Project Title:

A Conceptual Framework for Personalised AI Agents in Enhancing Digital Literacy in Qatari Primary Classrooms

1. Significance / Contribution to the Discipline / Research Problem

Qatar's national vision for digital transformation in education emphasises the integration of ICT skills from early stages of schooling. However, primary students often lack personalised, curriculum-aligned support that adapts to diverse learning needs and digital capabilities. While digital tools such as Microsoft Office, Scratch, and Spike are introduced in Qatari classrooms, many learners experience challenges without consistent scaffolding.

This research addresses this gap by proposing a **conceptual framework** for a personalised AI learning agent. The project contributes to the field of **Artificial Intelligence in Education (AIED)** by evaluating theoretical design principles for adaptive systems tailored to Qatar's ICT Competency Framework for Teachers and Qatar National Vision 2030.

2. Research Question

What are the key design considerations and theoretical implications of implementing a personalised AI agent to support digital literacy in Qatari elementary classrooms?

Sub-questions:

- How can gamification be theoretically embedded to improve engagement and motivation?
- What pedagogical design elements align AI feedback mechanisms with early digital literacy goals?
- What are the ethical and contextual considerations in deploying AI agents in Qatari primary schools?

3. Aims and Objectives

Aim:

To propose and critically evaluate a theoretical framework for the design of personalised AI agents aimed at supporting digital literacy among Grade 6 students in Qatar.

Objectives:

- To critically review literature on AI in education, gamification, and early digital literacy pedagogy.
- To analyse existing conceptual frameworks and models of personalised AI agents.
- To propose a framework aligned with Qatar's curriculum, linguistic, and cultural context.
- To evaluate ethical implications of AI in primary education from a theoretical perspective.

4. Key Literature Related to the Project

The literature will span five key domains:

- **Learning theories**, especially Vygotsky's sociocultural theory and its relevance to AI-mediated scaffolding (Vygotsky, 1978).
- **AI in education**, including adaptive learning and intelligent tutoring systems (Luckin et al., 2016; Holmes et al., 2019).
- **Gamification in learning**, for motivating student engagement (Hamari et al., 2014; Deterding et al., 2011).
- **Digital literacy pedagogy**, focusing on skills progression in early education (Beetham & Sharpe, 2019; Passey, 2019).
- **Policy documents and national priorities**, including Qatar's MOEHE ICT Competency Framework and Vision 2030.

5. Methodology / Research Design

The study adopts a **Design Science Research (DSR)** methodology to theoretically build and justify the proposed AI agent framework.

Methodological Structure:

- **Phase 1**: Conduct an in-depth literature synthesis to extract theoretical design features.
- **Phase 2**: Construct a **conceptual framework** using DSR's knowledge contribution cycle (Hevner et al., 2004).
- **Phase 3**: Theoretically evaluate the framework using principles from the **FEDS model** (Venable et al., 2016).

The study remains conceptual, focusing on design logic, not implementation or system testing.

6. Ethical Considerations and Risk Assessment

As no empirical work is conducted, ethical considerations are discussed in anticipation of future deployment. Ethical evaluation will be purely literature-based and exploratory in nature:

- Issues of privacy, data protection, and informed consent involving minors.
- AI bias, fairness, and inclusivity in classroom settings.
- Accountability of AI feedback in place of human judgment.
- Alignment with **GDPR** standards and **Qatar's Data Privacy Law** (MOTC, 2020).

Framework design will be shaped by ethical analysis drawn from literature (Porayska-Pomsta et al., 2023; Sim and Waterfield, 2019).

7. Proposed Artefact

This project proposes a conceptual artefact, not a technical prototype. This artefact will be proposed through theoretical design principles and not built as a functional system:

- Personalisation logic for adaptive task assignments.
- Gamified features such as badges, progress meters, and avatars.
- Teacher-oriented design layer for curriculum alignment.
- Localisation considerations (Arabic/English interface, culturally responsive content).

The artefact will be expressed visually as a high-level framework diagram and theoretically justified in the narrative.

8. Timeline of Proposed Activities

Weeks	Activity
Weeks 1–2	Conduct literature review and map theoretical domains
Weeks 3–4	Develop initial conceptual framework
Weeks 5–6	Align framework with Qatar's ICT curriculum and cultural context
Weeks 7–8	Evaluate ethical dimensions and reflect on policy relevance
Week 9	Finalise proposal and prepare transcript
Week 10	Submit narrated presentation and supporting documents

9. References:

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