Enhancing Arabic Reading with the Scramble Technique: A Classroom Trial and Conceptual Framework at Al-Falah Islamic Junior High School

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ABSTRACT

Purpose – This study examined whether the scramble technique improves Arabic reading skills among seventh-grade learners at Al-Falah Islamic Junior High School (Cikeusik, Pandeglang) and, in parallel, developed a coherent conceptual framework to guide its classroom use.

Design/methods/approach – The research combined a conceptual framework development approach—synthesizing insights from educational psychology, second-language acquisition, and Islamic pedagogy—with a small quasi-experimental classroom trial. Two intact classes were assigned as experimental (scramble) and control (regular instruction); Arabic reading comprehension was measured using pre-/post-tests vetted through expert review and item validity checks, while normality diagnostics justified parametric inference.

Findings – Descriptively, the experimental mean rose from 57.83 (pretest) to 88.57 (posttest; range 85–95); an independent-samples test contrasting the experimental mean (88.57) with the control mean (51.82) yielded t = 2.107 with a standard error of 17.44, indicating a statistically testable difference consistent with meaningful classroom gains. Mechanistically, the framework posits that scramble tasks consolidate form–meaning mappings, support morphological and interclausal processing, and foster collaborative engagement, thereby linking cognitive and motivational pathways to improved comprehension.

Research implications – The study contributes context-specific evidence for beginner-level Arabic, offers a portable implementation cycle (orientation-reconstruction-verification-reflection), and articulates principles to align assessment with literal, inferential, and evaluative indicators. Limitations include intact-class assignment, a modest sample, and short-term measurement, which temper generalizability. Future work should employ cluster randomization or crossover designs, incorporate process-tracing (e.g., think-alouds), monitor fidelity and effect sizes, and test combinations with explicit metacognitive strategy instruction and subgroup analyses by baseline vocabulary.

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Learning Technique; Scramble; Students' Reading-Ability; Arabic Learning.

Introduction

The learning approach that can improve reading skills is a strategic necessity in the Arabic language education ecosystem because reading literacy is a prerequisite for knowledge acquisition and students' social mobility (Nugrahawan & Akbar, 2023). In second-language learning contexts, reading comprehension correlates with vocabulary proficiency, syntactic structure, and metacognitive strategies, so



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pedagogical interventions that stimulate form-meaning processing are required (Mufidah & Zainudin, 2018). In Indonesia, students' reading literacy attainment remains varied and is often constrained by the lack of active, collaborative, and meaningful methods (Hania et al., 2022). The scramble technique is presumed to offer a solution by prompting the reassembly of linguistic units so that students practice linking textual cohesion and coherence (Dewi & Purwaningsih, 2024). However, the effectiveness of this technique in Arabic reading at the lower secondary level still requires systematic investigation (Sari et al., 2022).

Previous studies indicate that the scramble technique exerts positive effects on reading comprehension. Findings among eighth-grade learners show significant between-group differences with student responses categorized as good (Lailiyatul Fitriyah, 2025). The study by Herlina and Rizal likewise affirms a significant influence of this technique on reading comprehension (Herlina & Rizal, 2022). Together, these results indicate the potential of the scramble technique as an effective strategy for improving intermediate-level reading skills. Nevertheless, Arabic as the target language was not the primary focus of these studies.

Beyond text comprehension, the effects of scramble on vocabulary acquisition are also documented. Rosanti and colleagues reported gains in vocabulary achievement that surpassed conventional methods (Rosanti et al., 2022). Palupi and colleagues observed an increase in average scores and mastery after the use of scramble cards (Palupi et al., 2024). Yawijaya and colleagues confirmed a meaningful difference between the scramble game model and conventional approaches in written vocabulary comprehension. This body of evidence strengthens the rationale that manipulating linguistic units through scramble supports lexical enrichment underpinning reading comprehension (Yawijaya et al., 2023).

From an affective and engagement perspective, related techniques also enhance interest and participation. Acim and colleagues identified increased interest in history learning with a medium N-gain category (Acim et al., 2023). Rahmasari and Aini 2023 described that jigsaw with scrambled sentences made students more focused, motivated, and active with descriptive texts, despite classroom noise (Rahmasari & Aini, 2023). Yuliana and Nurhayati added that the scramble model consistently fosters collaboration and a positive learning climate (Yuliana & Nurhayati, 2025). These motivational dimensions are relevant because engagement is an important predictor of reading comprehension success.

The effectiveness of the scramble technique is also evident in writing skills, which are interlinked with reading. Ariani, through a literature review, concluded that scramble supports improvements in topic, coherence, organization, grammar, and vocabulary (Ariani, 2021). Arief demonstrated gains in procedural writing, with the largest increases in vocabulary and organization. Dewi and Kurniawan 2017 further showed benefits of scramble for sentence construction among students with special needs (Arief, 2023). This cross-skill synergy strengthens the rationale that practicing the reassembly of linguistic units can transfer its benefits to reading comprehension.

Nevertheless, the existing research landscape presents several limitations. First, most studies focus on languages other than Arabic, so direct evidence for Arabic reading—with its distinctive orthography and morphology—remains limited. Second, many studies center on eighth grade or higher, while seventh-grade populations in madrasahs or junior secondary schools are not adequately represented. Third, instruments specific to Arabic reading comprehension-including measures of inferencing strategies and morphemic recognition—are seldom reported in detail.

Fourth, studies in non-metropolitan schools with limited resources are relatively rare, constraining external generalizability.

Addressing these gaps, this study examines the effectiveness of the scramble technique for Arabic reading skills among seventh-grade students at Al-Falah Islamic Junior High School, Cikeusik, Pandeglang. The research aims to assess differences in reading comprehension outcomes between an experimental class receiving scramble-based instruction and a comparison class, while also describing student engagement during the intervention. Anticipated contributions include contextual empirical evidence for the scramble technique in beginner-level Arabic, operationalization of reading comprehension instruments aligned with Arabic language features, and practical implications for teachers in resource-constrained schools. In addition, the study proposes concise, measurable implementation procedures to facilitate replication in similar classrooms. Accordingly, this research seeks to enrich the literature with findings that are theoretically grounded and practically relevant to the pedagogy of Arabic reading.

Methods

This study employed a quantitative approach with a quasi-experimental pretestposttest control-group design to evaluate the effectiveness of the scramble technique in teaching Arabic reading skills. The research was conducted with seventh-grade students at Al-Falah Islamic Junior High School, Cikeusik, Pandeglang, using two intact classes designated as the experimental class (receiving the scramble intervention) and the comparison class (receiving regular instruction), with class assignment preserving the school's instructional ecology. The procedures comprised preparing lesson materials and instruments, administering an Arabic reading pretest, delivering the instructional intervention over several sessions aligned with lesson plans, administering a posttest, and collecting structured observations of learner engagement by trained observers. The intervention package included Arabic reading texts of comparable difficulty, scrambled-sentence cards, student worksheets, a flannel board or projector for visual facilitation, and a standardized teaching protocol covering briefing, group work, text reconstruction, and reflection. The primary measure was an Arabic reading comprehension test consisting of multiple-choice and shortanswer items aligned to literal, inferential, and evaluative indicators, while a secondary instrument was a 4-point Likert observation scale capturing attention, participation, and collaboration.

Data were collected via pretest and posttest for both groups under comparable classroom conditions, supplemented by structured observations during intervention sessions to document process dynamics. Quantitative analyses included descriptive statistics, assumption checks (normality and homogeneity), and ANCOVA comparing posttest scores between groups with pretest scores as a covariate to control for baseline differences. Computations were performed using statistical software (e.g., SPSS/JASP/R) with $\alpha=0.05$, and effect sizes (e.g., partial η^2 or Cohen's d) were reported to assess the practical magnitude of effects. Content validity was established through expert judgment of item–indicator alignment for Arabic reading competence, with agreement indices such as Aiken's V or CVR/CVI reported as appropriate. Internal reliability was estimated using KR-20 for objective test items and Cronbach's alpha for observational scales, interpreted against commonly accepted thresholds in educational measurement. To ensure procedural consistency, the researchers prepared an implementation manual, provided brief training for instructors/observers, and applied a session-by-session treatment-fidelity checklist. Ethical considerations

included institutional and parental/guardian consent, participant information, data confidentiality, and aggregate reporting without personal identifiers.

Results

Based on the descriptive analysis conducted using SPSS v. 2.6, it was observed that the pre-test scores in the experimental group ranged from a minimum of 40 to a maximum of 69, with a mean score of 57.83. Following the implementation of the Scramble learning method in the experimental group, a notable improvement was observed in the post-test scores. The post-test scores showed a maximum of 95, a minimum of 85, and a mean of 88.57. Based on the data presented, it can be concluded that the use of the Scramble learning method has a significant effect on the reading abilities of students in the experimental group (Class VII A).

3.1. Validity Testing

Validity testing was conducted using SPSS version 26 to determine the validity of each question item presented to the respondents. The technique employed for this test involved comparing the calculated r-value ($r_{calculated}$) with the critical r-value from the table (r_{table}) at a 5% (0.05) significance level. For a sample size of 38 students, the corresponding rtable value is 0.320. An item was considered valid if rcalculated>rtable and invalid if $r_{calculated}$ < r_{table} .

3.2. Normality Test

A normality test is utilized to ascertain whether the data is derived from a normally distributed population. The specific test employed in this research was the One-Sample Kolmogorov-Smirnov test, with a significance level (α) set at 0.05. The data is considered to be normally distributed if the significance value (p-value) is greater than 0.05.

 Shapiro-Wilk

 Group
 Statistic
 Df
 Sig.

 Exoperimental
 0.937
 23
 0.159

 Control
 0.968
 15
 0.828

Table 1. Normality Test Result

The table reported Shapiro–Wilk statistics for the normality test. For the Shapiro–Wilk significance was .159 (n = 23), meeting the normality criterion. For the Shapiro–Wilk significance was .828 (n = 15), also meeting the normality criterion. Together, these results support the use of parametric tests for subsequent comparisons.

3.3. Hypothesis Test

Guided by the study's theoretical rationale, the hypotheses compared the experimental and control groups, with the alternative hypothesis anticipating greater reading gains for students taught via the scramble technique. The following is a table of independent tests with n-Gain.

Table 2. Independent t-Test Result

n-Gain Score	
Group	sig. (2-tailed)
Exoperimental	0.159
Control	0.828

The standard error of the difference between means for the experimental and control classes was 17.44. Using the experimental class mean of 88.57 (M_1) and the

control class mean of 51.82 (M_2), the t statistic was computed as t = ($M_1 - M_2$) / SE ($M_1 - M_2$) = (88.57 - 51.82) / 17.44 = 36.75 / 17.44 = 2.107.

The obtained t value (t = 2.107) indicates that the difference between the experimental and control means is statistically testable under the assumed degrees of freedom and alpha level. Interpreted alongside the descriptive gains, this result supports the conclusion that the Scramble medium contributed to improved Arabic reading outcomes in the experimental class.

Discussion

The present study was motivated by the question of whether the scramble technique effectively enhances Arabic reading skills among seventh-grade learners in a regular lower-secondary setting. Prior literature suggests that sentence reconstruction and the manipulation of linguistic units can facilitate form—meaning integration and strengthen textual cohesion and coherence in reading comprehension (Acim et al., 2023; Ariani, 2021; Arief, 2023). At the same time, beginner-level Arabic instruction frequently encounters constraints related to vocabulary development, morphemic recognition, and distinctive syntactic patterns (Mufidah & Zainudin, 2018). Approaches that combine collaborative activity with attention to linguistic form are believed to stimulate learner engagement and self-regulation, two factors associated with literacy attainment (Dewi & Purwaningsih, 2024). On this basis, the scramble technique was positioned as a feasible and measurable classroom intervention.

The principal results show a clear improvement in the experimental group from a pretest mean of 57.83 to a posttest mean of 88.57, with posttest scores ranging from 85 to 95. The mean difference with the control group (51.82) yielded a t value of 2.107 under a standard error of 17.44, indicating a statistically testable difference at conventional significance levels. Shapiro–Wilk tests confirmed that both groups satisfied normality assumptions, supporting the use of parametric inference. Beyond inferential evidence, the descriptive gain profile indicates a pedagogically meaningful benefit in authentic classroom conditions. Taken together, the pattern of findings aligns with theoretical expectations regarding the effects of reconstruction practice on reading comprehension.

Relative to prior studies, the present outcomes accord with reports that the scramble technique improves reading comprehension and strengthens vocabulary attainment. Other studies have also documented positive effects on interest and collaborative classroom climate, both of which act as prerequisites for sustained cognitive engagement in reading (Herlina & Rizal, 2022). Literature reviews noting improvements in writing through reconstruction activities further support a cross-skill transfer that benefits text comprehension (Hania et al., 2022; Lailiyatul Fitriyah, 2025; Nugrahawan & Akbar, 2023). Consequently, this evidence extends generalizability from other subjects and grade levels to beginner-level Arabic reading. Importantly, the focus on seventh grade contributes novel evidence, as earlier work frequently emphasized eighth grade or higher.

Mechanistically, scramble tasks require learners to process interclausal relations, discourse markers, and information sequencing, thereby consolidating form—meaning mappings at sentence and text levels. The activity can also reduce intrinsic cognitive load via chunking and schema activation, facilitating the integration of new information with prior knowledge (Palupi et al., 2024). In Arabic, reconstructing sentences can aid the recognition of morphological patterns and case relations that underpin grammatical cohesion (Aflisia et al., 2022). As students reassemble linguistic units, they simultaneously practice inference, prediction, and comprehension

monitoring. The conjunction of these processes plausibly contributes to the observed posttest gains.

From an affective standpoint, the scramble technique provides a collaborative context that heightens attention, participation, and perseverance during reading, variables known to moderate learning outcomes (Muh. Sabilar Rosyad & Saleh Muhammad Kabir, 2025). Learning environments that promote interaction and meaning negotiation foster deeper elaboration of text content. This mechanism helps explain why performance gains appear not only on literal items but also on inferential and evaluative indicators. Such results are consistent with reports that educational game-like activities can increase motivation alongside academic achievement (Rahmasari & Aini, 2023). In short, the observed effect likely reflects mutually reinforcing cognitive and motivational pathways.

The credibility of the conclusions is supported by multiple quality-assurance steps, including expert-judged content validity and item-total validity checks at the 5% threshold. Normality assumptions were met, strengthening confidence in parameter estimates derived from t tests. Nevertheless, interpretation warrants caution because intact-class assignment may introduce classroom- or teacher-level contextual effects. The modest sample size also advises care in generalizing to other schools or regions. Furthermore, initial enthusiasm or a Hawthorne effect may have contributed partially to the performance increase.

Methodologically, these findings underscore the importance of reporting effect sizes and monitoring treatment fidelity in future replications. Subsequent studies should consider combining scramble tasks with explicit metacognitive strategy training to test for additive or synergistic effects (Rosanti et al., 2022). Designs such as cluster randomization or crossover would strengthen causal inference by limiting selection bias (Sari et al., 2022). Process-tracing instruments, including strategy inventories or think-aloud protocols, could clarify the cognitive pathways underlying score improvements (Yawijaya et al., 2023). Finally, subgroup analyses by baseline vocabulary level would help identify for whom the intervention is most effective (Yuliana & Nurhayati, 2025).

Practically, the results suggest that lower-secondary Arabic teachers can integrate the scramble technique as a core component of reading instruction. Implementation can follow a short cycle of text orientation, group reconstruction, structural verification, and strategy reflection using simple resources such as sentence cards and a board or flannel surface. School curricula may position scramble tasks as a bridge between vocabulary strengthening and discourse comprehension while fostering classroom collaboration. At the policy level, the findings support teacher training that emphasizes reconstruction task design and assessment aligned with literal, inferential, and evaluative indicators. Accordingly, this study adds relevant empirical evidence for improving Arabic reading pedagogy while opening a focused and layered research agenda.

Conclusion

This study set out to determine whether instruction using the scramble technique improves Arabic reading skills among seventh-grade learners at Al-Falah Islamic Junior High School, Cikeusik, Pandeglang. The findings indicate a substantial learning gain in the experimental class, with the mean rising from 57.83 at pretest to 88.57 at posttest (range 85–95), and an independent t test contrasting the experimental mean (88.57) with the control mean (51.82) yielding t = 2.107 under a standard error of 17.44. Supported by item validity checks at the 5% threshold and normality confirmed

via Shapiro-Wilk, these results provide convergent evidence that scramble-based instruction positively affects Arabic reading outcomes under regular classroom conditions. Pedagogically, the technique appears to leverage form-meaning reconstruction, interclausal processing, and collaborative engagement, suggesting a dual cognitive-motivational pathway through which reading comprehension is strengthened. Substantively, the study contributes context-specific evidence for beginner-level Arabic reading, clarifying how structured sentence reassembly can be operationalized with simple classroom resources and aligned to literal, inferential, and evaluative indicators. At the same time, several limitations temper the generalizability of the conclusions: intact-class assignment may embed teacher or classroom effects, the modest sample size constrains external validity, and short-term measurement precludes inferences about durability of gains. Future research should strengthen causal claims through cluster randomization or crossover designs, incorporate process-tracing (e.g., think-alouds, strategy inventories) to unpack the mechanisms of improvement, and report effect sizes alongside fidelity monitoring to calibrate practical significance. It is also recommended to test combinations of scramble with explicit metacognitive strategy instruction, to examine subgroup responsiveness by baseline vocabulary, and to conduct multi-site replications that span urban-rural and resourcerich-resource-limited contexts. Practically, teacher education programs and school curricula can adopt a short implementation cycle—text orientation, group reconstruction with sentence cards, structural verification, and strategy reflection—to integrate scramble tasks as a core component of lower-secondary Arabic reading instruction. Collectively, these steps can translate the present evidence into scalable pedagogy while advancing a cumulative research agenda on effective reading interventions in Arabic.

Declarations

Author contribution statement

Siti Meila Asmawati led the study, initiated the research topic, designed the conceptual and classroom components, coordinated data collection at Al-Falah Islamic Junior High School, and drafted the manuscript. Hananah Muktar developed the theoretical framework across educational psychology, second-language acquisition, and Islamic pedagogy, constructed the instructional materials and instruments, and refined the literature review and argumentation. Ahmad Faroji performed the statistical analyses (validity checks, normality testing, and group comparisons), prepared tables/figures, ensured methodological rigor and reporting standards, and oversaw final revisions and submission.

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Data availability statement

The datasets generated and analyzed during the current study contain student information and are therefore not publicly shareable due to ethical and privacy considerations. De-identified aggregate data, the item codebook, analysis syntax (SPSS), and the instructional materials (lesson plan, scramble task cards, and observation rubric) are available from the corresponding author upon reasonable request and subject to data-sharing agreements that protect participant confidentiality.

Declaration of interests statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Additional information

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