

QIntern 2025 Detailed Game Plan

Project Title: Play Your Way into Quantum; **Duration:** 6 weeks;

Mentor: Dr. Vesselin Gueorguiev

Short Objective: To design and develop a proof-of-principle educational game prototype that introduces key quantum physics concepts relevant to quantum computing through interactive, escape room–style gameplay. This project aims to make complex ideas accessible and engaging by leveraging gamification, immediate feedback, and experiential learning.

Overall Project Goal: To create a compelling demonstration of how gamification can effectively teach fundamental quantum physics concepts essential for understanding quantum computing, culminating in a playable prototype and a clear roadmap for future development into a more comprehensive "quantum quest."

Week 1: Orientation & Research

Objective: Establish foundational knowledge and project direction.

- **Goals:** Onboard interns, introduce project goals and tools, review core quantum concepts (superposition, entanglement, gates), and research escape room mechanics and educational games.
- **Activities:** Kickoff meeting, assign QWorld "Quantum Computing 101" resources, initial ideation on gamifiable quantum concepts.
- **Deliverables:** Shared understanding of project, list of key quantum concepts, initial analysis of relevant games.

Week 2: Game Concept Design

Objective: Define the game's structure and initial learning objectives.

- **Goals:** Define the proof-of-concept game structure and learning objectives, select a few core quantum topics for initial rooms.
- **Activities:** Brainstorm "quantum quest" narrative flow, sketch game mechanics and puzzle ideas, begin room mockups/storyboards.
- **Deliverables:** Draft narrative outline, initial puzzle concepts linked to quantum topics, preliminary room mockups.

Week 3: Puzzle Development & Pedagogy Mapping

Objective: Design educational puzzles aligned with learning outcomes.

- **Goals:** Design puzzles that teach selected quantum topics intuitively through gameplay, ensure alignment with educational goals.
- **Activities:** Detail the first escape room (e.g., probabilities and superposition), map learning outcomes to puzzle solutions, team and mentor feedback.

- **Deliverables:** Detailed design of the first escape room, mapping of learning outcomes to puzzle mechanics.

Week 4: Prototype Development (Phase 1)

Objective: Build a playable prototype of at least one escape room.

- **Goals:** Begin building a functional prototype, set up a hosting environment (e.g., Google Sites, GitHub Pages, popular gaming platforms).
- **Activities:** Develop core interactions (inputs, feedback), implement basic visuals/interfaces, internal testing and iteration.
- **Deliverables:** Playable prototype of the first escape room with core mechanics.

Week 5: Prototype Testing & Community Feedback

Objective: Gather user feedback on usability and educational effectiveness.

- **Goals:** Share the prototype with a small test group (ideally QWorld community), collect feedback on usability, clarity, and engagement.
- **Activities:** Create feedback forms/surveys, document test session observations, identify areas for improvement.
- **Deliverables:** Collected user feedback, documented issues and observations, list of proposed improvements.

Week 6: Final Improvements & Presentation

Objective: Refine the prototype and prepare a project showcase.

- **Goals:** Refine prototype based on feedback, prepare a presentation/demo for the QWorld community or project showcase.
- **Activities:** Polish visuals and instructional text, add final puzzles/logic, compile documentation (learning objectives, design rationale, testing outcomes).
- **Deliverables:** Final version of the first escape room prototype, comprehensive project documentation, presentation materials.

Expected Deliverables by August 15th:

- A playable prototype of a few escape rooms illustrating quantum concepts through puzzles.
- Accompanying documentation outlining the game design, learning goals, and development process.
- A summary of community/user feedback gathered and proposed next steps for the project.