SOFIA UNIVERSITY ST. KLIMENT OHRIDSKI

STAMP-BASED GAMIFICATION FOR ENHANCING MUSEUM ENGAGEMENT AND INFORMAL LEARNING

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Presentation roadmap

- Why low-cost engagement matters for museum learning
- The stamp-based gamification model: tangible passport + optional QR layer
- Multi-site pilot design across 15 Bulgarian museum and heritage institutions
- Real aggregated findings: engagement, clarity, recall, and QR use
- Transferability, limitations, and practical implications

The practical problem

Museums need engagement tools that deepen attention without turning the visit into a technology project.

Visitors often move quickly through exhibitions; attention is uneven and highly context-dependent.

Immersive digital systems may be attractive, but they are not always financially or operationally feasible.

A low-cost, tangible format can structure exploration while preserving the open-ended character of museum learning.

The research question is therefore not “Can games entertain visitors?” but “Can a simple game structure guide attention and reflection?”

Theoretical positioning

Gamification: game design elements in a non-game context (goals, feedback, progression, milestones).

Museum learning: informal, free-choice, object-centred and socially situated learning.

Visitor attention: attention is the precondition for meaning-making; prompts should be tied to visible cues.

Human-centric design: technology is an optional support layer, not the core experience.

Key design principle

A low-cost tangible mechanic can guide attention, route-following, and immediate reflection without requiring immersive technologies.

Contribution and research questions

Contribution

Low-cost stamp passport model for hybrid museum participation.

Multi-site pilot across diverse museum types.

Transferability framework: stable vs. adaptable design parameters.

Research questions

RQ1: What engagement patterns are observed and reported?

RQ2: Which implementation factors enable transferability?

RQ3: How does the optional QR-supported layer function?

Important framing: the study reports preliminary, non-causal, design-relevant signals rather than effect estimates.

Intervention: stamp-based museum journey

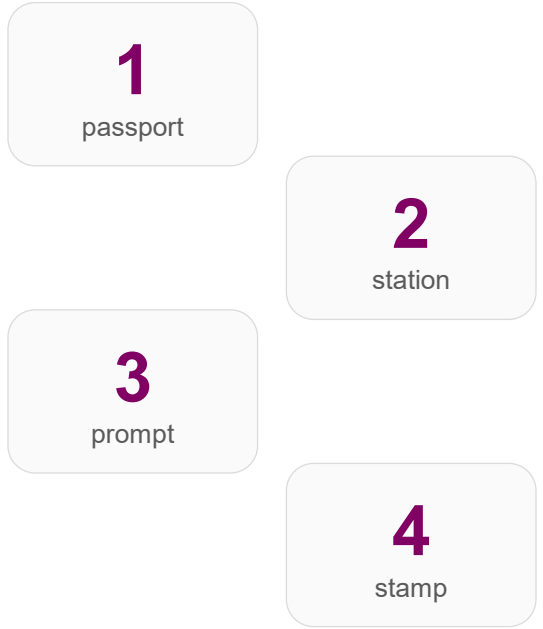
Physical passport: visitors collect stamps at selected stations.

Curated route: each station directs attention to an object, exhibit or visual detail.

Micro-task: short inquiry prompt, recognition cue, or interpretive question.

Milestone feedback: visible progression encourages route completion.

Optional QR layer: concise additional context or follow-up content.



The visitor path is deliberately lightweight: enough structure to focus attention, but not enough to dominate the museum experience.

Evaluation logic model

Figure 1. Evaluation logic model

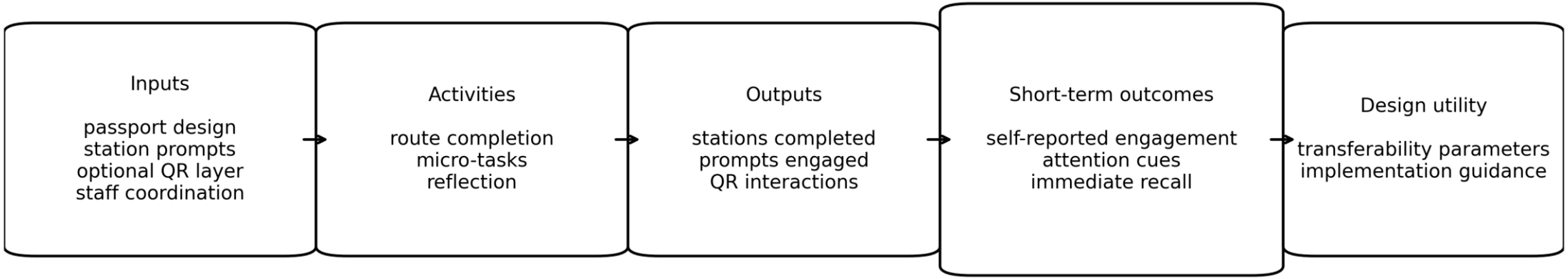
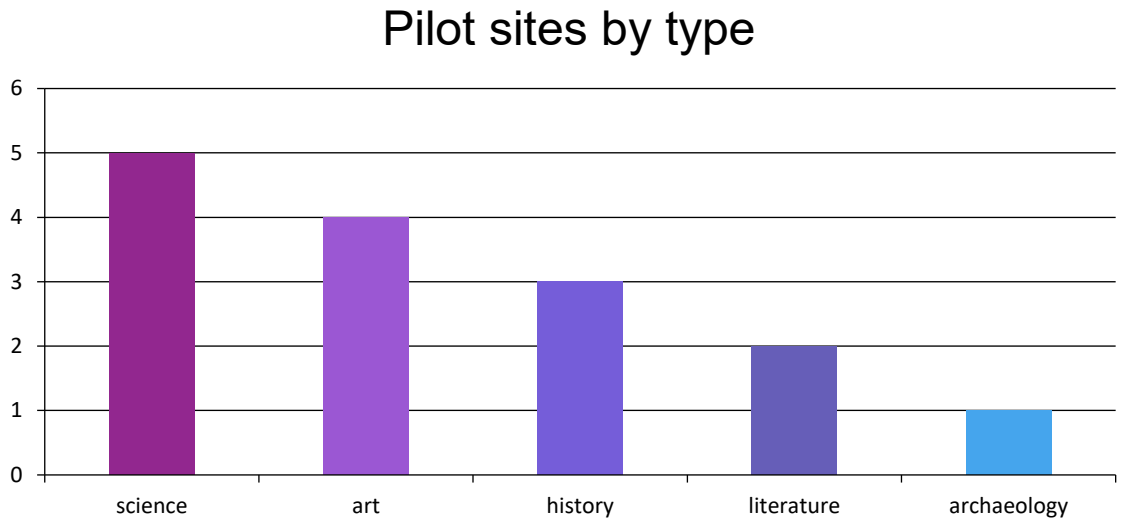


Figure 1 links design inputs to observable outputs, short-term outcomes and design utility. The model clarifies what the study can and cannot claim.

Pilot design: scope and institutional diversity

15	147	6–12	56	147
pilot sites	participants	per site	interviews	surveys



History and archaeology

Art and contemporary art

Science, technology and natural sciences

Literature/house museums and specialised collections

Method: mixed evidence, cautious interpretation

On-site observation: attention cues, bottlenecks, flow problems.

Structured interviews: route clarity, friction, QR experience, perceived value.

Short post-visit survey: engagement, clarity, recommendation/revisit intention.

Recall: R1 recognition item coded correct/incorrect; open recall screened for semantic alignment.

Analysis: descriptive statistics + thematic coding; no causal inference.

Interpretation standard: convergent signals across at least two evidence sources.

Why this matters methodologically

The design does not claim that stamps caused engagement. It shows whether the model is plausible, usable and transferable under specified conditions.

Dataset overview

147	56	147	70.7%	27.9%
completed surveys	structured interviews	valid recall responses	weighted R1 correct	weighted QR usage

Engagement site means ranged from 3.51 - 4.45 on a 1–5 scale.

Route clarity site means ranged from 3.41 - 4.47 on a 1–5 scale.

R1 correct rate ranged from 58.3 - 83.3% across sites.

QR usage ranged from 10.0 - 50.0%; QR remained an optional support layer.

All results remain preliminary and non-causal because there was no controlled comparison group.

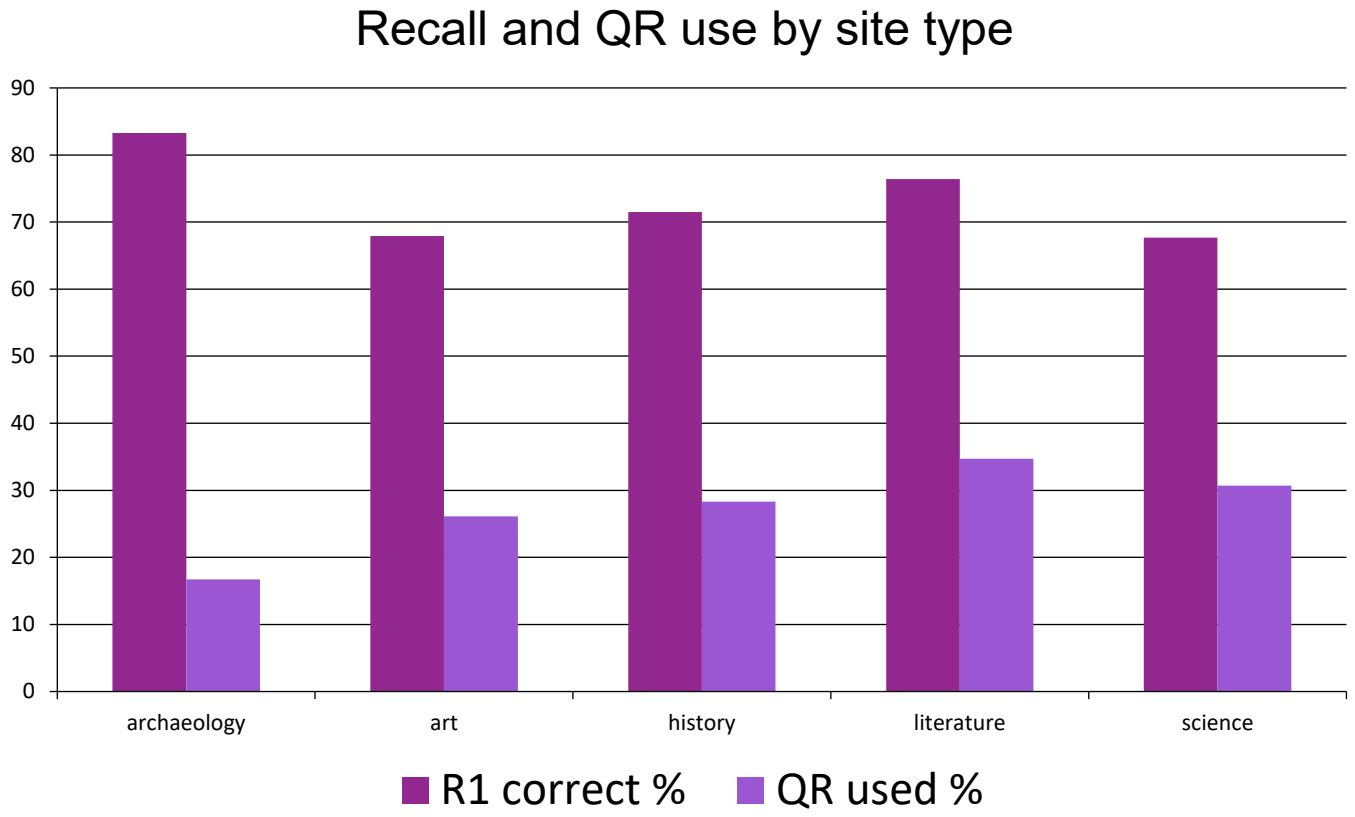
Finding 1: engagement and route clarity

Engagement scores are consistently above the scale midpoint across site types.

Route clarity varies more strongly by site type and spatial configuration.

The strongest qualitative pattern: prompts work best when they point to visible exhibit cues.

Finding 2: immediate recall and QR layer



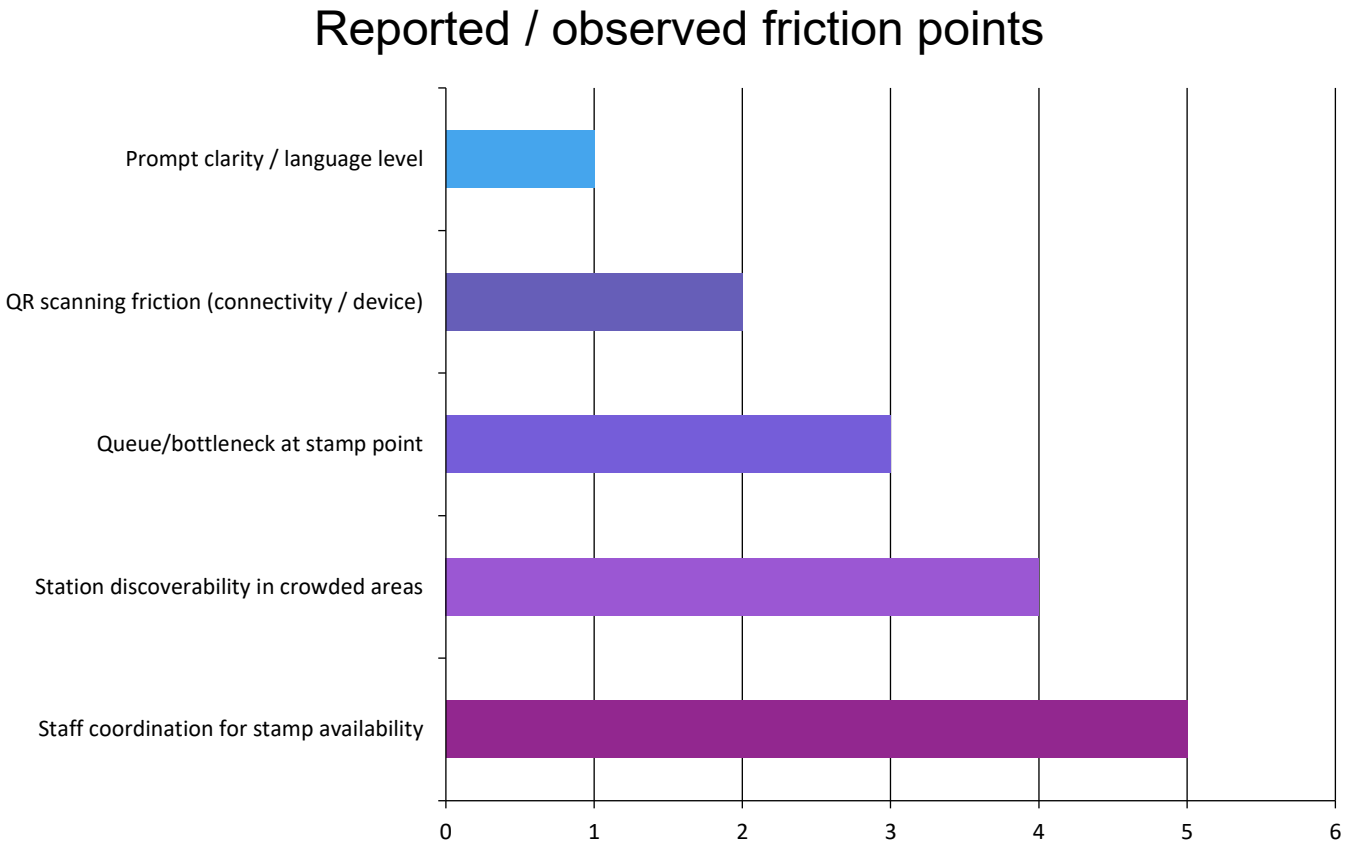
Weighted R1 correct rate across sites: 70.7%.

QR usage was moderate: 27.9% weighted across completed surveys.

QR works best as a short extension, not as the central visitor interface.

The physical stamp passport remained the core participation structure.

Implementation frictions



Station discoverability matters: visitors must see the next action quickly.

Stamp points can create bottlenecks in narrow or high-traffic areas.

Prompt clarity is critical: tasks should be short, concrete and object-linked.

QR use depends on connectivity, device readiness and perceived added value.

Transferability framework

Stable parameters

Curated route with a limited number of stations

Prompts tied to observable exhibit cues

Milestone feedback through stamps

Short reflection moment after the route

Adaptable parameters

Number and spacing of stations

Visual identity and passport format

Reward framing and route narrative

QR depth: none, light or rich layer

Language level and prompt difficulty

Transferability is not statistical generalisation; it is a design claim under specified conditions.

Boundary conditions and validity

No random assignment or controlled comparison: no causal claims.

Small heterogeneous groups: findings are exploratory and design-oriented.

Self-report may involve social desirability; triangulation reduces but does not remove this risk.

Crowded galleries, narrow corridors and long routes can weaken the model.

Children may need a mediator to prevent pure “stamp collecting” behaviour.

Validity strategy

Triangulation: survey + interview + observation

Explicit coding rules for recall

Interpretation through convergent patterns

Transparent limits of external validity

Implications for museums and education

For museums

Low-cost engagement tool requiring limited infrastructure.

Can guide visitors without over-prescribing interpretation.

Useful for temporary exhibitions, family programmes and educational routes.

For higher education

Students become experience designers, not only observers.

Course-based projects can produce real cultural prototypes.

Marketing, UX and informal learning can be integrated in one task.

Strategic insight: the model connects cultural participation, visitor engagement, and design-based learning.

Conclusion

Stamp-based gamification is best understood as a pragmatic design strategy, not as a technological novelty.

It structures attention through a tangible, visible progression mechanic.

It supports immediate reflection through short, object-linked prompts.

It can be transferred across museum types if the stable design parameters are preserved.

The optional QR layer should remain concise and supportive, not dominant.

Next step: delayed recall and controlled comparison designs to test learning retention and stronger outcome claims.

THANK YOU!

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