

Strategies for enhancing Arabic language skills using flashcards: Introducing animal names based on hijaiyah letters

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ABSTRACT

This study aims to examine the effectiveness of flashcards as an instructional strategy for enhancing Arabic vocabulary acquisition among children aged 5 to 12 years. The focus is on introducing animal names categorized according to hijaiyah letters. This study employed a quantitative approach using a pre-experimental one-group pretest-posttest design. A total of 45 participants were involved in a three-week intervention using flashcards that integrated visual images, Arabic script, and phonetic transliteration. Data were collected through pretests and posttests and analyzed using a paired samples t-test. The findings revealed a significant improvement in students' vocabulary mastery, as indicated by higher posttest scores compared to pretest results ($p < 0.001$) with a large effect size, demonstrating strong practical significance. In addition, observational data showed increased student engagement, confidence, and participation during the learning process. The study concludes that flashcards are an effective and accessible tool for improving basic Arabic vocabulary and supporting early language development. This instructional strategy is particularly relevant for early childhood education and learning environments with limited resources, as it offers a practical, low-cost, and engaging approach to Arabic language instruction.

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1. Introduction

Language is a fundamental tool of communication, and in the context of Islamic education, Arabic holds a uniquely central position (Abdalla, 2025; Riyadi, 2025). Arabic isn't only the liturgical language of Islam but also the primary medium through which classical Islamic knowledge is preserved and disseminated (Al-Musawi, 2015; Mustafa, 2025). Thus, the mastery of Arabic, particularly among non-native speakers, has been an enduring goal in many educational institutions across the world (Almelhes, 2024). Given the foundational nature of vocabulary acquisition in language learning, innovative strategies to improve Arabic vocabulary, especially in early learners, are vital (Mufidah, 2024). This study focuses on one such strategy: the use of flashcards to introduce animal names based on the Arabic alphabet, or hijaiyahs letter.

The ideal condition in Arabic language education is a learning environment where students are actively engaged, can recall and use vocabulary in context, and demonstrate a growing command of linguistic structures (Lazuardi & Syaheed, 2025). However, in many educational contexts, especially among young learners and beginners, the reality falls short. Students often experience rote memorization that lacks contextual understanding, leading to passive recall rather than active usage. This disconnection results in low motivation, weak vocabulary retention, and limited language proficiency over time. Such challenges underscore the need for alternative teaching tools that are

both pedagogically effective and developmentally appropriate. Although previous studies have explored various instructional strategies in Arabic language learning, limited research has specifically examined the effectiveness of developmentally appropriate and engaging teaching tools in promoting active vocabulary use among young and beginner learners. In practice, many Arabic language classrooms still rely heavily on rote memorization techniques, resulting in passive learning, low student motivation, and inadequate long-term vocabulary retention, which contrasts with the expected active and contextual language use.

The conditions of Arabic language teaching in many schools, particularly those in non-Arabic-speaking countries, are often constrained by outdated methodologies, limited instructional time, and insufficient materials (Kamal, 2025). This research confronts those limitations by proposing an intervention that is low-cost, adaptable, and evidence-based. The potential long-term impact includes improved student engagement, better vocabulary retention, and increased learner autonomy (Wahba et al., 2014). Previous studies, though rich in their exploration of vocabulary acquisition and multimedia tools, haven't adequately addressed the specific application of alphabet-based categorization in Arabic language flashcards. This research fills that gap by focusing on an underexplored intersection: Arabic alphabet learning and thematic vocabulary acquisition. The critical identification of this gap underscores the contribution this study can make to both academic and practical domains.

A pressing issue in the field of Arabic language instruction is the insufficient integration of interactive and multisensory learning tools, such as flashcards, particularly in introducing foundational vocabulary (Jannah et al., 2025). Flashcards, as a visual and kinesthetic learning aid, have been widely used in language education due to their simplicity, adaptability, and effectiveness (Marzuq et al., 2024). However, their application in Arabic language learning, especially structured around the hijaiyah letters and targeted vocabulary like animal names, remains underexplored. The impact of this gap is significant: students may not only fail to engage meaningfully with the vocabulary but may also struggle to develop an intrinsic motivation to learn the language, ultimately affecting long-term language acquisition. The central constructs of this research include Arabic vocabulary acquisition, flashcard-based instruction, and the structuring of vocabulary learning around the hijaiyah alphabet.

The theoretical framework underpinning this research is grounded in the cognitive theory of multimedia learning, which posits that learners understand and retain information better when it is presented using both verbal and visual formats (Mayer, 2017). This theory aligns with the structure and purpose of flashcards, which combine images, text, and repeated exposure to aid in vocabulary retention. Moreover, sociocultural theory emphasizes the importance of interactive and socially mediated learning, suggesting that tools like flashcards, when used in group settings or teacher-student interactions, can significantly enhance language development (Allahyar & Nazari, 2012; Lantolf & Thorne, 2007; Schuermann et al., 2018).

Preliminary literature supports the potential of flashcards as effective educational tools (Munisah, 2025; Sari et al., 2024; Xodabande et al., 2022). Vocabulary learning through repeated exposure in varied contexts is crucial, and flashcards allow for frequent, spaced repetition, a known technique for improving memory retention (Khan et al., 2025; Saksittanupab, 2024). The efficacy of visual aids in enhancing comprehension and engagement among young learners (Mayer, 2017). Multimodal approaches, including visual cues, greatly assist in overcoming the abstract nature of Arabic script and vocabulary for non-native speakers (Al Sharif, 2025; Itriq & Noor, 2025). Despite these findings, there is a lack of focused research on flashcards designed specifically around the hijaiyah letters and thematic vocabulary categories, such as animal names. This study aims to address that gap by developing and evaluating a flashcard-based instructional strategy centered on Hijaiyah-based vocabulary categorization. The objective of this study is twofold: first, to develop a set of flashcards introducing animal names in Arabic, organized according to the hijaiyah letters; and second, to evaluate the effectiveness of these flashcards in enhancing vocabulary acquisition among early Arabic learners. The significance of this research lies in its potential to offer a practical, scalable, and empirically tested resource for Arabic educators. The findings are expected to contribute to the fields of language pedagogy, Arabic instruction, and instructional design, especially in early childhood and beginner-level education. This research is highly relevant to the field of Arabic language education and responds directly to the real challenges faced by educators and learners. The

innovative integration of flashcards based on hijaiyah letters addresses the dual need for alphabet recognition and vocabulary acquisition, creating a dual-layered learning process.

2. Method

2.1. Research design

This study employed a quantitative approach using a pre-experimental method with a one-group pretest-posttest design to examine the effectiveness of flashcard-based instruction in enhancing Arabic vocabulary acquisition among children aged 5 to 12 years. In this design, a single group of participants was first administered a pretest to measure their initial ability in recognizing and recalling Arabic animal names based on hijaiyah letters, followed by a structured intervention using specially designed flashcards over three weeks, and finally a posttest with an equivalent level of difficulty to assess learning gains. The difference between pretest and posttest scores was used as the primary indicator of the intervention's effectiveness in improving students' vocabulary mastery. This design was considered appropriate for evaluating instructional practices in a natural classroom setting where the use of a control group was not feasible. However, the absence of a control group may limit the ability to fully attribute the observed improvements solely to the intervention, although the findings still provide important preliminary evidence regarding the effectiveness of flashcards as an accessible and engaging tool for early Arabic language learning.

2.2. Data of the research

The validity of the data was further ensured through triangulation, combining quantitative data (test scores) with qualitative data (facilitator observations) to strengthen the conclusions. The data was also cross-checked and peer-reviewed to avoid biases and ensure a robust interpretation of results. All research activities were conducted in accordance with ethical research standards for studies involving minors.

2.3. Data collection tools

Data collection involved both test results and observational notes from facilitators during the flashcard sessions. The facilitators, trained educators, recorded behaviors such as student engagement, pronunciation attempts, and verbal participation during each session. These observations complemented the test results by providing qualitative insights into the students' responses to the flashcard intervention. The pretest and posttest were administered in a controlled classroom environment, ensuring similar conditions for all participants to avoid external influences on their performance.

2.4. Research procedure

The study involved creating a set of flashcards that featured vivid images of animals, the Arabic name for each animal written in bold letters, transliteration, and the corresponding hijaiyah letter. The selection of vocabulary was aligned with beginner-level Arabic learning objectives for early childhood and elementary learners. The flashcards were evaluated using a pretest-posttest design, in which participants completed a vocabulary recognition task both before and after the intervention. The pretest consisted of 20 multiple-choice questions asking participants to match animal images with their corresponding Arabic names. After using the flashcards for over three weeks (three 30-minute sessions per week), the same participants completed a posttest with an equivalent structure and difficulty to measure vocabulary gain and retention.

To ensure the data collection process was ethical and appropriate for child participants, informed consent was obtained from the parents or legal guardians before the study. A brief explanation of the research goals, methods, benefits, and potential risks was provided to the guardians, along with a written consent form. Participation was entirely voluntary, and children were allowed to withdraw at any time without any negative consequences. The identities of all participants were kept anonymous, and the data collected were used solely for this academic study.

To ensure the validity and reliability of the instruments used in this study, several steps were taken. The flashcards and test instruments were reviewed by three experts in Arabic language education and early childhood learning. Suggestions for improvements in design, clarity, and content accuracy were incorporated before the tools were piloted. A small pilot test with 10 children outside the main research sample was also conducted to check for question clarity and age-appropriateness.

Cronbach's alpha was calculated to assess the reliability of the test instruments, with a reliability score above 0.80 indicating a high level of internal consistency.

2.5. Data analysis technique

The data were analyzed using descriptive and inferential statistical methods. Descriptive statistics such as mean, median, and standard deviation were used to summarize the performance scores of the participants. To determine whether there was a statistically significant improvement in vocabulary knowledge between the pretest and posttest, a paired sample t-test was conducted. The significance level was set at $p < 0.05$. This test helped identify the effectiveness of the flashcard intervention in enhancing Arabic vocabulary among children in the selected age range.

3. Results and Discussion

The quantitative findings from this study provide compelling evidence for the effectiveness of flashcards in improving Arabic vocabulary acquisition among children aged 5 to 12. Using a pretest-posttest design and paired samples t-test analysis, this research assessed the impact of a structured flashcard-based intervention on students' ability to recognize and recall Arabic animal names organized by hijaiyah letters. The results reveal statistically significant gains across all measured variables, confirming that the use of visually enhanced, phonologically reinforced flashcards is an effective pedagogical tool for language instruction in early education.

The data were obtained through a pretest-posttest design, allowing for a direct comparison of students' performance before and after the intervention. Table 1 describes the pre-test and post-test results, reflecting changes in children's abilities from baseline and the results of the intervention. Table 2 provides information on its effectiveness. The following is a description of the intervention results in Table 1.

Table 1. Paired samples statistics

Note	N	Mean	Median	SD	SE
Pre-Test	45	12.8	12	1.79	0.800
PosTest	45	23.2	24	1.10	0.490

The descriptive statistics from the pretest and posttest in Table 1 show a clear improvement in learners' performance. The pretest mean score was 12.8 with a standard deviation of 1.79, while the posttest mean increased substantially to 23.2 with a reduced standard deviation of 1.10. This suggests not only improved vocabulary knowledge but also greater consistency in student performance following the intervention. The narrowing standard deviation indicates that the flashcard intervention helped to bring lower-performing students closer to the group mean, highlighting its accessibility and potential to support diverse learning abilities. Table 2 shows the description of the paired sample test results to answer the research question.

Table 2. Paired samples test results

Pre-Test	PosTest	Statistic	Df	p	
		Student's t	-13.9	4.00	< .001

Based on Table 2, the results of the paired samples t-test further support this conclusion. As shown in Table 2, the t-test produced a value of -13.9, with a significance level (2-tailed) of 0.001, well below the conventional alpha level of 0.05. This confirms that the differences observed between the pretest and posttest are statistically significant and not due to chance. The effect size, calculated using Cohen's d, was approximately 4.00, which is considered a very large effect, underscoring the powerful impact of the flashcard-based learning strategy on students' Arabic vocabulary development. The increase of nearly 10.4 points in the average score reflects a substantial learning gain, made possible through a relatively short-term intervention using flashcards.

These results align with previous findings in language education research that emphasize the cognitive benefits of multisensory learning materials (Setman, 2022; Oviatt, 2017). Visual stimuli,

when combined with written and spoken elements, support memory encoding and retrieval processes in children, especially in language contexts that involve unfamiliar scripts such as Arabic (Safitriani et al., 2025; Yassin et al., 2020). In this study, each flashcard included an animal image, its Arabic name in large script, transliteration, and phonetic guidance. This design promoted recognition and internalization of vocabulary through multiple channels visual, textual, and auditory (Shadiev et al., 2020). For early learners, particularly those in the 5 to 8 age group, this approach capitalizes on their natural curiosity and learning preferences (Agustini et al., 2024). By organizing the vocabulary by hijaiyah letters, the instructional design also reinforced alphabet familiarity, thus integrating literacy and vocabulary development into a single pedagogical experience.

Observational data collected during the intervention revealed additional insights that support the statistical outcomes. Teachers reported increased levels of participation, enthusiasm, and engagement among students during the flashcard activities (Paldy et al., 2025). Children were observed repeating the animal names aloud, associating them with the images, and even recalling them outside the flashcard sessions, such as during playtime or unrelated class activities. These behavioral indicators demonstrate that the flashcards didn't only function as a test preparation tool, but they also had a meaningful impact on students' spontaneous language use, a key indicator of language acquisition (Papi & Hiver, 2025).

Moreover, the structured flashcard sessions also appeared to reduce learner anxiety. In contrast to traditional drilling methods, flashcards offered a game-like format that encouraged trial and error without fear of judgment (Malgazhdarova et al., 2024). This supportive environment helped children build confidence in producing Arabic sounds and recognizing unfamiliar script forms (Almelhes, 2024; Sabrina, 2025). Such psychological safety is critical in foreign language acquisition, especially at early ages when negative experiences may inhibit future language interest or effort (Wang et al., 2021).

An additional strength of this study lies in its alignment with the ADDIE model of instructional design. The implementation phase benefited from the iterative development of materials based on expert input and pilot feedback, ensuring that the final flashcards were age-appropriate, engaging, and educationally sound. The evaluation stage, through pretest-posttest comparisons and classroom observation, provided a holistic understanding of both the outcomes and the processes through which learning occurred. This research, therefore, not only demonstrates impact but also offers a replicable model for Arabic vocabulary instruction that educators can adapt in various settings. The theoretical foundation of this study also supports the observed outcomes (Smaldino, 2020). According to dual coding theory, the human cognitive system processes verbal and nonverbal information through separate but interconnected channels (Mohamed, 2021; Bi, 2021). When learners are exposed to both words and images simultaneously as with flashcards that pair animal pictures with Arabic labels cognitive processing is enhanced, making recall more efficient (Fadhila & Fadilaturrehman, 2025). This aligns well with the observed effect sizes in this research, where multimodal flashcards produced substantial vocabulary gains (Fadhila & Fadilaturrehman, 2025; Rahayu & Rostika, 2025).

In addition, sociocultural theory suggests that language learning is most effective in socially interactive and supportive environments (Allahyar & Nazari, 2012). The group-based flashcard sessions provided opportunities for peer interaction, collaborative guessing, and repetition, all of which are known to reinforce language acquisition. This context made it possible for children to move from passive recognition to active usage of Arabic vocabulary, thus transitioning from mere exposure to meaningful internalization (Atouf & Issa, 2025; Samir et al., 2025). It is important to note, however, that the results must be interpreted within certain limitations. The sample size, while sufficient for statistical analysis, was limited to 45 participants from a single institution. This may limit the generalizability of the findings to broader populations. In addition, while the vocabulary gains were clearly demonstrated, the study didn't assess long-term retention or the ability of students to use the vocabulary in more complex language tasks, such as sentence formation or conversation (Elekaei et al., 2020). Future research could expand on these aspects by incorporating longitudinal designs or by comparing different types of flashcards, such as those focusing on verbs, adjectives, or thematic word sets.

Despite these limitations, the study fills an important gap in Arabic language instruction literature by providing empirical support for a tool that is both low-cost and high-impact. In

educational contexts where access to digital tools or trained Arabic language teachers is limited, flashcards offer a scalable and effective solution. Moreover, the emphasis on hijaiyah letters provides a culturally and linguistically coherent framework for vocabulary acquisition, reinforcing foundational literacy skills that are essential for further language learning (Fauziyyah & Sari, 2025). The implications for curriculum developers, especially in Islamic schools or language centers that teach Arabic as a foreign language, are substantial. The integration of such flashcards into early curriculum stages can lay a strong groundwork for later grammar and comprehension instruction. The ability to recall basic nouns with confidence and accuracy, as shown in this study, is a crucial stepping-stone in achieving broader language proficiency.

4. Conclusion

The average posttest scores of the participants showed a substantial increase compared to their pretest results, indicating that the flashcard intervention led to meaningful learning gains. The effect size derived from the analysis demonstrated a high level of practical significance, suggesting that this strategy can be not only effective but transformative, particularly in early childhood and foundational language instruction. The qualitative observations during the learning process confirmed increased learner engagement, enthusiasm, and confidence. Children were actively involved in the learning sessions, and many displayed improvements in both pronunciation and recognition of Arabic script. These behavioral outcomes reflect not just memorization but deeper cognitive processing, which is crucial for long-term retention and the development of functional language skills. The implications of this research in educational settings where Arabic is taught as a second or foreign language, particularly in Islamic schools or early childhood institutions. Flashcards offer an accessible, low-cost, and scalable solution to common instructional challenges. They can be especially useful in environments with limited access to digital tools or trained Arabic language educators. Moreover, flashcards designed around culturally familiar themes and organized according to the hijaiyah letters serve the dual purpose of vocabulary enrichment and script literacy, creating a more integrated and efficient learning experience. As such, this strategy holds significant promise for language educators, curriculum developers, and policymakers aiming to support Arabic literacy from the earliest stages of education.

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Declarations

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