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Gamification and Experiential Learning for Learner Retention in the Teaching–Learning Process: An Evidence-Informed Integrative Framework

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Abstract:

Learner retention is not produced by exposure to content alone; it depends on whether learners attend, act, retrieve, reflect, receive usable feedback, and repeatedly apply knowledge in meaningful contexts. This conceptual research article synthesises empirical and meta-analytic evidence on gamification and experiential learning to propose an integrated retention-oriented framework for teaching and learning. Gamification is treated as the purposeful use of game-design elements—such as challenge, progress indicators, feedback, choice, collaboration and recognition—within non-game learning contexts, while experiential learning is understood as learning through structured experience, reflection, conceptualisation and further experimentation. Meta-analytic evidence indicates that well-designed gamification can produce positive cognitive, motivational and behavioural outcomes, although effects vary by design, context and duration. A large meta-analysis of experiential learning similarly reports better learning outcomes than conventional instruction. The article argues that the strongest pedagogical value emerges when gamification provides motivational architecture and rapid feedback while experiential learning provides authenticity, reflection and transfer. A five-stage Gameful Experiential Retention Cycle is proposed, together with design principles, an implementation matrix and assessment indicators. The paper cautions against superficial point-and-badge systems, excessive competition, novelty effects and the mistaken equation of engagement with durable learning. It concludes that learner retention is most likely when gameful design is aligned with meaningful experience, retrieval, feedback, reflection, spaced revisiting and opportunities for transfer.

Keywords: *gamification; experiential learning; learner retention; student engagement; active learning; feedback; retrieval practice; teaching–learning process*

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1. Introduction

A persistent problem in teaching is the gap between what learners encounter during instruction and what they can later recall, explain, apply and transfer. Learners may appear attentive during a lesson yet fail to retain central concepts, or they may remember information for an examination without being able to use it in an unfamiliar situation. For this reason, learner retention should be understood more broadly than short-term recall. In the present paper, retention includes durable knowledge and skill retention as well as sustained participation and persistence in the learning process.

Two pedagogical movements have attracted particular attention in attempts to make learning more active and memorable: gamification and experiential learning. Gamification does not require turning a course into a complete game. Rather, it modifies the learning environment through selected game-design features that make goals visible, provide feedback, structure challenge, and sometimes enable collaboration or competition. Experiential learning, by contrast, places meaningful activity and reflection at the centre of learning. Its central premise is that experience becomes educative when learners examine it, construct meaning from it, connect it to concepts, and test those concepts through further action.

The empirical record is encouraging but not uniformly positive. Sailer and Homner (2020) reported significant positive effects of gamification on cognitive, motivational and behavioural learning outcomes. Bai, Hew, and Huang (2020) likewise found a significant medium overall effect on academic performance across 30 interventions involving 3,202 participants. A later meta-analysis of 41 studies and more than 5,000 participants reported a larger pooled effect but also demonstrated that design principles, duration, discipline and learning environment moderate effectiveness. These findings suggest that the question is no longer simply whether gamification works, but under what pedagogical conditions it supports learning.

Evidence for experiential learning follows a similar pattern. Burch et al. (2019), synthesising controlled empirical studies across more than four decades, reported that classes using experiential pedagogies achieved learning outcomes approximately 0.43 standard deviations higher than traditional learning environments. Recent systematic work also warns that experiential learning is often labelled as "Kolbian" without implementing the full cycle of experience, reflection, conceptualisation and experimentation. Therefore, both gamification and experiential learning require design fidelity rather than surface adoption.

This paper develops an integrated framework in which gamification supplies motivational and feedback structures while experiential learning supplies authentic action, reflection and transfer. The purpose is not to claim a universal causal effect on retention, but to build an evidence-informed model that can guide instructional design and future empirical testing.

2. Objectives of the Study

- To clarify the relationship among gamification, experiential learning, engagement and learner retention.

- To synthesise credible empirical evidence on the learning effects of gamification and experiential learning.
- To identify mechanisms through which the two approaches may jointly strengthen durable learning and persistence.
- To propose a practical Gameful Experiential Retention Cycle for classroom and blended-learning contexts.
- To identify risks, assessment indicators and research directions for responsible implementation.

3. Method and Scope of the Article

This is an evidence-informed conceptual synthesis rather than a new experimental study. It draws on peer-reviewed meta-analyses, systematic reviews and foundational theoretical literature on gamification, experiential learning, engagement, motivation and retention. Priority is given to quantitative syntheses because they aggregate results across multiple settings; systematic reviews are used to interpret implementation quality and contextual variation. Numerical effect sizes reported in this article are reproduced only as summary statistics from the cited studies and are not re-analysed as a new meta-analysis. The proposed framework is therefore a theoretically and empirically grounded model that requires direct testing in future intervention research.

4. Conceptual Foundations

4.1 Gamification as Instructional Design

Gamification is commonly defined as the use of game-design elements in non-game contexts (Deterding et al., 2011). In education, useful elements include meaningful goals, progressive challenge, immediate or informative feedback, visible progress, choice, levels, quests, narratives, collaboration, badges and recognition. These elements are not equally valuable in every context. A badge may be motivational when it signals genuine mastery, but trivial when it merely rewards attendance. A leaderboard may stimulate effort for some learners while creating anxiety, social comparison or disengagement for others. Thus, game elements should be selected because they support a learning mechanism, not because they make a lesson look entertaining.

4.2 Experiential Learning as a Reflective Cycle

Experiential learning has intellectual roots in Dewey's emphasis on experience and reflection and is strongly associated with Kolb's experiential learning cycle. In a retention-oriented interpretation, the learner encounters a concrete task, observes and reflects on the consequences of action, develops or revises conceptual understanding, and then tests that understanding in a new attempt. Experience without reflection can remain activity without learning; reflection without re-application can remain insight without transfer. Recent systematic reviews reinforce the importance of implementing the cycle coherently rather than treating any practical activity as experiential learning.

4.3 Learner Retention as a Multi-Dimensional Outcome

Retention in teaching and learning should be operationalised explicitly. Cognitive retention concerns the durability of knowledge, concepts and procedures across delayed assessments. Skill retention concerns the ability to

reproduce or adapt a performance after time has elapsed. Transfer concerns application to a new task or context. Participation retention concerns continued engagement, attendance, course completion or persistence. These outcomes overlap but are not interchangeable. A gamified activity may raise participation without producing durable conceptual learning; conversely, a demanding experiential task may improve transfer even when learners do not rate it as highly enjoyable.

5. What the Evidence Shows

Evidence source	Scope	Reported effect	Interpretation	Caution
Sailer & Homner (2020)	Meta-analysis of gamified learning	Cognitive g=.49; motivational g=.36; behavioural g=.25	Positive small effects across domains	Heterogeneity; some outcomes less stable under rigorous subsamples
Bai, Hew, & Huang (2020)	30 interventions; 3,202 participants	Overall Hedges g=.504	Medium advantage for gamification on academic performance	Effects vary; qualitative evidence also reports anxiety/jealousy for some learners
Li et al. (2023)	41 studies; 49 samples; >5,071 participants	Overall g=.822	Positive pooled effect on learning outcomes	Moderated by user type, discipline, design, duration and environment
Burch et al. (2019)	89 controlled experiential-learning studies identified	Overall d=.43	Experiential pedagogies outperform traditional environments on average	Wide variation in interventions and outcome measures
Villarroel Henríquez et al. (2025)	30 higher-education studies using Kolb framework	Qualitative systematic synthesis	Benefits are stronger when the full experiential cycle is implemented coherently	Many studies incompletely operationalise the model

Table 1. Selected empirical syntheses relevant to the proposed framework. Effect sizes are those reported by the original authors; they should not be compared mechanically because studies, outcomes and designs differ.

Taken together, the evidence supports three conclusions. First, both approaches can improve learning outcomes relative to conventional instruction, but neither is automatically effective. Second, implementation matters: challenge, feedback, social structure, duration, learner characteristics and fidelity to the experiential cycle can alter outcomes. Third, engagement is best treated as a pathway to retention rather than proof of retention itself. Durable learning must be demonstrated through delayed retrieval, performance, transfer or persistence indicators.

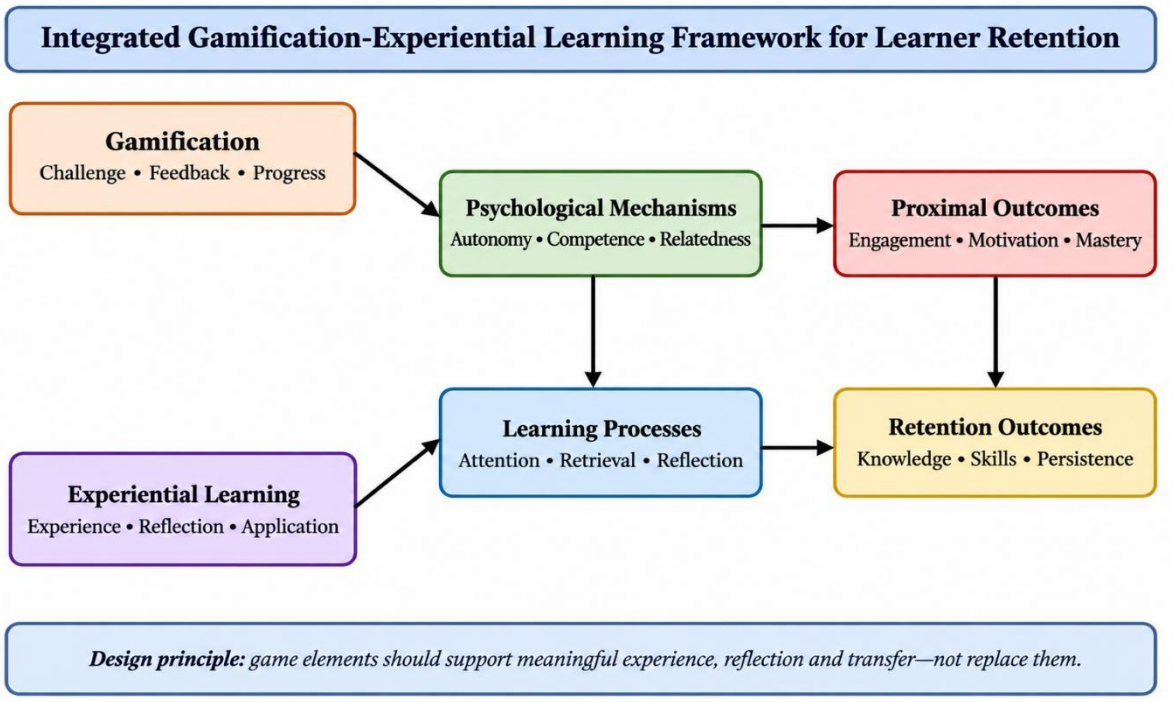


Figure 1. Integrated conceptual framework developed for this article.

6. Mechanisms Linking Gamification and Experience to Retention

6.1 Attention and Goal Clarity

Well-designed challenges focus attention by making the next goal understandable and achievable. Progress indicators reduce ambiguity about where the learner is in a sequence, while quests or staged tasks can divide complex learning into manageable units. Attention, however, must be directed toward disciplinary ideas rather than decorative game features. The pedagogical question is always: what should the learner notice, retrieve or decide?

6.2 Competence, Autonomy and Relatedness

Self-determination theory provides a useful explanation for why some gameful designs motivate. Learners are more likely to invest effort when they experience growing competence, meaningful choice and social connection. Gamification can support these needs through optimally difficult challenges, informative feedback, branching options and cooperative missions. It can also frustrate them when rewards become controlling, competition becomes humiliating, or progress is disconnected from genuine mastery.

6.3 Retrieval and Feedback

Retention is strengthened when learners repeatedly retrieve knowledge rather than merely re-read it. Low-stakes gameful quizzes, challenge rounds, scenario decisions and "unlock" tasks can create repeated retrieval opportunities. Their value depends on feedback quality. Immediate feedback is useful for correcting misconceptions during practice, while explanatory feedback helps learners understand why an answer or strategy worked. Points alone provide information about performance but not necessarily information for improvement.

6.4 Reflection and Meaning-Making

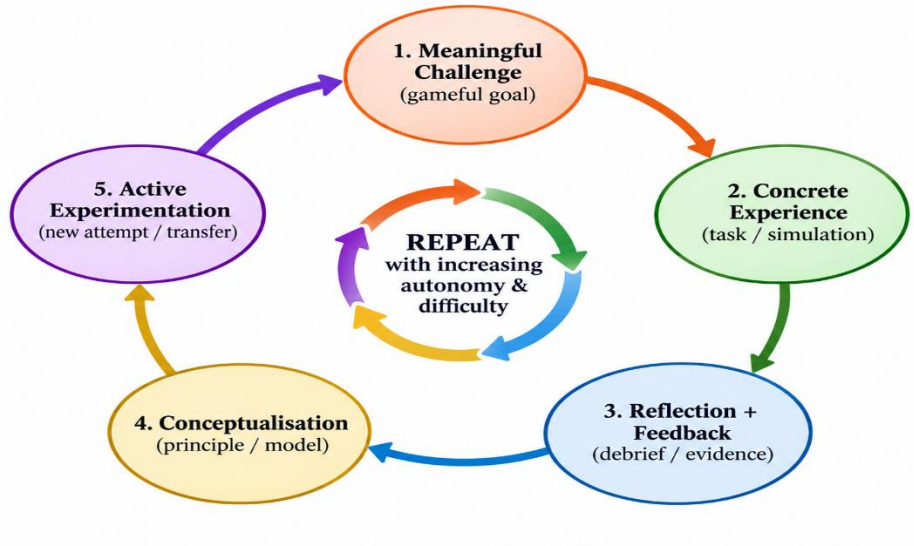
Experiential learning adds a mechanism that gamification can otherwise lack: structured reflection. After a simulation, role play, field task, laboratory activity or problem-solving mission, learners should reconstruct what happened, identify evidence, compare strategies, connect experience to theory and formulate principles for the next attempt. Debriefing therefore converts activity into conceptual learning.

6.5 Transfer through Repeated Experimentation

A learner who succeeds once may have memorised a procedure rather than understood a principle. Transfer requires variation. A retention-oriented design therefore repeats the cycle with altered cases, contexts or constraints. Gameful progression can make this variation visible: later levels should not simply be harder versions of the same question but should require increasingly independent application, explanation and adaptation.

7. The Gameful Experiential Retention Cycle

Figure 2. Retention-Oriented Gameful Experiential Learning Cycle



The proposed cycle begins with a meaningful challenge, not a reward. The challenge creates purpose and a reason to use knowledge. Learners then enter a concrete experience such as a simulation, investigation, project, case, field observation or authentic problem. Reflection and feedback follow, allowing learners to examine evidence and misconceptions. Conceptualisation connects the experience to disciplinary models and vocabulary. Active experimentation then asks learners to apply the revised understanding in a new situation. The cycle repeats with greater complexity, spacing and autonomy. In this structure, gamification provides the architecture of progression and feedback, while experiential learning protects depth, authenticity and transfer.

8. Practical Design Matrix for Teachers

Phase	Teacher design	Gameful element	Experiential element	Retention evidence

Challenge	State an authentic problem and success criteria	Quest, mission, level goal	Problem situation	Pre-task retrieval / prediction
Experience	Let learners act, decide, create or investigate	Time-bound challenge, role, resource constraint	Simulation, case, project, field/lab task	Observed performance / decision trail
Reflect + Feedback	Prompt evidence-based debriefing	Feedback loop, progress map	Reflective observation	Explanation of errors and strategy
Conceptualise	Connect experience to theory	Mastery badge only after demonstrated understanding	Abstract conceptualisation	Concept map / explanation / principle
Experiment + Transfer	Change context or difficulty	Next level, branching scenario, team mission	Active experimentation	Novel problem, delayed task, transfer performance

Table 2. A retention-oriented design matrix for integrating gamification with experiential learning.

9. Illustrative Classroom Application

Consider a teacher-education course on classroom assessment. Instead of beginning with a lecture on validity and reliability, students receive a "diagnostic mission": evaluate three short assessment plans and identify which one could lead to misleading conclusions about learner achievement. Teams earn progress only when they justify decisions with evidence, not merely when they select an option. They then design a short assessment, pilot it with peers, inspect response patterns, and receive feedback. During the debrief, they identify where their original assumptions failed and connect those observations to concepts of validity, reliability, item difficulty and fairness. A later level presents a different subject, learner group and constraint. Two weeks later, students complete an individual transfer task without game cues. In this design, the gameful structure motivates progression, the experience provides context, reflection develops meaning, and the delayed individual task tests retention rather than momentary excitement.

10. Risks and Design Safeguards

The most common weakness in educational gamification is "pointsification": adding points, badges or leaderboards without changing the intellectual quality of learning. Extrinsic rewards can also narrow attention to score accumulation, especially when learners discover that the fastest route to points is not the deepest route to understanding. Competition may energise some groups but discourage learners who repeatedly occupy low ranks. Public leaderboards should therefore be used cautiously; team progress, personal bests and mastery pathways are often more inclusive alternatives.

Experiential learning has parallel risks. Activity can become busy work when objectives are vague, reflection is rushed or the experience is only loosely connected to disciplinary concepts. Authentic tasks can also overload novices if insufficient scaffolding is provided. The solution is not to abandon experience, but to sequence it: model expert

thinking, provide partial supports, fade assistance over time and use debriefing to connect action with conceptual structure.

A further risk is measuring only immediate enjoyment or end-of-class quiz scores. If retention is the stated outcome, the evaluation design should include a delayed measure. Ideally, studies should distinguish immediate achievement, delayed retention, transfer and persistence. This makes it possible to determine whether an intervention produces durable learning rather than a novelty effect.

11. Assessment Framework for Learner Retention

A robust evaluation can combine four types of evidence: (a) immediate learning—post-task understanding or performance; (b) delayed cognitive retention—parallel assessment after one or more weeks; (c) transfer—application to a structurally similar but unfamiliar problem; and (d) participation persistence—attendance, completion, re-engagement or voluntary continuation. Motivation and engagement scales may be added as mediating variables, but they should not substitute for retention outcomes. Where digital platforms are used, trace data such as attempts, spacing between sessions and revision behaviour can complement self-report measures.

12. Implications for Teaching and Teacher Education

For teachers, the principal implication is that gamification and experiential learning should be planned from learning outcomes backward. The teacher first identifies what learners should retain and transfer, then designs an experience in which that knowledge is necessary, then adds gameful elements only where they strengthen attention, feedback, choice, progression or social participation. This reverses the common practice of selecting an attractive tool first and searching for a pedagogical use afterward.

Teacher-education programmes can use the same framework to develop pedagogical judgement. Pre-service and in-service teachers should experience gameful experiential lessons as learners, analyse the design decisions behind them, redesign weak examples and test their own prototypes. Such meta-pedagogical experience is especially important because the effectiveness of these approaches depends less on the presence of technology than on alignment among goals, activity, feedback, reflection and assessment.

13. Directions for Future Research

Future studies should move beyond short interventions and self-reported engagement. Randomised or strong quasi-experimental designs can compare conventional instruction, gamification alone, experiential learning alone and an integrated condition. Delayed post-tests should be included to establish whether gains persist. Researchers should report game elements precisely, describe the experiential cycle in enough detail for replication, and test moderators such as prior achievement, age, subject domain, collaboration structure and intervention duration. Studies in Indian school, teacher-education and higher-education contexts would be particularly valuable because cultural expectations around competition, collaboration, teacher authority and digital access may shape implementation.

14. Conclusion

Gamification and experiential learning are best understood as complementary design approaches rather than competing innovations. Gamification can make goals, progress, challenge and feedback more visible; experiential learning can make knowledge actionable, reflective and transferable. Evidence from meta-analyses indicates that both approaches can improve learning outcomes, but the magnitude and durability of benefits depend on implementation. The proposed Gameful Experiential Retention Cycle integrates meaningful challenge, concrete experience, reflection and feedback, conceptualisation, and active experimentation in a repeating progression. Its central principle is simple: reward should follow evidence of learning, activity should be followed by reflection, and engagement should be verified through delayed retention and transfer. When these conditions are met, gameful experiential teaching has a credible basis for supporting not only participation but durable, meaningful learning.

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