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Developing Index Card Match-Based Card Media to Enhance Motivation and Learning Outcomes in Arabic Language Learning

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ABSTRACT

Student motivation and learning outcomes in Arabic language learning require interactive media that support vocabulary practice, peer interaction, and active classroom engagement. This study developed *Mumtaza Card*, an Index Card Match-based card medium, for *Tamrin Lughoh* material among Grade VII students at SMP MBS Sleman Yogyakarta. This research used a Research and Development approach with the ADDIE model: analysis, design, development, implementation, and evaluation. The product was validated by media and subject matter experts and tested through classroom implementation. The effectiveness test involved 68 Grade VII students divided into experimental and control classes. Data were collected through expert validation sheets, student response questionnaires, observation, motivation questionnaires, and Arabic learning outcome tests. The data were analyzed using descriptive statistics, assumption tests, MANOVA, and N-Gain. Expert validation showed that *Mumtaza Card* was highly feasible, with media expert validation of 93% and subject matter expert validation of 92%. Student responses indicated very high practicality, with an average score of 92.59%. MANOVA results showed a significant effect of the media on students' motivation and learning outcomes, with $p < .001$. The N-Gain score of 0.82 indicated high learning improvement. The findings suggest that *Mumtaza Card* is feasible, practical, and effective for supporting Arabic language learning. The card-based matching activity encourages active participation, repeated vocabulary practice, and peer interaction. This media can be used as an alternative instructional tool for improving motivation and learning outcomes in Arabic classes.

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1. INTRODUCTION

Motivation plays an important role in Arabic language learning. Students who have strong motivation show better attention, persistence, and classroom participation. Recent international evidence shows that game-based and gamified learning can improve motivation, engagement, and achievement when teachers align the game activity with clear learning goals (Kalogiannakis et al., 2021;

Li et al., 2023; Alotaibi, 2024). In Arabic instruction, motivation becomes more important because many students perceive Arabic as difficult when they must master vocabulary, grammar, pronunciation, and the four language skills (Ghofur et al., 2023; Riwanda et al., 2021).

Instructional media can support motivation by making learning more interactive, concrete, and student centered. Multimedia learning research stresses that words, pictures, feedback, and structured practice help learners process information more effectively when the design avoids unnecessary cognitive load (Mayer & Fiorella, 2021). UNESCO (2023) also emphasizes that educational technology and media should serve a clear pedagogical purpose, not function as decoration. National studies in Arabic learning show that card media, digital quizzes, and active strategies can help students participate more actively and remember vocabulary more easily (Anggraini, 2022; Hania et al., 2022; Mufti et al., 2022).

At SMP MBS Sleman Yogyakarta, Arabic learning media for Grade VII students remain limited in variety. Students often feel bored, less focused, and less motivated during lessons. These conditions match findings from Indonesian Arabic learning contexts where vocabulary learning often needs more visual, interactive, and repetitive activities (Ardiansyah et al., 2023; Kamalia et al., 2022). The use of game-based card media, especially Index Card Match, has not been fully developed for Arabic instruction in this context. This creates a need for media that combine play, peer interaction, and structured vocabulary practice.

Previous national studies reported positive effects of Index Card Match and card-based media on Arabic vocabulary mastery, learning interest, and learning outcomes (Khoeriyah, 2022; Nisa' & Rohmah, 2022; Fatullah et al., 2024). International studies also show that game-based learning and gamification can affect motivation and achievement, although the effect depends on activity design, feedback, class management, and learner characteristics (Diaz & Estoque-Lonez, 2024; Lampropoulos & Sidiropoulos, 2024; Zhang & Yu, 2022). However, limited research has developed printed card media using the Index Card Match model for Arabic learning in pesantren-based junior secondary schools. Therefore, this study focuses on the development of Mumtaza Card media based on the Index Card Match model to improve students' motivation and support Arabic learning outcomes.

This study aims to develop Mumtaza card media based on the Index Card Match model for Arabic language learning among Grade VII students at SMP MBS Sleman Yogyakarta.
The study is guided by the following questions:

1. How can Mumtaza card media based on the Index Card Match model be developed for Arabic language learning?
2. How does the use of Mumtaza card media support students' motivation and learning outcomes in Arabic language learning?

2. METHODS

This study follows a Research and Development (R&D) approach to develop and evaluate an Index Card Match-based card game for Arabic language learning in Tamrin Lughoh material. R&D suits this study because the main output is a learning media product that must pass stages of needs analysis, expert validation, revision, classroom implementation, and effectiveness testing (Sugiyono, 2022; Arika et al., 2023). Quantitative data were used to test media feasibility, practicality, motivation, and learning outcomes, while classroom observation supported interpretation of the product use.

The study employs the ADDIE model, which consists of Analysis, Design, Development, Implementation, and Evaluation. ADDIE provides a systematic instructional design framework because each stage links learner needs, media design, product development, classroom use, and evaluation (Adeoye et al., 2024). A quasi-experimental design with a Non-Equivalent Control Group was also used to evaluate the effect of Mumtaza Card. This design was appropriate because the study used existing school classes and compared an experimental group that used the card media with a control group that followed conventional learning (Creswell & Creswell, 2023).

Participants included one Arabic language subject matter expert, one media expert, four Arabic language teachers who took part in the Focus Group Discussion, and 68 Grade VII students from SMP MBS Sleman Yogyakarta divided into an experimental class and a control class. Student selection was based on enrollment in Grade VII Arabic classes and classroom availability. This sampling approach followed the practical logic of school-based quasi-experimental research, where intact classes often become the unit of treatment comparison (Creswell & Creswell, 2023).

The instruments assessed both product quality and learning impact. Observation sheets recorded classroom dynamics during media use. The material feasibility questionnaire assessed content accuracy, language suitability, and alignment with Tamrin Lughoh objectives. The media feasibility questionnaire assessed layout, usability, readability, and card design. The student response questionnaire measured practicality, engagement, and motivational value. Arabic learning achievement tests measured pre-test and post-test results. This combination follows recent media-development studies that use expert validation, learner response, and learning outcome tests to judge feasibility, practicality, and effectiveness (Arika et al., 2023; Ardiansyah et al., 2023; Hania et al., 2022; Munawaroh, 2021).

The development and testing of Mumtaza Card followed the ADDIE model. In the Analysis phase, the researcher identified student difficulties, learning needs, existing media, and teacher practices in Grade VII Arabic learning. In the Design phase, the researcher prepared the card format, question-answer pairs, learning objectives, rules, and classroom scenario. In the Development phase, the researcher produced the media, validated it with experts, and revised it based on feedback. In the Implementation phase, the media was used in the experimental class during Arabic lessons. In the Evaluation phase, formative feedback and summative data from questionnaires and tests were analyzed. This sequence matches recent R&D studies that position ADDIE as an iterative model for improving learning media before and after classroom use (Adeoye et al., 2024; Arika et al., 2023).

To analyze the data, assumption tests and inferential statistics were conducted. Linearity, multicollinearity, normality, and homogeneity tests ensured that the data met the assumptions for multivariate analysis. MANOVA was used because the study examined two dependent variables at the same time, namely learning motivation and learning outcomes. The N-Gain score was calculated to measure pre-test to post-test improvement in the experimental group. This statistical strategy strengthens the evaluation because recent meta-analytic studies on gamification and game-based learning recommend measuring both cognitive and motivational outcomes rather than focusing only on test scores (Diaz & Estoque-Lonez, 2024; Zhang & Yu, 2022).

The study followed school research ethics. Permission was obtained from SMP MBS Sleman Yogyakarta before data collection. Teachers and students received information about the study purpose, procedures, and data use. Personal information was anonymized, and the results were used only for academic purposes. These procedures follow current research design guidance that school-based studies must protect participants, clarify consent, minimize risk, and report data honestly (Creswell & Creswell, 2023).

3. FINDINGS AND DISCUSSION

3.1 Findings

This section presents the findings based on the research objectives. The results are organized into three themes: media feasibility, practicality, and effectiveness. The media developed in this study is the Mumtaza Card, an index card match-based card game for Grade VII Arabic learning. The development process followed the ADDIE model: analysis, design, development, implementation, and evaluation.

The first research objective was to determine the feasibility of developing Mumtaza Card as learning media for Arabic vocabulary and communication practice.

The needs analysis showed that students had difficulty understanding and using Arabic vocabulary correctly. Students also had limited speaking practice outside the classroom. The learning

process still used classical methods, guidebooks, and PowerPoint slides. These conditions showed the need for more interactive media.

Table 1. Media Feasibility Based on ADDIE Stages

ADDIE Stage	Key Findings	Link to Research Objective
Analysis	Students had difficulty understanding Arabic vocabulary. Learning was still monotonous and relied on books and PowerPoint.	Shows the need for new Arabic learning media.
Design	The media was designed as Mumtaza Card using the index card match method. It contained question and answer cards for Tamrin Lughoh.	Supports the development of interactive vocabulary learning media.
Development	The media was developed using laptop or PC, Google, Canva, and Microsoft Word. The content covered Grade VII odd and even semester materials.	Produces structured media based on student learning needs.
Implementation	The media was applied in the experimental class, VII I.	Tests whether the media can be used in real classroom learning.
Evaluation	The media was evaluated through student and teacher responses.	Measures feasibility, practicality, and effectiveness.

The feasibility findings show that Mumtaza Card matched the classroom problem. Students needed more active vocabulary practice, and the Index Card Match model supported interaction, repetition, movement, and peer feedback. This finding is consistent with national studies showing that Index Card Match and card media can improve Arabic vocabulary practice and learning outcomes when students match terms, meanings, pictures, and questions in a guided activity (Anggraini, 2022; Ardiansyah et al., 2023; Nisa' & Rohmah, 2022).

A relevant observation note stated that students "were not yet fully skilled in communicating using Arabic" and had difficulty understanding vocabulary. This supports the need for media that trains vocabulary use through repeated practice.

The second research objective was to examine the practicality of Mumtaza Card based on user responses.The student response questionnaire assessed four aspects: appearance, content, media operationalization, and instructional design. All aspects received scores above 92%. This indicates that students viewed the media as highly practical for Arabic learning. Recent Indonesian studies also report that students respond positively to Arabic learning media when the media are easy to use, visually clear, and connected to the target language material (Ghofur et al., 2023; Mufti et al., 2022).

Table 2. Student Response Results on Media Practicality

Practicality Aspect	Percentage	
Appearance or media design	92.10%	Very practical
Content or subject matter	93.14%	Very practical
Media operationalization	92.94%	Very practical
Instructional design	92.16%	Very practical
Average	**92.59%**	**Very practical**

Figure 1. Student Practicality Response Results

The highest score appeared in the content aspect, with 93.14%. This means students considered the material suitable for their learning needs. The operationalization score reached 92.94%, which shows that students could use the media easily during learning. The appearance score reached 92.10%, which shows that the card design attracted student interest. These results support multimedia learning principles, which state that clear visual design, relevant text, and simple interaction can help learners focus on the learning task (Mayer & Fiorella, 2021).

Teacher response data was mentioned in the source, but no teacher response score was provided. Therefore, this section can be strengthened by adding a teacher response table when the data is available.

Table 3. Teacher Response Data Availability

Response Source	Data Available	Notes
Students	Available	Four practicality aspects were reported.
Teachers	Partly available	The study mentions teacher involvement, but no teacher response score is provided.
Vice principal of curriculum	Partly available	Involved in observation, but no quantified response result is provided.

The third research objective was to test the effectiveness of Mumtaza Card in improving student motivation and learning outcomes.

The source states that the media improved student motivation and learning outcomes. The effectiveness test included a linearity test, a multicollinearity test, a normality test, a homogeneity test, and a MANOVA analysis. However, the statistical values were not included in the provided text.

Table 4. Effectiveness Test Results

Statistical Test	Purpose	Result in Provided Text
Linearity test	To check the linear relationship between variables	Test mentioned, values not provided
Multicollinearity test	To check correlation among independent variables	Test mentioned, values not provided
Normality test	To check whether data were normally distributed	Test mentioned, values not provided
Homogeneity test	To check variance equality	Test mentioned, values not provided
MANOVA	To test the effect on motivation and learning outcomes	Test mentioned, values not provided

The available findings show that Mumtaza Card had a positive effect on motivation and learning outcomes. This result supports the third research objective and aligns with international meta-analytic

evidence that game-based and gamified learning can improve achievement and motivation when teachers provide goals, rules, feedback, and meaningful challenge (Diaz & Estoque-Lonez, 2024; Li et al., 2023; Zhang & Yu, 2022). Still, the effectiveness section needs complete statistical output, such as significance value, F value, Wilks' Lambda, mean score, standard deviation, and pre-test and post-test results.

3.1.1 Linearity Test

The results of the linearity test include both the experimental class and the control class.

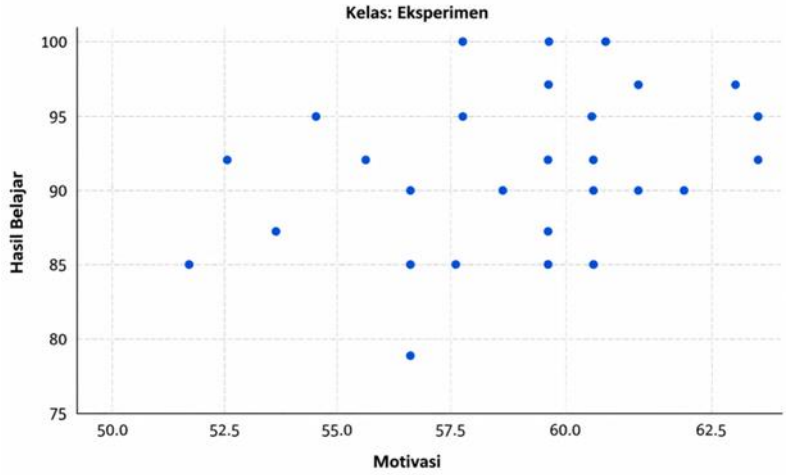

Figure 1. Linearity Test of the Experimental Class

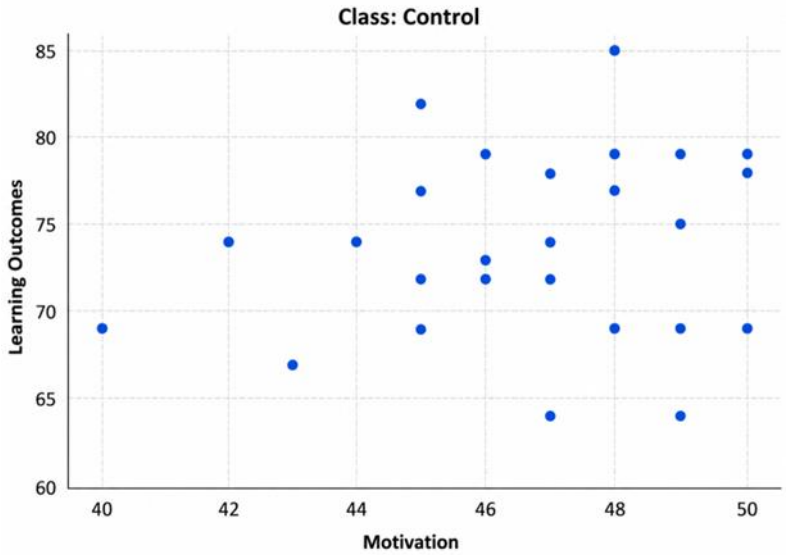

Figure 2. Linearity Test of the Control Class

The scatter plots indicate a linear relationship between students' learning motivation and their learning achievement in both the experimental and control classes. Students with higher motivation tended to show better learning outcomes. In the experimental class, where learning used Mumtaza Card, this relationship appeared clearer and stronger. This suggests that the media-supported motivation moved in the same direction as achievement. This pattern is consistent with studies that connect gamified learning, active participation, feedback, and classroom engagement with stronger learning outcomes (Lampropoulos & Sidiropoulos, 2024; Ramirez Ruiz et al., 2024).

3.1.2 Multicollinearity Test

The multicollinearity test consists of the multivariate test and the test of between-subject effects.

Table 5. Multivariate Tests

Effect	Multivariate Test	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.998	16326.289[b]	2.000	65.000	.000	.998
Intercept	Wilks' Lambda	.002	16326.289[b]	2.000	65.000	.000	.998
Intercept	Hotelling's Trace	502.347	16326.289[b]	2.000	65.000	.000	.998
Intercept	Roy's Largest Root	502.347	16326.289[b]	2.000	65.000	.000	.998
Class	Pillai's Trace	.857	194.673[b]	2.000	65.000	.000	.857
Class	Wilks' Lambda	.143	194.673[b]	2.000	65.000	.000	.857
Class	Hotelling's Trace	5.990	194.673[b]	2.000	65.000	.000	.857
Class	Roy's Largest Root	5.990	194.673[b]	2.000	65.000	.000	.857

Note. Design: Intercept + Class.
[b] Exact statistic.
In thesis writing, the significance value should be reported as **p < .001**, not **p = .000**.

The multivariate analysis indicates significant differences in students' learning motivation and learning outcomes across classes. The test produced F(2, 65) = 194.673, p < .001, with Wilks' Lambda = 0.143. The partial eta squared value of 0.857 suggests a very large class effect on the combined dependent variables. This finding supports the argument that a well-designed game-based learning activity can influence both affective and cognitive outcomes, not only one domain (Alotaibi, 2024; Diaz & Estoque-Lonez, 2024).

Table 6. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected	Learning Outcomes	5136.485[a]	1	5136.485	205.046	.000	.756
Model	Motivation	2352.941[b]	1	2352.941	302.648	.000	.821
Intercept	Learning Outcomes	46431.11	1	46431.11	1353.51	.000	.996
Intercept	Motivation	188265.94	1	188265.94	242157.7	.000	.997
Class	Learning Outcomes	5136.485[a]	1	5136.485	205.046	.000	.756
Class	Motivation	2352.941[b]	1	2352.941	302.648	.000	.821
Error	Learning Outcomes	1653.324	66	25.050			.821
Error	Motivation	5133.118	66	77.775			.821
Total	Learning Outcomes	471100.00	68				
Total	Motivation	191132.00	68				
Corrected Total	Learning Outcomes	6789.809	67				
Corrected Total	Motivation	2866.059	67				

Note:
[a] R Squared = .756 (Adjusted R Squared = .753)
[b] R Squared = .821 (Adjusted R Squared = .818)

The univariate analysis revealed that class differences had a significant impact on learning outcomes and motivation. Learning outcomes showed $F(1, 66) = 205.046$, $p < .001$, while motivation showed $F(1, 66) = 302.648$, $p < .001$. The partial eta squared values were 0.756 for learning outcomes and 0.821 for motivation, indicating strong effects. These results strengthen the conclusion that the Index Card Match-based card media encouraged students to engage with Arabic vocabulary and practice more actively. Similar national evidence shows that Index Card Match can improve Arabic vocabulary mastery and learning interest when students search, match, and discuss cards with peers (Khoeriyah, 2022; Nisa' & Rohmah, 2022).

3.3 Normality Test

The normality test consists of the test of normality.

Table 7. Tests of Normality

Class	Statistic	df	Sig. (Kolmogorov-Smirnov)	Statistic (Shapiro-Wilk)	df	Sig. (Shapiro-Wilk)
Motivation	Experimental group	.121	34	.200[a]	.963	34
Motivation	Control group	.134	34	.127	.950	34
Learning Outcomes	Experimental group	.131	34	.146	.958	34
Learning Outcomes	Control group	.122	34	.200[a]	.967	34

Note:
[a] This is a lower bound of the true significance.
Kolmogorov-Smirnov and Shapiro-Wilk are tests used to assess the normality of the data.

The Shapiro-Wilk test assessed the normality of students' learning outcomes and motivation data in each class. The results showed that all p-values were greater than 0.05, so the data met the normality assumption for further parametric testing. This step is important because quasi-experimental educational studies need to check statistical assumptions before interpreting group differences (Creswell & Creswell, 2023).

3.4 Homogeneity Test

The homogeneity test includes Levene's test of equality of error variances.

Table 8. Levene's Test of Equality of Error Variances

Dependent Variable	Levene Statistic	df1	df2	Sig.
Learning Outcomes	Based on Mean	.010	1	66
Learning Outcomes	Based on Median	.014	1	66
Learning Outcomes	Based on Median and with adjusted df	.014	1	65.992
Learning Outcomes	Based on trimmed mean	.011	1	66
Motivation	Based on Mean	2.071	1	66
Motivation	Based on Median	1.752	1	66
Motivation	Based on Median and with adjusted df	1.752	1	57.278
Motivation	Based on trimmed mean	2.086	1	66

Note:
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
Design: Intercept + Class

The criteria for homogeneity testing were based on Levene's Test of Equality of Error Variances. If $p < 0.05$, the data are not homogeneous. If $p > 0.05$, the data are homogeneous. In this study, Levene's test showed $p = 0.155$ for motivation and $p = 0.919$ for learning outcomes. Both values are greater than 0.05. Therefore, the variance of both variables was homogeneous, and the assumption for further analysis was met.

3.5 MANOVA Analysis

The MANOVA analysis includes the multivariate test and the test of between-subjects effects.

Table 9. Multivariate Tests

Effect	Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.998	16326.289[b]	2.000	65.000
Intercept	Wilks' Lambda	.002	16326.289[b]	2.000	65.000
Intercept	Hotelling's Trace	502.347	16326.289[b]	2.000	65.000
Intercept	Roy's Largest Root	502.347	16326.289[b]	2.000	65.000
Class	Pillai's Trace	.857	194.673[b]	2.000	65.000
Class	Wilks' Lambda	.143	194.673[b]	2.000	65.000
Class	Hotelling's Trace	5.990	194.673[b]	2.000	65.000
Class	Roy's Largest Root	5.990	194.673[b]	2.000	65.000

Note:
Design: Intercept + Kelas.
[b] Exact statistic.

The MANOVA results show that the Index Card Match-based card media had a significant effect on students' learning motivation and learning outcomes. The reported significance value was lower than 0.05, so the difference between the experimental and control classes was statistically meaningful. This supports the theoretical view that game elements such as challenge, matching, feedback, and peer interaction can increase participation and strengthen learning when they serve clear instructional goals (Kalogiannakis et al., 2021; Thurairasu, 2022).

Table 10. Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected	Learning Outcomes	5136.485[a]	1	5136.485	205.046	.000
Model	Motivation	2352.941[b]	1	2352.941	302.648	.000
Intercept	Learning Outcomes	46431.191	1	46431.191	1353.51	.000
Intercept	Motivation	188265.941	1	188265.941	242157.7	.000
Kelas	Learning Outcomes	5136.485[a]	1	5136.485	205.046	.000
Kelas	Motivation	2352.941[b]	1	2352.941	302.648	.000
Error	Learning Outcomes	1653.324	66	25.050		
Error	Motivation	5133.118	66	77.775		
Total	Learning Outcomes	471100.000	68			

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Total	Motivation	191132.000	68			
Corrected Total	Learning Outcomes	6789.809	67			
Corrected Total	Motivation	2866.059	67			

Note:
[a] R Squared = .756 (Adjusted R Squared = .753)
[b] R Squared = .821 (Adjusted R Squared = .818)

The significance value was lower than the 0.05 threshold, so the use of Index Card Match-based card media significantly affected students' motivation and learning outcomes. The positive result was not only a statistical finding. It also showed that a simple printed card game can become an effective learning medium when teachers design the activity around clear vocabulary targets, balanced group work, and repeated practice. This conclusion is consistent with recent Indonesian Arabic learning studies that found interactive media, card media, and gamified evaluation tools can improve vocabulary mastery, motivation, and learner participation (Ardiansyah et al., 2023; Fatullah et al., 2024; Ghofur et al., 2023; Riwanda et al., 2021).

4. CONCLUSION

This development research produced Mumtaza Card, an index card match-based card game for Tamrin Lughoh material in Arabic language learning for Grade VII students at SMP MBS Sleman, Yogyakarta. The findings show that the media is highly feasible, practical, and effective. Expert validation, student responses, and learning outcome data indicate that Mumtaza Card supports active learning, improves student motivation, and strengthens achievement in Tamrin Lughoh. The game helps students engage directly with questions and answers, interact with peers, and practice reading Arabic aloud in a structured classroom activity.

Teachers should integrate Mumtaza Card into Arabic language lessons as a supporting medium for practice, review, and formative assessment. They should explain the rules clearly, guide students during play, and maintain classroom focus so the activity supports learning goals. Schools can include this media in the Arabic curriculum as an interactive strategy for vocabulary, sentence practice, and comprehension tasks. Future research should test Mumtaza Card in different schools, larger student groups, and other Arabic language materials. Researchers should also compare it with digital learning media and examine its long-term effect on motivation, retention, and speaking confidence.

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