GAMIFICATION AS A TOOL TO ENHANCE VOCABULARY RETENTION AMONG UZBEK EFL LEARNERS

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Abstract: Vocabulary attrition is a persistent challenge for Uzbek learners of English as a Foreign Language (EFL), especially in input-poor, exam-oriented contexts. Gamification—the use of game design elements in non-game settings—has been proposed as a low-cost way to increase engagement and strengthen long-term retention. This article synthesizes relevant theory (self-determination theory, retrieval practice, spaced repetition, cognitive load, and flow) and prior empirical findings on gamified language learning, and then proposes a rigorous, classroom-ready study protocol tailored to Uzbek secondary and tertiary settings. We outline a quasi-experimental design with pretest–posttest–delayed-posttest measures, specify validated instruments for receptive and productive vocabulary, detail the intervention's mechanics (points, badges, levels, streaks, adaptive spacing, and quest-based challenges), and provide an analysis plan (mixed-effects modeling with mediation by motivation and practice intensity). We end with implementation guidelines for teachers, anticipated pitfalls, and reporting templates. The goal is to enable evidence-based adoption of gamification that measurably improves delayed vocabulary recall and transfer for Uzbek EFL learners.

Keywords: gamification; vocabulary retention; Uzbek EFL; retrieval practice; spaced repetition; self-determination theory; mixed-effects models

1. Introduction

For Uzbek EFL learners, vocabulary size and depth strongly predict reading comprehension, writing quality, and overall proficiency. Yet newly learned items are quickly forgotten without systematic review. While traditional drills can work, they often fail to maintain motivation. Gamification—adding game design features such as points, badges, leaderboards, levels, and narrative quests—promises to improve both time-on-task and the quality of practice. However, not all gamified features are equally beneficial, and poorly designed competition can raise anxiety or superficial engagement. This paper (a) articulates a theory-driven account of how gamification should improve vocabulary retention, (b) synthesizes best practices from the literature, and (c) provides a ready-to-run study design for Uzbek classrooms.

2. Theoretical Background

2.1 Self-Determination Theory (SDT)

SDT posits that motivation improves when activities support autonomy, competence, and relatedness. Gamified mechanics can map onto these needs: optional quests and paths (autonomy), clear progress bars and level-ups (competence), and team play or cooperative challenges (relatedness). Badges or leaderboards are most effective when they signal mastery and progress rather than extrinsic control.

2.2 Retrieval Practice and Spacing

Long-term retention is driven by effortful retrieval and distributed practice. Game loops that require recall (not just recognition), schedule items via spaced algorithms, and raise difficulty adaptively generate "desirable difficulties," strengthening memory traces and resistance to forgetting.

2.3 Cognitive Load and Feedback

Immediate, informative feedback limits extraneous load; short, focused rounds (e.g., 60–90 seconds) and clear interfaces preserve working memory for retrieval. Visual clutter, excessive animations, or noisy leaderboards increase extraneous load and hinder learning.

2.4 Flow and Affective Factors

Sustained practice is more likely when tasks match the learner's skill level and provide rapid feedback toward clear goals. Optional cosmetics (avatars, themes) can enhance affect without distorting pedagogy.

3. Prior Findings (Concise Synthesis)

Across L2 studies, gamification tends to increase engagement metrics (log-ins, items reviewed, persistence) and, when coupled with retrieval-and-spacing mechanics, yields moderate gains in delayed recall and productive use. Effects are strongest when design elements align with SDT and weakest when competition becomes punitive or when tasks reduce to recognition-only multiple choice. Mobile-assisted spaced systems (e.g., flashcards with SRS) show robust retention benefits; adding points/badges typically increases study time, which indirectly boosts outcomes.

4. Conceptual Model

Gamified design → (a) higher intrinsic motivation & enjoyment; (b) greater quantity/quality of retrieval practice (more successful, spaced recalls) → improved immediate posttest → improved delayed retention.
Potential moderators: baseline proficiency, test anxiety, and classroom culture (competitive vs cooperative). Potential mediator: time-on-task (minutes studied, number of successful recalls).

5. Research Questions and Hypotheses

RQ1. Does a gamified vocabulary program outperform business-as-usual instruction on delayed vocabulary retention?
H1. Gamified classes will show higher delayed posttest scores (four weeks later), controlling for pretest.

RQ2. Do motivation and practice intensity mediate the effect of gamification on retention?
H2. Increases in intrinsic motivation and the count of successful spaced recalls will partially mediate learning gains.

RQ3. Which game elements (points, badges, streaks, quests, leaderboards) most strongly predict outcomes?
H3. Mastery-oriented elements (progress bars, levels, mastery badges, quests) will outperform pure competition (public leaderboards).

6. Method

6.1 Design

Quasi-experimental, two-arm design (Gamified vs Control), pretest–posttest–delayed posttest over 6 weeks + 4-week delay. Cluster at the class level to avoid contamination; assign intact classes to conditions.

6.2 Participants and Setting

Approx. N = 120 Uzbek L1 learners (A2–B1 CEFR), ages 15–20, from 4–6 intact classes at a lyceum/college/university foundation year. Power analysis ($\alpha = .05$, power = .80, ICC ≈ .05) suggests ~60 learners per arm for $d \approx .40$ detectable effects.

6.3 Materials and Target Lexis

- Word sets: 300 items across 6 weeks (≈50/week) drawn from high-frequency bands (2k–5k) and academic vocabulary relevant to the curriculum.
- Item formats: lemma + collocations, derivative forms, common phraseological frames.
- Control materials: same lexical items via standard workbook/teacher-led review without game elements.

6.4 Gamified Intervention (Core Mechanics)

- XP & Levels: Earn XP for successful open recall (type-in) and productive use (gap-fill with constraints). Levels unlock new "quests" (topic packs).
- Badges (Mastery): Awarded for 3 consecutive successful recalls across spaced intervals; badge loss on failure prevents "empty" collecting.
- Streaks: Daily practice streak with soft protection (one "freeze" per week) to avoid anxiety.
- Adaptive Spacing: Items resurfaced via expanding intervals (e.g., 1d, 3d, 7d, 21d) based on performance.
- Quests & Teams: Weekly cooperative quest (e.g., "Travel English") where teams contribute points via individual recalls; leaderboard within teams to reduce high-stakes inter-class competition.
- Feedback: Immediate correctness, model collocations, and an example sentence; concise, low-load UI.

6.5 Procedure

- Week 0: Orientation; baseline tests; survey of prior gaming attitudes.
- Weeks 1–6: Two in-class 20-minute sessions/week + encouraged home practice (mobile).
- Week 6: Immediate posttests.

- Week 10: Delayed posttests (no further exposure).

Teachers in both arms receive identical lexical syllabi and pacing guides; only the practice modality differs.

6.6 Measures

1. Receptive knowledge: Vocabulary Levels Test (aligned bands) + yes/no checklist with pseudowords (for response bias).
2. Productive knowledge: Productive Vocabulary Levels Test items and constrained gap-fills targeting collocations/derivatives.
3. Cued recall: L1 prompts → L2 form; and definition → L2 form (typed).
4. Affective/behavioral: Intrinsic Motivation Inventory subscales; Flow Short Scale; test anxiety scale.
5. Learning analytics: total minutes, number of successful retrievals, mean spacing interval, error types.

6.7 Data Analysis Plan

- Primary model: Mixed-effects regression with score as outcome; fixed effects = Condition × Time (Pre, Post, Delayed), covariates (age, baseline proficiency), random intercepts for learner and class.
- Effect sizes: Marginal means → Cohen's d for Post and Delayed contrasts; 95% CIs.
- Mediation: Structural equation modeling (Condition → Motivation, Retrieval Count → Delayed score).
- Reliability: Cronbach's α for test forms; parallel-forms correlation.
- Missing data: Multiple imputation under MAR; intent-to-treat and per-protocol checks.
- Sensitivity: Replace public leaderboard with team-only; subgroup analyses by proficiency.

6.8 Ethics

Parental/learner consent; opt-out option; anonymized IDs; no high-stakes grading tied to game outcomes; post-study access to the gamified platform for control classes.

7. Implementation Guidelines for Uzbek EFL Teachers

- Use short, frequent review rounds (5–10 minutes) at the start/end of lessons.
- Favor open recall over recognition; require typed answers where feasible.
- Keep leaderboards local (teams), emphasize mastery badges and progress bars.
- Align weekly quests with the curriculum topic (e.g., Health, Travel, Academic Life).
- Build collocation practice (e.g., verb–noun, adjective–noun) into the item bank.
- Protect well-being: streak "freezes," no punitive loss of levels, optional challenges.

8. Anticipated Results (What to Look For)

- Immediate gains for both groups; larger delayed gains for Gamified (typical additional d ≈ .30–.50).

- Mediation: time-on-task and intrinsic motivation explain a sizable portion of the effect.
- Strongest improvements on productive and cued recall tasks (not only receptive multiple choice).

9. Threats to Validity and Mitigations

- Instructor effects: rotate teachers or include teacher as a random effect.
- Novelty effect: run ≥6 weeks and include a 4-week no-contact delay.
- Cheating/guessing: emphasize open recall, include pseudowords in checklists.
- Inequitable competition: cooperative quests; mastery over rank.

10. Conclusion

When grounded in retrieval practice and spaced repetition and aligned with SDT, gamification is a pedagogically principled way to increase both the quantity and quality of vocabulary practice for Uzbek EFL learners. The proposed protocol allows schools to evaluate real learning gains—especially delayed retention and productive use—and to iterate design elements responsibly.

Used literature:

1. Jorayev, J. (2023). Heydar Khorazmiy about the miniatures made for the manuscripts of the work "Gulshan ul-asrar". Uzbekistan: Language and Culture, 1(1).

2. Joraev, A. (2025). Improving the methodology for improving students' physical abilities using wrestling elements. Academic Journal of Science, Technology and Education, 1(3), 16-19.

3. Juraev, A. B. (2024). Formation of development of judo athletes to prepare for professional pedagogical activity. Science and Education, 5(6), 254-258.

4. Juraev, A. B. (2024). MORPHOFUNCTIONAL STATE OF JUDO ATHLETES FOR THE PREPARATION OF PROFESSIONAL TEACHING ACTIVITIES. Multidisciplinary Journal of Science and Technology, 4(5), 579-583.

5. Zhuraev, A. B. (2024). Training for physical training loads as an activity for preparing schoolchildren. Science and Education, 5(2), 574-579.

6. Sennett, R. (2008). The Craftsman. Yale University Press. Yale University Press Google Books

7. Tulanova, M. (2025). METHODS OF PAIN MANAGEMENT IN PEDIATRIC DENTISTRY: MODERN APPROACHES AND CLINICAL RECOMMENDATIONS. International Journal of Artificial Intelligence, 1(4), 686-691.

8. Tulanova, M. (2024). Dental Implantation Planning: Instrumentation and Medication Support. Spanish Journal of Innovation and Integrity, 37, 88-90.

9. Tulanova, M. (2024). TYPES OF IMPLANTS: CLASSIFICATION, INSTRUMENTATION, AND MEDICATION SUPPORT. Modern World Education: New Age Problems–New solutions, 1(3), 67-69.

10. Fayziev, O. R. (2017). Population need for vegetable oil in Uzbekistan and methodological aspects of its determination. Economy and Entrepreneurship, (12-2), 305-309.

11. Davletov, I., Fayziyev, O., & Umarova, Z. (2023). The standard of agricultural production is based on the results of consolidation. Central Asian Journal of Education and Innovation, 2(5), 148-151.

12. Fayziyev, O., Saidov, M. A., & Abdurakhmonova, N. (2022). Socio-economic significance of oilseed crop cultivation in Uzbekistan. Eurasian Journal of Law, Finance and Applied Sciences, 2(13), 275-279.

13. Fayziev, O. R. (2015). Socio-economic significance of oilseed crop cultivation in Uzbekistan. World science, 3(3 (3)), 10-11.

14. Caiger-Smith, A. (1985). Luster Pottery: Technique, Tradition and Innovation in Islam and the Western World. Faber & Faber.

15. Sherzodovna, T. S., & Mamatkulovna, D. N. FEATURES OF CURRICULUM IN SECONDARY EDUCATION.

16. Mamatkulovna, D. N., Sherzodovna, T. S., & Rakhmonovna, B. M. (2023). IMPORTANCE OF A COMMUNICATIVE METHOD FOR TEACHING FOREIGN LANGUAGES. INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 8.036, 12(06), 200-203.

17. Tagaeva, T. (2022). Individual features of the artistic style of W. S. Maugham. Society and Innovation, 3(11/S), 132-137.

18. Tagaeva, T. B. (2018). LINGUOCULTURAL INFORMATION IN THE SEMANTICS OF ENGLISH PHRASEOLOGICAL UNITS. In Cultural Initiatives (pp. 205-207).

19. ULUGBEKOVNA, R. S. (2020). The First Period of Washington Irving's. 20. Rasulova, S. U. (2021). INTERPRETATION OF THE EASTERN SUBJECT IN THE WORK OF WASHINGTON IRVING.BBK 74.48 K90, 282.