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## Augmented Reality Application to Enhance Understanding of the English Vocabulary Vocational High School Students

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**Abstract**—Learning media is one aspect that can support success in the learning process. However, to create good and enjoyable learning, teachers must use appropriate media or strategies, one of which is by using augmented reality-based media in the learning process. This study aims to describe the use of augmented reality media in the learning process in schools to improve students' understanding of English vocabulary carried out at SMK GUS DUR Soko Tuban. To explain the extent to which the use of augmented reality media in improving students' understanding of English vocabulary. Augmented reality is a learning media that utilizes technology that can be done by a group of people at a predetermined time and place, while vocabulary is a component of language that has meaning, in making good and correct sentences in a language we need to improve understanding of vocabulary. researchers use qualitative methods. Data were collected through observation, interviews, and documentation. The population of this study was grade 10 students of SMK GUS DUR Soko Tuban in the 2024/2025 academic year. The results showed that the use of augmented reality media was effective in improving students' understanding of vocabulary.

**Keywords**—Augmented Reality, kosakata bahasa Inggris

**Abstrak**—Media pembelajaran merupakan salah satu aspek yang dapat mendukung keberhasilan dalam proses pembelajaran. Namun, untuk menciptakan pembelajaran yang baik dan menyenangkan, guru harus menggunakan suatu media atau strategi yang sesuai, salah satunya adalah dengan menggunakan media berbasis augmented reality dalam proses pembelajaran. Penelitian ini bertujuan untuk mendeskripsikan penggunaan media augmented reality dalam proses pembelajaran di sekolah guna meningkatkan pemahaman kosakata bahasa Inggris siswa yang dilakukan di SMK GUS DUR soko tuban. Untuk menjelaskan sejauh mana penggunaan media augmented reality dalam meningkatkan pemahaman kosakata bahasa Inggris siswa. Augmented reality adalah suatu media pembelajaran dengan memanfaatkan teknologi yang dapat dilakukan oleh sekelompok orang pada waktu dan tempat yang telah ditentukan, sedangkan kosakata adalah sebuah komponen bahasa yang memiliki makna, dalam membuat kalimat yang baik dan benar pada suatu bahasa kita perlu meningkatkan pemahaman tentang kosakata. peneliti menggunakan metode kualitatif. Data dikumpulkan melalui observasi, interview, dan dokumentasi. Populasi penelitian ini adalah siswa kelas 10 SMK GUS DUR Soko Tuban pada tahun akademik 2024/2025. Hasil penelitian menunjukkan bahwa penggunaan media augmented reality efektif untuk meningkatkan pemahaman kosakata siswa.

**Keywords**—Augmented Reality, English vocabulary

## INTRODUCTION

In today's globalized era, English language proficiency is increasingly essential for academic and professional success. However, conventional classroom instruction often remains monotonous, emphasizing theoretical knowledge without practical engagement, which can reduce student motivation and hinder language acquisition (Susanti, 2022). Vocabulary mastery is a foundational component of language skills, influencing reading comprehension, writing fluency, and oral communication (Kridalaksana, 2001). Yet, traditional teaching method, largely reliant on rote memorization, fail to address diverse learning styles or promote long-term retention. As noted by Arslan and Tanis (2018), such approaches often lack interactivity and student engagement. To address these limitations, technology-enhanced learning tools such as Augmented Reality (AR) have gained attention. AR enables the integration of virtual objects into real-world environments in real-time, thereby creating immersive, interactive learning experiences that promote active participation and conceptual understanding (Carmigniani, 2010). At SMK GUS DUR Soko Tuban, AR-based media is being explored as a pedagogical tool to improve English vocabulary comprehension among tenth-grade students. This study examines the implementation of AR in the classroom and evaluates its effectiveness in enhancing vocabulary acquisition.

This study demonstrates that Augmented Reality (AR) significantly enhances students' understanding, memory retention, and engagement in learning English vocabulary. Students showed greater enthusiasm due to the interactive and visual aspects of AR. These findings are consistent with previous research conducted at IKIP PGRI Bojonegoro. Nurdianingsih et al. (2022) and Fitri Nurdianingsih et al. (2021) emphasized the effectiveness of interactive and visual media in improving vocabulary mastery at the junior and elementary school levels. Similarly, Cuhanazriansyah et al. (2023) found that AR boosts cognitive engagement among vocational high school students, while Hasanudin et al. (2024) highlighted the potential of AR in promoting inclusive and student-centered education. A study by Rohmah et al. (2022) supports the use of AR in building contextual understanding and communicative interaction through strategies such as DRTA. This suggests that AR not only strengthens vocabulary comprehension but also fosters motivation and learner autonomy.

## RESEARCH METHOD

In this study, the researcher used a descriptive analysis research design with a qualitative approach because the researcher wanted to obtain a deeper understanding and detailed information about the phenomena that occurred in class X of SMK Gus Dur Soko Tuban, especially those related to the use of media to improve students' understanding of English vocabulary. In this case, the researcher tried to analyze the extent to which the influence of augmented reality can improve students' understanding of English vocabulary. The data used in this study were collected through observation and interviews. Observation was used to determine how augmented reality was used in class X of SMK Gus Dur Soko Tuban. While interviews were used to determine the level of understanding of English vocabulary of class X

students. The procedures used to analyze the collected data were by reducing data, presenting data, and concluding.

## RESULT AND DISCUSSION

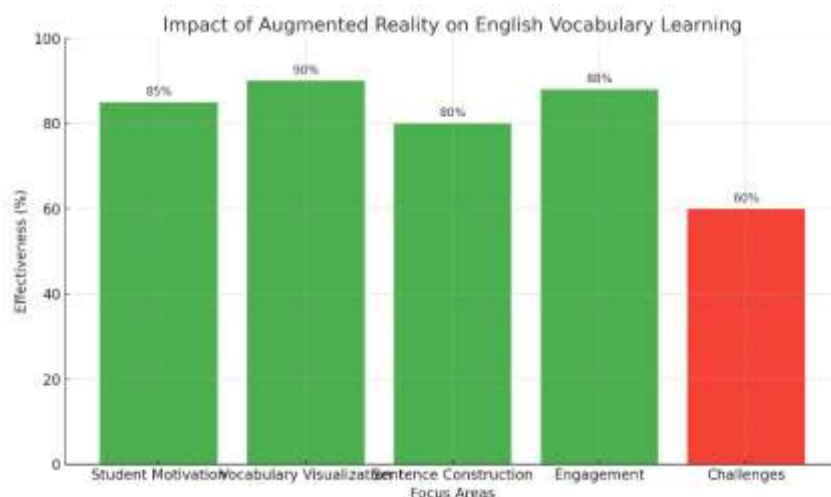
The use of augmented reality (AR) media has been proven to have a positive impact on the English vocabulary comprehension of vocational high school students, particularly in Grade X at SMK GUS DUR Soko Tuban. This medium creates a more engaging, interactive, and contextual learning environment. Based on observations and interviews, AR has been shown to increase students' motivation to learn actively. Students are not merely passive recipients of information; they also take part in exploring new vocabulary independently and collaboratively through discussions and sharing experiences with classmates.

AR helps students visualize abstract concepts that were previously difficult to grasp. By using their phone cameras, students can view virtual objects such as animals, plants, or geometric shapes that appear as if they are present in the classroom environment. This visual experience makes the meaning and usage of vocabulary easier to understand and remember. Additionally, the realistic learning experience is enhanced by AR's ability to display these objects within real-life contexts, for example, against a blackboard or classroom floor background, thus reinforcing the connection between words and their practical use. From a language skill development perspective, AR not only aids in vocabulary memorization but also encourages students to construct sentences using the newly learned words. This activity supports the improvement of speaking, writing, and critical thinking skills in English. Overall, AR-based learning makes the language acquisition process more meaningful and enjoyable for students.

Nevertheless, the implementation of AR media in education does not come without challenges. Teachers face several obstacles, including a lack of technical training, limited access to AR-compatible devices, and unstable internet connectivity. Differences in students' technological proficiency also pose a challenge. To address these issues, teachers strive to pursue self-directed training, share knowledge with fellow educators, and advocate for improved school facilities to support more effective and equitable implementation of AR-based learning.

To clarify the findings of this study, **Figure 1** is presented below, illustrating the impact of using Augmented Reality media on several key aspects of English vocabulary learning among Grade X students at SMK GUS DUR Soko Tuban.

**Figure 1.** Impact of Augmented Reality on English Vocabulary Learning.



**Figure 1.** Bar chart illustrating the impact of Augmented Reality on English vocabulary learning. The chart demonstrates that the use of AR has a positive effect on several aspects of learning, including learning motivation, vocabulary visualization, sentence construction, and student engagement. Meanwhile, implementation challenges such as limited device availability and teacher training are also noted, although they exhibit a comparatively lower level of impact.

## CONCLUSION

The use of augmented reality (AR) technology has proven effective in enhancing students' English vocabulary comprehension, as it creates an interactive and enjoyable learning environment while also increasing motivation and interest in learning. In addition to strengthening vocabulary mastery, AR supports the comprehensive development of language skills through sentence construction and the application of vocabulary in real-life contexts. Nevertheless, its implementation still faces several obstacles, such as limited teacher training, insufficient devices and internet connectivity, and varying levels of students' technological proficiency. To address these challenges, teachers are working to improve their competencies through training, foster collaboration with fellow educators, and advocate for the enhancement of school facilities and infrastructure to optimize the integration of AR in the learning process.

The relevance of digital and AR-based media in the vocational high school setting is further supported by a range of scholarly works from IKIP PGRI Bojonegoro, such as:

- Nurdianingsih, Zainudin, & Rifa'i (2022), who showed that word guessing games enhance vocabulary retention;
- Nurdianingsih, Zainudin, & Firdiani (2022), who emphasized the pedagogical value of language styles in media for vocabulary teaching;
- Nurdianingsih et al. (2021), who developed engaging digital media for primary school English education;
- Rohmah, Matin, & Prismutitomi (2022), who analyzed student interaction patterns in writing classes as foundations for AR integration;
- Rohmah, Matin, & Shalsabila (2022), who applied DRTA strategies compatible with AR to improve vocabulary comprehension;

- Cuhanazriansyah et al. (2023), who implemented AR-based learning in vocational settings;
- Hasanudin, Fitrianingsih, et al. (2024), who demonstrated AR's value for inclusive education that can be adapted to language learning contexts.

These studies collectively support the empirical findings of this research and reinforce the importance of integrating interactive, contextual, and technology-integrated instruction in vocational language education.

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