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Application-Based Gamified Learning and Qur'anic Literacy among Madrasah Aliyah Students in Blora

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ABSTRACT

This quasi-experimental study examines the association between application-based gamified learning and Qur'anic literacy at Madrasah Aliyah Khozinatul Ulum Blora. Sixty students participated in non-equivalent experimental and comparison groups (30 each). Motivation and engagement, cognitive Qur'anic literacy, and practical recitation were assessed before and after instruction using questionnaires, tests, and performance assessments. The experimental group outperformed the comparison group at posttest in motivation and engagement (77.60 versus 63.00; $t(58) = 5.582$), cognitive literacy (77.87 versus 68.40; $t(58) = 2.623$), and recitation performance (76.93 versus 63.07; $t(58) = 5.691$). The reported two-sided p values were $< .001$, $.011$, and $< .001$, respectively. Pooled pretest-to-posttest comparisons also improved across all three measures. These findings support the use of carefully guided digital practice to complement teacher feedback in Qur'anic education. Since group assignment was not random and group-specific baseline statistics are unavailable, the posttest differences should not be interpreted as a definitive causal effect.

Keywords: Gamification; Qur'anic Literacy; Digital Learning; Recitation; Islamic Secondary Education



ABSTRAK

Penelitian kuasi eksperimen ini mengkaji pembelajaran gamifikasi berbasis aplikasi dan literasi Al-Qur'an siswa Madrasah Aliyah Khozinatul Ulum Blora. Sebanyak 60 siswa terbagi dalam kelompok eksperimen dan pembandingan, masing-masing 30 siswa. Motivasi dan keterlibatan, kemampuan kognitif, serta praktik membaca diukur sebelum dan sesudah pembelajaran. Pada pascates, rerata kelompok eksperimen lebih tinggi daripada pembandingan untuk motivasi (77,60 berbanding 63,00), kemampuan kognitif (77,87 berbanding 68,40), dan praktik membaca (76,93 berbanding 63,07). Perbedaan ketiganya signifikan menurut uji-t yang dilaporkan. Karena pembagian kelompok tidak acak dan data awal per kelompok tidak tersedia, temuan ini belum memastikan pengaruh kausal. Aplikasi sebaiknya digunakan bersama bimbingan dan koreksi bacaan oleh guru.

Kata kunci: Gamifikasi, Literasi Al-Qur'an, Pembelajaran Digital, Membaca Al-Qur'an

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1. INTRODUCTION

Qur'anic literacy in secondary Islamic education involves accurate recitation, recognition of tajwīd rules, interpretation of selected verses, and thoughtful application of their meanings. Students need repeated practice and timely correction to develop these related but distinct competencies. Conventional group recitation remains valuable, yet limited individual practice time may restrict the feedback each learner receives. A digital application can extend opportunities to rehearse and review material between teacher-led sessions.

Gamification places selected game design elements within a learning activity. Points, levels, challenges, immediate feedback, and visible progress may encourage repeated participation when aligned with a clear learning objective (Deterding et al., 2011; Sailer & Homner, 2020). Reviews and meta-analyses generally report positive average associations with motivation and achievement, while emphasizing substantial variation across implementation contexts (Bai et al., 2020; Li et al., 2023). Rewards alone cannot establish whether a learner pronounces letters correctly or understands a verse.

In Qur'anic instruction, digital questions can support vocabulary recognition, tajwīd identification, and low-stakes retrieval practice. Oral recitation still requires careful listening and individualized correction by a qualified teacher. The educational value of an application therefore depends on the quality of its tasks, feedback, accessibility, and integration with face-to-face instruction (Clark & Mayer, 2023; Mayer, 2021). Self-determination theory further suggests that feedback and appropriate challenge can support competence when students retain meaningful autonomy (Ryan & Deci, 2017).

This study examines a class-level intervention at Madrasah Aliyah Khozinatul Ulum Blora, Central Java. It compares motivation and engagement, cognitive Qur'anic literacy, and recitation

performance between students receiving application-based gamified instruction and peers receiving conventional instruction. The three outcomes are reported separately to avoid treating enthusiasm as a substitute for demonstrated competence.

2. RESEARCH METHODS

The study used a nonequivalent control-group quasi-experimental design involving 60 students: an experimental group ($n = 30$) received application-based gamified Qur'anic instruction and a comparison group ($n = 30$) received conventional instruction. The source manuscript does not specify the application name, intervention duration, recruitment procedure, or group allocation mechanism; consequently, the intervention cannot yet be replicated in full. These details should be confirmed before journal submission.

Questionnaire scores represented motivation and engagement. A cognitive test measured Qur'anic literacy, and a performance assessment evaluated practical recitation. Each outcome was recorded at pretest and posttest. The source describes reading, tajwīd, comprehension, and practical application as target competencies but does not provide item-level instruments, scoring rubrics, reliability coefficients, or assessor blinding. These gaps limit assessment of measurement quality.

The original analysis included descriptive statistics, normality checks, Levene tests, paired-sample t tests for the full sample, independent-sample t tests of posttest scores between groups, and normalized gains. We report only values legible and stated explicitly in the supplied manuscript. A reported p value of .000 is written as $p < .001$. Since the pooled paired tests combine both instructional conditions, they describe overall change and cannot isolate the intervention effect. Baseline-adjusted analysis and group-specific changes would improve causal interpretation.

3. RESULTS AND FINDINGS

Across the 60 students, mean motivation and engagement increased from 60.62 to 70.30, cognitive literacy from 56.47 to 73.13, and recitation performance from 58.05 to 70.00. The source reports pooled paired comparisons of $t(59) = -8.999, -12.813, \text{ and } -8.636$, respectively, with $p < .001$ for each. These comparisons represent change across both groups combined.

All three experimental-group posttest means exceeded the corresponding comparison-group means. The absolute differences were 14.60 points for motivation and engagement, 9.47 points for cognitive literacy, and 13.87 points for recitation performance. These are unadjusted differences; the source does not supply group-specific pretest means needed to establish baseline equivalence.

Reported Levene-test p values for the three posttest outcomes were .696, .198, and .749, respectively. The Shapiro–Wilk test for pooled cognitive posttest scores returned $p = .019$, indicating evidence against normality for that pooled measure. The source also reports normalized gains as greater for the experimental group, but its numerical gain tables are embedded as images and cannot be reliably transcribed here. A reanalysis from student-level data would permit baseline-adjusted estimates, confidence intervals, and sensitivity checks.

4. DISCUSSION

The observed pattern is consistent with research suggesting that well-designed gamification can increase practice and engagement (Sailer & Homner, 2020; Bai et al., 2020). The largest unadjusted difference concerned motivation and engagement, which may reflect the salience of immediate feedback and progress indicators. This interpretation remains a plausible mechanism rather than a mechanism tested directly in the present study.

The cognitive outcome also favored the gamified group, although its unadjusted difference was smaller than that for engagement. Recognizing a *tajwīd* rule in an application and explaining the meaning of a verse require different processes. Instruction should therefore pair retrieval exercises with discussion, worked examples, and comprehension checks (Mayer, 2021; Brown et al., 2014). The positive recitation result is particularly relevant, but automated feedback should supplement, rather than replace, a teacher's assessment of pronunciation and articulation.

The teacher interview summarized in the source suggests that instruction previously relied mainly on shared reading, alternating individual recitation, and teacher demonstration. This contextual account helps explain the appeal of additional practice opportunities, although a single interview cannot validate the quantitative effect. The source does not document fidelity, screen time, or the precise tasks delivered to each group.

The difference in motivation and engagement should be understood as an instructional outcome rather than proof of deeper Qur'anic understanding. Game elements can make repeated exercises more attractive, but sustained learning depends on whether the exercises require students to retrieve, explain, and apply what they have learned. Meaningful progress indicators may support a sense of competence; excessive emphasis on rank may instead discourage students who begin with weaker reading skills (Ryan & Deci, 2017; Nicholson, 2015). Teachers should therefore monitor both participation and the quality of each student's response.

The cognitive and practical outcomes also call for different forms of feedback. An application can check identification of a rule, matching of vocabulary, or comprehension of a short passage, whereas correct articulation and the rhythm of recitation require careful listening. A teacher can identify errors in *makhārij al-ḥurūf* and *tajwīd* that a multiple-choice item cannot capture. Digital exercises are most defensible when they prepare students for guided oral practice and give the teacher information about which errors require attention (Clark & Mayer, 2023; Mayer, 2021).

The reported results do not establish whether every student benefited to the same extent. Students with strong initial fluency may advance more quickly through levels, while those needing foundational pronunciation support may require slower practice and additional modeling. The wider posttest spread described in the source is compatible with heterogeneous attainment, although it does not identify which learners improved most. Disaggregated analysis by initial reading ability would help teachers decide how to differentiate challenges, feedback, and practice time.

Finally, the contrast between instructional groups may include differences beyond the application itself, such as teacher attention, time on task, novelty, and opportunities for independent practice.

The available analysis compares posttest means without adjusting for group-specific pretest scores. Reporting baseline means, standardized effect sizes with confidence intervals, intervention duration, and fidelity measures would make the findings easier to interpret and reproduce. Such reporting is especially important in a nonrandomized study because pre-existing class differences can influence the observed posttest gap (Shadish et al., 2002; Cohen et al., 2018).

Three limitations are material. First, nonrandom groups may differ before instruction; posttest-only between-group tests do not control for this possibility. Second, the pooled cognitive posttest distribution departed from normality in the reported Shapiro–Wilk test, so a robust or nonparametric sensitivity analysis is advisable. Third, findings from 60 learners in one madrasah may not generalize to other schools, applications, or levels of prior reading ability. Future studies should preregister outcome definitions, supply instrument evidence, report group-specific baseline scores and gain estimates, and consider ANCOVA or mixed-effects models (Shadish et al., 2002; Field, 2018).

5. CONCLUSION AND SUGGESTIONS

Students in the application-based gamified group achieved higher posttest scores than peers taught conventionally in motivation and engagement, cognitive Qur’anic literacy, and practical recitation. The results justify further evaluation of guided digital practice as a complement to teacher-led Qur’anic instruction. Schools should connect app challenges to specific tajwīd and comprehension objectives, provide individualized oral feedback, and monitor participation without making rewards the sole measure of success. Causal claims require group-specific baseline data and more rigorous follow-up analysis.

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