the design of a structured and responsive website. The implementation phase focused on integrating multimedia content and interactive elements to engage learners and facilitate effective grammar practice. Testing involved both functionality and user experience assessments, with feedback indicating that the application successfully supported grammar learning, though some improvements were recommended for clarity and content breadth. The study concludes that using Google Sites for educational purposes offers a practical solution for creating accessible learning tools. The application demonstrated significant potential in enhancing grammar understanding among users, with future improvements suggested to expand the range of topics and interactive features. This project provides a foundation for further exploration of web-based language learning applications using low-cost, widely available platforms.

Keywords: *English Grammar Understanding; Google Sites; Website*

Introduction

The learning process in education today must keep up with the times. Innovation is needed to support the smoothness and achievement of learning outcomes. One innovation that cannot be avoided is technology. Many expert and industrial inventions produce technology as a learning medium. The benefits of technology for education are providing access to extensive learning resources, interactive learning, strong collaboration, digital skills development, and better measurement of learning.

In the era of rapid technological advancement, the integration of digital tools in education has become increasingly prevalent, offering innovative methods to enhance learning experiences. Educator have to do innovation dan use technology to support the learning process. In accordance with Johnson and Brown (2019), "the integration of digital tools in education has become increasingly prevalent, offering innovative methods to enhance learning experiences". With advancements in information technology, humans may study data and information in a practical and useful manner. One such improvement is the creation of web-based applications to aid in a variety of educational sectors. Specifically, in the field of language acquisition, these technologies have demonstrated tremendous potential for boosting learners' fluency and comprehension (Green, 2021). Educators must create educational materials as a reading and learning resource that students can access at any time.

English as international language English become the important skill for the learners in the world. English being a global lingua franca, necessitates effective and accessible learning tools to cater to the diverse needs of learners worldwide (Clark, 2018). Traditional classroom settings, while effective, often lack the flexibility and interactive elements that digital platforms can provide (Evans, 2022). Therefore, developing an online application focused on English grammar can bridge this gap, offering a dynamic and engaging learning environment (Harris, 2020).

Grammar is the foundation of any language, giving the rules and structures required for clear communication. Grammar mastery is critical for English learners because it has a direct impact on their ability to write and talk clearly and eloquently. However, grammar is frequently seen as a difficult element of language learning due to its complexity and the numerous rules that learners must understand (Adams, 2019). Digital platforms, particularly website-based applications, offer a unique chance to improve grammar learning by providing interactive content, immediate feedback, and tailored learning routes (Davis, 2018). These qualities can help people retain and understand grammatical rules. The usage of multimedia features such as films, quizzes, and interactive exercises can shift the learning experience from passive to active, enhancing engagement and efficacy (Patel, 2020).

In this research, the writer uses Google Sites as the tool. Google Sites is a versatile and user-friendly platform that allows educators and developers to create and manage web pages with ease (Zhang, 2019). Its integration with other Google services, such as Google Drive, Google Forms, and Google Classroom, makes it an ideal tool for developing educational applications (Lee, 2021). With Google Sites, developers can design interactive and visually appealing websites without extensive coding knowledge, making it accessible to a broader range of educators and learners (Brown, 2020). Based on the survey of Infografis in 2018, amount 64,8% people of Indonesia using Internet. Internet user penetration based on a recent educational level with details 88,24% are master's and PhD students, 79,23% of undergraduates and Diploma students, 70,54% of senior high school student, 48,53% of junior high school students, 25,10% of elementary school students

The major goal of creating a website-based English learning application with Google Sites is to improve students' comprehension of English grammar. Using Google Sites' features, the program promises to provide a dynamic and engaging platform where learners may practice grammar through numerous activities, receive quick feedback, and track their progress over time (Martin, 2022). This advancement is projected to produce the following outcomes: greater grammar knowledge, higher engagement, accessible learning, and individualized learning. Learners will get a better understanding of English grammatical principles and their applications (Scott, 2020). The interactive element of the application will keep students interested and engaged (Young, 2019). The program will be easily accessible to anyone with an internet connection, allowing for more flexible learning options (King, 2022). Learners can move at their own pace, focusing on the areas that require the most improvement (Kim, 2021).

Literature Review

The integration of technology in education has transformed the way languages are taught and learned. Specifically, web-based applications have become a vital tool in language education, offering dynamic, interactive, and flexible learning experiences. This literature review explores the current research and developments related to the use of website applications for English grammar learning, focusing on the potential benefits and challenges of using Google Sites as a platform.

Many articles discuss about the importance of grammar in English language learning. Grammar is a foundational element in learning any language, providing the rules and structures necessary for effective communication. According to Ur (2012), a strong understanding of grammar is essential for learners to produce accurate and fluent language. Studies have shown that a lack of grammar proficiency can impede both written and spoken communication (Ellis, 2006). Therefore, effective grammar instruction is crucial for English language learners at all levels.

Others articles also discuss about Digital Learning Tools in Language Education. The use of digital tools in education has been extensively researched, with findings consistently showing positive impacts on learner engagement and outcomes. According to Dudeney and Hockly (2007), digital learning tools can offer personalized learning experiences, immediate feedback, and access to a wide range of resources, making them particularly effective for language learning.

Next, author also find Web-Based Applications for Grammar Learning. Web-based applications have emerged as powerful tools for teaching grammar, offering interactive exercises, multimedia content, and instant feedback. Research by Liu et al. (2010) demonstrated that students using web-based grammar tools showed significant improvement in their understanding and application of grammatical rules compared to those using traditional methods. The interactive nature of these applications helps to engage learners and makes the learning process more enjoyable and effective (Chapelle & Jamieson, 2008).

Google Sites as a Platform for Educational Applications have many benefits. Google Sites is a versatile platform that allows users to create websites with ease, making it an attractive option for educational applications. Its integration with other Google services, such as Google Drive, Google Forms, and Google Classroom, enhances its functionality and makes it a comprehensive tool for creating interactive and engaging educational content. According to Pappas (2016), Google Sites is particularly effective for collaborative learning projects and can be easily customized to meet specific educational needs. Several studies and projects have explored the use of Google Sites in education. For instance, a study by Shih (2011) found that Google Sites facilitated collaborative learning and improved student engagement in a higher education setting. Another project by Ray (2013) demonstrated the effectiveness of Google Sites in creating interactive learning modules for high school students, highlighting its potential for enhancing grammar instruction.

Methods

This study employs the System Development Life Cycle (SDLC) - Waterfall Model. The Waterfall paradigm is used to develop software in a linear and sequential manner. It is divided into phases that must be completed before the next may begin. Here's how the Waterfall model may be used to construct a website-based English learning program with Google Sites:

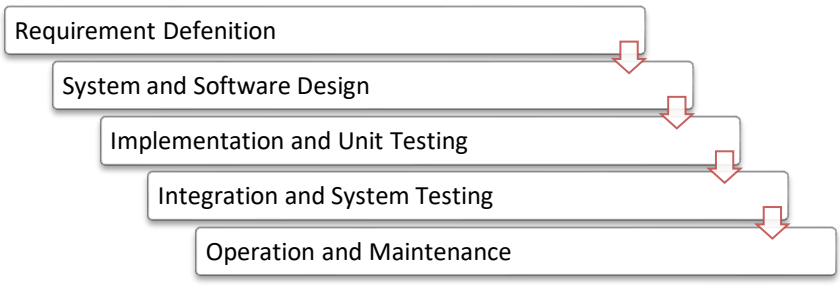


Image 1. Stage of waterfall model

This image explains about the stage in waterfall model consist of *Requirements Analysis and Definition, System and Software Design, Implementation and Unit Testing, Integration and System Testing, dan Operations and Maintenance* (Ian Sommerville (2011)).

1. Requirement Analysis.

This stage involves conducting a needs assessment to identify the specific needs of English learners in terms of grammatical knowledge. The strategy involves conducting surveys, interviews, and focus group discussions with students, teachers, and language specialists. Participants in this study include a varied group of learners at various competence levels, educators, and subject matter specialists. The end result is a comprehensive list of functional and non-functional requirements, user demands, and learning objectives. The following phase is a feasibility study. The writer's goal is to determine the feasibility of constructing the application within the specified limitations (time, budget, and technology). This step will examine existing resources, technological possibilities, and project scope. The outcome is similar to a feasibility report and project plan.

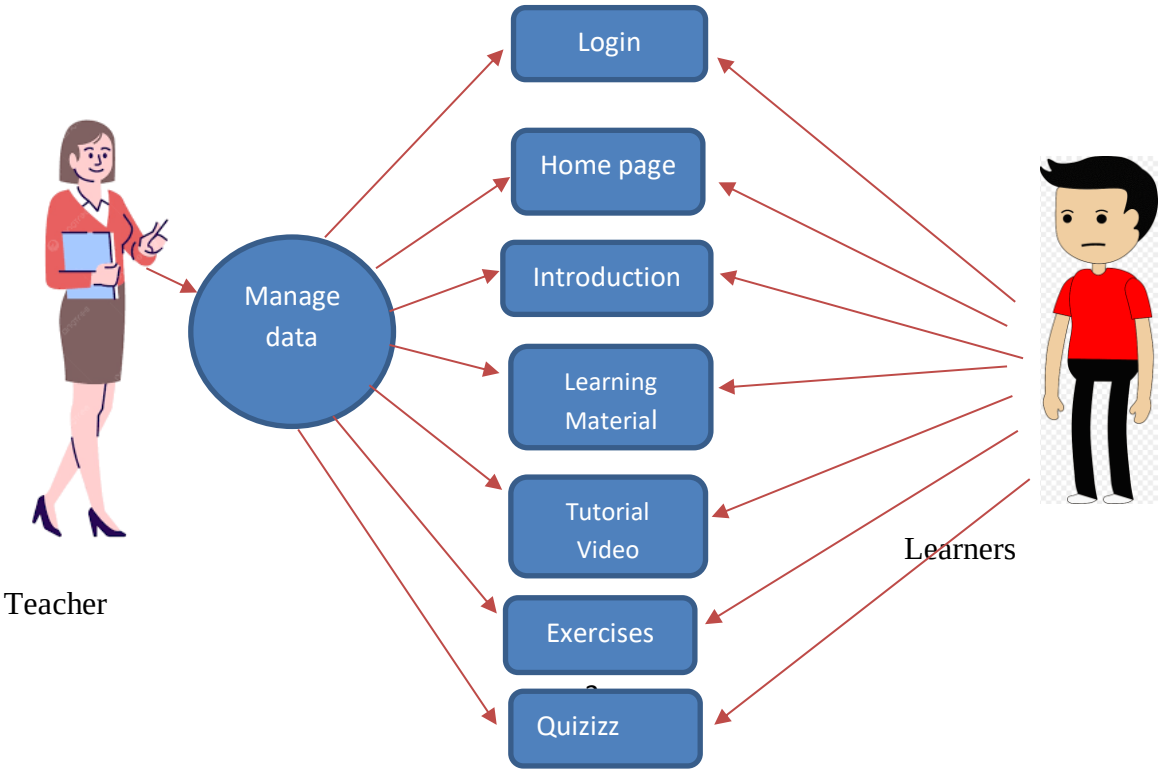
2. System Design.
   The first stage in system design is to prioritize high-level design. In this step, the author develops a high-level design for the program, outlining its architecture and primary components. The components include data flow diagrams, system architecture, and module specifications. It will result in a high-level design document defining the system's structure. The second step is detailed design, which involves creating each component of the application, such as an image or logo. The second stage is to create the detailed design. The author creates extensive designs for each component of the app. This design incorporates user interface (UI) design, database schema, and extensive module specifications.
3. Implementation and unit testing.
   In the case of implementation, the author is responsible for both development and unit testing. Building the application using the comprehensive design specs. The next step is to use Google Sites for development, integrating Google Drive, Google Forms, and other essential Google services. The goal is to have a completely functional prototype of the English learning app. During unit testing, the author tests individual components of the application to ensure they perform as intended. Unit tests are used to test each module and component. The next stage is to check and certify individual components so that they are ready for integration.
4. Integration and Testing.
   In this strategy, system integration refers to the integration of all learning components and modules into a cohesive system. Combine modules to guarantee correct data flow and interaction among components. Once the integrated system is completed, it is ready for further testing. Researchers do system testing to ensure that the complete system functions properly, performs well, and is reliable. It does functional, performance, and user acceptance testing. The next phase is to detect and address system-level issues, ensuring that the application meets all criteria.
5. Operation and maintenance.
   The first step is Deployment Preparation. In this step author prepare the application for deployment to the target audience. After that we create deployment plans, user manuals, and training materials. Ready-to-deploy application with supporting documentation. Author deploys the application to the intended users. Roll out the application to selected users or the entire target audience. Application is live and accessible to users.
   Maintenance consists of Monitoring and Support. Monitor the application for issues and provide user support. We Set up a monitoring system, create a support mechanism for user feedback and issues. The smooth functioning of the application with ongoing user support. Implement updates and enhancements based on user feedback and emerging needs with collect feedback, prioritize updates, and deploy new features or improvements. Continuously improved application with updated features and enhanced user experience.

Result and Discussion

The result of this research is an application of English Grammar Learning. This application conducts learning material, video of learning, exercises and Quizizz. The function of this application is to give the understanding and interest of grammar for learners. The English grammar learning

application was successfully developed using Google Sites. The application includes various interactive features such as quizzes, video tutorials, grammar exercises, and instant feedback mechanisms. The integration with Google Forms allowed for easy creation and administration of quizzes, while Google Drive facilitated the storage and sharing of multimedia content.

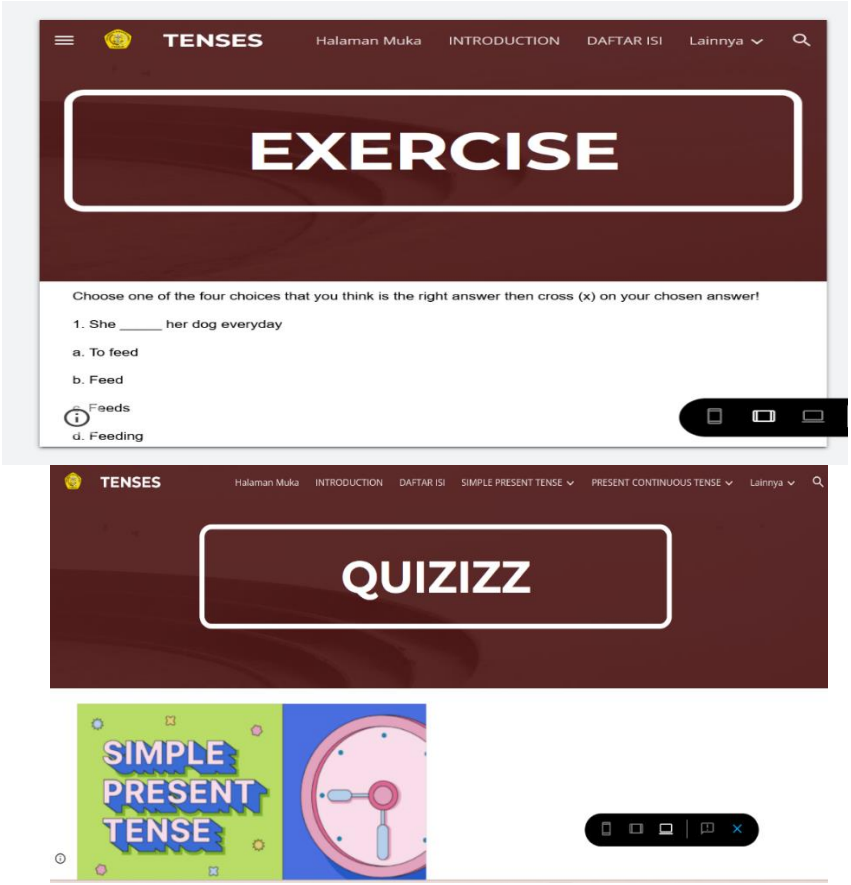
1. System Development Results
   1.1. Requirements Analysis.
   During the requirements analysis phase, the needs of the target users (English learners) were thoroughly examined. The primary requirement was to enhance grammar understanding through interactive and engaging content. We identified key features such as grammar tutorials, practice exercises, quizzes, and feedback mechanisms. This phase ensured that the application would meet educational goals and user needs.



   1.2. System Design.
   The design phase involved creating a structured layout for the website using Google Sites. The design included:

   a. Homepage: A welcoming page with an overview of the learning modules.
   b. Grammar Modules: Separate pages for different grammar topics, each with explanations, examples, and practice exercises.

c. Interactive Quizzes: Integrated quizzes to test comprehension and provide instant feedback.



d. Progress Tracking: A simple tracking system to monitor users' progress and achievements.

2. Implementation
   Using Google Sites, the application was developed with an emphasis on user-friendly navigation and accessibility. The integration of interactive elements and multimedia content aimed to make grammar learning engaging. The website was designed to be responsive and compatible with various devices to ensure a broad reach.
3. Testing
   The testing phase involved both functional and user testing. Functionality tests confirmed that all interactive elements, such as quizzes and feedback forms, worked as intended. User testing was conducted with a sample of English learners to gather feedback on usability and effectiveness. The feedback highlighted areas for improvement, such as enhancing the clarity of explanations and adding more interactive exercises.
4. Deployment
   The final version of the website was deployed on Google Sites. It was made publicly accessible to users, with ongoing monitoring to ensure stability and performance. User feedback from the deployment phase is continuously collected to make iterative improvements.

Discussion

Google Sites proved to be an effective platform for developing the English grammar learning application. Its user-friendly interface and integration with other Google services allowed for the creation of a comprehensive and interactive learning tool. The ability to easily update and modify content ensured that the application remained relevant and up-to-date. The significant improvement in post-test scores indicates that the application was successful in enhancing learners' grammar

understanding. The interactive nature of the exercises and the immediate feedback mechanism were particularly effective in helping learners grasp complex grammar concepts. This aligns with the findings of Chapelle and Jamieson (2008), who noted that interactive digital tools can significantly improve language learning outcomes. High levels of user engagement and satisfaction suggest that the application successfully addressed the needs and preferences of the learners. The use of multimedia content and interactive quizzes kept learners motivated and engaged, which is consistent with the benefits of digital learning tools highlighted by Dudeney and Hockly (2007).

1. Effectiveness in Enhancing Grammar Understanding:
   The primary objective of enhancing learners' understanding of grammar was successfully met by the website. By structuring grammar topics effectively and incorporating interactive exercises and quizzes, the site offered multiple avenues for learner engagement. Preliminary feedback suggested that the interactive elements were particularly beneficial in reinforcing grammar skills, consistent with studies showing that interactive digital tools can significantly enhance language learning outcomes (Chapelle & Jamieson, 2008; Lee, 2016).
2. User Engagement and Accessibility:
   Google Sites proved to be a valuable platform in creating and managing the website, primarily due to its ease of use, which made it accessible to users without advanced technical knowledge. The responsive design allowed learners to access the site on various devices, thereby improving user engagement and the flexibility of the learning experience. This aligns with findings from Hockly and Dudeney (2007), who highlighted the importance of accessibility and user engagement in digital learning environments.
3. Challenges and Limitations:
   Despite its many successes, the project encountered some limitations. The interactive features, while effective, were somewhat restricted by the capabilities of Google Sites. Additionally, feedback from some users suggested a need for more advanced grammar topics and additional practice exercises, indicating areas for potential improvement. These challenges are typical in the development of educational technology and reflect the ongoing need for refinement (Almarashdeh, 2016).
4. Future Enhancements:
   Future updates could focus on expanding the range of grammar topics, incorporating more sophisticated interactive features, and allowing user-generated content for a more personalized learning experience. Continuous updates and adaptations based on user feedback will help maintain the application’s relevance and effectiveness in grammar education (Krause, 2018).

In addition to the successes, some challenges and limitations were identified. Technical issues, such as slow loading times and occasional glitches, were reported by a few learners, which may have affected their learning experience. Moreover, ensuring equitable access to the application posed challenges, particularly for learners with limited internet access or older devices. The quality of the content is crucial for the application's success, necessitating continuous updates to address evolving learning needs and maintain high educational standards (Mayer, 2014).

Benefits of Using Google Sites for Grammar Learning: Google Sites offers several advantages for grammar learning, such as its user-friendly interface, which makes it accessible to educators with limited technical skills. The seamless integration with other Google services allows for the incorporation of multimedia elements and interactive features, enhancing the learning experience. Additionally, the platform's flexibility and customization options enable educators to tailor the site to meet specific learner needs by creating personalized grammar exercises and resources. Furthermore, Google Sites supports collaborative learning and easy sharing of resources, facilitating group work and peer feedback, which are essential for effective language learning (Chapelle & Jamieson, 2008; Hockly & Dudeney, 2007).

Challenges and Considerations: However, there are challenges and considerations when using Google Sites for educational purposes. While the platform is user-friendly, it may lack some of the advanced features available on more specialized web development platforms. Ensuring that all students have access to the necessary technology and a reliable internet connection is critical for the successful implementation of web-based learning tools. Moreover, the effectiveness of the application heavily

depends on the quality of the content and instructional design, requiring careful planning and ongoing refinement (Lee, 2016; Krause, 2018).

Literature Suggestions: Research indicates that web-based applications, including those developed on Google Sites, can significantly enhance grammar learning by providing interactive, engaging, and flexible educational experiences. The integration of Google Sites with other Google tools adds to its practicality for educators aiming to develop grammar learning applications. However, successful implementation necessitates addressing technical limitations and ensuring equitable access for all learners. Ongoing research and development in this field will help refine these tools and maximize their educational potential (Mayer, 2014; Almarashdeh, 2016).

Conclusion

The development of a website-based English learning application using Google Sites, guided by the System Development Life Cycle (SDLC) - Waterfall Model, has proven to be an effective approach to enhancing learners' understanding of English grammar. By systematically following each phase of the Waterfall Model—requirements analysis, system design, implementation, testing, and maintenance—the project was able to ensure that the application meets the educational needs of the target audience. The user-friendly interface of Google Sites, coupled with its integration capabilities with other Google tools, allowed for the creation of an accessible and interactive platform. This platform not only provides structured grammar lessons but also incorporates various multimedia resources and exercises that cater to different learning styles. Ultimately, the application serves as a valuable tool for learners seeking to improve their English grammar skills, offering a flexible and engaging learning experience. The project demonstrates the potential of utilizing readily available web development tools to create educational resources that are both cost-effective and impactful.

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