Developing ArVo: Augmented Reality-Based Application to Improve Arabic Vocabulary Mastery

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Abstract

The purpose of this study was to describe: (1) the process and results of ArVo development and (2) the effectiveness of ArVo to improve students' vocabulary mastery at MAN Kota Batu. Learning media could be used to stimulate students' reasoning, interests, emotion, and expertise or skills and could accelerate the development of learning processes. The subjects of this study were the students of class X MAN Kota Batu, and they were also accompanied by material experts, media experts, and subject teachers who played certain roles in achieving research's objectives and quality. This study used 4 data collection techniques, namely observation, interviews, qualitative questionnaires, and quantitative questionnaires with tests. The results showed that the ArVo process and development were carried out based on the 4 data collection techniques, resting upon the ADDIE development model. The effectiveness of ArVo was known based on the assessment results answered by 30 respondents. Such effectiveness indicated an increase in vocabulary mastery and accurate pronunciation.

Keywords: Augmented reality; Arabic vocabulary; vocabulary mastery

Abstrak

Tujuan penelitian ini untuk mendeskripsikan: (1) proses dan hasil pengembangan ArVo dan (2) keefektifan ArVo untuk meningkatkan penguasaan kosakata (*mufrodat*) siswa di MAN Kota Batu. Media pembelajaran dapat digunakan untuk merangsang penalaran, ketertarikan, emosi dan keahlian atau kemahiran peserta didik serta dapat mempercepat perkembangan proses belajar. Subjek penelitian ini adalah siswa kelas X MAN Kota Batu juga disertai dengan ahli materi, ahli media, dan guru mata pelajaran yang berperan untuk mencapai tujuan dan kualitas penelitian. penelitian ini menggunakan 4 teknik pengumpulan data yaitu observasi, wawancara, angket

kualitatif dan angket kuantitatif dengan tes. Hasil penelitian menunjukkan bahwa proses dan pengembangan ArVo dilakukan berdasarkan 4 teknik pengumpulan data yang disebutkan sebelumnya dan disertai dengan model pengembangan ADDIE. Keefektifan ArVo diketahui berdasarkan hasil penilaian yang dijawab oleh 30 responden. Hasil tersebut menunjukkan adanya peningkatan kemampuan penguasaan kosakata dan melafalkannya dengan benar.

Kata kunci: Augmented reality; penguasaan kosakata; bahasa Arab

Introduction

In Indonesia, education has an increasingly important development, especially in terms of technology. In language learning, of course, learning must be created that is different from the media so that learning objectives can be achieved. In line with the development of the digital era based on technology and communication, the use of technology is an essential requirement to improve learning efficiency.[1]

The aids for the teaching and learning process are generally called learning media. Learning media is everything that can be used to stimulate reasoning, interest, emotions, and skills or skills of learners and can accelerate the development of the learning process.[2] Some advantages of visual media, namely making an impression that is more interesting, easy to remember, easy to understand, and increasingly interested in connecting lessons with the real world.[3]

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[1] Rahmat Arofah Hari Cahyadi, "Pengembangan Bahan Ajar Berbasis Addie Model," *Halaqa: Islamic Education Journal* 3, no. 1 (May 25, 2019): 35–42, https://doi.org/10.21070/halaqa.v3i1.2124; Fifit Firmadani, "Media Pembelajaran Berbasis Teknologi Sebagai Inovasi Pembelajaran Era Revolusi Industri 4.0," *KoPeN: Konferensi Pendidikan Nasional* 2, no. 1 (February 13, 2020): 93–97; Thityn Ayu Nengrum, Najamuddin Pettasolong, and Muhammad Nuriman, "Kelebihan Dan Kekurangan Pembelajaran Luring Dan Daring Dalam Pencapaian Kompetensi Dasar Kurikulum Bahasa Arab Di Madrasah Ibtidaiyah 2 Kabupaten Gorontalo," *JURNAL PENDIDIKAN* 30, no. 1 (March 1, 2021): 1–12, https://doi.org/10.32585/jp.v30i1.1190.

[2] Tatta Herawati Daulae, "Langkah-Langkah Pengembangan Media Pembelajaran Menuju Peningkatan Kualitas Pembelajaran," *FORUM PAEDAGOGIK* 10, no. 1 (June 30, 2019): 52–63, https://doi.org/10.24952/paedagogik.v11i1.1778; Ramen A. Purba et al., *Pengantar Media Pembelajaran* (Yayasan Kita Menulis, 2020).

[3] Siti Mahmudah, "Media Pembelajaran Bahasa Arab," *An Nabighoh: Jurnal Pendidikan Dan Pembelajaran Bahasa Arab* 20, no. 01 (June 25, 2018): 129–38, https://doi.org/10.32332/an-nabighoh.v20i01.1131; Siti Maisaroh, Amrini Shofiyani, and Siti Sulaikho', "Pengembangan Media Pembelajaran Smart Snake Dalam Pembelajaran Bahasa Arab," *Al-Lahjah* 5, no. 2 (August 19, 2020): 1–19, https://doi.org/10.32764/lahjah.v5i2.862; Nur Anisah Ridwan and Hanik Mahliatussikah, "Using Nearpod for Teaching Arabic in Kindergarten and Madrasah Ibtidaiyah," *Al-Arabi: Journal of Teaching Arabic as a Foreign Language* 5, no. 2 (December 31, 2021):

Based on interviews with Arabic teachers at MAN Kota Batu, it is known that MAN Kota Batu is one of the schools that implement Android-based learning, especially in Arabic subjects. The learning media used in class X when offline and online is not much different. Based on the observations of researchers during offline and online learning, Arabic teachers use auxiliary media in the form of androids to access the subject matter through YouTube videos.

Good vocabulary mastery will help learners master Arabic. On the other hand, very limited vocabulary skills greatly hinder the mastery of Arabic. In the experience of speaking Arabic, it can be felt that vocabulary is a very important Arabic material. The reality in the field (madrasah) is that there are still many students who are less able to understand texts or even simple Arabic sentences. When asked why they did not speak Arabic or did not understand the Arabic text, the majority answered that they did not know the meaning (they did not know the meaning of the vocabulary). This shows that their mastery of vocabulary is still weak.[4] The facts in the field, from interviews with Arabic teachers at MAN Kota Batu, show that students are currently lacking practice and applying new vocabulary in Arabic learning, and the capacity for acceptance and understanding is still very limited, hence learners easily forget about the new vocabulary received.

Vocabulary functions as a key element that supports learning Arabic. The addition of vocabulary is a must in learning a foreign language as well as developing a language that can be fluent in languages such as Indonesian. Students are helped to understand Arabic through a large and good vocabulary, as well as being helped when writing, speaking, and reading Arabic well. Although many movements have been carried out, including one in schools or institutions, especially institutions with Islamic nuances to encourage the development of Arabic, there are still many students who are inadequate in mastering Arabic.[5]

The selection of the right learning media will be effective for students so the selection of media in the learning process must be based on and adapted to

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142–55, https://doi.org/10.17977/um056v5i2p%p.

[4] Norbert Schmitt, "Understanding Vocabulary Acquisition, Instruction, and Assessment: A Research Agenda," *Language Teaching* 52, no. 2 (April 2019): 261–74, https://doi.org/10.1017/S0261444819000053; Subur Subur, "Pembelajaran Kosakata Arab Pada Siswa Madrasah Aliyah Di Kabupaten Banyumas," *INSANIA : Jurnal Pemikiran Alternatif Kependidikan* 26 (September 17, 2021): 111–23, https://doi.org/10.24090/insania.v26i1.4666.

[5] Helmi Kamal, "The Influence of Online Game on the Learners' Arabic Vocabulary Achievement," *Jurnal Al Bayan: Jurnal Jurusan Pendidikan Bahasa Arab* 13, no. 1 (February 3, 2021): 16–31, https://doi.org/10.24042/albayan.v13i1.7339; Nuril Mufidah & Intan Izha Rohima, "Pengajaran Kosa Kata Untuk Mahasiswa Kelas Intensif Bahasa Arab: Vocabulary Teaching For Arabic Intensive Class," *Uniqbu Journal of Social Sciences* 1, no. 1 (August 14, 2020): 13–24, https://doi.org/10.47323/ujss.v1i1.7.

certain characteristics and conditions of the communication and learning process[6]. When receiving a message, the more senses they have, the easier it is to remember and absorb what they have learned.

One way to activate student participation is through the use of technology-based learning media by getting direct experience and triggering students' interests in learning. The foregoing to some extent can be helped by the utilization of Android-based Augmented Reality learning media.[7] Augmented Reality (AR) is an application that brings together two different dimensional sources of virtual objects and visualizes them in real time to the user. The Augmented Reality application works on the android platform where this application prioritizes video streaming from the cellphone camera as an input source, then tracks and senses the marker using a tracking system, when the marker is detected, a 3D image will appear above the marker as if it were an image.[8]

Augmented Reality is an additional reality that can complement reality, unlike Virtual Reality which replaces reality completely. Augmented Reality helps inanimate objects appear alive using cameras that can be accessed on a computer or smartphone with the help of markers.[9] The use of Augmented Reality today, can improve various aspects of life, especially the world of education, and will improve the quality of education.[10]

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[6] Rudi Haryadi and Hanifa Nuraini Al Kansaa, "Pengaruh Media Pembelajaran E-Learning Terhadap Hasil Belajar Siswa," *At- Ta'lim : Jurnal Pendidikan* 7, no. 1 (February 13, 2021): 68–73, https://doi.org/10.36835/attalim.v7i1.426; Rusli Rusli, "Peranan Media Pembelajaran Dalam Proses Belajar Mengajar Pada Kelas VI SD Negeri 27 Buton," *SYATTAR* 1, no. 2 (May 31, 2021): 123–30.

[7] Tasneem Khan, Kevin Johnston, and Jacques Ophoff, "The Impact of an Augmented Reality Application on Learning Motivation of Students," *Advances in Human-Computer Interaction* 2019 (February 3, 2019): e7208494, https://doi.org/10.1155/2019/7208494; Andriyani Zahra, "Pengembangan Media Pembelajaran Lingkaran Menggunakan Augmented Reality Berbasis Android Bagi Siswa Tunarungu Development Learning Media Of Circle Using Android-Based Augmented Reality For The Deaf Students," *Math Didactic Jurnal Pendidikan Matematika* 7 (September 27, 2021): 170–85.

[8] Eko Suharyanto, "Pengembangan Aplikasi Augmented Reality Berbasis Android Untuk Pengenalan Hewan Endemik," *Jurnal Ilmu Komputer* 4, no. 2 (December 8, 2021): 33–37.

[9] Erliana Dewi, Dwi Setyowati, and Harmastuti, "Penerapan Teknologi Augmented Reality Dengan Metode Marker Based Pada Aplikasi Pengenalan Jurusan Resiskom Berbasis Android," *Jurnal Teknologi* 14, no. 2 (December 9, 2021): 122–31, https://doi.org/10.3415/jurtek.v14i2.3688.

[10] Nurul Hidayati, "Designing the Arabic Crossword Puzzles for the First, Second, and Third Grade of the 'Mambaul Ulum' Islamic Elementary School Malang," *Al-Arabi: Journal of Teaching Arabic as a Foreign Language* 4, no. 2 (December 31, 2020): 245–58, https://doi.org/10.17977/um056v4i2p245-258; Indria Wahyuni et al., "Pendidikan Konservasi Masyarakat Melalui Pengembangan Media Mangrove Berbasis Augmented Reality (AR)," *BIODIDAKTIKA: Jurnal Biologi dan Pembelajarannya* 16, no. 2 (July 30, 2021), https://jurnal.untirta.ac.id/index.php/biodidaktika/article/view/12868.

Until now, still very few studies have discussed the application of Augmented Reality applications in learning Arabic. The results of existing research such as Hashim (2021) and Abdullah (2013) only focus on application development without additional features such as pronunciation. In Fauzan's study (2020) 3D images displayed were less interactive and were not equipped with pronunciation features.[11] Android-based Augmented Reality Media is an innovation in Arabic education to provide a new experience in learning Arabic vocabulary that will have an impact on increasing students' interest in the importance of basic vocabulary to be able to understand Arabic texts.

On this basis, researchers made a breakthrough to create an ArVo (Arabic Vocabulary) application to improve the mastery of Arabic vocabulary. The breakthrough is an augmented reality-based application. Researchers are trying to provide breakthroughs in the form of features that can be used to develop a vocabulary treasury of Arabic. With this kind of means, it is hoped that both can be achieved so that no one thinks that learning Arabic is difficult. Based on the description in the background, it can be formulated the formulation of the problem as follows 1) How is the development of Arabic Vocabulary with the concept of Augmented Reality-based applications to improve the mastery of Arabic vocabulary? 2) How does the development of Arabic Vocabulary affect the concept of Augmented Reality-based applications to improve the mastery of Arabic vocabulary?

The aim of the research and development was to produce the Augmented Reality-based teaching materials that focus on learning vocabulary for class X Madrasah Aliyah Negeri (MAN) Kota Batu. The development used the ADDIE form developed by Branch (2009). The selection of the ADDIE form was based on the consideration that the form had been developed systematically and based on learning design theory. The steps in the form of ADDIE consisted of 5 steps, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation (Branch, 2009). Researchers adapted the five steps of research and development as follows:

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[11] Habib Abdullah, "Augmented reality untuk pembelajaran bahasa Arab menggunakan polygonal modeling approach" (undergraduate, Universitas Islam Negeri Maulana Malik Ibrahim, 2013), http://etheses.uin-malang.ac.id/7700/; Ady Fauzan, Dihin Muriyatmoko, and Shoffin Nahwa Utama, "Penerapan Teknologi Augmented Reality pada Media Pembelajaran Bahasa Arab: Durus Al-Lughah Jilid 1," *ELSE (Elementary School Education Journal) : Jurnal Pendidikan dan Pembelajaran Sekolah Dasar* 4, no. 1 (February 27, 2020): 63–78, https://doi.org/10.30651/else.v4i1.4379; Mochamad Hasyim et al., "Implementasi Teknologi Augmented Reality Sebagai Media Pembelajaran Bahasa Arab Berbasis Android Menggunakan Metode Markerless Tracking," *Explore IT! : Jurnal Keilmuan Dan Aplikasi Teknik Informatika* 13, no. 1 (June 30, 2021): 28–34, https://doi.org/10.35891/explorit.v13i1.2684.
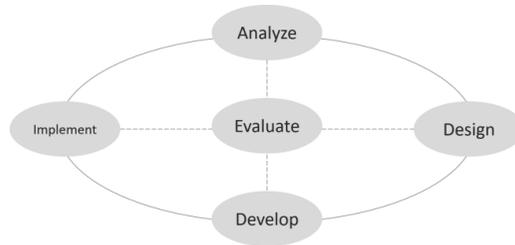
Figure 1. Stages of the ADDIE Model (Branch, 2009)

This research was carried out in the phases of (1) analysis, to find out the needs of students. This stage analyzed the curriculum, media, and learning strategies; (2) design, which was carried out by designing application methods and strategies that were easily understood by users based on the results of problem analysis and analysis of software and hardware requirements; (3) development, carried out by making learning media in the form of applications and product validation. After the product manufacturing process was complete, then the product was validated by material experts and media experts to obtain input to improve the product; (4) implementation, carried out by testing learning media in the form of the ArVo application to find out the responses of students and teachers. Implementation was carried out to grade X students of MAN Kota Batu as research subjects; and (5) evaluation, carried out to perfect the developed product, based on the results of field trials. An evaluation was also carried out on the responses of students and teachers to the developed learning media.

The evaluator subjects in this research included material experts who play a role in providing an assessment of the suitability of the material and the feasibility of the material in accordance with the curriculum and media experts who play a role in providing an assessment of aspects of media layout, display design, and operations. The subject teacher acts as a source of information for the initial study of this research, while the class X students of MAN Kota Batu play an important role as the subject of the implementation of ArVo development. All research subjects were selected to achieve the objectives of the research and to reach good research quality. The data were collected from 4 data collection techniques, namely observation, interviews, qualitative and quantitative questionnaires with tests. Observations and interviews were used as a first step before developing teaching materials and learning media. At the same time, questionnaires and tests were used as tools to collect quantitative data regarding the effectiveness of the developed product.

The instrument used in this research was a student needs analysis questionnaire and an assessment questionnaire by material expert validators and media experts using questionnaires and suggestions. The assessment aspect questionnaire was adapted by BSNP (2007), Krismasari (2015), Susilana (2008),

and Sungkono (2013), namely content feasibility, language feasibility, presentation feasibility, and graphic feasibility. The questionnaires were described in several questions (Huda, 2017). The validation results were analyzed using a Likert scale with the following formula:

$$\% = \frac{n}{N} \times 100\%$$

Information:

n = Empirical score (score obtained)

N = Number of ideal scores (number of questions x highest score)

% = Success rate achieved

Table 1. Descriptive Eligibility Criteria according to Likert

No	Criteria	Validation Level
1	85,01 % - 100,00 %	Very valid, can be used without revision
2	70,01 % - 85,00 %	Sufficiently valid, can be used but needs minor revision
3	50,01 % - 70,00 %	Less valid, it is recommended not to use it because it needs major revision
4	01,00 % - 50,00 %	Invalid, should not be used

Research Result and Discussion

The description of the research results includes (1) the process and results of ArVo development and (2) the effectiveness of ArVo in improving students' vocabulary mastery at MAN Kota Batu. In this study, the model used is the ADDIE model, so the concept of ArVo development refers to the stages of the ADDIE model.

Analysis

Learning Arabic in class X IPS 2 and X IPS 3 MAN Kota Batu is carried out through online and offline media using power points and e-learning videos. Based on the google forms questionnaire that has been filled out by 190 students, the students have difficulty knowing the meaning of vocabulary and knowing the proper pronunciation of vocabulary.
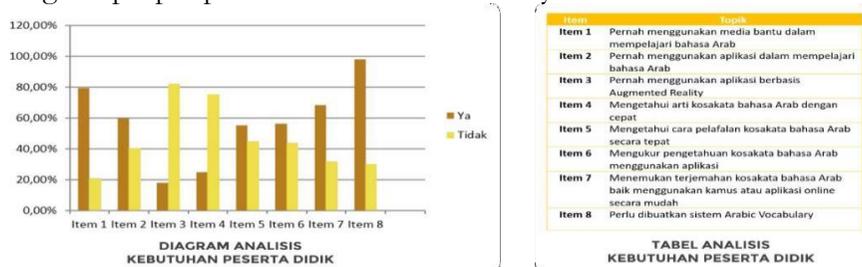

Figure 2. Diagram of Student Needs Analysis

The results of the researcher's interview with Arabic teachers at MAN Kota Batu related to the teaching of Arabic subjects show that students are currently lacking practical activities and applying new vocabulary in Arabic learning, and the capacity of acceptance and understanding is still very limited so that learners easily forget about the new vocabulary that is Accepted.

The curriculum used in Arabic subjects is the KMA curriculum (Minister of Religion Decree) number 183 of 2019. The teaching book used in Arabic subjects is a book published by the Ministry of Religious Affairs of the Republic of Indonesia. The material provided by the teacher is displayed in videos downloaded from YouTube and E-Learning.

After conducting interviews with subject teachers, researchers followed the learning process in classes X IPS 2 and X IPS 3. Based on observations during the teaching and learning process. The condition that some learners are bored, less attentive, and less motivated to learn can be caused by the lack of interactive media delivered.

Based on the results of the needs analysis conducted through interviews and observations, it obtains the following preliminary conclusions:

1. The textbook used is a book published by the Ministry of Religious Affairs of the Republic of Indonesia.

2. The educational media used so far is only limited to playing videos that can be downloaded on YouTube and power points that can be downloaded at E-Learning.

3. Lack of interactive media as support in learning.

Design

At the design stage, materials are prepared based on the results of the needs analysis. Three activities were carried out during this stage, namely (1) the selection of material according to the demands of the ability to be achieved, (2) application strategy, and (3) exercises. The results of the design phase were application design and vocabulary preparation and practice questions. The design of the application that has been set has been adapted to the class X Arabic learning curriculum at MAN Kota Batu. Vocabulary material is classified based on the sequence of teaching materials and then arranged using Ms. Word, each vocabulary consists of a three-dimensional image, the meaning of the vocabulary, and the pronunciation of the vocabulary. After the material is compiled in Ms. Word, the material is rearranged and attractively designed by application developer services.
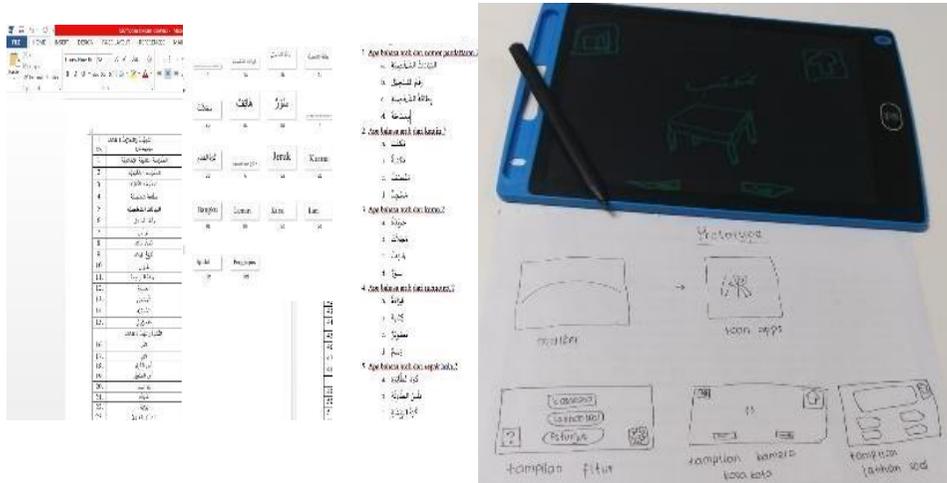
Figure 3. Application Design and Vocabulary Compilation

Development

After completing the preparation, the researcher conducted and designed the application, and then the researcher conducted expert validation of the material online, namely by sending files and questionnaires (Ms. Word) uploaded to Google Drive via WhatsApp. The Arabic material in the application is validated by Dr. Moh. Ahsanuddin, S.Pd., M.Pd. The validation includes the feasibilities of content, language, and presentation.

Table 2: Results of material expert validation

No	Aspect	Percentage	Description
1	Content Eligibility	91%	Very Valid
2	Language Eligibility	89%	Very Valid
3	Presentation Eligibility	93%	Very Valid

Figure 4. Application Audio Recording Process

At the development stage, the researchers recorded audio applications

by students majoring in Arabic literature and materials management and created application software that contains Augmented Reality features, exercises, instructions, and about; by application development services.
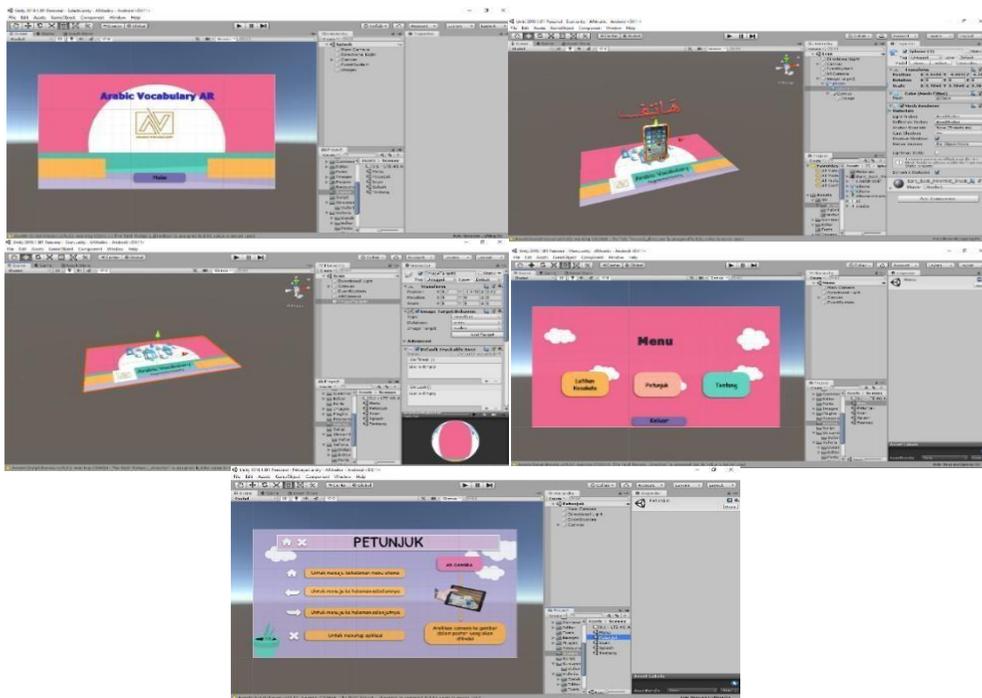

Figure 5. Processing Applications

Media expert validation is carried out online, namely by sending files and questionnaires (Ms. Word) uploaded to Google Drive via WhatsApp. The media of the ArVo application was validated by an Expert Lecturer of Arabic Learning Media Dr. Moch. Wahib Dariyadi, M.Pd includes presentation feasibility, language feasibility, and graphic feasibility.

Table 3: Media expert validation results

No	Aspect	Percentage	Description
1	Presentation Eligibility	91%	Very Valid
2	Language Eligibility	95%	Very Valid
3	Graphic Eligibility	91%	Very Valid

Implementation

Implementation of learning media ArVo application by testing the application to class X MAN Batu City with the number of respondents 30 students. At this stage, it can be seen that there are differences in the conditions of respondents who learn vocabulary without using the ArVo application with the condition of respondents who learn vocabulary using the ArVo application. The test is divided into a control class and an experimental class with sample

characteristics that are in accordance with the minimum completeness criteria value of 78 with different test results indicating a difference so that the ArVo application can have a positive influence on students. The condition of students before using the application is that they have not been able to remember vocabulary and the pronunciation of vocabulary is less precise. After using the ArVo application, students can easily remember vocabulary with the correct pronunciation. Based on the results of the trial with the average learning outcomes of the control class 55 and the experimental class 90. The following table of test results has been classified by level.

Table 4: The results of the trials conducted on the group of independent variables and dependent variable group

Control Class	Experimental Class
65	80
55	90
60	90
40	100

H0 : hasil penelitian tidak ada perbedaan
H1 : hasil penelitian ada perbedaan

t-Test: Paired Two Sample for Means

	40	100
Mean	60	86,66667
Variance	25	33,33333
Observations	3	3
Pearson Correlation	-0,86603	
Hypothesized Mean Difference	0	
df	2	
t Stat	-4,4376	
P(T<=t) one-tail	0,023607	
t Critical one-tail	2,919986	
P(T<=t) two-tail	0,047214	
t Critical two-tail	4,302653	

t hitung -4,4376
t tabel 3,182446
t hitung < t tabel H0 ditolak menandakan adanya perbedaan

Figure 8: The results of the difference test

Evaluation

Based on the results of the application of learning media the ArVo application can assist in the teaching and learning process. This is evidenced by students who know Arabic vocabulary and can pronounce it.

The results of material expert validation, the ArVo application got a value of 93.18% which indicated that the application was valid to be used as an application for learning Arabic for class X MA students. In the next development, the validator asked to correct the mistakes in writing Arabic vocabulary. The results of media expert validation, the ArVo application got 95.31% results which indicated that the application was valid to be used as an application for learning Arabic for class X MA students. For further development, the validator asks to complete the application's instructions for use so as not to confuse users. The results of the teacher's response were that it

was found that ArVo was the learning media desired by the teacher. This application provides many changes for class X MAN Batu City students. The Arabic language learning media used in the classroom is not enough, because in reality when meeting outside the classroom students have forgotten the vocabulary and correct pronunciation. The teacher is very supportive and hopes that this research can be used in Madrasah Aliyah throughout Indonesia. The condition of students when they have not used the ArVo application is that it is difficult to find vocabulary and know the pronunciation of vocabulary correctly. After using this application, students can find vocabulary quickly and know the pronunciation of vocabulary correctly.

Discussion

The ArVo application has been developed using the ADDIE model which includes five steps, namely: (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation (evaluation).

The analysis stage is the first step of the ADDIE model. At this stage, the researchers conducted a needs analysis in two ways, namely conducting field studies in the form of interviews and observations conducted at MAN Kota Batu. Needs analysis aims to determine the responses and needs of students' learning media related to Augmented Reality technology. The most appropriate learning media if its existence is necessary and can be a medium for disseminating or learning information 12. Based on the google forms questionnaire that has been filled out by 190 students, shows that students have difficulty knowing the meaning of vocabulary and knowing the proper pronunciation of vocabulary. The results of Falah's research (2021) state that vocabulary is considered important in the process of learning a language or developing one's ability to speak fluently. It is necessary to have the right Arabic vocabulary learning method so that the vocabulary needs in Arabic learning are met 13. So that through Google Forms, researchers know the current needs of students.

The second stage is planning, in this stage, 3 things have been done, namely (1) selection of material according to the demands of the ability to be achieved, (2) application strategy, and (3) training. The framework of the application content is defined in this stage. Furthermore, the learning media strategy is determined so that the application is easy to learn and understand by

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12 Budiyono Budiyono, "Inovasi Pemanfaatan Teknologi Sebagai Media Pembelajaran Di Era Revolusi 4.0," *Jurnal Kependidikan: Jurnal Hasil Penelitian Dan Kajian Kepustakaan Di Bidang Pendidikan, Pengajaran Dan Pembelajaran* 6, no. 2 (July 4, 2020): 300–309, https://doi.org/10.33394/jk.v6i2.2475.

13 Miftahul Falah, "Pembelajaran Kosa Kata Untuk Meningkatkan Pemahaman Bahasa Arab Siswa MTs Swasta Fajrul Iman Patumbak," *Taushiah: Jurnal Hukum, Pendidikan Dan Kemasyarakatan* 11, no. 1 (2021): 93–106.

users.

The development stage is the third stage of the ADDIE model. This stage requires extra time because it is the core stage that includes the development of learning media for the ArVo application. Typing, searching, and creating required illustrations, setting, and editing application layouts. At this stage, validation activities are carried out by material experts and media experts. The ArVo application learning media has advantages, namely (1) Easy to use on Android without the internet, so students can use it anytime anywhere and anytime, (2) this media has instructions for use, interesting icons, and animations so that students are entertained while studying and (3) is equipped with practice questions. However, this media has several drawbacks, namely, it does not have a word marker and students still cannot choose the chapter or subject they want to learn.

The fourth stage is development which is piloted in class. The implementation consisted of 30 students consisting of 15 students of class X IPS 2 and 15 students of class X IPS 3. Class X IPS 2 was a control class by learning Arabic vocabulary using conventional media while class X IPS 3 was an experiment by learning vocabulary using ArVo application learning media. After using the learning media, students are asked to do practice questions to measure vocabulary understanding. Mastery of vocabulary plays an important role in learning because students' Arabic learning obstacles are caused by not having a large vocabulary and students being less enthusiastic about learning Arabic.[14]

The final stage of the ADDIE model is evaluation. The evaluation results obtained in the research on the development of Augmented Reality-based Arabic learning media include a. The results of material expert validation, the ArVo application got a value of 93.18% which indicated that the application was valid to be used as an application for learning Arabic for class X MA students. In the next development, the validator was asked to correct the mistakes in writing Arabic vocabulary. b. The results of media expert validation, the ArVo application got a result of 95.31% which indicated that the application was valid to be used as an application for learning Arabic for class X MA students. For further development, the validator asks to complete the application's instructions for use so as not to confuse users. c. The results of the teacher's response were that it was found that ArVo was the learning media desired by the teacher. This application provides many changes for class X MAN Batu City students. The Arabic language learning media used in the classroom is not enough, because in reality when meeting outside the classroom students have forgotten the vocabulary and correct pronunciation. The teacher

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[14] Muh Haris Zubaidillah and Hasan Hasan, "Pengaruh Media Kartu Bergambar (Flash Card) Terhadap Penguasaan Kosakata Bahasa Arab," *Al Mi'yar: Jurnal Ilmiah Pembelajaran Bahasa Arab dan Kebahasaaraban* 2, no. 1 (April 14, 2019): 41–56, https://doi.org/10.35931/am.v2i1.90.

is very supportive and hopes that this research can be used in Madrasah Aliyah throughout Indonesia. d. The condition of students when they have not used the ArVo application is that it is difficult to find vocabulary quickly and know the pronunciation of vocabulary correctly. After using this application, students can find vocabulary quickly and know the pronunciation of vocabulary correctly.

Conclusion

The results of the ArVo application research are that this system can detect objects that have been marked, the system determines the appropriate Arabic translation, can mention examples of Arabic pronunciation, can provide Arabic grammatical material features, and can provide Arabic grammatical practice features. The ArVo application product was developed using the ADDIE model which has gone through a long process. The components in the application consist of the splash screen page, the main page, and the Augmented Reality (AR) display page. Implementation is carried out by application testing, namely some groups use the application and groups that do not use the application with different test results showing differences so that the ArVo application can have a positive influence on students. From the results of this study, it is recommended to improve further research, further development needs to be carried out by determining the right device, more detailed computing, making applications or websites as an interface between the user and the main database, and expanding the research subject.

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