Development of Educandy Platform as an Educational Game to Improve Arabic Language Learning Achievement

Melisa Rezi[1], Jacob Quintana[2], Walker Dominic[3], Liu Darius[4]

Universitas Islam Negeri Imam Bonjol Padang, Indonesia
E-mail: melisarezi.fah@uinib.ac.id
Pontifical Catholic University of Peru, Peru
E-mail: jacobquintana@gmail.com
University of Novi Sad, Serbia
E-mail: walkerdominic@gmail.com
Ateneo de Manila University, Philippines
E-mail: liudarius@gmail.com

Corresponding author: Melisa Rezi

Abstract— **Game-based learning is certainly very favored by students, especially nowadays games in learning do not need to be done in the classroom using a cellphone. One application that can be developed to improve student achievement is the Educandy platform. The purpose of this research is to develop the Educandy platform as a learning media in improving Arabic language learning achievement. The method used in this research is research and development method with ADDIE model. The results of this study indicate that the Educandy platform is able to improve student achievement so that students are happy in learning Arabic. The conclusion of this study can be seen that the use of the Educandy platform as an educational game in learning Arabic can support the learning and teaching process. The limitation of this research is that researchers only make Arabic language games at the junior high school level so that the game cannot be developed as a whole, for that the researcher hopes that the next researcher can do the same research and be practiced at boarding schools where there is more knowledge about Arabic lessons.**

I. INTRODUCTION

In this era of global technological advancement, it has impacted many components of life, both politically, economically, culturally, arts and education (de Reuver et al., 2018). Technological progress is closely related to scientific progress, so evolution over time is inevitable in life (von Uexkull & Buhaug, 2021). In the field of education, technology has a significant impact where in science students are taught about natural phenomena and facts, and technology allows people to use it in science (Korol et al., 2021). Technology can help everyone around the world, to perform the daily activities that people do at work and in education (Saleem et al., 2019). Technology is included in the scope of science and is used to develop systems contained in online media. This technology is used to create network-

installed tools or applications to help or facilitate people's daily activities (Kobayashi et al., 2019). With the development of increasingly modern technology, technology is also increasingly advanced and sophisticated. So that schools can also improve the learning media available to create worksheets/assessments for students when completing assignments by applying various technologies (Mahdavinejad et al., 2018). During this time, technological developments are increasingly advanced, and all parties in the world of education must be able to balance and keep up with existing technological advances. We found that the influence of the environment on technology is strongly supported by the availability of the internet network. This can have implications for other development (Hussain et al., 2018), especially in the field of Education (Scherer et al., 2019) In the world of education, the internet is used as a support for learning media (Greenhow et al., 2009). Education needs to improve schools and educational progress through positive innovation (Lortie-Forgues & Inglis, 2019). Therefore, many believe that technology makes things easier, more effective, and more convenient. (S. Li et al., 2018) From children to adults, there is no age limit in the use of technology (Lawton et al., 2019).Schools are expected to keep up with significant technological developments by providing electronic tools that support the learning process (Dwivedi et al., 2021). Good and complete facilities and infrastructure ensure that learning activities are carried out effectively and efficiently so that students can find a conducive and pleasant learning environment.

The success of the educational process is the main goal when implementing education in schools (Alqahtani & Rajkhan, 2020). Dalam proses pendidikan, aspek utama adalah guru dan siswa (Carless & Boud, 2018). Agar proses In order for education to be successful, teachers must guide students to the formation of knowledge in accordance with the structure of the subjects they study (Strelan et al., 2020). The use of media in education is one of the efforts to achieve this goal. Because the advantages of media, along with the development of technology and information, is an increase in success in conveying information and attitudes (Garzón & Acevedo, 2019). Multiple learning environments for platform learning activities can increase student engagement in learning (de Reuver et al., 2018). The learning environment is an element of teaching and learning that plays an important role in learning. Using technology and social media is the right and most reliable way to spread social media (H. Li et al., 2018). Learning media can be created only with Educandy, but also from other platforms (Kiili, 2005). Especially in Arabic language learning, Arabic language learning becomes more interesting when presented in the form of quizzes and puzzles with Android applications (Elnagar et al., 2020). Teachers should consider this when using media in all educational activities (Basar et al., 2019). Therefore, teachers must know and master teaching tools before distributing them to students.

Educational media refers to the communication and interaction between teachers and students (Makransky et al., 2019). Media is used intentionally so that learning takes place well and consistently. Two-way communication between teachers and students is necessary to achieve certain goals or competencies developed by the school (Young et al., 2018). Media has various aspects in the student's environment and can stimulate student learning (Wang et al., 2020). With the advancement of science and technology, educational media is also developing (Korol et al., 2021). Based on the explanation above, it can be concluded that communication is essentially a mediator that connects learning media between teachers and students through an interactive process (Théry et al., 2018). Education is also a communication process, so educational media is a means of communication (Lortie-Forgues & Inglis, 2019; Wang et al., 2020). In the world of education, especially in the education process, communication is very important (Huang et al., 2019). Because without communication there can be no reciprocal relationship between teachers and students (Elgrishi et al., 2018). Teachers and students are expected to develop a communicative relationship with each other, and communication is essential for successful learning.

Learning media is an important part of the learning system (Kamilaris & Prenafeta-Boldú, 2018). Using the learning environment can facilitate and plan the teaching and learning process (C. Zhang et al., 2019). because the material taught by the teacher must be in accordance with the learning environment. In addition, teachers must match the media used for student understanding so that learning occurs optimally (Elgrishi et al., 2018).

The purpose of learning media is to enhance students' creativity and performance in learning methods (Bers et al., 2019). Each student has different characteristics to understand and digest the material delivered by the teacher (Anderson & Dron, 2011). Educational media is an important benefit for teachers and students, because the existence of educational media can facilitate student and teacher learning so that the desired goals are achieved (Bond et al., 2018). The learning environment must evolve with the times. Therefore, learning always requires teachers to update the learning environment for the progress of their students. The way to use the Educandy application is to click www.educandy.com then select sign in and select register under the box Next click create your first activity then open the email, click the inbox and click the message from Educandy after it opens, click the one as given the red box in the picture above. Enter the new password, then click reset password. Then return to the educandy page. Here there are three choices of game types that we can create, namely words, matching pairs, and quiz questions. This time the researcher will explain the tutorial for making a matching game. Please click matching pairs. In number one fill in the name of the subject, for example Arabic, in number two fill in the title of the quiz. Next, in number one, fill in the question. In number two fill in the answer. Then the third step is to click add pair. Then scroll down until you find the section as shown above. To try playing the game that has been made please click one of the images. After it is deemed appropriate, then please share the game link with students.

This gives the teacher an additional burden to present the lesson in a way that engages students (Korol et al., 2021). The solution to overcome these problems is to use media that can increase student motivation and learning outcomes (Theobald et al., 2020). Educandy is a web-based application used to create quizzes. Everyone has access to create or play these quizzes. The slogan "making learning sweeter" educandy screen is made with sweet colors to look happy. Educandy has three main game features: words, matching pairs and quiz questions (Nurjanah et al., 2022). However, these three functions can be transformed into several other types of games such as word search, hanger, anagram, space and cross, crossword, matching, memory and multiple choice. This game can be useful for students to reduce boredom in learning

(Hu et al., 2018). Educandy is an online educational game that allows teachers to create quizzes (Kiili, 2005). Educandy has 3 main game features which are words, matching pairs and quiz questions. Teachers can create three game functions for several game types, such as word search, hangman, anagram, space and cross, crossword, matching, memory and multiple choice. Education can be applied in subjects such as Arabic, English and Civics (Hussein et al., 2019). Students can complete this Educandy quiz using a mobile phone, laptop or computer, so it is very practical and can increase student learning motivation.

This media can be designed to enhance group learning activities and involve students actively in the design of the quiz (Hussein et al., 2019). The low ability and skills of students greatly affect the learning outcomes of students. This requires teachers to innovate in the production of learning media in order to quickly overcome the problems and difficulties that arise today (Young et al., 2018). As a solution to this problem, the provision of interactive learning is needed (Liao et al., 2019). With the need for learning media that dances and is easy to use for everyone, researchers are therefore interested in conducting research related to interactive learning media that can be used for learning (Garzón & Acevedo, 2019). Using the Educandy platform can create useful dialogs for students (Mozaffari et al., 2019). Educandy is an application that can be used both as a learning medium and as an interesting assessment tool for online learning students (S. Zhang et al., 2020). The Educandy app is perfect for classroom use. Based on previous findings, Educandy is a word game app that can be played by everyone, including students, because Educandy's features are easy to us (Radianti et al., 2020). Other findings show that educational games are very effective in improving student learning outcomes (Subhash & Cudney, 2018). It is concluded that the Educandy app can help increase the enthusiasm for learning in students. The colorful screen can also arouse students' interest in playing games while learning. So that it will cause student motivation to learn and facilitate student understanding of the material provided, and students can achieve high learning outcomes.

(Ulya, 2021) Teachers can design and create question banks related to the material taught in lectures to be reused later when teachers make

assessments, quizzes or exercises. Interesting and interactive assessments are very helpful to increase students' interest and enthusiasm in dealing with questions. The use of online quizzes to learners is expected to increase learning motivation, so that students acquire material in such a way that it is expected that their learning outcomes are good, because the training provided is suitable for using for learning. Like quizzes are not boring. Since the quiz contains a lot of word games, this study material is suitable for learning Arabic (Al-Zoubi et al., 2018). Educandy can be used as a tool to capture students' attention during distance learning. Educandy can also be played individually, duel against the computer or duel with friends, all of which can be customized to suit your needs.

This research seeks to revisit the development of the Educandy platform as a student learning enhancement for Arabic language learning in schools. Educandy is an application that can be used to create interactive learning media. We hope that this research can improve student achievement in learning, improve student grades, make learning Arabic more fun and not boring students. This application can be accessed through smartphones making it easier for students to work through worksheets / quiz-based assessments or questions in this application. On the Educandy page there are also examples of the teacher's work, so that even beginners can get an idea of what the work will be like. Educandy educational game can be defined as a web application used to create fun trivia games. This web application is suitable for increasing students' interest in learning.

II. RESEARCH METHODS

The educandy platform as an educational game is an educational game to improve student achievement in learning Arabic (Castro & Tumibay, 2021). The Educandy platform was developed in accordance with research procedures that apply the development method (Research and Development) with the ADDIE model (Trust & Pektas, 2018). At this stage, researchers obtain information through observation and structured interviews (Baharuddin, 2018). Observation by directly seeing the Arabic language learning process using the educandy platform so that students feel comfortable and not easily bored during learning (Kim et al., 2020). Furthermore, interviews were conducted and finally

the theoretical basis. When developing the Educandy Platform as an educational game for learning Arabic which is able to motivate students that in the process of learning Arabic they can also play using the Educandy Platform (Nurjanah et al., 2022). The development model is an activity carried out by researchers to obtain relevant research results as expected, based on the explanation above, researchers apply the following development steps:

Stage	Activity
Analysis	Analysis is the element of gathering data about what is needed. Here teachers will gather every possible piece of information they can before they consider the next step in the process.
Design	Designing learning objectives, tasks and assessment criteria
Development	This development step will be carried out by creating and combining the material content that has been made in the design step. At this stage teachers will create storyboards, write the content and create the graphics needed in the learning that will be given to students.
Implementation	Focus on objective achievement
Evaluation	Evaluation is used to measure how well the learner meets the objectives set out in the material that has been given to the learner.

This research model is systematic in developing learning. ADDIE model research was developed for educandy platform-based learning media in several ways (1) analysis, at this stage an analysis was carried out on how much interest students have in learning Arabic (2). Planning, at this stage the initial planning of learning is carried out, such as a questionnaire of students' responses and designing the learning process, (3) development, at this stage a practicum module is developed (4) implementation, at this stage testing the media to be developed to students (5) evaluation, this stage aims to evaluate the learning outcomes of the previous stages, as well as provide conclusions on the media that has been developed. The research was conducted at State Junior High School 1 Lubuk

Alung in October 2022. The subjects and objects of this research are media validators, materials, language, educators, and students. The research is aimed at the feasibility of Educandy Platform learning media to determine the ability of students in learning Arabic. Data collection techniques in this study used non-participant observation techniques, researchers were not on site to directly examine students in Madrasah, and media feasibility test questionnaires, materials, language were carried out by distributing questionnaires to students with the aim of knowing the response of students to the development of media developed.

III. RESULT DISCUSION

This study uses the ADDIE model which is used to analyze the development of the Edycandy platform as an achievement enhancer for students in Arabic language learning at school. This study was prepared to fulfill the UTS assignment for the Learning Media course. It is developed and made in the form of an assessment of improving student achievement in Arabic language learning at school. In addition, researchers conducted a learning media analysis by creating learning media on the Educandy platform using quiz templates as the learning media used. The learning media created using the quiz template on the Educandy platform is effective and Equipped with attractive images to encourage efficient learning. That's what students need. This educandy platform is interactive. This learning media is analyzed by filling three validation questionnaires: media, application, and language validation. Based on the development of the Educandy platform to increase student achievement for Arabic language learning at school, the results of the media, material and language feasibility tests on the learning media are as follows:

Media Feasibility Validation Sheet

The results of the media expert experiment were used to verify the feasibility of the media under study to find deficiencies in Educandy media made by researchers as Arabic language learning media. The data obtained in this study consisted of students. Evaluation or data collection from the results of the Media Feasibility Check Sheet in the form of Educandy Learning Media evaluation. Validation of the assessment by students is done by filling out a questionnaire. The purpose of this research is to get learning media that is easy for students to find the desired vocabulary and suitable

for use. Therefore, researchers provide suggestions for improvement. Data on the results of Educandy media research on the media feasibility validation sheet can be seen in the table below.

feasibility tests on the learning media are as follows:

Media Feasibility Validation Sheet

The results of the media expert experiment used to verify the feasibility of the media under study to find deficiencies in Educandy media made by researchers as Arabic language learning media. The data obtained in this study consisted of students. Evaluation or data collection from the results of the Media Feasibility Check Sheet in the form of Educandy Learning Media evaluation. Validation of the assessment by students is done by filling out a questionnaire. The purpose of this research is to get learning media that is easy for students to find the desired vocabulary and suitable for use. Therefore, researchers provide suggestions for improvement. Data on the results of Educandy media research on the media feasibility validation sheet can be seen in the table below.

The data on the results of the language validation feasibility trial can be described as follows: shows that responses based on 42 learners who are presented as testers & assessors in this study, the highest research results of learners on the validation of the feasibility of educandy platform development learning media language to improve students in learning Arabic, obtained the highest percentage of 45.5% which is included in the criteria Strongly Agree (SS). The results of the second highest evaluation of the validation of the feasibility of the language of the learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 35.7% which is included in the Agree (S) criteria. The third highest evaluation result on the validation of the feasibility of educandy platform development learning media language to improve student achievement in Arabic language learning, obtained the highest percentage of 36.6% which is included in the Disagree (TS) criteria. And according to the results of student evaluations of the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 14.3% which is included in the criteria Strongly Disagree (STS).

No.	Assessment Aspect	Strongly Agree (SS)	Agree	Disagree (TS)	Strongly Disagree (STS)	Criteria
1.	the Educandy platform is equipped with attractive images	40%	22,5%	25%	12,5%	Strongly Agree (SS)
2.	Educandy platform is an educational game application	32,5%	25%	35%	7,5%	Strongly Agree (SS)
3.	Educandy platform is suitable for use as Arabic language learning media	20,5%	20%	33,3%	10,3%	Disagree (TS)
4.	Educandy platform functions as a medium to improve students' learning abilities	37,5%	32,5%	25%	-	Strongly Agree (SS)
5.	Educandy platform as an online learning media	39%	24,4%	29,3%	7,3%	Strongly Agree (SS)
6	Learning Media with the Educandy Platform is needed in Arabic language learning	51%	24,4%	14.6%	9,8%	Strongly Agree (SS)
7	The suitability of the material provided by researchers with Arabic language learning	31,1%	24,4%	36,6%	7,3%	Disagree (TS)
8		36,6%	17,1%	36,6%	9,8%	Strongly Agree (SS)
9	Image and writing compatibility	26,6%	31%	26,2%	14,3%	Agree
10	The time to do the questions is flexible	40,5%	35,7%	21,4%	-	Strongly Agree (SS)

Material Validation Feasibility Sheet

The results obtained after conducting material feasibility trials conducted by several experts concluded that the learning media material was suitable for use in schools in Arabic language subjects. The purpose of media validation is to find out the shortcomings of this application and correct errors and deficiencies in this Educandy platform learning media. This Educandy platform-based learning media that researchers make aims to develop Arabic learning media, so that learning takes place fun and students are enthusiastic about learning. And replace the learning atmosphere that only uses monotonous learning media based on books and pens as learning media. This application is in the form of a game with many types of games that can be selected at will, the media here is used as increasing student interest in learning, students as a test material for this competency. The data obtained on this material feasibility validation sheet are;

The data on the results of the language validation feasibility trial can be described as follows: shows that responses based on 42 learners who are presented as testers & assessors in this study, the highest research results of learners on the validation of the feasibility of language learning media development of the educandy platform to improve students in learning Arabic, obtained the highest percentage of 45.5% which is included in the criteria Strongly Agree (SS). The results of the second highest evaluation of the validation of the feasibility of the language of the learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 35.7% which is included in the Agree (S) criteria. The third highest evaluation result on the validation of the feasibility of educandy platform development learning media language to improve student achievement in Arabic language learning, obtained the highest percentage of 36.6% which is included in the Disagree (TS) criteria. And according to the results of student evaluations of the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 14.3% which included the criteria Strongly Disagree (STS).

Material Validation Feasibility Sheet

The results obtained after testing the feasibility of the material conducted by several experts concluded that the learning media material is suitable for use in schools in Arabic language subjects. The purpose of media validation is to find out the shortcomings of this application and correct errors and deficiencies in this Educandy platform learning media. This Educandy platform-based learning media that researchers make aims to develop Arabic learning media, so that learning takes place fun and students are enthusiastic about learning. And replace the learning atmosphere that only uses monotonous learning media based on books and pens as learning media. This application is in the form of a game with many types of games that can be selected at will, the media here is used as increasing student interest in learning, students as a test material for this competency. The data obtained on this material feasibility validation sheet are;

No	Assessment aspect	Agree	Strongly Agree (SS)	Disagree (TS)	Strongly Disagree (STS)	Criteria
1	The Educandy platform application makes it easier for students to understand Arabic language learning	30%	32,5%	20%	17,5%	Strongly Agree (SS)
2	Educandy application as a medium to improve students' ability to understand learning material	37,5%	30%	22,5%	10%	Agree
3	Educandy application is a form of technological progress in the world of education	47,5%	22,5%	25%	-	Agree
4	The advantage of the Educandy application is that it is easily accessible anywhere, anytime and by students	25%	37,5%	25%	7,5%	Strongly Agree (SS)
5	Educandy application as a medium of encouragement in learning	25%	40%	15%	20%	Strongly Agree (SS)
6	Educandy application is suitable for use in Arabic language learning media	32,5%	35%	20%	12,5%	Strongly Agree (SS)
7	Educandy application is very suitable for use in Arabic	32,5%	32,5%	25%	10%	Strongly Agree (SS)

The data on the feasibility of this language validation can be described as follows: shows that the response based on 40 students who are presented as testers & assessors in this study, the highest research results of students on the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 40% which is included in the criteria Strongly Agree (SS). The second highest research result on the validation of the feasibility of educandy platform development learning media language to improve student achievement in Arabic language learning, obtained the highest percentage of 47.5% which is included in the Agree (S) criteria. The results of the third highest evaluation of the validation of the feasibility of the language of the learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 25% which was included in the Disagree (TS) criteria. And according to the results of student research on the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning in junior high school, obtained the highest percentage of 17.5% which is included in the criteria Strongly Disagree (STS).

Language feasibility sheet

The results obtained after validating the feasibility of language. can be concluded that the learning media is suitable for use in schools. The goal is to find out the shortcomings of this application and correct the mistakes and shortcomings of this educandy platform learning application. This learning media in the form of educandy platform aims to develop Arabic learning media, so that learning takes place fun and can motivate students to be active in learning. And change the atmosphere of learning that only uses monotonous learning media based on books and pens as media. learning. This application is in the form of a game with many types of interactive games and can be used as media, the media here is used as a competency test material for students. The data obtained on this media feasibility validation sheet are;

Table 4. Language validation sheet

No	Assessment aspect	Agree	Strongly Agree (SS)	Disagree (TS)	Strongly Disagree (STS)	Kriteria
1	Appropriateness of the use of Arabic words	34.1%	29,5%	27,3%	9,1%	Agree
2	The language used is easy to understand	43,2%	22.7%	20,5%	13,6%	Agree
3	The language used is in accordance with the emotional level of students	31,8%	36,4%	25%	-	Strongly Agree (SS)
4	The language used is common in everyday life	43,2%	27,3%	20,5%	9,1%	Agree
5	Provisions in the use of Arabic language rules	43,2%	27,3%	22,7%	-	Agree
6	The language used is effective for learning Arabic	56,8%	20,5%	15,9%	-	Agree
7	The sentence structure is standardized	31,6%	36,4%	22,7%	9,1%	Strongly Agree (SS)
8	Accuracy in Arabic	27,8%	39,5%	35,6%	7%	Strongly Agree (SS)
9	The language used is in accordance with the emotional development of students	50%	36,$%	-	11,4%	Agree
10	Accuracy in Arabic	45%	34,1%	20,5%	-	Agree

The data on the feasibility of this language validation can be described as follows: shows that the response based on 40 students who are presented as testers & assessors in this study, the highest research results of students on the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 39.5% which is included in the criteria Strongly Agree (SS). The second highest research result on the validation of the feasibility of educandy platform development learning media language to improve student achievement in Arabic language learning, obtained the highest percentage of 56.8% which is included in the Agree (S) criteria. The third highest research result on the validation of the feasibility of educandy platform development learning media language to improve student achievement in Arabic language learning, obtained the highest percentage of 35.6% which is included in the Disagree (TS) criteria. And according to the results of student research on the validation of the feasibility of the language of learning media development of the educandy platform to improve student achievement in Arabic language learning, obtained the highest percentage of 13.6% which is included in the criteria Strongly Disagree (STS).

As one of the factors that can affect the quality of education, the utilization of evolving technology has a significant impact on the learning process. Using the Educandy platform is a useful option to create learning media that can be used by teachers and students, and the end result is that teachers can measure and test their students' abilities in learning Arabic. The Educandy platform is an online learning media that requires students to use Android to support this learning media. The advantage of this application is that it has a large selection of interesting games that can be used for interesting and fun learning for students. In addition, the application is flexible rather than monotonous and creative so that it can increase students' interest in learning. Due to the uniqueness of this application, students will not get bored quickly when answering teacher questions. Moreover, this application can be easily accessed by anyone anywhere. This research uses interactive components and processes to develop learning media based on the Educandy platform based on the ADDIE model.

The first step before conducting research is to analyze the development of teaching materials in learning. analyze performance, at the stage where it is necessary to analyze, especially the problems that arise in learning. student analysis, at this stage what will be analyzed is the characteristics of students based on their knowledge, skills and development. analysis of the learning material process, at this stage what will be analyzed is the method of studying the material, the purpose of analyzing the learning material is to clarify what parts will be taught. analysis of learning objectives, at this stage it is necessary to analyze the skills that students have. in the analysis of a study will be used to develop the Educandy platform in Arabic language learning later. The first is the analysis of learning materials that will be taught to students at SMP N 1 Lubuk Alung. This stage is intended to determine the level of understanding of students in learning Arabic. The main focus is on the content of the learning material itself. Therefore, it can be concluded that analyzing teaching materials is the first step before conducting research.

The next step after analyzing the development of teaching materials in learning, the next step is to design teaching materials, specifically as follows Arrange teaching materials systematically with basic and fundamental skills to define teaching materials based on facts, processes, learning time and student assessment tools. , learning time and student assessment tools. Develop a good learning

strategy for selecting teaching material skills that are suitable for students. design subject-based learning materials so that students can achieve their learning goals. Evaluate student learning outcomes after using the Educandy application as a dukative game to improve student achievement in Arabic language learning. The varying levels of expertise among the teachers participating in the ADDIE process required maintaining a line of sight throughout the process. The design management team and its development activities were influenced by ideas from this Line of Sight. This line of sight is biased by activities unrelated to the scope of filling performance gaps. Therefore, the teacher must have a strong relationship in order to cover the gap between his students by giving confidence to the students during the meeting.

The next step after designing educational materials is to develop research. The development of this research includes activities that produce teaching materials. At this stage teaching materials have been prepared, at this stage teaching materials have been developed which are then realized as teaching materials that are ready to be implemented in accordance with the objectives. In developing teaching materials, there are two very important objectives, including reviewing teaching materials used to achieve learning objectives, selecting interesting teaching materials used to achieve learning objectives. The results of this stage are expected to produce a complete set of learning resources, such as all content, learning strategies, and other lesson plans. To support the learning module, educational media and a comprehensive set of directions for each lesson and independent activities are required that provide a means of building students' knowledge and skills. Teachers will also be helped by a comprehensive set of directions in guiding students during the interaction in the planned teaching. Furthermore, during the development stage teachers develop a formative evaluation design and validate it resulting in a revision. The teacher should be able to focus on communicating the learning well and giving confidence to the learners during the learning with the learning resources presented, so as to fill the gaps in learning performance regarding the students' lack of knowledge and skills.

The next step after designing teaching materials is to implement the developed learning media. The goal is for students to achieve their learning objectives, minimize student errors and ensure that at the end of their studies, students are more motivated to learn. At this stage the researcher implements the learning aids that have been developed. The media that has been developed is distributed in accordance with Arabic language learning. After completion in the next lesson, evaluate the learning media. The result of this phase is the implementation strategy. The common components of the implementation strategy are the student plan and the facilitator. Teachers need to actually manage the learning program in order to successfully communicate the implementation strategy.

The final step is evaluation, which is the final stage of the ADDIE development model. At the stage where researchers evaluate the teaching materials that have been developed, the aim is to find out the final results of the teaching materials developed. Below are the objectives of the media assessment, to find out the students' response to the developed media, to find out the students' level of understanding in learning Arabic, and finally to find out the students' level of interest in learning. Arabic language using the Educandy application and knowing the benefits felt by Madrasah Tsanawiyah after developing learning materials. The outcome of this phase is the evaluation plan. A summary outlining objectives, data collection tools, timelines, and the individual or group responsible for a particular level of assessment, a summary set of assessment criteria, and a set of assessment tools in the general component of the assessment plan. Teachers focus on measuring the assessment plan with their students during the learning process. The academic performance gap serves as a reference point for evaluation and evaluation decisions.

The purpose of this study is to improve student achievement in learning Arabic, as well as assess the level of student ability in using the Educandy application as a means of learning Arabic at the Junior High School. The steps described above are intended to help and expedite the achievement of learning objectives and put forward each step of the ADDIE model. The purpose of making teaching materials in the form of the Educandy application is to increase students' interest in learning Arabic. Motivate students to learn Arabic and assess students' ability to achieve their learning goals. The development model created during the development of the Educandy

application is the ADDIE model which aims to increase participants' interest in learning.

Sample image of Educandy

The picture above is an example of educandy application media as an educational game to improve student achievement in learning Arabic. Educandy is used to create educational games that are very accessible to everyone, teachers and students, across devices such as cell phones, laptops, computers and other devices. This online application is suitable for improving Arabic language learning achievement because it is equipped with interesting features. And educators are also more creative in developing Arabic learning materials so that learners are more active. This educandy application is an educational game that makes it easier for educators to convey knowledge that cannot be conveyed verbally. The advantage is that it can be easily accessed by anyone and anywhere.

Technology that is developing rapidly in this day and age makes it easier for students to access learning materials, one of which is the educandy learning material application. The purpose of making this teaching material is so that students can improve student achievement in learning Arabic. The main objective is to improve students' understanding of the material provided by educators. The model used in the development of the educandy platform as a digital game is the ADDIE model. The developed model includes analysis, design, development, implementation and evaluation. The search for time and place was carried out at the Negri 1 Lubuk Alung Junior High School. The goal is to find out whether or not a learning media is used.

The utilization of Educandy as an educational media gives a new touch. The use of educational game platforms like this is also rarely used by most educators, so students will be enthusiastic about this new face as well. Student enthusiasm is an incentive for students to actively participate in learning. Students' activities in learning, such as responding to the teacher and asking questions that are not well managed, deepen and broaden students' understanding. Another reason why this educandy is necessary in learning, especially in Arabic, is that it not only provides new colors, but also makes learning fun.

The variety of games available in educandy makes it easy for educators to create quizzes to review material. With as few as nine questions, educators can present students with eight quiz variations. Start with regular quizzes or match formats like multiple choice, Noughts & Crosses, Match-Ups, and Memory. Also find words like word search, hangman, anagram. Up to crossword puzzle models. By changing the nature of the game with the same problem and material, students will be able to fully understand. This is because students get other types of games. Students can answer correctly because they already know from the previous type of game. By repeating the same question and answer, learners will eventually understand it by heart. So. So repeating questions in different games is very effective in checking students' understanding.

Therefore, educandy is suitable to be applied and developed in Arabic language learning. Some of the advantages of educandy based on the data above include having many types of word games that can be played, making it easier for educators to make varied educational games, effective for testing students' understanding and making question practice more fun. Educandy can be used when learning in the classroom such as opening it together through each smartphone or various layers by using a projector, so that only the teacher / educator accesses and students pay attention. Educandy can also be used in Distance Learning (PJJ) by accessing it yourself at home and must be observed by the teacher\educator.

IV. Conclusions

Based on the results of the study, it can be concluded that the educandy application learning media that supports learning as an educational game to improve student achievement in learning Arabic is suitable for use. The purpose of this learning material is to improve student achievement and motivate students to learn. And the results of research by filling out a questionnaire for 40 students confirming the feasibility of media,

documents and language obtained the highest score of 56%, indicating that the educandy platform can be used in learning, aiming to make students able to improve learning achievement, interest in learning and motivation to learn Arabic to achieve their learning goals.

V. Acknowledgment

VI. REFERENCES

Alqahtani, A. Y., & Rajkhan, A. A. (2020). E-Learning Critical Success Factors during the COVID-19 Pandemic: A Comprehensive Analysis of E-Learning Managerial Perspectives. *Education Sciences*, *10*(9), 216. https://doi.org/10.3390/educsci10090216

Al-Zoubi, A. M., Faris, H., Alqatawna, J., & Hassonah, M. A. (2018). Evolving Support Vector Machines using Whale Optimization Algorithm for spam profiles detection on online social networks in different lingual contexts. *Knowledge-Based Systems*, *153*, 91–104. https://doi.org/10.1016/j.knosys.2018.04.025

Anderson, T., & Dron, J. (2011). Three generations of distance education pedagogy. *The International Review of Research in Open and Distributed Learning*, *12*(3), 80. https://doi.org/10.19173/irrodl.v12i3.890

Baharuddin, B. (2018). ADDIE Model Application Promoting Interactive Multimedia. *IOP Conference Series: Materials Science and Engineering*, *306*, 012020. https://doi.org/10.1088/1757-899X/306/1/012020

Basar, E., Di Renzo, M., De Rosny, J., Debbah, M., Alouini, M.-S., & Zhang, R. (2019). Wireless Communications Through Reconfigurable Intelligent Surfaces. *IEEE Access*, *7*, 116753–116773. https://doi.org/10.1109/ACCESS.2019.2935192

Bers, M. U., González-González, C., & Armas–Torres, M. B. (2019). Coding as a playground: Promoting positive learning experiences in childhood classrooms. *Computers & Education*, *138*, 130–145. https://doi.org/10.1016/j.compedu.2019.04.013

Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: Student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, *15*(1), 48. https://doi.org/10.1186/s41239-018-0130-1

Carless, D., & Boud, D. (2018). The development of student feedback literacy: Enabling uptake of feedback. *Assessment & Evaluation in Higher Education*, *43*(8), 1315–1325. https://doi.org/10.1080/02602938.2018.1463354

Castro, M. D. B., & Tumibay, G. M. (2021). A literature review: Efficacy of online learning courses for higher education institution using meta-analysis. *Education and Information Technologies*, *26*(2), 1367–1385. https://doi.org/10.1007/s10639-019-10027-z

de Reuver, M., Sørensen, C., & Basole, R. C. (2018). The Digital Platform: A Research Agenda. *Journal of Information Technology*, *33*(2), 124–135. https://doi.org/10.1057/s41265-016-0033-3

Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., Galanos, V., Ilavarasan, P. V., Janssen, M., Jones, P., Kar, A. K., Kizgin, H., Kronemann, B., Lal, B., Lucini, B., … Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, *57*, 101994. https://doi.org/10.1016/j.ijinfomgt.2019.08.002

Elgrishi, N., Rountree, K. J., McCarthy, B. D., Rountree, E. S., Eisenhart, T. T., & Dempsey, J. L. (2018). A Practical Beginner's Guide to Cyclic Voltammetry. *Journal of Chemical Education*, *95*(2), 197–206. https://doi.org/10.1021/acs.jchemed.7b00361

Elnagar, A., Al-Debsi, R., & Einea, O. (2020). Arabic text classification using deep learning models. *Information Processing & Management*, *57*(1), 102121. https://doi.org/10.1016/j.ipm.2019.102121

Garzón, J., & Acevedo, J. (2019). Meta-analysis of the impact of Augmented Reality on students' learning gains. *Educational Research Review*, *27*, 244–260. https://doi.org/10.1016/j.edurev.2019.04.001

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, Teaching, and Scholarship in a Digital Age: Web 2.0 and Classroom Research: What Path Should We Take *Now? Educational Researcher*, *38*(4), 246–259. https://doi.org/10.3102/0013189X09336671

Hu, S., Rusek, F., & Edfors, O. (2018). Beyond Massive MIMO: The Potential of Data Transmission With Large Intelligent Surfaces. *IEEE Transactions on Signal Processing*, *66*(10), 2746–2758. https://doi.org/10.1109/TSP.2018.2816577

Huang, C., Zappone, A., Alexandropoulos, G. C., Debbah, M., & Yuen, C. (2019). Reconfigurable Intelligent Surfaces for Energy Efficiency in Wireless Communication. *IEEE Transactions on Wireless Communications*, *18*(8), 4157–4170. https://doi.org/10.1109/TWC.2019.2922609

Hussain, S., Abdulaziz Dahan, N., Ba-Alwi, F. M., & Ribata, N. (2018). Educational Data Mining and Analysis of Students' Academic Performance Using WEKA. *Indonesian Journal of Electrical Engineering and Computer Science*, *9*(2), 447. https://doi.org/10.11591/ijeecs.v9.i2.pp447-459

Hussein, M. H., Ow, S. H., Cheong, L. S., Thong, M.-K., & Ale Ebrahim, N. (2019). Effects of Digital Game-Based Learning on Elementary Science Learning: A Systematic Review. *IEEE Access*, *7*, 62465–62478. https://doi.org/10.1109/ACCESS.2019.2916324

Kamilaris, A., & Prenafeta-Boldú, F. X. (2018). Deep learning in agriculture: A survey. *Computers and Electronics in Agriculture*, *147*, 70–90. https://doi.org/10.1016/j.compag.2018.02.016

Kiili, K. (2005). Digital game-based learning: Towards an experiential gaming model. *The Internet and Higher Education*, *8*(1), 13–24. https://doi.org/10.1016/j.iheduc.2004.12.001

Kim, S., Choi, S., Seo, M., Kim, D. R., & Lee, K. (2020). Designing a Clinical Ethics Education Program for Nurses Based on the ADDIE Model. *Research and Theory for Nursing Practice*, *34*(3), 205–222. https://doi.org/10.1891/RTNP-D-19-00135

Kobayashi, H., Hayakawa, A., Somarathne, K. D. K. A., & Okafor, E. C. (2019). Science and technology of ammonia combustion. *Proceedings of the Combustion Institute*, *37*(1), 109–133. https://doi.org/10.1016/j.proci.2018.09.029

Korol, A., Blashkova, O., Kravchenko, V., & Khilya, A. (2021). WEB-TECHNOLOGIES AND MULTIMEDIA SYSTEMS IN THE TRAINING OF PROFESSIONALS IN THE EDUCATION SYSTEM. *ENVIRONMENT. TECHNOLOGIES. RESOURCES. Proceedings of the International Scientific and Practical Conference*, *2*, 244–248. https://doi.org/10.17770/etr2021vol2.6570

Li, H., Ota, K., & Dong, M. (2018). Learning IoT in Edge: Deep Learning for the Internet of Things with Edge Computing. *IEEE Network*, *32*(1), 96–101. https://doi.org/10.1109/MNET.2018.1700202

Li, S., Xu, L. D., & Zhao, S. (2018). 5G Internet of Things: A survey. *Journal of Industrial Information Integration*, *10*, 1–9. https://doi.org/10.1016/j.jii.2018.01.005

Liao, C.-W., Chen, C.-H., & Shih, S.-J. (2019). The interactivity of video and collaboration for learning achievement, intrinsic motivation, cognitive load, and behavior patterns in a digital game-based learning environment.

Computers & Education, 133, 43–55. https://doi.org/10.1016/j.compedu.2019.01.013

Lortie-Forgues, H., & Inglis, M. (2019). Rigorous Large-Scale Educational RCTs Are Often Uninformative: Should We Be Concerned? Educational Researcher, 48(3), 158–166. https://doi.org/10.3102/0013189X19832850

Mahdavinejad, M. S., Rezvan, M., Barekatain, M., Adibi, P., Barnaghi, P., & Sheth, A. P. (2018). Machine learning for internet of things data analysis: A survey. Digital Communications and Networks, 4(3), 161–175. https://doi.org/10.1016/j.dcan.2017.10.002

Makransky, G., Terkildsen, T. S., & Mayer, R. E. (2019). Adding immersive virtual reality to a science lab simulation causes more presence but less learning. Learning and Instruction, 60, 225–236. https://doi.org/10.1016/j.learninstruc.2017.12.007

Mozaffari, M., Saad, W., Bennis, M., Nam, Y.-H., & Debbah, M. (2019). A Tutorial on UAVs for Wireless Networks: Applications, Challenges, and Open Problems. IEEE Communications Surveys & Tutorials, 21(3), 2334–2360. https://doi.org/10.1109/COMST.2019.2902862

Nurjanah, S., Dea, L. F., & Anwar, M. S. (2022). Development of Games Online Features Educandy to Children Aged 5-6 Years. Bulletin of Early Childhood, 1(1), 1. https://doi.org/10.51278/bec.v1i1.398

Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgenannt, I. (2020). A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. Computers & Education, 147, 103778. https://doi.org/10.1016/j.compedu.2019.103778

Saleem, Y., Crespi, N., Rehmani, M. H., & Copeland, R. (2019). Internet of Things-Aided Smart Grid: Technologies, Architectures, Applications, Prototypes, and Future Research Directions. IEEE Access, 7, 62962–63003.

https://doi.org/10.1109/ACCESS.2019.2913984

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. Computers & Education, 128, 13–35. https://doi.org/10.1016/j.compedu.2018.09.009

Strelan, P., Osborn, A., & Palmer, E. (2020). The flipped classroom: A meta-analysis of effects on student performance across disciplines and education levels. Educational Research Review, 30, 100314. https://doi.org/10.1016/j.edurev.2020.100314

Subhash, S., & Cudney, E. A. (2018). Gamified learning in higher education: A systematic review of the literature. Computers in Human Behavior, 87, 192–206. https://doi.org/10.1016/j.chb.2018.05.028

Theobald, E. J., Hill, M. J., Tran, E., Agrawal, S., Arroyo, E. N., Behling, S., Chambwe, N., Cintrón, D. L., Cooper, J. D., Dunster, G., Grummer, J. A., Hennessey, K., Hsiao, J., Iranon, N., Jones, L., Jordt, H., Keller, M., Lacey, M. E., Littlefield, C. E., … Freeman, S. (2020). Active learning narrows achievement gaps for underrepresented students in undergraduate science, technology, engineering, and math. Proceedings of the National Academy of Sciences, 117(12), 6476–6483. https://doi.org/10.1073/pnas.1916903117

Théry, C., Witwer, K. W., Aikawa, E., Alcaraz, M. J., Anderson, J. D., Andriantsitohaina, R., Antoniou, A., Arab, T., Archer, F., Atkin-Smith, G. K., Ayre, D. C., Bach, J.-M., Bachurski, D., Baharvand, H., Balaj, L., Baldacchino, S., Bauer, N. N., Baxter, A. A., Bebawy, M., … Zuba-Surma, E. K. (2018). Minimal information for studies of extracellular vesicles 2018 (MISEV2018): A position statement of the International Society for Extracellular Vesicles and update of the MISEV2014 guidelines. Journal of Extracellular Vesicles, 7(1), 1535750. https://doi.org/10.1080/20013078.2018.1535750

Trust, T., & Pektas, E. (2018). Using the ADDIE Model and Universal Design for Learning Principles to Develop an Open Online Course for Teacher Professional Development. *Journal of Digital Learning in Teacher Education*, *34*(4), 219–233. https://doi.org/10.1080/21532974.2018.1494521

Ulya, M. (2021). PENGGUNAAN EDUCANDY DALAM EVALUASI PEMBELAJARAN BAHASA INDONESIA. *Lingua Rima: Jurnal Pendidikan Bahasa Dan Sastra Indonesia*, *10*(1), 55. https://doi.org/10.31000/lgrm.v10i1.4089

von Uexkull, N., & Buhaug, H. (2021). Security implications of climate change: A decade of scientific progress. *Journal of Peace Research*, *58*(1), 3–17. https://doi.org/10.1177/0022343320984210

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *International Journal of Environmental Research and Public Health*, *17*(5), 1729. https://doi.org/10.3390/ijerph17051729

Young, T., Hazarika, D., Poria, S., & Cambria, E. (2018). Recent Trends in Deep Learning Based Natural Language Processing [Review Article]. *IEEE Computational Intelligence Magazine*, *13*(3), 55–75. https://doi.org/10.1109/MCI.2018.2840738

Zhang, C., Patras, P., & Haddadi, H. (2019). Deep Learning in Mobile and Wireless Networking: A Survey. *IEEE Communications Surveys & Tutorials*, *21*(3), 2224–2287. https://doi.org/10.1109/COMST.2019.2904897

Zhang, S., Yao, L., Sun, A., & Tay, Y. (2020). Deep Learning Based Recommender System: A Survey and New Perspectives. ACM Computing Surveys, 52(1), 1–38. https://doi.org/10.1145/3285029