**Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab**

**Vol. 09 No. 01, Juni 2025**

P-ISSN 2550-0430 (Print), E-ISSN 2623-2588 (Online)

| | |
|---|---|
| Received : 20-04-2025 | Accepted : 25-06-2025 |
| Published : 30-06-2025 | Doi : 10.32699/liar.v9vi1.9134 |

# Development of Innovative Digital Learning Media Based on Arabic Matching Puzzle for Learning Nahwu and Sharaf

**Ainiyatul Fatihah, Muhammad Alfan, Hanik Mahliatussikah**
Universitas Negeri Malang
Email: ainiyatulf16@gmail.com

**Abstract**

This study aims to develop digital learning media based on an Arabic Matching Puzzle to support the learning of Nahwu and Sharaf in junior high school. The research addresses challenges such as complex material, low student engagement, and limited interactive resources. Using the ADDIE model, the development process included analysis of needs, design and creation of media, expert validation, and classroom implementation. Results show that the media is feasible and effective in improving students' understanding, motivation, and participation in learning Nahwu and Sharaf. Teachers also responded positively, indicating that the application supports teaching goals and facilitates more interactive learning experiences. The findings suggest that digital media based on game approaches can be a valuable solution to enrich Arabic language learning. This application is recommended for broader use and further development, including potential integration of advanced features such as Artificial Intelligence to enhance personalization and adaptability to diverse student needs.

**Keywords:** Learning Media, Matching Puzzle, Nahwu, Sharaf, Arabic Language Education

## A. Introduction

The digitalization era has brought significant changes in the world of education, especially in presenting innovative learning that can increase student interest and understanding (Sutriyani et al., 2022). Digital technology plays an important role in the development of learning media, especially in Arabic language learning, because as it able to increase the effectiveness of teaching and learning processes that are more interactive and interesting (Ruswan et al., 2024).

Arabic language learning is one of the challenges faced by teachers, especially in seeking active involvement of students so that they are able to master the material effectively and efficiently. The purpose of this learning process is to achieve competence in mastering foreign languages, especially Arabic, both in terms of understanding and application in real contexts (Fahrezi & Yusuf, 2023). In Arabic language learning, learning nahwu and sharaf is still a weak point in mastering Arabic at the secondary education level (Thobib & Amirudin, 2023) both in public schools, madrasah, and pesantren (Asiah et al., 2022) In fact, The sciences of nahwu and sharaf are the two main pillars of Arabic grammar (Luthfan & Hadi, 2019), mastering these two branches of knowledge is very important as a basis for understanding the linguistic structure in Arabic (Albab, 2015) which supports the four main skills such as listening, speaking, reading, and writing (Sa'adah, 2019). By understanding the sentence structure and word change patterns appropriately, students can more easily understand the content of the text, express ideas orally and in writing, as well as listen and respond well to conversations in Arabic (Natsir, 2017).

Nahwu focuses on sentence structure, which enables students to understand the relationship between words in Arabic sentences and recognize the changes in the final form of words based on their function (Abdillah & Maswani, 2015) contains a number of important rules that are the basis for understanding the structure of Arabic sentences (Holilulloh, 2018). The use of harakat i'rab, identification of the position of words in the sentence structure, as well as the application of syntactic laws become a challenge in themselves because they require precision and strong conceptual understanding (Supriadi et al., 2020). Meanwhile, the science of sharaf plays a role in understanding morphology or the change in word form from one form to another based on a certain pattern, such as derivation from a base word into a form of doer, object, or place. in sharaf, the complexity arises from the process of transforming base words into various derivative forms that follow certain wazan patterns (Ilmiani et al., 2020). This change in form is not only grammatical, but also semantic because the shift in form is often followed by a change in meaning, which is confusing for students who are not familiar with the morphological derivation system in Arabic (Syaripudin et al., 2012). So that students experience difficulties due to the complexity of the rules (Suci & Syaifudin, 2024).

According to (Abdurrohman & Ulinnuhaa, 2024) shows that more than 60% of students have difficulty understanding Arabic grammar structures. Specifically, research (Ismail et al., 2024) revealed that from the verb category (Fi'il), students find it easier to master Fi'il Mudhari' (74.6%), while Fi'il Madhi (59.5%) is classified as more difficult. In the noun category (Isim), Isim Mufrad and Mutsanna (91.7%) are easier than Isim Jam' (57.4%). While in the category of sentence structure (Tarakib), Al-Jumlah Al-Fi'liyyah (75.4%) is easier to understand than Al-Jumlah Al-Ismiyyah (69.0%).

See example serves to provide examplesBecause media that is less attractive or not in accordance with the needs and learning styles of students can make the learning process monotonous and less interactive (Rahmadita et al., 2023). As a result of these media limitations, the teaching and learning process has not achieved maximum results. Learning tends to be one-way, where the teacher becomes the center of information without media support that can encourage active student involvement (Fata et al., 2024). thus making students quickly bored and less involved in the learning process (Sakdiah & Sihombing, 2023).

The function of teachers as conveyors of educational messages cannot stand alone, but needs to be supported by appropriate learning media so that the teaching and learning process takes place effectively and optimally. Media can help teachers deliver material in a more interesting way, as well as arouse the enthusiasm and interest of students, especially in learning that requires conceptual understanding such as nahwu and Sharaf (Huda, 2020). Therefore, the use of media is very important to bridge the complexity of the material with students' needs for learning that is fun, contextual, and relevant to the times (Mappanyompa & Ali, 2017). Media selection cannot be done arbitrarily (Putra & Pratama, 2023) but must be aligned with learning objectives (Sholihah et al., 2022) as well as technological advances and the character of learners in order to provide optimal benefits for students (Maufidhoh & Maghfirah, 2023).

It is imperative for teachers to be prepared in designing and selecting the right learning media to generate enthusiasm for learning and develop student competencies (Refdianti et al., 2024). In this context, digital-based learning innovation is one of the relevant solutions in a more visual and interactive way (Suib et al., 2022). The presence

of gamificationbased interactive applications, is able to change the monotonous learning process to be more fun and challenging (Cholidah & Muid, 2024) Gamification also offers high flexibility and adaptability to various student learning styles (Firdaus & Aziz, 2024). so that the subject matter is more easily comprehended by students, especially in helping them master concepts that are abstract or complex (Nisa, 2022).

One form of interactive digital media that is interesting to develop is puzzles (Dhananjaya et al., 2024). Puzzle-based learning media has been proven to increase active student involvement in the learning process, especially in complex material such as nahwu and sharaf (Yunita & Supriatna, 2021). The use of *puzzle* media in learning has various advantages, including increasing student interaction so that it can contribute to the development of social skills, fine motor skills, and cognitive abilities. It supports the improvement of students skills and understanding and strengthens their response and feedback to learning (Nuzula, 2024). The learning by play approach becomes more effective as it involves students actively and collaboratively, increasing their interest and engagement in the learning process (Hidayat et al., 2024).

Various previous studies have examined the effectiveness of puzzle-based media in Arabic language learning. Research from (Taqiyah, 2023) developed and implemented Kaana Puzzle in manual form as a tool in understanding the structure of Arabic grammar. The results of his research show that this game-based media can improve students' understanding of the rules for using fi'il kaana and its isim. However, the media is still conventional and has not utilized interactive digital technology that can increase student involvement optimally in the modern learning era.

Furthermore, research conducted by (Dafiq, 2024) examined the effectiveness of various digital-based Nahwu and Sharaf learning applications. He showed that technology can accelerate the process of students' understanding of Arabic grammatical structures. However, this research is more explorative of existing applications, and does not focus on developing one innovative media specifically designed based on puzzles. In addition, the design approach and evaluation of media development have not been carried out systematically and thoroughly. On the other hand, research by (Kovalsky et al., 2015) discusses edge-matching puzzles in the context of mathematics and computer science as a solution in the field of global algorithms. Although not in the realm of language education, their approach provides important inspiration in interactivity design and visual

cognitive principles that can be adapted for the development of Puzzle-based educational media. However, the relevance of the research to Arabic language learning is still conceptual and technical, not implementative.

Finally, research conducted by (Fuadi et al., 2024) developed a Nahwu Matching game focused on learning isim isyarah. The results showed an increase in learning effectiveness, especially for students with non-native Arabic speakers background. However, the scope of the media developed is still limited to one material (isim isyarah), not covering the fi'il aspect which is the central component in understanding Arabic sentence structure. In addition, the media design has not utilized instructional design approaches such as ADDIE, and has not been based on interactive digital applications.

From the results of the study, it can be concluded that although Puzzle-based learning media is proven to have potential in Arabic language learning, there has been no research that specifically develops Puzzle-based interactive digital media with a systematic and comprehensive design approach for Nahwu and Sharaf materials. This research comes to fill the gap, by developing Arabic Matching Puzzle media based on Android applications designed using the ADDIE development model, which includes needs analysis, curriculum-based material design, development through interactive digital platforms, expert validation, and implementation and evaluation in the field. Another advantage of this research is that it pays attention to aspects of learning style preferences of the digital-native generation, as stated by (Huang et al., 2020).

Which states that students today tend to be more responsive to learning media that are visual, gamification, and interactive. Therefore, the media developed not only aims as an instructional aid, but also as a means that is able to increase motivation, active involvement, and understanding of grammatical concep(Hajar & Qohar, 2024)ngful way (Hajar & Qohar, 2024). Although various digital media have been developed in Arabic language learning, there are still limited studies that specifically develop Android-based learning media that integrate Nahwu and Sharaf learning in one application. Answering this void, this research develops an Arabic Matching Puzzle application for students of Muhammadiyah Junior High School 9 Bojonegoro, an interactive media based on Construct 3 that presents a visual and fun format. This application is structured and gradual, with the aim of increasing students understanding and involvement in learning.

The novelty of this research lies in the integration of Nahwu Sharaf material in one interactive game based Android application, the use of Construct 3 technology, a structured gamification approach, and a comprehensive evaluation of students cognitive, affective, and psychomotor aspects and targeting three grade levels at once, making it more exploratory than previous limited studies. Thus, this media is expected to be an effective and innovative solution in learning Arabic grammar at the junior high school level.

Comparison Table of Previous Studies and Unique Contributions of the Current Research

| No | Researcher | Year | Research Focus | Weaknesses of Previous Research | Unique Contribution of This Study |
|---|---|---|---|---|---|
| **1** | Kovalsky et al. | 2015 | Edge-matching Puzzle for mathematics and computer science | Limited relevance to Arabic language education, mainly conceptual and technical | Adapts principles of interactivity and visual cognition for digital puzzle-based Arabic language learning |
| **2** | Taqiyah | 2023 | Development of manual Kaana Puzzle for understanding fi'il kaana and its noun | Still conventional, not yet based on interactive digital media | Develops interactive digital puzzle-based media using the ADDIE approach for teaching Nahwu and Sharaf |
| **3** | Dafiq | 2024 | Exploration of digital applications for Nahwu and Sharaf | Did not focus on innovative media development, lacked systematic design approach | Designs and implements game-based digital puzzle media with comprehensive instructional design |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | using the ADDIE model |
| **4** | Fuadi et al. | 2024 | Nahwu Matching Game for demonstrative nouns (isim isyarah) | Limited material scope (only isim isyarah), did not employ the ADDIE approach, not yet interactive digital application-based | Develops interactive digital application-based media for Nahwu and Sharaf using the ADDIE approach with broader material coverage (fi'il, nouns, etc.) |
| **5** | Current Research | 2025 | Development of interactive digital puzzle media using Construct 3 for Nahwu and Sharaf in grades VII, VIII, IX | Previous studies were limited in terms of grade level, design approach, and material scope | Develops interactive digital puzzle-based media using the ADDIE approach and Construct 3 platform, covering Nahwu and Sharaf materials across three grade levels, combining motivation, active engagement, and enjoyable grammatical concept understanding |

Table 1. Comparison Table of Previous Studies

## B. Method

This chapter systematically presents the research methods used to obtain valid and reliable data aligned with the study's focus. The methods are chosen rationally to achieve the main goal: developing and implementing interactive digital learning media using the Arabic Matching Puzzle to improve the effectiveness of Nahwu and Sharaf learning. Thus, the methodological approach includes not only data collection and analysis but also product design and evaluation. The ADDIE instructional development model guides each stage—from needs analysis, design, development, and field implementation to effectiveness evaluation—ensuring a systematic process. This chapter also describes the research approach, population and sample, data collection techniques, instruments, and data analysis strategies, providing a strong scientific foundation that ensures the validity and reliability of the research outcomes.

### 1. Sample And Population

The population in this study includes all students of SMP Muhammadiyah 9 Bojonegoro in the 2024/2025 academic year. However, not all students were included in the sample. Samples were selected using purposive sampling, based on specific criteria relevant to the research objectives (Lenaini, 2021). The study involved three classes: Grade VII (7B), Grade VIII (8A), and Grade IX (9C). These classes were chosen to reflect a range of student understanding levels of Nahwu and Sharaf, providing a more complete picture of the media's effectiveness. In addition, Nahwu and Sharaf teachers participated to evaluate the feasibility and effectiveness of the Arabic Matching Puzzle learning media.

### 2. Development Flow

The study took place at SMP Muhammadiyah 9 Bojonegoro in the 2024/2025 school year. It aimed to develop innovative digital learning media based on the Arabic Matching Puzzle to improve students' understanding of Nahwu and Sharaf. The research applied a Research and Development (R&D) method following the ADDIE model, which consists of five stages: 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation (Richey & Klein, 2013). The development process was carried out

sequentially through these stages to ensure the quality and effectiveness of the resulting learning media.


In this chapter, we will explain in detail the stages carried out in the application development process, starting from the needs analysis stage to the product design stage. Each stage is explained systematically in order to provide a clear picture of the methods used and the results obtained in this study. The following are the steps taken in the process of developing this application:


Figure 2: Flow of Development Activities

a. Analysis Stage

The analysis stage is the first stage in this research. This stage is carried out by analyzing the problems that exist in the Arabic language learning process. In addition, a

needs analysis was carried out to find out Arabic Matching Puzzle based teaching materials. The analysis is needed to determine the urgency and need for the development to be carried out. This stage is carried out by conducting field studies to Muhammadiyah Junior High School 9 Bojonegoro. Field study activities are carried out using three methods, namely direct observation, interviews and filling out questionnaires.

b. Design Stage

This stage is done by designing Arabic Matching Puzzle referring to the needs analysis that has been done. The product design is designed with a 2D display using the Construct 3 application, Corel Draw with Javascript and Visual scripting programming languages.

Gameplay design includes rules and features that are applied during the game. Gameplay development consists of several structured stages such as, 1). Control Design, control can be defined as an input or input that players provide so that certain functions in the game can run properly. Developers need to determine the most appropriate controls for the game being designed. 2). Object Design, in a game there will certainly be an object made in such a way that has its own function. Objects designed can be active, which is an object that has the ability to interact with the player, or passive, which is an object that has no interaction with the player. 3). Interface Design, every game that will be designed will require a display that functions to help players to interact in a game. The display design includes images, initial appearance, main menu, assets, and displays in the game.

1) Menu Start View

The main menu display can be seen when the game is run. In this display there is the title of the game Arabic Matching Puzzle in the lower right corner of the layer there is a start button that functions to start the game with a predetermined table of contents, and an "Audio" button that functions to sound / turn off the backsound.


Figure 3. Initial menu display

2) Login View

The designed login view does not use a database as storage media, because this learning application is designed for offline use.

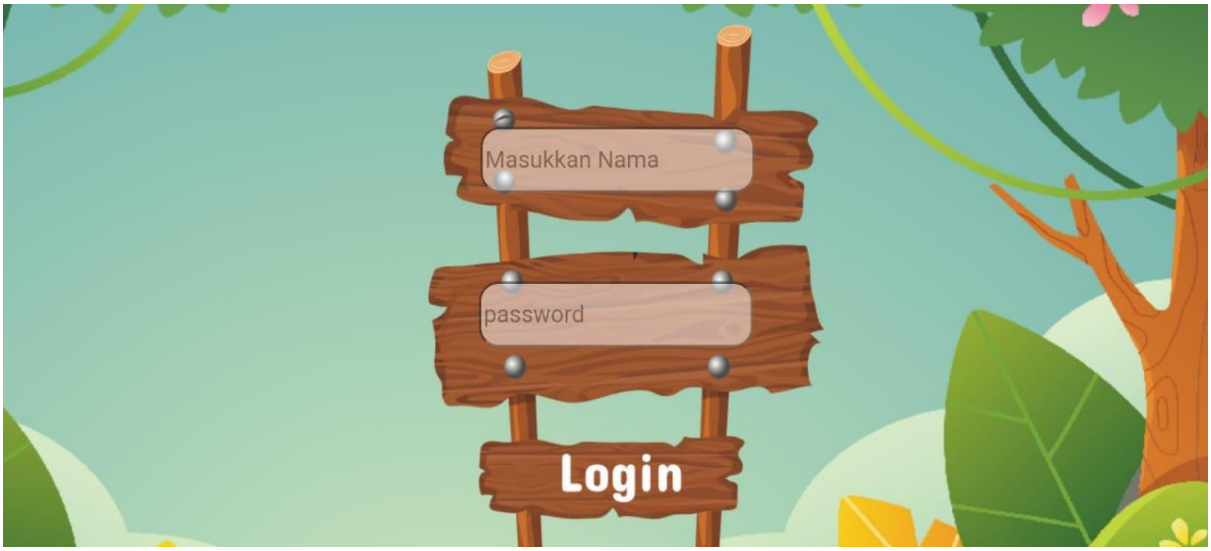


Figure 4. Login menu display

3) Display

After the login menu, it will be directed to the instructions menu. Which players must understand the Steps before starting the game.

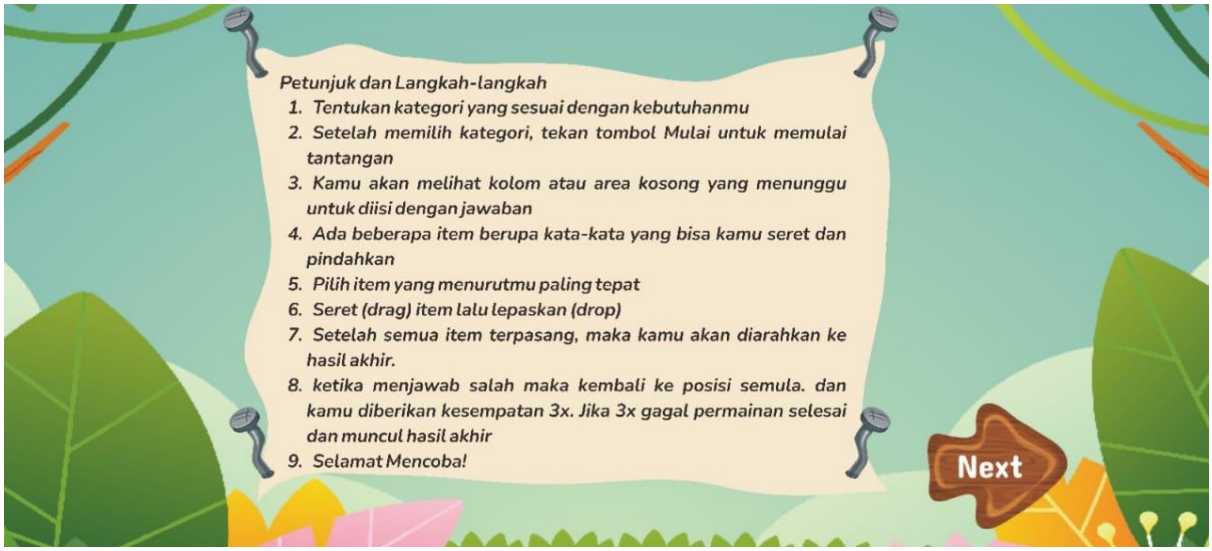


Figure 5. Instruction menu display

4) Table of view

After the instructions menu, the user is directed to the table of contents menu where there is a choice of several menus to go to the game. There are 6 buttons that are directed to each game. In the table of contents menu there is a Home button with a house icon to return to the initial menu display and an exit button to exit the game or from the application.


Figure 6. Table of contents menu display

5) Game Menu Display

This is one example of the available games. The user must correctly and properly match the objects in the "choose answer" section with the corresponding objects by dragging them into the white box (the answer area). If all answers are correct, the game proceeds to the final result and the user can continue to the next game. If the user fails three times, the score they achieved will be displayed. At the top, there is a title with a "see example" label that provides guidance so the user understands before starting the game. Additionally, there is a back button that returns the user to the previous menu.


Figure 7. Game view

6) Display Menu final results

On the final result screen, users can see the results of the game they have played. If they are not satisfied with the results, they can repeat the game. However, if they are satisfied with the results they obtained, they can proceed directly to the next game.

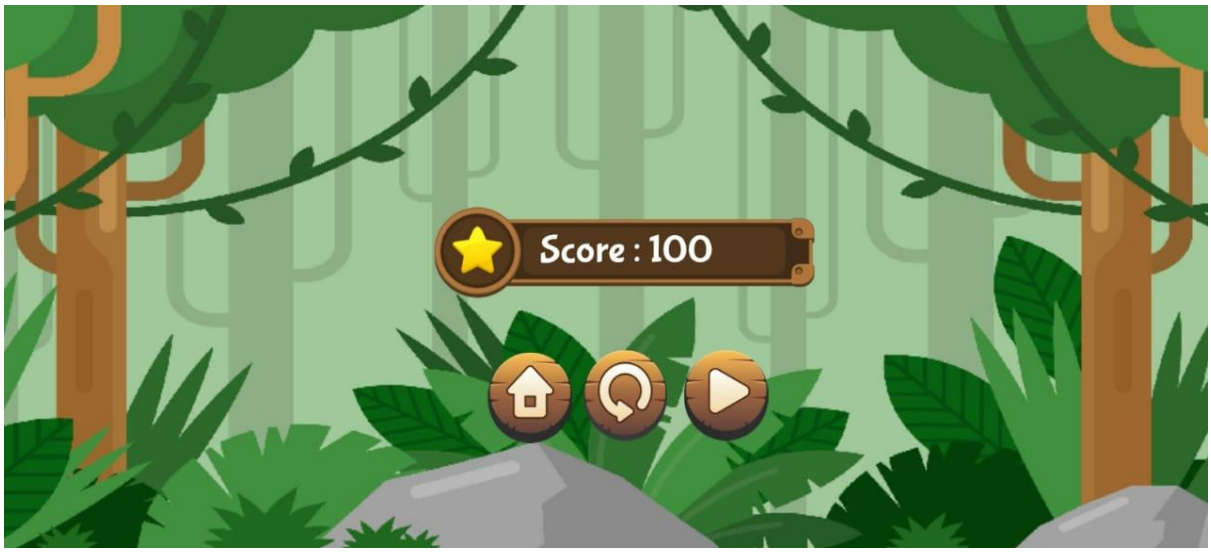


Figure 8. Final result display

c. Development Stage

The development stage focuses on designing the Arabic Matching Puzzle product, followed by expert validation involving material and media experts. Before moving to the next phase, the product is revised according to feedback provided by the validators. The Arabic Matching Puzzle is a matching game genre that requires players to pair identical objects to achieve specific targets. Unlike other games that use a locked-level system, this game requires players to start from the beginning each time, displaying the final score upon completion. The game also includes an exit feature, represented by an "x" icon, to close the game.

This game was developed using Construct 3, an HTML5-based platform that supports Javascript and visual scripting languages. Construct 3 requires user registration with an email and password, and obtaining a license may involve payment through the platform. The resulting game can be deployed across various platforms, including Android, iOS, HTML5 Web, Windows, and even game consoles such as Nintendo Switch and Xbox.
Before implementation in learning, the Arabic Matching Puzzle media underwent validation by experts to ensure its feasibility and effectiveness. Validation was conducted by two groups: media experts, who assessed technical and design aspects, and material experts, who examined content accuracy and relevance to Nahwu and Sharaf learning objectives.

4. Implementation Stage

In the implementation stage, researchers applied the *Arabic Matching Puzzle* learning media to the Arabic language teaching and learning process in classes 7, 8, and 9 of Muhammadiyah Junior High School 9 Bojonegoro. Before implementation in the classroom, this media has gone through the validation stage by material and media experts, and has been revised in accordance with the input given. The main purpose of this stage is to determine the effectiveness of the media in helping students understanding of Arabic lessons, as well as evaluating teacher and student responses to its use.

The trial process was conducted directly in the classroom with normal learning duration. The teacher first introduced the digital media to the students, explained how to

use it, and provided technical direction regarding the features available in the game. After the introduction, students began to use the media independently or in groups to complete various challenges that had been arranged in the game. The teacher accompanies the learning process as a facilitator, helping if there are technical or understanding problems.

During the learning process, students interact directly with the media through the digital devices available. They are asked to match the elements in the game, understand the language structure, and compose sentences according to the game results. This activity is also supported by completing the Learner Worksheet (LKPD) as a form of documentation of learning outcomes.

5. Evaluation Stage

At this stage, the *Arabic Matching Puzzle* is assessed for its quality and feasibility based on the users. Then improvements are made from the evaluation results.

## 3. Data Collection Techniques

This study employs a mixed-method approach, combining both qualitative and quantitative methods (Jailani, 2023), aimed at obtaining a comprehensive picture of the effectiveness of using the Arabic Matching Puzzle learning media in improving students' understanding of Nahwu and Sharaf material. This approach allows simultaneous collection of descriptive and numerical data, providing internal validity through data triangulation. The data collection techniques used include observation, interviews, and questionnaires, conducted systematically and continuously.

a. Observation

This observation aims to monitor students' behavior and engagement while interacting with the Arabic Matching Puzzle media, including levels of concentration, learning enthusiasm, verbal responses, and students' ability to complete tasks provided through the application. The observation is supported by a structured observation sheet containing both quantitative and qualitative indicators to ensure objectivity and measurability. (Hasanah, 2017). This observational data is expected to provide information on learning dynamics that cannot be captured solely through quantitative data.

1) Observation Guidelines

Aimed at observing students' engagement and interaction while using the Arabic Matching Puzzle media (Herdiansyah, 2013). Observation is conducted over 6 meetings and then analyzed to observe the development of student engagement.

Score: 1 = Not focused 2 = Less focused 3 = Focused 4 = Very focused

| No | Aspect Observed | Indicator | Score 1 | Score 2 | Score 3 | Score 4 |
|---|---|---|---|---|---|---|
| 1 | Student focus level | Students appear focused on the learning media | | | | |
| 2 | Active student participation | Students actively answer and complete tasks | | | | |
| 3 | Student verbal response | Students ask questions/respond correctly | | | | |
| 4 | Learning enthusiasm | Expressions of enthusiasm and emotional involvement | | | | |
| 5 | Task completion ability | Students are able to complete tasks in the app | | | | |

Table 2. Observation Guidelines

b. Interview

Semi-structured interviews were conducted with two groups of informants: Arabic language teachers. Guided by an interview protocol containing open-ended questions, the interviews explored experiences with using the learning media, perceptions of ease and challenges during the learning process, and constructive suggestions for future media development (Hansen, 2020). Interviews were audio-recorded and transcribed verbatim, then analyzed thematically to gain deep understanding of supporting and hindering factors in the media's implementation.

**1)** Interview Guidelines

Purpose to obtain in-depth information from teachers and students about the use of the learning media (Anufia & Alhamid, 2019).

Interviews with Teachers:

1. How was your experience teaching using the Arabic Matching Puzzle media?
2. What are the strengths of this media, in your opinion?
3. What challenges did you encounter during the learning process with this media?
4. How did students respond to this media?
5. What suggestions do you have for improving this media?

c. Questionnaire

Quantitative data collection was conducted by distributing questionnaires to all students and teachers after the learning process. The questionnaire uses a five-point Likert scale (Strongly Disagree, Disagree, Somewhat Agree, Agree, Strongly Agree) to measure aspects such as ease of use, visual appeal and interactivity, improvement in Nahwu and Sharaf understanding, and learning motivation. The questionnaire was designed based on content validity theory and tested for reliability. Data were analyzed using percentage formula (Sugiyono, 2010) to assess the media's effectiveness and feasibility in Arabic language learning.

1) Questionnaire Guidelines

Purpose to measure students' and teachers' perceptions of the Arabic Matching Puzzle learning media's effectiveness (Pujihastuti, 2010). 5-point Likert Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Agree, 4 = Agree, 5 = Strongly Agree

| No | Statement | Score 1 | Score 2 | Score 3 | Score 4 | Score 5 |
|---|---|---|---|---|---|---|
| 1 | The Arabic Matching Puzzle media is easy to use | | | | | |
| 2 | The media's display is attractive and motivates me to learn | | | | | |

| | |
|---|---|
| 3 | The media helps me better understand Nahwu and Sharaf material |
| 4 | I feel more motivated to learn Arabic after using this media |
| 5 | The media content aligns with the curriculum |
| 6 | This media makes it easier to remember vocabulary and grammar rules |
| 7 | I want to use this media again in future lessons |

Table 3. Questionnaire Guidelines

**4.** Data Analysis Techniques

Data collected were analyzed using both qualitative and quantitative methods:

a. Qualitative Analysis:

Observational and interview data were fully transcribed, then grouped by emerging patterns, particularly regarding strengths and challenges in media usage. This provided a detailed understanding of how the media supported students' mastery of Nahwu and Sharaf. The results were presented narratively to offer comprehensive insights into the observed phenomena (Djajanegara, 2019).

b. Quantitative Analysis:

Questionnaire data were analyzed by calculating the percentage of media feasibility using a formula comparing obtained scores with maximum possible scores, then multiplying by 100%. The resulting percentage was classified into categories: not feasible, less feasible, feasible, and very feasible. This classification determined the media's feasibility based on respondents' assessments. The formula used (Muhson, 2006):

$$NP = \left( \frac{R}{SM} \right) \times 100\%$$

Where:

NP = Percentage Value

R = Score obtained from respondents

SM = Maximum possible score

Based on the calculation results, the percentage of learning media feasibility is categorized into the following four levels:

| **Percentage Score (%)** | **Feasibility Category** |
|---|---|
| 0% - 40% | Not Feasible |
| 41% - 60% | Less Feasible |
| 61% - 80% | Worth |
| 81% - 100% | Very Feasible |

Table 4. Feasibility Categories

## 5. Expert Validation

To ensure the quality and feasibility of the media, validation was carried out by at least two validators for each aspect (subject matter experts and media experts) using a validation sheet with criteria such as content accuracy, curriculum alignment, and design aspects including visual display, interactivity, ease of use, and technical performance. Experts rated each aspect on a scale of 1-4 (1 = poor, 4 = excellent) and provided comments and suggestions. The data were analyzed descriptively by calculating mean scores and feasibility percentages. Feasibility percentages were categorized according to Table 1: 0-40% (Not Feasible), 41-60% (Less Feasible), 61-80% (Feasible), and 81-100% (Very Feasible). These results served as the basis for revising and improving the media (Wulandari & Purwanto, 2017).

a. **Media Expert Instrument**

| Validation Aspect | Percentage Score (%) | Category |
|---|---|---|
| Layout and visual design | | |
| Navigation & readability | | |
| Ease of access & interactivity | | |
| Media Expert Average | | |

Table 5. Media Expert Instrument

The Media Expert Instrument measured the feasibility of the media from the perspective of media design and technical quality. Validation aspects included layout and visual design, which assessed the aesthetic quality, consistency, and clarity of visual elements; navigation and readability, which evaluated the logical flow, ease of finding features, and legibility of text; and ease of access and interactivity, which assessed whether users could easily access, navigate, and interact with the media. The average percentage score across these aspects was used to determine the overall feasibility category assigned by the media experts.

b. **Subject Matter Expert Instrument**

| Validation Aspect | Percentage Score (%) | Category |
|---|---|---|
| Content alignment with curriculum | | |
| Relevance to learning objectives | | |
| Appropriate difficulty level | | |
| Subject Expert Average | | |

Table 6. Subject Matter Expert Instrument

Meanwhile, the Subject Matter Expert Instrument measured the appropriateness of the media content and its alignment with educational goals. Validation aspects included content alignment with the curriculum, ensuring that the media's content corresponded to

the required curriculum standards; relevance to learning objectives, evaluating how well the media supported achieving specific instructional goals; and appropriate difficulty level, assessing whether the media content matched the targeted learners' level of knowledge and skill. The average percentage score across these aspects was used to determine the overall feasibility category assigned by the subject matter experts.

## C. Results and Discussion

This section presents the feasibility analysis of the Arabic Matching Puzzle learning media. It describes the validation results from media and material experts, highlighting aspects such as layout, visual design, interactivity, and ease of use. The discussion interprets how these results confirm the media's appropriateness and readiness for classroom implementation, pointing out its strengths in supporting Arabic language learning effectively.

1. Feasibility of Learning Media Based on Validation Results

| Validation Aspect | Percentage (%) | Score | Category |
|---|---|---|---|
| Layout and visual design | 90% | | Very Feasible |
| Navigation & Readability | 85% | | Very Feasible |
| Ease of Access & Interactivity | 88% | | Very Feasible |
| Media Expert Average | 88% | | Very Feasible |

Table 7: Results of Validation by Media Experts

| Validation Aspect | Percentage Score (%) | Category |
|---|---|---|
| Content conformity with the Curriculum | 87% | Very Feasible |

| | | |
|---|---|---|
| Relevance to objectives | 89% | Very Feasible |
| The level of difficulty is appropriate to the student's ability | 85% | Very Feasible |
| Material Expert Average | 87% | Very Feasible |

Table 3. Results of Validation by Material Experts

Based on the validation results from both groups of validators, the average percentage of feasibility of *Arabic Matching Puzzle* learning media is calculated using the formula:

$$\text{Rata-rata Validasi} = \frac{\text{Persentase Ahli Media} + \text{Persentase Ahli Materi}}{2}$$

With the final results as follows:

| Validation Aspect | Percentage Score (%) | Category |
|---|---|---|
| Media Expert | 88% | Very Feasible |
| Material Expert | 87% | Very Feasible |
| Average | 87,5% | Very Feasible |

Table 8. Average Validation Results by Material Experts and Media Experts.

The Arabic Matching Puzzle learning media developed is considered very feasible based on the validation results from two groups of experts. The validation by media experts showed an average score of 88%, with details: visual design aspects obtained 90%, navigation and readability of 85%, and interactivity and ease of access 88%. This indicates that this media fulfills the principles of interactive learning design that is responsive and user-friendly, and supports active student engagement during the learning process.

Meanwhile, the validation results from material experts get an average score of 87%, with a score of content conformity with the curriculum of 87%, relevance to learning objectives 89%, and the level of difficulty in accordance with the ability of students 85%. This means that the Nahwu and Sharaf material packaged in this media is

not only scientifically accurate, but also in accordance with the cognitive level of junior high school students. This is reinforced by the validator's suggestion that the material be arranged in stages and given emphasis on visualizing complex material.

2. Effectiveness of Media in the Learning Process

| Assessment Aspect | Percentage Score (%) | Category |
|---|---|---|
| Visual Design | 92% | Very Feasible |
| Interactivity and Accessibility | 88% | Very Feasible |
| Clarity and Effectiveness of Materials | 90% | Very Feasible |
| Student Attraction and Engagement | 90% | Very Feasible |
| Average | 90% | Very Feasible |

Table 9. Results of Teacher Response to Media Implementation

Arabic Matching Puzzle media has been implemented in three classes at Muhammadiyah Junior High School 9 Bojonegoro, namely the students from classes 7B, 8A, and 9C.. The learning process has a different learning focus, adjusted to the material of each level. This process is accompanied by the teacher as a facilitator, and students are given directions to use the application directly through an Android-based device.

The questionnaire results showed that teachers gave an average rating of 90% on the effectiveness of this media, especially in the aspects of visual design (92%), effectiveness of material delivery (90%), and student attraction to the media (90%).

3. Impact of Media on Student Understanding and Motivation

| Assessment Aspect | Percentage Score (%) | Category |
|---|---|---|
| Visual and Presentation Design | 95% | Very Feasible |
| Accessibility and Navigation | 90% | Very Feasible |
| Relevance to Learning Objectives | 90% | Very Feasible |
| Effectiveness in Learning | 92% | Very Feasible |

| | | |
|---|---|---|
| Average | 92% | Very Feasible |

Table 10. Results of Grade 7 Students Response to Media Implementation

| Assessment Aspect | Percentage Score (%) | Category |
|---|---|---|
| Visual and Presentation Design | 94% | Very Feasible |
| Accessibility and Navigation | 90% | Very Feasible |
| Relevance to Learning Objectives | 92% | Very Feasible |
| Effectiveness in Learning | 95% | Very Feasible |
| Average | 93% | Very Feasible |

Table 11. Results of Grade 8 Students Response to Media Implementation

| Assessment Aspect | Percentage Score (%) | Category |
|---|---|---|
| Visual and Presentation Design | 97% | Very Feasible |
| Accessibility and Navigation | 92% | Very Feasible |
| Relevance to Learning Objectives | 95% | Very Feasible |
| Effectiveness in Learning | 95% | Very Feasible |
| Average | 95% | Very Feasible |

Table 12. Results of Grade 9 Students Response to Media Implementation

Based on observation data and questionnaire results, the use of this media is proven to improve students understanding of Nahwu and Sharaf material. Students in class 7 obtained an average assessment score of 92%, class 8 of 93%, and class 9 reached 95%. From the observation results, students seemed more active in compiling answers and showed high curiosity precisely in a relatively short time.

Interviews with students also showed positive responses. A grade 9 student stated that "with this game, learning becomes easier and more fun." This shows that this media supports learning by doing which strengthens conceptual understanding through hands-on practice.

Students learning motivation has also increased. Based on the learning motivation questionnaire distributed, students stated that they were more enthusiastic about participating in Arabic lessons than before. They feel more confident because this media

provides challenges with a score system, as well as instant feedback if their answers are wrong or right.

4. Implications and Recommendations for Further Development

| Evaluation Aspect | Percentage Score (%) | Category |
|---|---|---|
| Feasibility by Media Expert | 88% | Very Feasible |
| Feasibility by Material Expert | 87% | Very Feasible |
| Average Teacher Response | 90% | Very Feasible |
| Average Response of Class 7 Students | 92% | Very Feasible |
| Average Response of Class 8 Students | 93% | Very Feasible |
| Average Response of Class 9 Students | 95% | Very Feasible |
| Average Evaluation | 90,83% | Very Feasible |

Table 13: Average Evaluation Results

Based on the evaluation results, this media obtained an average score of 91% in the category of "Very Appropriate." In addition to increasing understanding and motivation, this media is also able to develop aspects of critical thinking skills, especially when students have to arrange fi'il and dhamir pairs in logical and meaningful sentences.

Nevertheless, there were some inputs that became the basis for further development. Teachers suggested that the media be equipped with an adaptive question feature to differentiate students ability levels, as well as a user data storage system so that student progress can be monitored. Meanwhile, students suggested that the variety of games be increased at each level. Along with the development of educational technology, this media can be expanded in the future by utilizing artificial *intelligence* to optimize learning.

5. Evaluation Results

Based on the evaluation results, the Arabic Matching Puzzle media obtained an average score of 91%, which is included in the Highly Appropriate category. This media is proven to help improve students understanding of Nahwu and Sharaf, increase learning motivation, and provide a more interesting learning experience. Nevertheless, there are several aspects that can still be improved in the next development, including the addition of a variety of questions, refinement of interactive features, and integration with additional exercises to strengthen students understanding and skills on an ongoing basis.

## D. Conclusion

Based on the results of the research that has been done, it can be concluded that the Arabic Matching Puzzle learning media is proven effective and feasible to use in learning Nahwu and Sharaf at Muhammadiyah Junior High School 9 Bojonegoro. This media development uses the ADDIE model which includes the stages of Analysis, Design, Development, Implementation, and Evaluation, resulting in a product that suits the needs of students and teachers.

The validation results show that this media gets a percentage of feasibility of 88% from media experts and 87% from material experts, which is included in the Very Feasible category. The implementation of media in learning also received positive responses from teachers and students, with an average score of 90% from teachers and 93% from students, which shows that this media is easy to use, interesting, and effective in improving students understanding of Nahwu and Sharaf.

In addition, the evaluation results show that Arabic Matching Puzzle contributes to increasing learning motivation, student engagement, and understanding of Arabic concepts in a more interactive and fun way. With an average evaluation score of 91%, this media is categorized as very feasible- for use in learning. This media not only improves students understanding but also changes the dynamics of classroom interaction, encouraging students to be more active and involved in learning.

The novelty of this research lies in the integration of Nahwu and Sharaf materials in one interactive game-based Android application, the use of Construct 3 technology, as well as the application of a structured gamification approach. In addition, this research also conducts a thorough evaluation of the cognitive, affective, and psychomotor aspects of students and targeted three grade levels at once, making it more exploratory and provides a comprehensive picture of the impact of this media in the learning process.

Thus, this media is expected to be an effective and innovative solution in learning Arabic grammar at the junior high school level, as well as opening up opportunities for further development with the integration of adaptive features based on Artificial Intelligence (AI). This technology allows more precise material adjustments according to the level of ability and needs of each student, so that learning becomes more personalized and responsive. In the future, the development of this media can be expanded to cover various levels of difficulty, making it more flexible in use at various levels of education, and has the potential to become a digital learning model that can be widely applied in other educational institutions.

## E. Reference

Abdillah, R., & Maswani, M. (2015). ATSAR ITBAA'MADKHAL AL-TA'ALLUM AL-TA'AWUNIY FII TA'LIIM AL-NAHW. *Arabiyat: Jurnal Pendidikan Bahasa Arab Dan Kebahasaaraban*, *2*(1), 130–143.

Abdurrohman, M. A., & Ulinnuhaa, M. (2024). Problematika Pembelajaran Nahwu. *AL-MIKRAJ Jurnal Studi Islam Dan Humaniora (E-ISSN 2745-4584)*, *4*(02), 1768–1772.

Albab, U. (2015). Performansi Dan Gramatika Bahasa Arab Sebagai Bahasa Kedua. *Arabiyat: Jurnal Pendidikan Bahasa Arab Dan Kebahasaaraban*, *2*(1), 75–85.

Anufia, B., & Alhamid, T. (2019). *Instrumen pengumpulan data*.

Asiah, A., Zamroni, Z., & Rijal, M. K. (2022). Problematika Pembelajaran Nahwu Dalam Meningkatkan Keterampilan Berbahasa Arab di Lembaga Pendidikan Indonesia. *Borneo Journal of Language and Education*, *2*(2), 170–185.

Cholidah, Z., & Muid, F. A. (2024). Inovasi Pembelajaran Nahwu dalam Kurikulum Bahasa Arab Modern. *Journal of Practice Learning and Educational Development*, *4*(3), 184–189.

Dafiq, A. K. A. (2024). Pengembangan Aplikasi Belajar Nahwu dan Shorof: Systematic Literature Review. *JATISI (Jurnal Teknik Informatika Dan Sistem Informasi)*, *11*(2).

Dhananjaya, A., Pragantha, J., & Haris, D. (2024). Rancangan Pembuatan Puzzle 2D" Perfect Match" untuk Perangkat Android. *Jurnal Komputer, Informasi Dan Teknologi*, *4*(2), 9.

Djajanegara, A. R. (2019). Teknik Analisis Data (Analisis Kualitatif Pada Hasil Kuesioner). *Medikom| Jurnal Ilmu Pendidikan Dan Dakwah*, *1*(1), 55–65.

Fahrezi, F., & Yusuf, E. B. (2023). Tatbiq Toriqotil Ta'lim Al Qoim ala Masyarik fii Ta'liim al Lughah al Arobiyah fi Manhaj Merdeka lil Fasli al 'syir bi Al Madrasah Tsanawiyah Al Islamiyah Al hukumiyah Al ulaa Banyumas. *Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab*, *7*(2).

Fata, K., Tsani, F. A. A., & Ramadhansyah, M. F. (2024). Fa'āliyyatu Istkhdāmi Wasāil "UNO Sharf" fī Ta'līmi Darsi as-Ṣarf li as-Ṣaf as-Tsāni bi Kulliyyati al-Mu'allimīn al-Islāmiyyah bi Ma'hadi ar-Ridho Sentul: The Effectiveness of Using" UNO Sharf" Media in Teaching Sharf Lessons for the Second Year at the Kulliyyatul Mu'allimin al Islamiyah Ar-Ridho Sentul. *Lisanudhad: Jurnal Bahasa, Pembelajaran, Dan Sastra Arab*, *11*(2), 124–144.

Firdaus, F. M., & Aziz, M. T. (2024). Pemanfaatan Aplikasi Pembelajaran Bahasa Arab: Mengubah Cara Belajar di Era Digital. *Journal of Practice Learning and Educational Development*, *4*(4), 273–278.

Fuadi, A. H. N., Panagara, F. H., Izzah, N., & Muasssomah, M. (2024). PENERAPAN PERMAINAN NAHWU MATCHING DALAM PEMBELAJARAN ISIM ISYĀRAH. *Al Mi'yar: Jurnal Ilmiah Pembelajaran Bahasa Arab Dan Kebahasaaraban*, *7*(1), 501–516.

Hajar, H. I., & Qohar, H. A. (2024). Pendekatan Inovatif untuk Mengatasi Tantangan Pembelajaran Nahwu dan Sharaf bagi Peserta Didik. *Ranah Research: Journal of Multidisciplinary Research and Development*, *6*(6), 2995–3009.

Hansen, S. (2020). Investigasi teknik wawancara dalam penelitian kualitatif manajemen konstruksi. *Jurnal Teknik Sipil*, *27*(3), 283.

Hasanah, H. (2017). Teknik-teknik observasi (sebuah alternatif metode pengumpulan data kualitatif ilmu-ilmu sosial). *At-Taqaddum*, *8*(1), 21–46.

Herdiansyah, H. (2013). *Wawancara, observasi, dan focus groups: Sebagai instrumen penggalian data kualitatif*.

Hidayat, A. I., Martha, A. S. D., & Adrian, M. (2024). Perancangan Gamifikasi pada Aplikasi Pembelajaran Bahasa Arab Menggunakan Metode GAME. *EProceedings of Engineering*, *11*(4).

Holilulloh, A. (2018). *Epistemologi ilmu nahwu: karakteristik kitab al-Ajurumiyyah dan al-Nahwu al-Wadih*. Trussmedia Grafika.

Huang, C. L., Luo, Y. F., Yang, S. C., Lu, C. M., & Chen, A.-S. (2020). Influence of students' learning style, sense of presence, and cognitive load on learning outcomes in an immersive virtual reality learning environment. *Journal of Educational Computing Research*, *58*(3), 596–615.

Huda, N. F. (2020). Penggunaan Media Pembelajaran Spinning Wheel dalam Pembelajaran Qawa>id Nahwu. *Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab*, *4*(2), 155–174. https://doi.org/10.32699/liar.v4i2.1495

Ilmiani, A. M., Ahmadi, A., Rahman, N. F., & Rahmah, Y. (2020). Multimedia interaktif untuk mengatasi problematika pembelajaran Bahasa Arab. *Al-Ta'rib Jurnal Ilmiah Program Studi Pendidikan Bahasa Arab*, *8*(1), 17–32.

Ismail, U. S., Radzi, A. H. M., Ismail, N., Pisal, N. A., & Zaki, M. F. M. (2024). Maharah Al-Qawaid Al-Arabiyyah Model Based On Sequence Of Student Mastery Of Arabic Grammar. *Ijaz Arabi Journal of Arabic Learning*, *7*(1).

Jailani, M. S. (2023). Teknik pengumpulan data dan instrumen penelitian ilmiah pendidikan pada pendekatan kualitatif dan kuantitatif. *IHSAN: Jurnal Pendidikan Islam*, *1*(2), 1–9.

Kovalsky, S. Z., Glasner, D., & Basri, R. (2015). A global approach for solving edge-matching puzzles. *SIAM Journal on Imaging Sciences*, *8*(2), 916–938.

Lenaini, I. (2021). Teknik pengambilan sampel purposive dan snowball sampling. *Historis: Jurnal Kajian, Penelitian Dan Pengembangan Pendidikan Sejarah*, *6*(1), 33–39.

Luthfan, M. A., & Hadi, S. (2019). Morfologi Bahasa Arab: Reformulasi Sistem Derivasi dan Infleksi. *Alsina: Journal of Arabic Studies*, *1*(1), 1–22.

Mappanyompa, M. M., & Ali, M. A. M. A. M. (2017). Urgensi Penggunaan Multimedia Interaktif Terhadap Peningkatan Motivasi BelaJar Siswa Dalam PembelaJaran Bahasa Arab Kelas Va Min Malang 2. *Ibtida'iy: Jurnal Prodi PGMI*, *2*(2), 54–80.

Maufidhoh, I., & Maghfirah, I. (2023). Implementasi pembelajaran berbasis artificial intelligence melalui media puzzle maker pada siswa sekolah dasar. *Abuya: Jurnal Pendidikan Dasar*, *1*(1), 30–43.

Muhson, A. (2006). Teknik analisis kuantitatif. *Universitas Negeri Yogyakarta. Yogyakarta*, 183–196.

Natsir, M. (2017). Pembelajaran Bahasa Arab Dengan Pendekatan Analisis Morfologi. *Jurnal Al Bayan: Jurnal Jurusan Pendidikan Bahasa Arab*, *9*(1), 40–48.

Nisa, D. S. K. (2022). Wasail al-Ta'allum bi al-Bithaqah al-Mushawwarah li al-Thullab Mu'aqiin Dzihni fi Itqan Mufradat al-Lugah al-Arabiyah. *Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab*, *6*(1), 133–148.

Nuzula, A. F. (2024). Penerapan Metode Crossword Puzzle Berbasis Aplikasi Puzzle Maker dalam Peningkatan Mufradat Bahasa Arab Siswa. *Al-Lahjah: Jurnal Pendidikan, Bahasa Arab, Dan Kajian Linguistik Arab*, *7*(2), 827–837.

Pujihastuti, I. (2010). Prinsip penulisan kuesioner penelitian. *CEFARS: Jurnal Agribisnis Dan Pengembangan Wilayah*, *2*(1), 43–56.

Putra, L. D., & Pratama, S. Z. A. (2023). Pemanfatan media dan teknologi digital dalam mengatasi masalah pembelajaran. *Journal Transformation of Mandalika, e-ISSN: 2745-5882, p-ISSN: 2962-2956*, *4*(8), 323–329.

Rahmadita, P. M., Tatang, T., & Maulani, H. (2023). Problematika Pembelajaran Bahasa Arab di Tingkat MTs Pada Masa Pandemi COVID-19. *Ihtimam: Jurnal Pendidikan Bahasa Arab*, *6*(1), 22–33.

Refdianti, A., Afwan, A., & Darman, I. H. (2024). الوسئل الرقمية وغير الرقمية لترقية المهارات اللغوية. *Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab*, *8*(1), 130–144.

Richey, R. C., & Klein, J. D. (2013). Design and development research. In *Handbook of research on educational communications and technology* (pp. 141–150). Springer.

Ruswan, A., Rosmana, P. S., Nafira, A., Khaerunnisa, H., Habibina, I. Z., Alqindy, K. K., Amanaturrizqi, K., & Syavaqilah, W. (2024). Pengaruh Penggunaan Media Pembelajaran Berbasis Teknologi dalam Meningkatkan Kemampuan Literasi Digital Siswa Sekolah Dasar. *Jurnal Pendidikan Tambusai*, *8*(1), 4007–4016.

Sa'adah, N. (2019). Problematika pembelajaran nahwu bagi tingkat pemula menggunakan Arab pegon. *Lisanan Arabiya: Jurnal Pendidikan Bahasa Arab*, *3*(1), 15–32.

Sakdiah, N., & Sihombing, F. (2023). Problematika Pembelajaran Bahasa Arab. *Jurnal Sathar*, *1*(1), 34–41.

Sholihah, E., Supardi, A., & Hilmi, I. (2022). Teknologi Media Pembelajaran Bahasa Arab. *Al-Urwatul Wutsqo: Jurnal Ilmu Keislaman Dan Pendidikan*, *3*(1), 33–42.

Suci, F., & Syaifudin, M. (2024). Inovasi dalam Pengajaran Bahasa Arab: Menggunakan Aplikasi dan Platform Online untuk Pembelajaran Nahwu yang Lebih Menarik. *Journal of Practice Learning and Educational Development*, *4*(4), 322–329.

Sugiyono, P. D. (2010). Metode Peneliian. *Kuantitatif, Kualitatif, Dan R&D*.

Suib, M., Saputra, D., & Fidri, M. (2022). Strategi Pembelajaran Berdasarkan Unsur-Unsur Bahasa Arab. *Jurnal As-Said*, *2*(1), 149–161.

Supriadi, A., Akla, A., & Sutarjo, J. (2020). Problematika Pengajaran Bahasa Arab Di Madrasah Aliyah. *An Nabighoh*, *22*(02), 211–230.

Sutriyani, W., Attalina, S. N. C., Wiranti, D. A., Zumrotun, E., & Wulandari, E. T. (2022). Inovasi Media Pembelajaran Puzzle Digital Sebagai Upaya Meningkatkan Kemampuan Kognitif Siswa Sekolah Dasar. *Khaira Ummah*, *1*(02), 157–162.

Syaripudin, U., Gerhana, Y. A., & Hasanudin, H. (2012). Pembuatan Game Ilmu Shorof (Tashrief) Sebagai Media Pembelajaran Bahasa Arab. *Jurnal Istek*, *6*(1–2).

Taqiyah, S. Z. (2023). Implementasi Manual Media Kaana Puzzle Dalam Pembelajaran Tata Bahasa Arab. *Tatsqifiy: Jurnal Pendidikan Bahasa Arab*, *4*(1), 34–51.

Thobib, M., & Amirudin, N. (2023). Implementasi Ilmu Nahwu Dan Sharaf Dalam Pembelajaran Kitab Fathul Qarib Di Madrasah Diniyah. *Jurnal Pendidikan Islam Al-Ilmi*, *6*(2), 267–273.

Wulandari, Y., & Purwanto, W. E. (2017). Kelayakan aspek materi dan media dalam pengembangan buku ajar sastra lama. *Jurnal Penelitian Pendidikan Bahasa Dan Sastra Indonesia*, *3*(2), 162–172.

Yunita, S., & Supriatna, U. (2021). Pengaruh penggunaan media puzzle terhadap hasil belajar siswa. *Syntax Idea*, *3*(8), 1999–2006.