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The Integration of Augmented Reality in Blended Culture-Based English Language Learning

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Abstract: This study examines the integration of Augmented Reality (AR) technology in English language learning based on blended culture. The research addresses two key questions: 1) How does the use of AR learning media influence student engagement in blended culture-based English learning? 2) How does the use of AR learning media affect students' understanding in blended culture-based English learning? The researcher employs a mixed-method approach with a quasi-experimental and qualitative descriptive design, involving two schools with a total sample of 60 students and 4 teachers selected through convenience sampling. Data were collected through observations and interviews to obtain qualitative data. Surveys and tests were used to gather quantitative data. The results show that: 1) student engagement increased, particularly in active participation, interaction with AR media, and collaboration with peers. 2) AR significantly enhances student engagement and understanding, with post-test scores increasing from 56.33 to 80.33 in School A and from 49.33 to 85.00 in School B. Survey results indicate that using AR technology in English learning enriches students' understanding of cultural diversity. AR allows students to engage more deeply in exploring local and target cultures, such as through interactive visualizations and culturally relevant contexts in the learning materials. This study highlights the significant potential of AR as an effective tool for enhancing the quality of English language learning through a blended culture-based approach.

INTRODUCTION

In the context of globalization and increasingly modern educational systems, technological advancements in learning are rapidly evolving. One such technology is Augmented Reality (AR). AR provides an interactive and

immersive learning experience by combining the real world with digital elements, creating a more engaging and in-depth learning environment (Yang, 2023). The use of AR in education not only helps improve the visualization of abstract concepts but also enhances student engagement in the teaching and learning process (Umisara et al., 2024).

Several studies indicate that the use of AR technology in education can positively impact various aspects of the learning process. First, AR helps improve students' understanding of the material (Zang & Wang, 2021). With more realistic and interactive visualizations, abstract and theoretically challenging concepts become easier to grasp. For instance, in science education, AR allows students to view three-dimensional models of the solar system, which helps them understand these concepts more clearly.

Second, AR has been shown to enhance students' memory retention (Atta et al., 2021). Through learning experiences that engage multiple senses such as sight and hearing, information is more easily absorbed and remembered over the long term. AR-based learning tends to be more engaging, leading to greater student involvement and prolonged attention, which ultimately strengthens information retention.

Third, this technology encourages collaboration between students and teachers (Upadhyay el at., 2023). In the use of AR, students are often invited to work together to explore material and engage in interactive discussions. This creates a more participatory learning environment, where the teacher acts as a facilitator, helping students understand the material more deeply.

AR provides an innovative solution to challenges often faced in conventional learning, such as a lack of student motivation and engagement (Umisara et al., 2023). In traditional teaching methods, students tend to be passive, receiving information unidirectionally from the teacher or textbooks without in-depth, hands-on experiences (Ma, 2023). As a result, many students lose interest and do not fully engage in the learning process.

The importance of integrating AR technology into language learning lies in its ability to create a more interactive and contextual learning environment, which is crucial for motivating and deeply engaging students. In traditional

language learning, students are often exposed only to theory through textbooks and teacher explanations without truly experiencing the use of the language in real situations (Ambarita, 2023). Consequently, student motivation often decreases due to the lack of practical opportunities to apply the language.

Based on the research team's observations, English language learning in elementary schools tends to emphasize linguistic aspects such as grammar, vocabulary, and pronunciation. Additionally, the learning materials used are general and do not specifically focus on the target culture or local culture. In other words, the primary focus of learning is on achieving systemic linguistic knowledge, such as phonology, morphology, and syntax.

However, language learning should not only concentrate on linguistic knowledge but also address non-linguistic knowledge, which includes socio-cultural knowledge, domain knowledge, genre knowledge, and general knowledge (Shaules, 2019). Non-linguistic knowledge is crucial because language is not just a tool for communication but also for understanding the social and cultural contexts in which the language is used (Yanka & Rex, 2020). Therefore, English language learning in elementary schools ideally should introduce students to cultural contexts, both the target culture and local culture, to enrich their understanding of language use in various real-life situations.

This study focuses on the use of AR technology in English language learning based on blended culture, specifically at the elementary school level. Previous studies have shown that AR has great potential for enhancing student engagement and understanding in various educational contexts. For example, Zulfikhar et al. (2024) explored the use of AR at the higher education level in English language learning. That research focused more on higher education contexts rather than applications at the elementary school level. The study by Liu et al. (2023) highlighted the impact of AR use on improving linguistic aspects without focusing on cultural integration. Majid and Salam (2021) studied in understanding culture in education, but this study was theoretical and did not

provide specific empirical data on the use of AR in English language learning. Li and Yu (2023) conducted a meta-analysis on the effectiveness of AR in education but did not address linguistic aspects.

This study aims to address gaps in previous research by exploring how AR technology not only aids students in understanding linguistic aspects but also introduces them to a broader cultural context, including both local and international cultures. To achieve this goal, the research questions are: 1) How does the use of AR learning media affect student engagement in English language learning based on blended culture? 2) How does the use of AR learning media impact students' understanding of English language learning based on blended culture? These questions aim to explore how AR can address challenges in English language learning, particularly in enhancing student engagement and enriching their understanding of cultural contexts.

The urgency of this research is underscored by the potential of AR technology to enrich students' learning experiences. By using AR, students can learn about English not just from a linguistic perspective but also explore and understand various cultural aspects related to the language. This is important because language is not just a means of communication but also a reflection of cultural values, norms, and traditions (Devianty, 2017).

Therefore, this research is highly relevant as it makes a significant contribution to more contextual and interactive language learning. AR technology offers opportunities to bridge the gap between linguistic and non-linguistic learning, preparing students not only to master the language but also to understand and appreciate the culture behind it.

METHOD

Type and Design

This research employs a mixed-method approach with a quasi-experimental design for quantitative analysis and descriptive methods for qualitative analysis. This approach is chosen to combine numerical data from surveys with descriptive data from observations and interviews. By using this method, the study can evaluate how AR learning media impacts student engagement and comprehension in

English language learning based on blended culture.

Data and Data Sources

The population in this study consists of students and teachers from two elementary schools in Brebes Regency that implement technology-based learning. The sample in this study includes 60 fifth-grade elementary students, with 30 students from School A and 30 students from School B, as well as 4 teachers, consisting of 2 teachers from each school, namely the English teacher and the class teacher. The sampling was conducted using the convenience sampling technique, and the selection of schools was based on the fact that both schools have implemented technology-based learning.

Data collection technique

The researcher used qualitative data from interviews and observations, and quantitative data from surveys and tests. Observations were made on student engagement during the English learning process using AR media. Five key aspects were observed: students' active participation in learning activities, the level of interest and enthusiasm towards the use of AR, the extent of student involvement in activities utilizing AR, their understanding of the material presented, and collaboration with classmates.

Interviews were conducted with both teachers and students. Teacher interviews aimed to explore their perceptions of the impact of AR on learning, particularly regarding student engagement, learning aspects, and student collaboration and interaction. Meanwhile, student interviews were conducted to understand their experiences using AR, how AR influenced their engagement and participation in the learning process, and how AR helped them comprehend the material and collaborate with peers.

Quantitative data were collected through surveys and tests. The survey instrument for teachers focused on the influence of AR media on student understanding, engagement, motivation, and teachers' perceptions of using AR as a learning medium. Meanwhile, the student survey covered understanding of the material, engagement and motivation, as well as their perceptions of AR learning media. For data collection through tests, the researcher used a quasi-experimental

design with a one-group pretest-posttest model. The study was conducted in two elementary schools, namely elementary school A and elementary school B, both serving as experimental groups. In the initial phase, a pretest was conducted to measure students' understanding of the culture-based English learning material. After the initial measurement, an intervention was given in the form of AR use in the learning process. AR was applied over two learning sessions to improve student engagement and understanding of the material. After the intervention was completed, a posttest was conducted to assess changes or improvements in students' learning outcomes compared to the initial measurements. Since this design does not involve a control group, the study focuses on comparing pretest and posttest results to identify the effect of AR on students' understanding. Below is a flowchart illustrating data collection through the quasi-experimental design.

Figure 1 Quasi-Experimental design Flowchat

Data analysis

In this study, the data obtained from observations and interviews were analyzed using thematic analysis. This technique was employed to identify, analyze, and report patterns (themes) that emerged from the qualitative data. The analysis process involved several stages, starting with the transcription of interview data, thoroughly reading and understanding the data, followed by a coding process to categorize the data into themes relevant to the research objectives.

Meanwhile, the quantitative data collected from surveys and tests were analyzed using descriptive and inferential statistical methods. Descriptive statistics were used to illustrate the distribution and general tendencies of the data, such as mean, median, and percentages, related to material comprehension, engagement, motivation, and students' perceptions of AR learning media. Additionally, inferential analysis, such as the t-test, was used to examine significant differences between student groups from two different schools regarding the use of AR learning media. The integration of qualitative and

quantitative data analysis was then conducted to provide a more comprehensive understanding of the impact of AR media in learning.

RESULT & DISCUSSION

This results section presents the key findings of the research derived from data obtained through observations, interviews, surveys, and tests. The data is summarized as follows:

1. Observation Results

Based on observations conducted by three observers at each school, including the English teacher, classroom teacher, and a member of the research team, it was concluded that the use of AR learning media in English language instruction has a positive impact on student engagement and understanding. The average scores for each observed aspect provide a clear picture of the effectiveness of using AR media.

Table 1 Average Scores Of Observation Aspects

No.	Aspect	Indicator	Average Score
1.	Active Participation	- Students participate in class discussions.	3.8
2.	Interest and Enthusiasm	- Students ask and answer questions.	5.0
3.	Engagement in AR Activities	- Students show interest in the material presented through AR media.	4.7
4.	Material Understanding	- Students appear enthusiastic in following the lesson.	4.0
5.	Collaboration with Peers	- Students use AR media according to instructions.	4.0

In terms of active participation, the average score obtained was 3.8. While this score indicates that most students actively participated in class discussions, asked questions, and answered both in Indonesian and English, some students were still shy about participating. This suggests that while AR media successfully encourages student engagement, further efforts are needed to increase the active participation of all students.

The aspect of interest and enthusiasm achieved a perfect average score of 5, indicating that students were highly interested and enthusiastic about the material presented through AR media. They appeared amazed and motivated by this learning method, as reflected in their eagerness to ask further

questions about cultural diversity, both in Indonesia and abroad, such as in the United States. This demonstrates that AR technology effectively captures students' interest in English lessons and broadens their understanding of global cultures.

The aspect of engagement in AR activities also received a high average score of 4.7. Students actively used the AR media as instructed, showing a high level of involvement in the learning process. They engaged in exploring and interacting with the learning materials, reflecting the effectiveness of this media in enhancing student engagement. For the aspect of material comprehension, the average score obtained was 4. Students felt that they could better understand the material using AR media, as evidenced by their ability to explain the learned material in both languages. The use of AR not only helped students grasp the cultural differences presented in the material but also reinforced their understanding of English language concepts, such as the use of the simple present tense.

The aspect of collaboration with peers received an average score of 4, indicating that AR media encouraged students to work together and share information with classmates using Indonesian. This strengthened teamwork and improved students' understanding, making them more excited and motivated to learn English.

An analysis of the average scores across these five aspects indicates that AR learning media positively impacts English language learning. Although there is still room for improvement, particularly in increasing student participation, these results show that AR can be an effective tool for enhancing student engagement, understanding, and collaboration in English learning.

2. Interview Results with Teachers

Interviews with four teachers—comprising two from each school (one classroom teacher and one English teacher)—revealed generally positive views regarding the use of AR technology in blended culture-based English learning. The

teachers assessed that AR could be an effective tool for enhancing the quality of learning and increasing student engagement. AR technology is perceived to captivate students' interest, bridge the gap between theory and practice, and enrich the learning experience by providing relevant cultural context.

According to the teachers, the use of AR in English learning significantly boosts student engagement. Students appeared more enthusiastic and interested when lessons were delivered through AR, particularly in relation to the English vocabulary introduced via this medium. Additionally, AR was seen to make lessons more interactive and enjoyable, which in turn increased student participation in the classroom. When posed with questions, students exhibited high enthusiasm in providing answers, both in Indonesian and English.

In terms of learning content, the teachers reported that AR aids in explaining local cultural materials, such as cuisine, traditional clothing, and arts from Indonesia and the United States, integrated into the discussion of the simple present tense. AR enables students to view and directly interact with cultural elements, making the learning process more effective and immersive.

Collaboration among students also improved due to the use of AR. Students became more active in exchanging information and ideas about the discussed topics, especially within the context of cultural exploration. However, some technical challenges, such as device incompatibility and other technical issues, occasionally disrupted the learning process. Despite these obstacles, students remained interested and curious about AR, and the teachers believe that these issues can be resolved with technical improvements and additional equipment.

Overall, the teachers concluded that the use of AR in blended culture-based English learning has a positive impact, particularly in enhancing student engagement, collaboration, and understanding of the material. Although there are

technical challenges, the benefits gained from using AR are substantial.

3. Interview Results with Students

Interviews with ten students (five from each school) revealed that students were generally enthusiastic and curious about the use of AR in English learning. They found AR to be an exciting new experience. Although there was some initial confusion or awkwardness, students quickly adapted and enjoyed the more interactive approach to learning.

Most students reported that AR made them more interested and motivated to engage in English lessons. They felt that AR made the lesson content more engaging and enjoyable, which in turn increased their participation in class. Students were also more motivated to actively participate because they could directly see and interact with the learning material.

In terms of content comprehension, students felt that AR helped them better understand English concepts, especially the cultural diversity presented. AR provided visual illustrations that helped them remember and grasp the material more effectively, and it clarified cultural concepts in a more vivid and engaging manner.

The use of AR also encouraged students to collaborate more frequently with their peers. They reported a preference for group work when using AR, as it allowed them to help each other and share information about the material being studied. The cultural exploration activities and the comprehension tasks using AR offered students opportunities to work together in completing assignments.

Students also provided some suggestions for improvement, such as allowing more time to observe the AR models before starting the main lesson and increasing the number of AR devices to avoid shortages. They expressed a desire for more content to be presented through AR across various learning topics, as they found AR to be very beneficial in their learning process.

Overall, students had a very positive view of the use of AR in

English learning. AR not only made the learning process more engaging and interactive but also helped them better understand the material and enhanced collaboration among them. Students expressed a strong interest in seeing AR expanded into other subjects as well.

In conclusion, the interview results from both teachers and students indicate that AR has a positive impact on blended culture-based English learning. AR not only makes learning more engaging and interactive but also helps improve material comprehension and collaboration among students. Despite some technical challenges, the benefits of using AR in education are significant and provide a solid foundation for further development in this context.

4. Survey Results

The survey results indicate that the use of AR media in blended culture-based English learning has had a significant positive impact on students' understanding of the material. The majority of teachers reported that AR media contributed to improved material comprehension, with an average score of 4.3, suggesting that AR is effective in helping students better grasp lesson content. Additionally, most teachers observed an increase in students' ability to understand English vocabulary and phrases, with an average score of 4.2, indicating that AR plays a role in strengthening vocabulary mastery. AR media was also considered highly effective in helping students understand cultural differences, with an average score of 4.5, reflecting its ability to bridge the understanding of complex cultural concepts.

The survey further revealed that AR media had a positive impact on student engagement and motivation. Teachers reported increased student participation in class discussions when using AR, with an average score of 4.5, showing that this technology is capable of enhancing student involvement and motivating them to be more active in the learning process. Teachers' perceptions of AR media indicated that this tool adds value to the English learning

process, with an average score of 4.5, signaling recognition of AR's contribution to enhancing learning activities. The following figure is presented to illustrate these results.

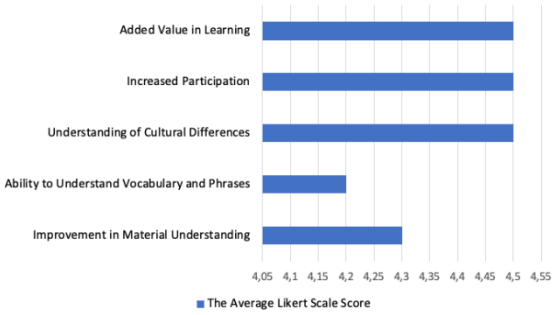

Figure 2 The Average Likert Scale Score of Teacher

Based on the results of the student survey, AR media made it easier for them to remember English vocabulary and phrases, with an average score of 4.3. This indicates that AR is effective in helping students retain learning material. Additionally, students felt that AR helped them understand the cultural context presented in the English lessons, with an average score of 4.2. This demonstrates that AR plays an important role in connecting language material with cultural contexts, enriching students' understanding.

Student motivation also increased with the use of AR, as reflected in an average score of 4.4. The AR media made students more enthusiastic about participating in lessons. Active participation in class also improved, with an average score of 4.5, indicating that AR effectively enhances student engagement in the learning process. Lastly, students perceived AR as providing a more engaging learning experience, with an average score of 4.6, showing that AR successfully increased the appeal and interactivity of the lessons. The following figure as follows.

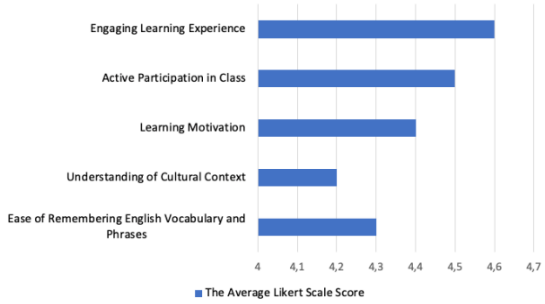

Figure 3 The Average Likert Scale Score of Students

The survey results, analyzed using the Likert scale, display average scores for each question on a 1-5 scale. The data demonstrates that AR learning media has a significantly positive impact on material comprehension, motivation, and student engagement in English learning with a blended culture approach. With average scores above

4 across all aspects, AR has proven effective in making the learning process more engaging, helping students retain material better, and enriching their understanding of cultural contexts.

5. Pre-Test and Post-Test Results

Based on the analysis of data from two different schools, the t-test results indicate that AR-based learning media has a significant impact on enhancing students' understanding.

At School A, the statistical analysis revealed a significant increase in post-test scores compared to pre-test scores. The average pre-test score was 56.33, while the post-test score rose to 80.33. This increase suggests that the use of AR media significantly aided students in better comprehending the learning material. Although the correlation between pre-test and post-test scores was not significant ($r = -0.120$, $p = 0.529$), the t-test results ($t = -5.067$, $p = 0.000$) confirmed that the improvement in students' understanding after using AR was indeed significant.

A similar pattern was observed at School B, where the average pre-test score was 49.33 and increased to 85.00 in the post-test. The correlation between pre-test and post-test scores at this school was also not significant ($r = 0.083$, $p = 0.662$); however, the t-test results ($t = -9.179$, $p = 0.000$) demonstrated a highly significant improvement in students' understanding after using AR media. This indicates that despite individual variations in pre-test scores, the use of AR consistently enhanced students' understanding significantly.

From the results of both schools, it can be concluded that AR-based learning media plays a crucial role in improving students' comprehension in culture-based English learning. The significant increase in post-test scores at both schools suggests that AR technology can be an effective tool for helping students better understand the material being taught.

This section also includes an interpretation of the findings as well as

a connection to previous research, as follow:

1) **How does the use of AR learning media influence student engagement in blended culture-based English learning?**

The use of AR in learning has a significant impact on increasing student engagement in English learning within a blended culture framework. Evidence from observations and interviews shows that AR technology enriches the learning experience, makes the material more engaging, and boosts student participation. High average scores in student engagement with AR activities (4.7) and material comprehension (4) underscore the effectiveness of AR in encouraging active participation in learning.

Support from experts, such as Fauziyah (2024), who emphasize that AR technology can deepen student interaction and enhance engagement in interactive educational contexts, reinforces these findings. Student feedback that AR made learning more enjoyable and helped them better understand the material aligns with the views of Tohir et al. (2024), who state that AR can facilitate better comprehension through more engaging interactions.

Although there are some technical challenges, such as device issues and compatibility, the benefits gained from using AR in learning are substantial. Handayani (2020) argue that despite technical hurdles, the advantages of using AR in enhancing the learning experience and student understanding far outweigh the drawbacks. Therefore, AR can be considered an effective learning tool with great potential to improve student engagement, comprehension, and collaboration in English learning within a blended culture.

Overall, while there is room for improvement, particularly in increasing active student participation, this study's results demonstrate that AR plays a crucial role in culture-based English learning. The support from this research and relevant literature provides a strong foundation for further integration of AR technology in educational practices, as well as for technical enhancements that can

increase its effectiveness in the future.

2) **How does the use of AR learning media affect students' understanding in blended culture-based English learning?**

The use of AR in education significantly influences students' comprehension in English learning within a blended culture framework. Data from observations reveal average scores above 4 across all aspects, including material understanding, motivation, and engagement, indicating that AR effectively enhances learning outcomes. High scores in interest and enthusiasm, with a maximum of 5, show that students felt highly motivated and engaged when using AR.

Teacher comments support these findings, noting that AR made lessons more interactive and enjoyable, positively impacting student motivation to participate in class. Additionally, AR enriches students' understanding of both local and global cultural contexts, aligning with constructivist theories that emphasize the importance of direct experience in the learning process (Musyafak & Subhi, 2023). Student interviews also confirm that AR helps them better remember the material and makes learning more engaging, supporting survey findings.

The significant improvement in post-test scores at both schools, consistent with observational and interview data, indicates that AR technology is an effective tool for helping students better understand the material taught. Teachers reported that AR facilitates the explanation of cultural and English language concepts through clearer and more engaging visual illustrations, supporting the study that interactive technology can deepen student comprehension (Haryadi et al., 2023; Nur & Wathon, 2018).

The use of AR learning media not only makes the learning process more engaging but also effective in enriching students' understanding of the material and cultural context. AR has significant potential to enhance student comprehension in blended culture English language learning, as reflected in improved learning

outcomes and positive feedback from both students and teachers.

In blended culture learning, materials covering local culture and traditions, such as traditional dances, local attire, and traditional foods, as well as community activities like gotong royong and community service, and celebrations such as Independence Day and festive events, are used to introduce students to various cultural aspects. This approach involves using AR through mobile devices to present information in English, supplemented with audio, text, quizzes, and vocabulary tracking. Below is an example of AR visualization created to provide an overview of how the material is taught in English language learning.

Figure 4 AR Visualization of Batik

Figure 5 The AR visualization features brief text

Overall, it can be concluded that integrating AR technology into education offers opportunities to present material in a more dynamic and relevant manner to students' daily lives. AR not only enhances student engagement by providing interactive learning experiences but also enriches the learning process with multidimensional content that includes linguistic and cultural aspects. Through AR, students can experience English language learning in a more authentic and contextual setting, allowing them to understand the language not only in terms of grammar and vocabulary but also through the cultural values embedded within it. Therefore, this technology has the potential to significantly improve the quality of blended culture English language learning, addressing challenges inherent in conventional teaching methods and preparing students for broader social interactions.

However, this study faces several limitations that need to be considered for a balanced understanding of its

strengths and weaknesses. First, the research design may have limitations in controlling external variables, such as differences in students' backgrounds and classroom environments, which could affect the effectiveness of AR technology in English language learning. Additionally, the limited sample size of 60 students from two elementary schools restricts the generalizability of the findings to a broader population or to groups of students with different characteristics.

CONCLUSION

This study reveals that the use of Augmented Reality (AR) media in blended culture English language learning has a significant positive impact on student engagement and understanding. Observations and interviews indicate that AR enhances student interest and enthusiasm for the material, as well as aids in understanding cross-cultural concepts such as Indonesian and American cuisine, traditional clothing, and arts. Students show increased eagerness to share their experiences related to cross-cultural knowledge. Quantitative data demonstrates a significant improvement in student scores after using AR. In School A, the average post-test score rose from 56.33 to 80.33, while in School B, it increased from 49.33 to 85.00. Surveys also show that AR helps students remember vocabulary (average score of 4.3) and understand cultural contexts (average score of 4.2), as well as boost motivation and active participation (average scores of 4.4 and 4.5, respectively). The implications of these findings suggest that AR can be widely integrated into English language teaching to enhance student engagement and understanding. Teachers are encouraged to use AR for delivering complex material and building cultural context.

RECOMMENDATION

Future research should focus on teacher training in the use of technology and blended culture-based teaching methods to create interactive and effective learning experiences. Integrating technology with contextual learning is crucial for sustaining values and providing a supportive learning environment for students. Additionally, further evaluation is needed to assess the long-term impact of technology on

students' English skills and its adaptation to local cultural contexts.

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REFERENCES

Ambarita, J., SIMANULLANG, M. P. K. P. S., & Adab, P. (2023). Implementasi Pembelajaran Berdiferensiasi. Penerbit Adab.

Atta, M., Romli, A., & Majid, M. (2021). The Impact of AR/VR on Spatial Memory Performance of Learners: A review. 2021 International Conference on Software Engineering & Computer Systems and 4th International Conference on Computational Science and Information Management (ICSECS-ICOCSIM), 75-79. https://doi.org/10.1109/icsecs52883.2021.00021.

Devianty, R. (2017). Peran bahasa Indonesia dan bahasa Daerah dalam pendidikan karakter. Ijtimaiyah: Jurnal Pendidikan Dan Ilmu Sosial, 1(2), 79-101.

Fauziyah, L. S., Sugiman, S., & Munahefi, D. N. (2024, February). Transformasi Pembelajaran Matematika melalui Media Augmented Reality: Keterlibatan Siswa dan Pemahaman Konseptual. In PRISMA, Prosiding Seminar Nasional Matematika (pp. 936-943).

Handayani, L. (2020). Keuntungan, kendala dan solusi pembelajaran online selama pandemi COVID-19: Studi ekploratif di SMPN 3 Bae Kudus. Journal of Industrial Engineering & Management Research, 1(2), 15-23.

Haryadi, R. N., Utarinda, D., Poetri, M. S., & Sunarsi, D. (2023). Peran Teknologi Informasi dalam Meningkatkan Pembelajaran Bahasa Inggris. Jurnal Informatika Utama, 1(1), 28-35.

Lin, Y., & Yu, Z. (2023). A meta-analysis of the effects of augmented reality technologies in interactive learning environments (2012–2022). Computer Applications in Engineering Education, 31, 1111 - 1131. https://doi.org/10.1002/cae.22628.

Liu, S., Gao, S., & Ji, X. (2023). Beyond borders: exploring the impact of augmented reality on intercultural competence and L2 learning motivation in EFL learners. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1234905.

Ma, Y. (2023). A Study of Interactive Teaching in High School English Classrooms. Communications in Humanities Research. https://doi.org/10.54254/2753-7064/7/20230810.

Majid, S., & Salam, A. (2021). A Systematic Review of Augmented Reality Applications in Language Learning. Int. J. Emerg. Technol. Learn., 16. https://doi.org/10.3991/IJET.V16I10.17273.

Musyafak, M., & Subhi, M. R. I. (2023). Strategi Pembelajaran Pendidikan Agama Islam dalam Menghadapi

Tantangan di Era Revolusi Industri 5.0. Asian Journal of Islamic Studies and Da'wah, 1(2), 373-398.

Nur, L., & Wathon, A. (2018). Peran Media Pembelajaran Speaker Terhadap Minat Belajar Siswa. Sistim Informasi Manajemen, 1(1), 48-63.

Shaules, J. (2019). Deep Language and Culture Learning. Language, Culture, and the Embodied Mind. https://doi.org/10.1007/978-981-15-0587-4_2.

Tohir, A., Handayani, F., Sulistiana, R., Wiliyanti, V., Arifianto, T., & Husnita, L. (2024). Analısıs Penerapan Augmented Realıty Dalam Proses Pemahaman Pembelajaran. Jurnal Review Pendidikan Dan Pengajaran (JRPP), 7(3), 8096-8102.

Umisara, E., Mutaqin, A., & Hidayah, S. U. N. (2023). Development of Educational Augmented Reality Game as English Language Learning Media with Character Education Values. Wahana, 75(2), 73-86.

Umisara, E., Riono, S. B., Antika, T. L., Toha, M., & Hidayah, S. U. N. (2024). Pelatihan Penggunaan Game Edukasi AR untuk Meningkatkan Kualitas Pembelajaran Bahasa Inggris di Sekolah Dasar Negeri Luwungbata 02. JAMU: Jurnal Abdi Masyarakat UMUS, 4(02), 125-130.

Upadhyay, B., Brady, C., Madathil, K., Bertrand, J., & Gramopadhye, A. (2023). Collaborative Augmented Reality in Higher Education Settings – Strategies, Learning Outcomes and Challenges. Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67, 1090 - 1096. https://doi.org/10.1177/21695067231192199.

Yang, B. (2023). Virtual Reality and Augmented Reality for Immersive Learning: A Framework of Education Environment Design. International Journal of Emerging Technologies in Learning (iJET). https://doi.org/10.3991/ijet.v18i20.44209.

Yanka, A., & Rex, E. (2020). Language Ideology in Cross-Cultural Communication. . https://doi.org/10.31219/osf.io/ba5y3.

Zhang, W., & Wang, Z. (2021). Theory and Practice of VR/AR in K-12 Science Education—A Systematic Review. Sustainability. https://doi.org/10.3390/su132212646.

Zulfikhar, R., Mustofa, M., Hamidah, E., Sapulete, H., Sitopu, J. W., & Sari, M. N. (2024). Dampak Integrasi Teknologi dalam Pembelajaran Terhadap Prestasi Akademis Mahasiswa Perguruan Tinggi. Journal on Education, 6(4), 18381-18390.