
# Gamified Bilingual AI Agents for Digital Literacy in Qatari Classrooms:

## A Conceptual Framework

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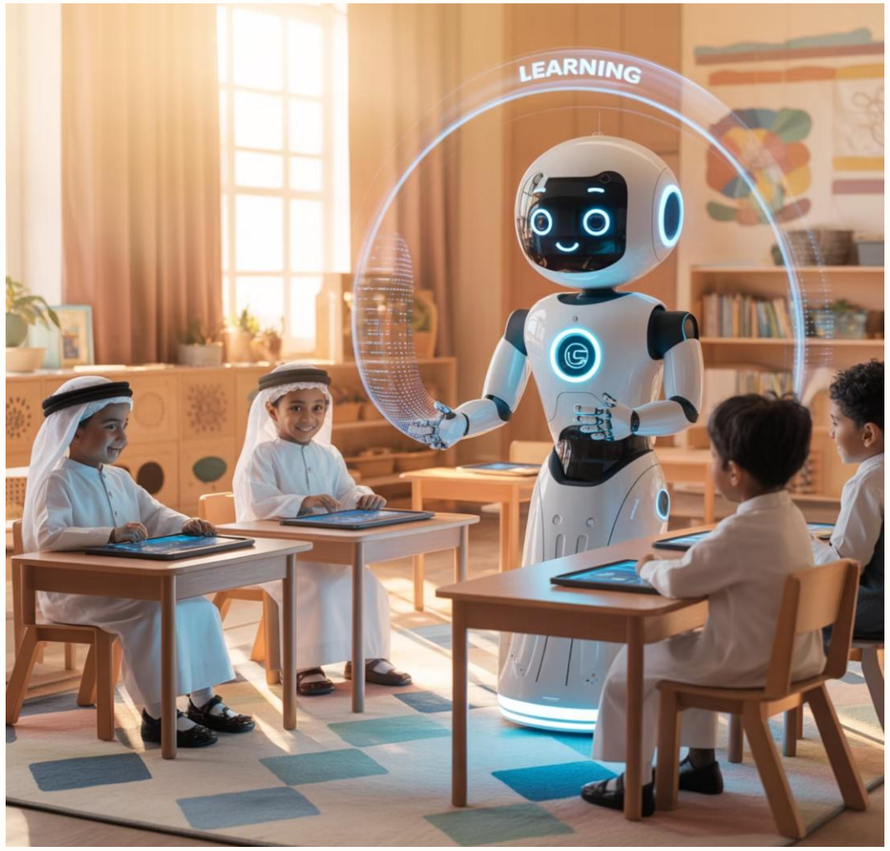
This research explores innovative approaches to integrate AI-powered educational assistants in Qatari primary schools, addressing digital literacy challenges through culturally-responsive, personalized learning support.

# 1. Introduction

Over 140,000 students across 200 Qatari schools engaged in digital literacy and cybersecurity programmes in 2023 (National Cyber Security Agency, 2024).




- Qatar is investing heavily in cyber awareness and digital skill-building from an early age.
- Over 140K students involved in national digital literacy programmes (NCSA, 2024).
- However, these efforts lack adaptive, personalised AI-based learning support.
- This research explores how gamified intelligent agents can deliver tailored digital literacy experiences for diverse learner needs.
- Grounded in Qatar's Vision 2030, this approach addresses the critical personalisation gap in ICT education.

# 2. Research Problem

## Personalisation Gap

Current digital literacy support systems fail to adapt to individual student learning needs and capabilities

## Tool Limitations

Existing educational platforms offer minimal adjustment to student learning curves and progression rates

## Strategic Alignment

Critical need to integrate solutions with Qatar's National ICT Framework and Qatar National Vision 2030 educational goals

Policies often overlook classroom-level constraints such as teacher training and infrastructure

# 3. Research Questions

> How can gamified, dual-language AI agents enhance digital literacy development among Grade 6 students in Qatar?

## Gamification Integration

Which gamification elements are most effective in increasing motivation and engagement in digital literacy learning?

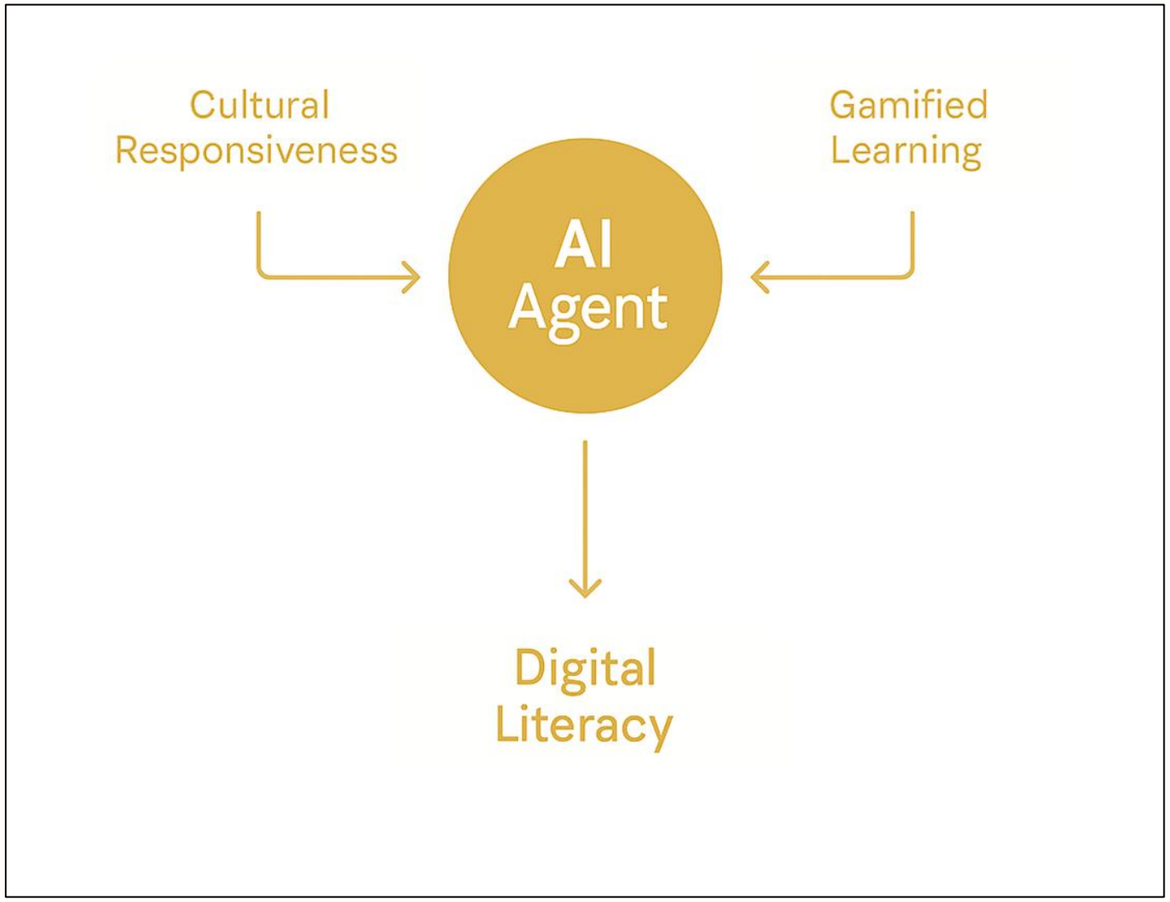
## Teaching Strategies

How can bilingual (Arabic-English) interface design influence the accessibility and cultural relevance of AI-supported learning in Qatari primary classrooms?

# 4. Aims and Objectives

**Primary Research Aim:**

Design and critically evaluate a conceptual framework for implementing gamified, bilingual AI agents to support digital literacy development in Grade 6 Qatari classrooms.



# 5. Literature Overview

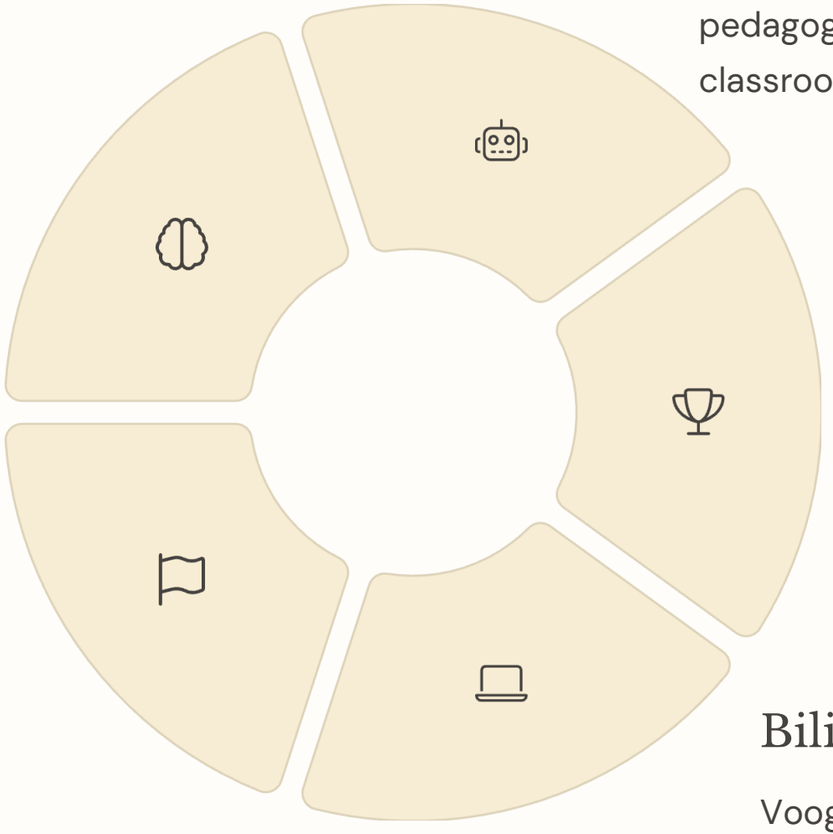
## AI in Education

Luckin et al. (2016) - Explores AI as a powerful tool for personalized learning experiences

Holmes et al. (2019) - Examines pedagogical applications of AI systems in classroom settings

## Sociocultural Theory

Vygotsky (1978) - Emphasizes learning as a social process mediated by tools, language, and cultural context



## Gamification

Hamari et al. (2014) - Investigates motivational affordances of game elements in educational contexts

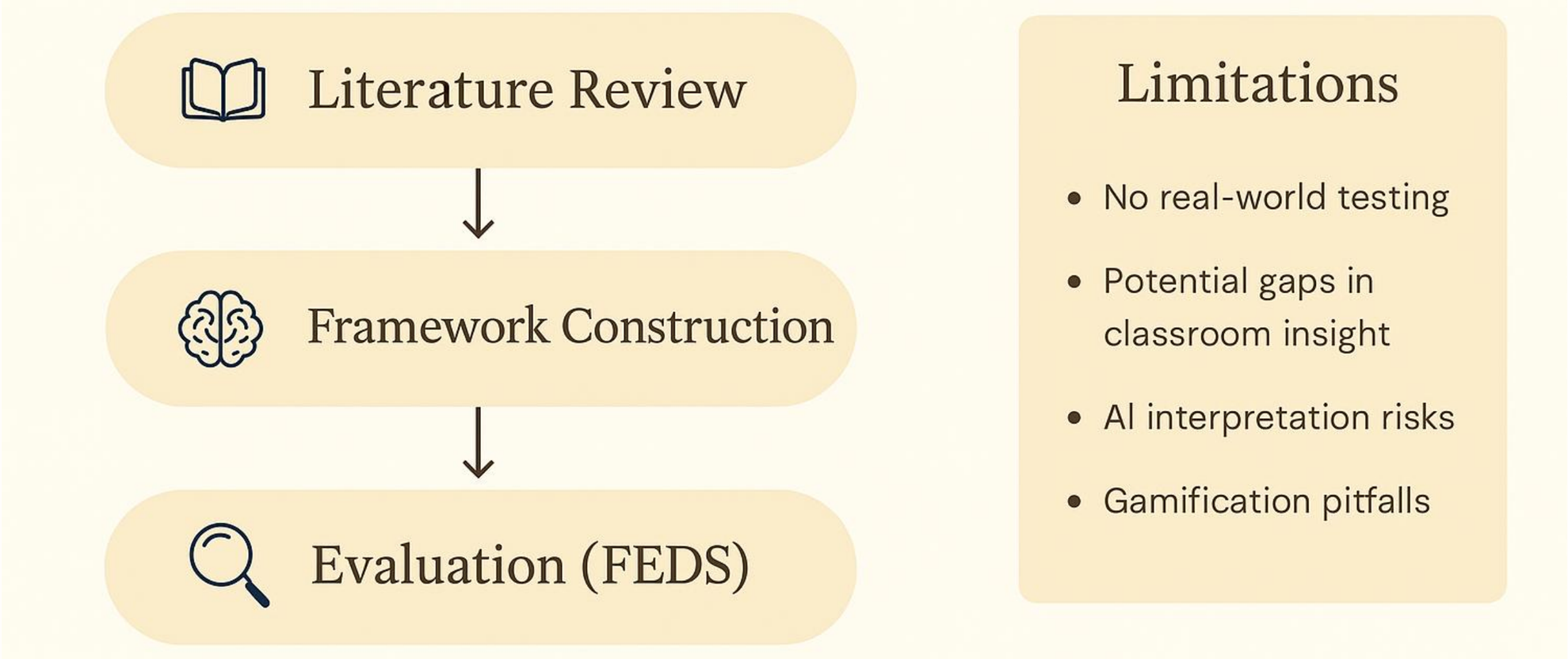
## Qatar Policy

MOEHE (2017) - Outlines Qatar's educational vision and implementation strategies for technology integration

## Bilingual Digital Literacy

Voogt & Roblin (2012); Passey (2019) - Presents frameworks for integrating digital technologies into effective teaching practices

# 6. Methodology & Limitations




## Limitations

- No real-world testing
- Potential gaps in classroom insight
- AI interpretation risks
- Gamification pitfalls

# 7. Ethical Design Principles & Regulations

Data Privacy

Fairness

Child Protection

## Regulatory Framework

- GDPR principles for transparent data processing and right to access (Information Commissioner's Office, 2021)
- Qatar Data Privacy Law (Law No. 13 of 2016) compliance for local implementation
- Porayska-Pomsta et al. (2023) guidelines on ethical AI design for educational contexts
- Regular ethical audits and parental involvement in system governance
- Cultural sensitivity assessments for Middle Eastern educational settings

# 8. Proposed Artefact

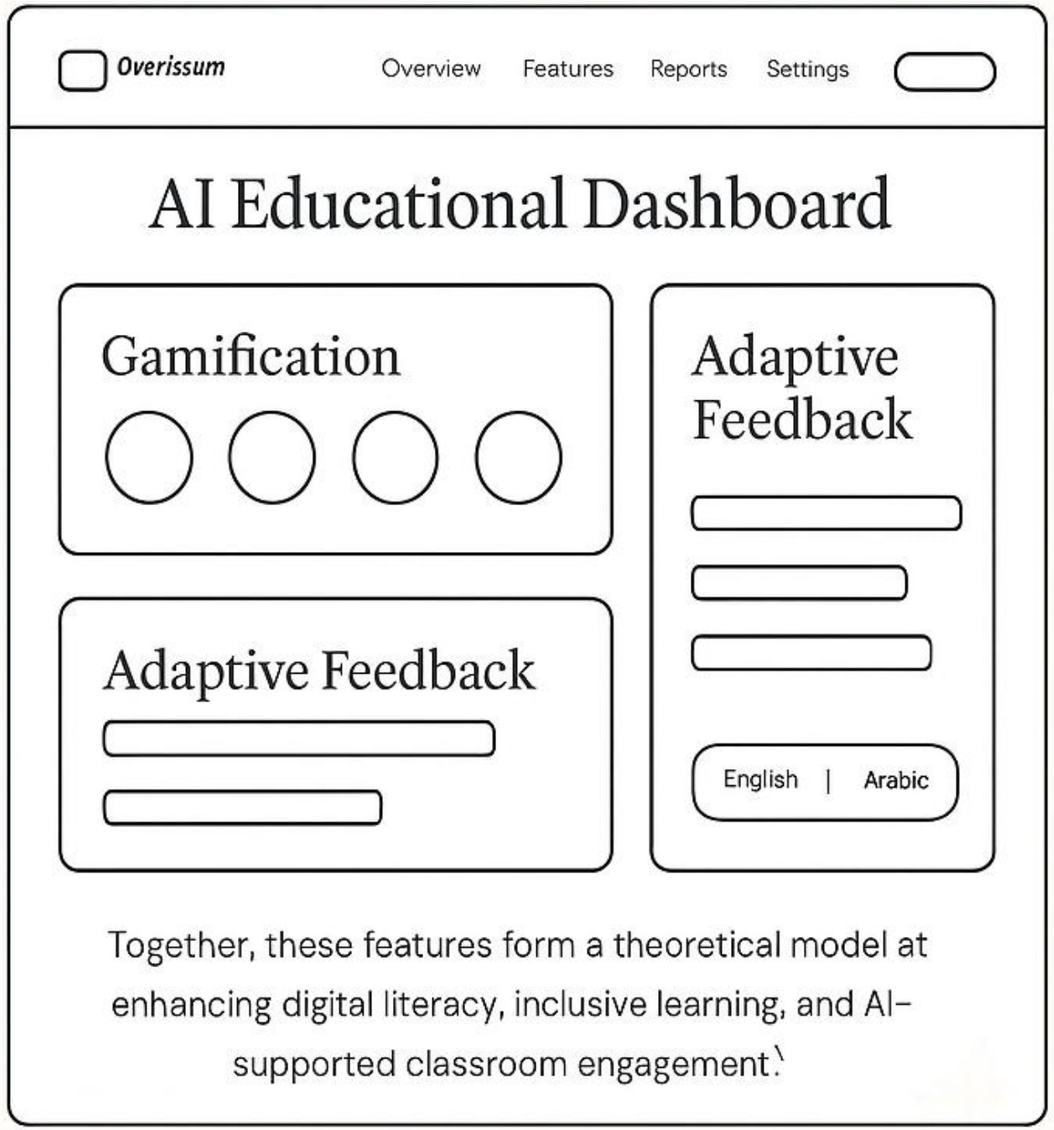
Conceptual Framework Features:

## Gamification Elements

Badges, avatars, progress charts to motivate learning.

## Dual Language Support

Seamless Arabic–English switching for inclusivity and cultural alignment.




AI-Driven Learning Assistant interface (concept)

# 9. Research Timeline

1

**Weeks 1-2**

Comprehensive Literature Review and Gap Analysis

2

**Weeks 3-4**

Development of Initial Conceptual Framework and Design Principles

3

**Weeks 5-6**

Cultural and Educational Contextual Alignment for Qatari Environment

4

**Weeks 7-8**

Ethical Considerations Assessment and Responsible AI Implementation

5

**Week 9**

Framework Refinement and Documentation Finalisation

6

**Week 10**

Final Review and Submission of Completed Research

# 10. Conclusion

## Theoretical Contribution

Pioneering a culturally-responsive framework for AI educational agents that bridges theoretical gaps in context-aware learning technologies

## National Alignment

Directly advancing Qatar Vision 2030's educational pillars by enhancing digital literacy and fostering innovation in pedagogical approaches

## Ethical Awareness

Establishing robust guidelines for child-centered AI implementation that prioritizes safety, privacy, and culturally appropriate educational development

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