

Implementation of Augmented Reality (AR) as A Teaching Media in English Language Learning in Elementary School

Shaumiwaty¹, Endang Fatmawati^{2✉}, Heni Novita Sari³, Yoiceta Vanda⁴, Herman⁵

Tadris Bahasa Inggris, Institut Agama Islam Negeri Takengon, Indonesia⁽¹⁾

Informasi dan Humas, Universitas Diponegoro, Indonesia⁽²⁾

Pendidikan Bahasa Inggris, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia⁽³⁾

Diploma 3 Teknik Elektronika, Universitas Dharma AUB Surakarta, Indonesia⁽⁴⁾

Pendidikan Bahasa Inggris, Universitas HKBP Nommensen Pematangsiantar, Indonesia⁽⁵⁾

DOI: [10.31004/obsesi.v6i6.3398](https://doi.org/10.31004/obsesi.v6i6.3398)

Abstract

This study discussed the application of augmented reality as a medium of learning in English subjects in elementary schools. This study used multimodal analysis. The theory used is Multimodal by Kress and Leeuwen. The object of this research was a teacher who teaches English subjects in elementary schools. The location of this research is at one Elementary school in Medan city. In data collection used nonverbal data in the form of images, assisted by recording techniques, with the method of listening. The data collection instrument used a questionnaire, and an interview sheet. The results of this study are teachers are able to use Augmented Reality-based learning media in learning English well. Hence, there is an increase in student learning outcomes in English subjects after using Augmented Reality-based learning media. Based on the data obtained, it can be concluded that there is an increase in student learning outcomes before and after use which is obtained through the results of the pre-test and post-test, and teachers and students feel more fun in learning seen from the results of filling out the questionnaire which is carried out to obtain a score that is categorized as very good

Copyright (c) 2022 Shaumiwaty, et al.

✉ Corresponding author :

Email Address : endangfatmawati@live.undip.ac.id (Semarang, Indonesia)

Received 17 July 2022, Accepted 8 October 2022, Published 26 October 2022

Introduction

One of the abilities that should be dominated by the more youthful age is unknown dialect abilities. This is proven by the numerous prerequisites that focus on forthcoming representatives who have unknown dialect abilities. In Indonesia, the most concentrated on unknown dialect is English. Acknowledging that it is so critical to dominate English, English illustrations have been given since primary school level. At one Elementary school in Medan city, English examples have been given from grade I to grade VI. In any case, not all understudies grasp the significance of learning and dominating English. A few understudies are hesitant to follow the illustration well. Likewise, during learning from home (BDR) exercises, there were a few understudies who didn't gather the day to day tasks given by the English instructor. This is sufficient to show that a few understudies have not exactly

understood the significance of learning English. During the BDR action, the English educator conveyed learning materials as recordings transferred on Youtube, then, at that point, gave everyday tasks that understudies needed to do and gather. The restricted time, energy, and offices make English BDR exercises dull and will generally utilize similar type of learning media. This makes a few understudies feel exhausted and less spurred in partaking in English learning exercises (Suryana & Indrawati, 2018).

Innovation based learning media is required with an end goal to confront the time of the Industrial Revolution 4.0 and Society 5.0. Expanded Reality (AR) is one of the elective learning media that can answer the difficulties of the present turn of events. Valino made sense of that AR is an innovation that utilizes two-layered or potentially three-layered virtual items into a genuine climate and afterward extends these virtual articles progressively. Dissimilar to computer generated reality which totally replaces reality, increased reality essentially adds to or supplements reality. Virtual items show data that the client can't see with his own faculties. This makes increased reality reasonable as an instrument to help the discernment and communication of its utilization with this present reality. Data showed by virtual articles assists clients with completing exercises in reality (Hanum, 2013).

Ady (2014) recommended that AR is an illustration of media created by PC innovation. AR is recognized in two ways in raising the item, to be specific AR utilizing markers (marker based) and without markers (markerless). Both are fit for delivering two-layered and three-layered objects, yet marker-based AR requires markers as pictures of complex and non-rehashing designs that should be printed first. So one might say that the media created utilizing this innovation is remembered for the media that is the consequence of a mix of PC and print innovation (Putro et. al., 2021). This AR learning media can stand out for understudies and make learning exercises more viable on the grounds that the item looks genuine to understudies in primary school. Three-layered (3D) objects consolidated into a genuine climate in light of cell phone applications make AR a reasonable and simple to-utilize medium. Vedadi, Abdullah, and Cheok (2019) defined that AR in schooling has a positive effect, which is appealing for multi-modular picking up, expanding availability of instructive substance, expanding understudy command over instructive substance, opening up potential open doors for cooperative getting the hang of, propelling understudies to be effectively involved, and transforming something unique into concrete (Suryana & Indrawati, 2018).

Bacca argues that AR-based learning applications have problems in their role in these applications related to the objectives and activities presented (Rovira, et. al., 2018). The role of most of the application of AR technology is only limited to interactive and visual elements without having a direction to conceptualized learning activities, even though learning activities have a very vital role in the success of learning objectives (Mailani, 2019). Referring to some of these things, this literature review was compiled as an effort to find out technological developments in making AR learning media. Information related to the implementation of the use of AR in the world of education or non-education can be known in detail and factually (Andriani, 2015).

This study uses multimodal analysis. The multimodal analysis discussed in this paper uses the theory of functional systemic linguistics (LSF) (Meneses et. al., 2018). The multimodal analysis model was developed from a combination of multimodal theory and multimodal analysis by Kress and Leeuwen (Kress, & van Leeuwen, 2016). In multimodal examination as per Anstey and Bull in Sihombing, Herman and Saputra (2022) express that a text is called multimodal on the off chance that the text is acknowledged from a mix of at least two semiotic frameworks (Syamsuar & Reflianto, 2018; Herman et. al., 2022). As per them, there are five multimodal semiotic frameworks in a text, in particular: 1) Linguistic: jargon, conventional construction and the sentence structure of oral and composed language, 2) Visual: variety, vectors and perspective in still and moving pictures, 3) Audio: volume, pitch and mood of music and audio effects, 4) Gesture: development, speed and tranquility in look and non-

verbal communication, and 5) Spatial: vicinity, bearing, position of format and association of items in space (Murcia, 2018).

Learning English is felt to be necessary and important for children, considering that in this very advanced era, children should have been taught English learning or learning a second language other than their mother tongue, which is where to start learning English sometimes children will feel bored with learning methods that only use book media, even though the learning is only in the form of basics (Nuraini and Ratnawati, 2021). Children who are starting to enter the age of 6-11 years really like something that is interesting or has never been seen before, especially something that can be seen in real terms and contains elements of learning (Verawati and Desprayoga, 2019). If at this age you already have the ability to speak English well and correctly, then you can be sure that this ability will be used at the next level of education (Trianto, 2011). As of now, an ever increasing number of new advances are arising in the field of Information Technology (IT). These innovations are at present growing quickly. One innovation that is presently being created is Augmented Reality (AR) (Bilfaqih & Qomarudin, 2017). Increased Reality (AR) is an innovation used to join the virtual world and this present reality, this framework is nearer to the genuine climate, so the limit between the two turns out to be flimsy. [1] Augmented Reality plans to foster innovation that permits converging continuously, this innovation permits clients to see genuine 3D items utilizing a cell phone. [2] With the range of media that can use innovation as a guide in acquiring data, this is the reason for the readiness of this last undertaking (Ningsih, 2018). The creator plans an English learning application utilizing Augmented Reality innovation utilizing cell phone media which prompts giving data and 3D appearances about existing items. Typically as of now kids are getting exhausted with learning English by utilizing book media

Methodology

This sort of exploration is a subjective examination utilizing an engaging subjective methodology (Rambe, 2019). The information in this review are general information as pictures from video accounts acquired when the educator shows in the study hall. The information was then broke down by Kress and Leeuwen's multimodal hypothesis, in particular to figure out how the type of nonverbal correspondence conduct, to be specific the educator's signals in learning exercises utilizing the listening strategy and helped by utilizing note-taking procedures (Sugiyono, 2017)

In subjective exploration, scientists are straightforwardly associated with the most common way of gathering information. The place of the scientist in subjective exploration isn't just as an organizer yet in addition as an agent of information assortment or as an instrument (Ady, 2014). To gather information in this review, the specialist utilized the referential technique. The listening strategy is a technique that is completed by listening which is lined up with the perception technique (Sugiyono, 2015). The listening strategy as per Sudaryanto said which will be applied in this review incorporates the accompanying methods: (1) recording procedure, for this situation the scientist records learning exercises in class at one Elementary school in Medan city by utilizing a Samsung S7 brand cell phone that has a screen. 5.2 crawls with super AMOLED board backing and QUAD HD goal. For the machine, it utilizes the Qualcomm Snapdragon 820 chipset. This processor is upheld by 4GB RAM so that its exhibition is very quick and agreeable while recording video, so it can catch sound and pictures obviously (Harrison, 2017). Then the recording is changed over into a picture. The outcomes are arranged by the request for time. In the information arrangement, information coding is given (information code), in particular italics and striking letters. Likewise, the date and month of distribution are additionally composed with a foreordained code. This was finished to make it more straightforward to sort the information. what's more, utilized as examination proof.

Results and Discussion

The results of the pretest and posttest showed an increase in students' English vocabulary skills. The augmented reality-based products provided are, through the figure 1.



Figure 1. People were having a dialogue in English

The picture above is a picture of people having a dialogue in English, then the picture 2 will be scanned with the application:



Figure 2. Application for scanning

So that it will bring up the video conversation in Figure 1 and Figure 2 so that students can record the English vocabulary spoken in the dialogue, then study it and repeat the pronunciation of the word according to the one in the dialogue.

The pretest and posttest were used as instruments to measure the difference in students' English vocabulary scores before and after the use of AR. The results of statistical descriptive analysis showed that the mean score of pretest English vocabulary of fourth grade elementary school students who participated in the training was high (mean = 87.00; SD = 11.64; SE = 1.97), while the post-test results showed an increase to be very high (mean = 91.71; SD = 10.77; SE = 1.82).

The range of difference between the pretest and posttest mean scores was 4.71. The data shows differences in the results of the fourth grade elementary school students' English vocabulary skills before and after the implementation of Augmented Reality. In addition, analytical tests were conducted to determine whether the data were normal and homogeneous. The results of the analysis test obtained the asymp value. sig. (2-tailed)= 0.00. Because the value of 0.00 is smaller than <0.05 , it can be concluded that the data is not normally distributed. Because the data were normally distributed, the analysis was carried out using the Wilcoxon test to determine the significance of the difference in the pretest and posttest scores of AR implementation on students' English vocabulary mastery skills.

The first result of the Wilcoxon test is ranks, specifically the positive ranks or the difference (positive) between the results for the pretest and posttest. There are 22 positive data (N), which means that 22 students experienced an increase in English vocabulary learning outcomes from the pretest to the posttest score. The mean rank or average increase is 14.93, while the number of positive ranks or sum of ranks is 328.50. In addition, based on the output of Test Statistics, it is known that asymp. sig (2-tailed) is 0.014, smaller than < 0.05 , it can be concluded that "Ha is accepted". That is, there is a significant difference between the results of learning English vocabulary on the pretest and posttest scores. Thus, it can also be concluded that there is an effect of Augmented Reality implementation on the learning outcomes of fourth grade elementary school students' English vocabulary.

The results of the analysis imply that Augmented Reality can be used as an alternative learning media for learning English vocabulary. English subject teachers play a role in making lesson plans (RPP), making learning materials and media, and making learning videos. In addition, English subject teachers also assist in coordination, discussion, and question and answer between the service team and service participants. Another party who plays a role is the guardian of class IV students. The guardians of students always accompany their children in participating in the activities provided in this service program. At the implementation stage which was carried out online through a Zoom meeting, the Principal gave a speech and motivated the participants. In addition, English teachers are also directly involved in the implementation of this program by providing material reviews to service participants. Parents also accompany and guide their children during the Zoom meeting.

The results of this study indicate that there are differences in student learning outcomes before and after using Augmented Reality-based learning media which was carried out at one Elementary school in Medan city. In addition, the use of AR also has a positive impact on teachers and students because teachers and students are more enthusiastic in learning, because learning is more interesting. Apart from that, it also received a positive response from parents who showed a positive response, because through the Augmented reality application, children increasingly like to learn English. Table 1 is known from the results of filling out the questionnaire:

Table 1. Results of Filling out the Questionnaire

Indicator	Total Score (Average)	Number of Appraisers	Information
Ease of Use	87	50 people	Well
Usefulness	95	50 people	Very good
attractiveness	90	50 people	Very good
Technology Use	96	50 people	Very good

The questionnaires given were filled out by students and teachers at that Elementary School. Filling out the questionnaire was carried out after finishing using augmented reality learning media, so that the results of the study were obtained, namely: a score of 87 for the ease of use indicator with good information, 95 for the usefulness indicator with very good information, 90 for the attractiveness indicator with very good information, 96 for the indicator. the use of technology with very good description. So it can be seen that the use of augmented reality in learning English in schools is appropriate to be used and responded to properly, and according to teachers and students it is very good if applied in elementary schools

The results of the research presented above were clear that the use of Augmented Reality (AR) could be use as a media in teaching and learning English. The results were supported with some previous study related. One of them was Chen, Zhou, Wang and Yu (2017) in their research entitled Application of Augmented Reality for Early Childhood English

Teaching, Their research discussed about the growth of information technology and economic globalization, early children English instruction has become a hot problem that requires the immediate attention of schools, instructors, and parents. After reviewing the current state of early childhood English instruction, we identified a number of issues, including the inability to pique children's interest in learning, a dearth of teaching environments, and poor study effectiveness. In this work, a novel approach to teaching early childhood English is proposed, using Situational Theory to build augmented reality (AR) tools. Then, using augmented reality (AR) technology, we create an early childhood learning smartphone app that teaches words and assesses development at various ages. This software has outstanding application effectiveness.

There were some similarities and differences depicted from this research with the previous study. The similarities were both paper used qualitative research method. Hence, the application used was Augmented Reality (AR) for both papers. The results were interconnected that an English teaching mobile app with AR technology could improve the students' progress in learning English. Beside the similarities, there were also some differences depicted in the paper. The source of data in this research was the students of elementary school, while the source of data in the previous research was early childhood. The difficulties in teaching for elementary and early childhood were also different. The several problems including difficulty in inspiring children's learning interest, lack of teaching situation, and low study efficiency.

Conclusion

There is an increase in the learning outcomes of fourth grade students after using AR learning media. The average value of the pretest English vocabulary of the fourth grade elementary school students who participated in the training was high (mean = 87.00; SD = 11.64; SE = 1.97). The use of AR in learning English in schools is appropriate to be used and responded to properly. According to teachers and students, it is very good if applied in elementary schools. The score for the ease of use indicator with good information, for the usefulness indicator with very good information and for the attractiveness indicator.

Acknowledgment

A big thankful given to editors and reviewers who have given some valuable comments for the improvement of the paper's quality.

References

- Ady, P. S. (2014). *Augmented reality tata surya sebagai sarana pembelajaran interaktif bagi peserta didik sekolah dasar berbasis android*. Surakarta: Universitas Muhammadiyah Surakarta. <http://eprints.ums.ac.id/31314>
- Andriani, T. (2015). Sistem pembelajaran berbasis teknologi informasi dan komunikasi. *Jurnal Sosial Budaya: Media Komunikasi Ilmu-Ilmu Sosial Budaya*, 12(1), 127-150. <https://ejournal.uin-suska.ac.id/index.php/SosialBudaya/article/view/1930>
- Bilfaqih, Y., & Qomarudin, M. N. (2017). *Multimodal analysis, dee publish*. Yogyakarta: Dee Publish.
- Cahyati, S. S., Tukiyo, T., Saputra, N., Julyanthry, J., and Herman, H. (2022). How to Improve the quality of learning for early childhood? An implementation of education management in the industrial revolution era 4.0. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 6(5), 5437-5446. <https://doi.org/10.31004/obsesi.v6i5.2979>
- Chen, Y., Zhou, D., Wang, Y., and Yu, J. (2017). Application of augmented reality for early childhood English teaching. *International Symposium on Educational Technology (ISET)*, 2017, pp. 111-115, <https://doi.org/10.1109/ISET.2017.34>
- Fatmawati, E., Saputra, N., Ngongo, M., Purba, R., and Herman, H. (2022). An application of multimodal text-based literacy activities in enhancing early children's literacy. *Jurnal*

Obsesi: Jurnal Pendidikan Anak Usia Dini, 6(5), 5127-5134.
<https://doi.org/10.31004/obsesi.v6i5.2782>

- Herman, H., Purba, R., Sijabat, P. A., Saputra, N., Muhammadijah, M., & Thao, N. V. (2022). Investigating the realization of speech function in a speech through systemic functional linguistics perspective. *Script Journal: Journal of Linguistics and English Teaching*, 7(01), 31-41. <https://jurnal.fkip-uwgm.ac.id/index.php/Script/article/view/917>
- Herman, H., Sulistyani, S., Ngongo, M., Fatmawati, E., and Saputra, N. (2022). The structures of visual components on a print advertisement: A case on multimodal analysis. *Studies in Media and Communication*, 10(2), 145-154. <https://doi.org/10.11114/smc.v10i2.5717>
- Hanum (2013). Keefetifan e-learning sebagai media pembelajaran (studi evaluasi model pembelajaran e-learning SMK Telkom Sandhy Putra Purwokerto). *Jurnal Pendidikan Vokasi*, 3(1), pp. 90-102. <https://doi.org/10.21831/jpv.v3i1.1584>.
- Harrison, C. (2017) *Multimodal analysis for education*. Technical Communication, 1, 46-60.
- Kress, G., & van Leeuwen, T. (2016). *Reading images the grammar of visual design*. Routledge.
- Mailani, E. (2019). *Media pembelajaran matematika*. Azizah Publishing.
- Meneses, A., Escobar, J., and Veliz, S. (2018). The effects of multimodal texts on science reading comprehensiofkressn in Chilean fifth-graders: Text scaffolding and comprehension skills. *International Journal of Science Education*, 40(18). DOI: <https://doi.org/10.1080/09500693.2018.1527472>.
- Murcia, K. (2018). Interactive and multimodal pedagogy: A case study of how teachers and students use interactive whiteboard technology in primary science. *Australian Journal of Education*, 58(1), pp. 74-88. <https://doi.org/10.1177/0004944113517834>
- Munthe, B., Herman., Arifin, A., Nugroho, B. S., and Fitriani, E. (2021). Online student attendance system using android. *Journal of Physics: Conference Series*. 1933 012048. <https://doi.org/10.1088/1742-6596/1933/1/012048>
- Ngongo, M., Purba, R., Thao N, V., & Herman. (2022). An application of compositional metafunctions in improving children's ability to learn English through images. *Jurnal Pendidikan Progresif*, 12(3), 1177-1188. <https://doi.org/10.23960/jpp.v12.i3.202214>
- Ngongo, M., Maromon, E., Loba, D., and Herman. (2022). A systemic functional linguistics analysis of text transitivity of Mathew Gospel, New Testament of Kupang Malay. *World Journal of English Language*, 12(5), 188-201. <https://doi.org/10.5430/wjel.v12n5p188>
- Ningsih, M. (2019). Pengaruh perkembangan revolusi industri 4.0 dalam dunia teknologi Pendidikan di Indonesia. *Jurnal Fakultas Komputer*, 1-12. <https://doi.org/10.31219/osf.io/pswmu>
- Nuraini, L. and Ratnawati, D. (2021). Pemanfaatan teknologi augmented reality untuk pengembangan bahan ajar materi komputer jaringan. *Jurnal Edukasi Elektro*, 5(2), 111-119. <https://doi.org/10.21831/jee.v5i2.43517>
- Putro, S. D. R. E., Adi, K. R. and Ratnawati, N. (2021). Pengembangan Media Evaluasi Pembelajaran IPS " MAPS " dengan Game Web Browser Based Learning untuk siswa SMP. *J-PIPS (Jurnal Pendidikan Ilmu Pengetahuan Sosial)*, 8(1), 25-42. <https://doi.org/10.18860/jpips.v8i1.12266>
- Rambe, R. (2019). *Analysis multimodal in school*. Cendekia Press.
- Rovira, M. S., Turro, M. R., Fioretti, R. M. S., & Velilla, M. C. (2015). Multimodal campus project: pilot test of voice supported reading. *Procedia - Social and Behavioral Sciences*, 196 (July 2014), 190-197. <https://doi.org/10.1016/j.sbspro.2015.07.027>
- Sihombing, P. S. R., Herman., & Saputra, N. (2022). How to teach English conversation? An implementation of a multimodal discourse analysis through images. *English Review: Journal of English Education*, 10(2), 431-438. <https://journal.uniku.ac.id/index.php/ERJEE/article/view/6244>
- Silalahi, D. E., Siallagan, H., Munthe, B., Herman, H. and Sihombing, P. S. R. (2022). Investigating students' motivation toward the use of zoom meeting application as

- English learning media during covid-19 pandemic. *Journal of Curriculum and Teaching*, 11(5), 41-48. <https://doi.org/10.5430/jct.v11n5p41>
- Simanjuntak, M.M., Saputra, N., Afrianti, D., Mulyadi, J. and Herman. (2022). Implementing multimodal literacy to improve students' ability in literacy for classroom practice. *Sarcouncil Journal of Education and Sociology*, 1(4), pp 1-5
- Sugiyono (2015). *Metode penelitian dan pengembangan*. Alfabeta.
- Sugiyono (2017). *Metode penelitian kuantitatif, kualitatif dan R&D*. Alfabeta.
- Suryana, N. M. & Indrawati, D. (2018). pengembangan media pembelajaran berbasis permainan tradisional "Geprek Kaleng" untuk menanamkan konsep pecahan siswa Kelas III SD. *JPGSD Surabaya*, 06(03), 219-228. <https://jurnalmahasiswa.unesa.ac.id/index.php/39/article/view/23503>
- Syamsuar, S. & Reflianto, R. (2018). Pendidikan dan tantangan pembelajaran berbasis teknologi informasi di era revolusi industri 4.0. *E-Tech: Jurnal Ilmiah Teknologi Pendidikan*, 6(2). <http://ejournal.unp.ac.id/index.php/e-tech/article/view/101343>
- Trianto (2011) *Desain pengembangan pembelajaran tematik bagi anak usia dini TK/RA & Anak Kelas Awal SD/MI*. Prenada Media Group.
- Vedadi, S., Abdullah, Z. B., and Cheok, A. D. (2019). The effects of multi-sensory augmented reality on students' motivation in English language learning. *IEEE Global Engineering Education Conference (EDUCON)*, 2019, 1079-1086. <https://doi.org/10.1109/EDUCON.2019.8725096>
- Verawati, V. and Desprayoga, D. (2019). Solusi pembelajaran 4.0: hybrid learning. in *Prosiding seminar nasional pendidikan program pascasarjana universitas PGRI Palembang*. 1183-1192. <https://jurnal.univpgri-palembang.ac.id/index.php/Prosidingpps/article/view/2739>