Northeastern University
College of Professional Studies

SCOPE DOCUMENT
PJM6810: Principles of Agile Management
Prof. Mimi Wan
June 7, 2025

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Project Overview

The Time-Traveling Maze project is a dynamic, collaborative initiative developed by Team 3. The project envisions the design and implementation of a visually engaging, educational, and age-appropriate digital game that transports young players through a series of thematic maze environments set in different periods: the prehistoric era, the medieval period, and the future age.

Players will assume the role of a character who travels through time, solving puzzles, collecting artifacts, and overcoming era-specific obstacles in mazes that gradually increase in complexity. Each maze offers a unique cultural and historical experience, allowing players to learn about ancient civilizations, medieval life, and futuristic possibilities through interactive storytelling and game mechanics.

The game will be developed using Scratch, with each team member contributing to specialized roles such as maze design, visual art, coding, sound integration, and narrative development. The project is structured using Agile principles, including sprint planning, iterative development, retrospectives, and continuous feedback. This not only ensures timely delivery within a five-week timeframe but also promotes cross-functional collaboration and shared ownership of outcomes.

The broader intention is to produce a game that is not only fun and immersive but also promotes cognitive growth, curiosity, and time management skills among children aged 7–12. At its core, the Time-Traveling Maze serves both as a learning platform for players and a professional development exercise for the team.

Problem Statement

Many educational games designed for children lack a balanced combination of engagement, cognitive challenge, and thematic depth. As a result, young learners often miss out on opportunities to develop critical thinking and historical awareness through play. Moreover, these games frequently fail to incorporate developmentally appropriate content or user-centered design that sustains attention across varied learning styles.

The **Time-Traveling Maze** project addresses this gap by developing an age-appropriate digital game, designed specifically for children aged 7 to 12, that fosters curiosity, problem-solving, and

learning through interactive maze environments set across historical and futuristic periods. The game aims to blend education and entertainment, while also providing a platform for Agile team collaboration and project-based learning among student developers.

Project Objectives

The central objective of the Time-Traveling Maze project is to design, develop, and deliver an educational maze-based game that enriches children's understanding of history and the future through interactive gameplay. The project aims to:

- Inspire curiosity in children about different historical periods and speculative futures.
- Encourage the development of problem-solving, strategic thinking, and resilience.
- Integrate narrative and visual storytelling to create a memorable gaming experience.

This objective is rooted in the desire to create a purposeful and age-sensitive digital experience that blends education, entertainment, and innovation while reinforcing teamwork and iteration.

Project Goals

To achieve the overarching objective, the following key goals have been established:

1. Gameplay and Engagement

- Develop three distinct, immersive maze levels themed around different periods.
- Implement a timer, progressive difficulty, and reward system to maintain engagement.
- Design puzzles and challenges that are both entertaining and intellectually stimulating.

2. Educational Value

- Embed educational elements such as time-appropriate clues, cultural references, and historical artifacts within each level.
- Create narrative arcs that encourage players to think critically about historical context and the concept of time.

3. Visual and Audio Immersion

- Create unique art assets for each period, including characters, environments, and objects.
- Design or curate background music and sound effects that reflect the ambiance of each era.

4. Technical Execution

- Code functional maze logic, character movement, level transitions, and clue interactions using Scratch.
- Ensure smooth integration of visual and audio elements with the game’s underlying logic.

5. Quality and Usability

- Conduct rigorous QA testing to identify and resolve bugs, ensure intuitive gameplay, and enhance user experience.
- Optimize for age-appropriateness, safety, and accessibility.

Scope

The *Time-Traveling Maze* game will involve designing and building an interactive game where a character explores maze levels set in different historical eras (prehistoric, medieval, future). Each level will feature unique obstacles, artistic elements, music, and a cohesive storyline. The project will integrate era-specific themes, provide smooth transitions between levels, and include hidden clues for added player engagement.

Deliverables

- **Three fully designed maze levels** (Prehistoric, Medieval, Future) with era-specific obstacles and challenges.
- **Unique visual assets** (characters, environments, objects) created for each time period.
- **Functional game logic** for maze navigation, level transitions, hidden clue interactions, and player movement.
- **Thematic soundtracks and sound effects** for immersive gameplay in each era.
- **Narrative script and storyline** that ties the mazes together with historical and futuristic context.
- **QA testing documentation** and bug fixes to ensure a smooth, age-appropriate gaming experience.
- **Final playable game build** (Scratch project file) that integrates all features and meets quality standards.
- **Supporting documentation** including:
    - Design drafts
    - Artwork files
    - Narrative script
    - Testing and QA notes

Exclusions

This project **will NOT accomplish or include** the following:	• **Multiplayer functionality** The game will not support multi-user or collaborative online gameplay modes. • **Advanced AI or procedural generation** No artificial intelligence algorithms or procedural maze generation will be incorporated. • **Monetization features** The game will be entirely free and educational—no ads, purchases, or monetization mechanisms will be included. • **External user testing** Playtesting will be limited to internal team members and classroom evaluations; no external focus groups or surveys will be conducted. • **Third-party asset integration** Royalty-free content will be used, licensed or paid assets are excluded due to budget constraints.

Milestones

Milestones	Description
Alpha v1.0	First playable version with one maze level (Prehistoric) and basic mechanics.
Alpha v2.0	Integration of timer and second era (Medieval); improvements from feedback.
Beta Version	All three maze levels developed; core features functional; major bugs resolved.
Final Version	Polished build with integrated visuals, sounds, transitions, and narrative.

Final Presentation	Team presents game progress and outcomes.
Final Submission / Go-Live	Final Scratch project and documentation submitted.

Project Stakeholders

The *Time-Traveling Maze* project engages a well-defined network of stakeholders, both internal and external, each contributing to the planning, development, and delivery of the game. Stakeholders include the end-users (children aged 7–12), course leadership, competing teams, project facilitators and platform gatekeepers. In alignment with Agile principles, team roles rotate weekly to promote shared ownership and adaptability.

Each plays a unique role in the project's success, especially within the Agile framework adopted by Team 3.

This section identifies key stakeholders, outlines their roles and interests, and classifies their **influence and power** over the project's direction and deliverables. The table below ensures a strategic understanding of who to engage, how, and why.

Stakeholder Analysis Table

Stakeholder	Role/Interest	Influence	Power	Why include them?
Children (Ages 7–12)	Primary users; their engagement, enjoyment, and learning are the project's core	High	Low	Directly impacted; define design and success criteria
Professor Mimi Wan	Course lead and evaluator	High	High	Evaluates deliverables; provides guidance and feedback
Team 3 (Project Team)	Responsible for full-cycle development, directly responsible for ideation, creation, and delivery of the game	High	High	Executes all game components and Agile activities

Scrum Master (Rotating)	Facilitates meetings, removes blockers, ensures Agile flow	High	High	Ensures team productivity and Scrum adherence
Product Owner (Rotating)	Prioritizes backlog, aligns development with user value	High	High	Central to backlog quality and project focus
Scratch Community/Moderators	Platform content approvers; enforce publishing and community standards	Medium	High	Control visibility, guidelines, and publishability of the final product
Scratch Platform by MIT	Development environment; defines technical capabilities	Medium	Low	Sets the boundaries for what the game can technically achieve
Other Student Teams	Peer teams building other games, provide collaborative feedback	Medium	Medium	Provide benchmarks and shared learning opportunities
Parents & Educators (Indirect)	Gatekeepers to children's digital activities	Low	Medium	Influence acceptability, tone, and educational framing

Detailed justification to include each stakeholder

Stakeholder	**Description**	**Why include them?**
Children (Ages 7–12)	Target audience and primary users of the game.	Their enjoyment, learning, and engagement directly define the game's success.
Professor Mimi Wan	Course instructor, mentor, and evaluator.	Provides feedback, grades, and ensures alignment with academic outcomes.
Team 3 (Project Team)	Five student members responsible for full-cycle design and development.	Executes project tasks and delivers outcomes using Agile collaboration.

Scrum Master (Rotating Role)	Facilitates meetings, removes blockers, ensures Agile methodology is followed.	Critical for sprint velocity, team focus, and process compliance.
Product Owner (Rotating Role)	Maintains the product vision, prioritizes backlog, and represents user interests.	Guides task prioritization, backlog grooming, and stakeholder value delivery.
Scratch Community/Moderators	Content gatekeepers on Scratch; uphold platform rules and approve user-published games.	Their standards influence design scope, asset usage, and technical implementation constraints.

Power vs. Influence Grid Summary

This matrix helps classify engagement strategy:

- **High Power, High Influence**:
  Prof. Mimi Wan, Product Owner, Scrum Master, Project Team
  → Engage frequently, involve in planning, reviews, and decisions.

- **High Power, Low Influence**:
  Scratch Community/Moderators
  → Comply with publishing rules, ensure content standards are met.

- **Low Power, High Influence**:
  Children (Aged 7–12)
  → Design gameplay around their cognitive needs and learning behaviors.

- **Medium Power & Influence**:
  Other Student Teams, Parents & Educators
  → Observe trends, maintain age-appropriate tone and educational alignment.

Engagement Approach

- **Agile Roles (Scrum Master & Product Owner)**: Rotate weekly within the team. These roles drive sprint planning, backlog prioritization, and daily workflow clarity.
- **Prof. Mimi Wan**: Engaged through sprint reviews, feedback, and final evaluation. Her expectations and rubric guide all planning decisions.
- **Scratch Moderators & Platform**: Design must remain within the technical and content limitations of Scratch, including safe, original, or royalty-free assets.

- **End-Users (Children)**: All game elements—difficulty, storyline, visuals, sound—are designed to be developmentally appropriate and engaging for ages 7–12.
- **Team Roles and Responsibilities**

The Time-Traveling Maze project is executed by Team 3, a five-member Agile team working under a Scrum framework. To support collaboration, cross-functional learning, and team agility, members rotate roles weekly across technical, creative, and leadership domains. This strategy ensures equitable participation and well-rounded project ownership.

Key Team Roles

- **Maze Designer**: Creates layout, logic flow, and increasing difficulty across maze levels.
- **Era-Themed Artist**: Designs visual assets and ensures thematic consistency for each historical/futuristic level.
- **Coder**: Implements gameplay mechanics, player movement, and transitions using Scratch.
- **Sound Curator**: Selects or produces thematic sound effects and music to enhance user immersion.
- **QA + Storyline Writer**: Writes level narratives, hidden clues, and tests the game for bugs and coherence.
- **Product Owner**: Prioritizes backlog items, manages task value, and represents the user's voice.
- **Scrum Master**: Facilitates sprint planning, clears blockers, and ensures Agile processes are followed.
- **Presenter**: Leads sprint reviews and communicates the team's progress during demos.

Team Role Rotation Schedule

Week	Maze Designer	Era-Themed Artist	Coder	Sound Curator	QA + Storyline Writer	Product Owner	Presenter	Scrum Master
GA1	Bismark Owusu Afriyie	Urja Ishwarbhai Trada	Dhruvi Ketan Sheth	Yashika Bhawar	Junaid Khan	Bismark	Bismark	Junaid
GA2	Junaid Khan	Bismark Owusu Afriyie	Urja Ishwarbhai Trada	Dhruvi Ketan Sheth	Yashika Bhawar	Junaid	Junaid	Bismark
GA3	Urja Ishwarbhai Trada	Dhruvi Ketan Sheth	Yashika Bhawar	Junaid Khan	Bismark Owusu Afriyie	Urja	Urja	Dhruvi

GA4	Dhruvi Ketan Sheth	Yashika Bhawar	Junaid Khan	Bismark Owusu Afriyie	Urja Ishwarbhai Trada	Dhruvi	Dhruvi	Urja
GA5	Yashika Bhawar	Junaid Khan	Bismark Owusu Afriyie	Urja Ishwarbhai Trada	Dhruvi Ketan Sheth	Yashika	Yashika	Yashika

Note: Roles such as *Scrum Master*, *Product Owner*, and *Presenter* rotate weekly in line with Scrum best practices. This foster shared accountability, strengthen team flexibility, and ensure all members gain experience across leadership and technical functions.

This rotational approach is documented on the **website** and directly supports the learning goals of the PJM6810 Agile Management course.

Project Methodology – Scrum Justification

The **Time-Traveling Maze** project is managed using the **Scrum framework**, a subset of Agile project management that emphasizes iterative progress, flexibility, and team-driven collaboration. Scrum is particularly well-suited to creative, evolving projects like game development, where features often change based on testing, feedback, or team innovation. Unlike the **Waterfall method**, which follows a strict linear sequence (for example, design → build → test), Scrum allows the team to break the project into manageable chunks (sprints) and deliver usable features incrementally. This iterative approach encourages continuous improvement, adapts easily to changing priorities, and emphasizes working software over exhaustive documentation.

As described by Schwaber and Sutherland (2020), *"Scrum is a lightweight framework that helps people, teams, and organizations generate value through adaptive solutions for complex problems."* This makes it particularly effective for student teams managing creative, multi-role projects under a tight timeline.

Team 3 applies Scrum in the following ways:

- **Sprints**: The development timeline is divided into five one-week sprints, each focusing on a specific milestone—for example, prehistoric level prototype, timer logic, or final polishing.
- **Scrum Roles**: Roles such as Scrum Master, Product Owner, and Presenter rotate weekly among team members, ensuring shared responsibility and exposure to different Agile functions.

- **Product Backlog**: All tasks, features, and bugs are maintained in a centralized Trello board, organized and prioritized by the Product Owner.
- **Sprint Planning & Daily Stand-ups**: Tasks for each sprint are selected during planning meetings, with check-ins throughout the week to track progress and remove blockers.
- **Sprint Reviews & Retrospectives**: Each sprint concludes with a review of what was completed and a retrospective to reflect on team performance and improvement opportunities.

This Agile methodology not only improves the team's collaboration and efficiency but also mirrors real-world software development practices—offering both a high-quality end product and valuable learning experience.

Constraints, Assumptions, Risks

Assumptions

S. No.	Assumptions
1.	Team members shall attend all planned meetings (online and in person) and fulfill deadlines.
2.	All team members have access to the essential technologies (Scratch, Trello, Microsoft Teams, and Office Suite).
3.	Internet and system availability will be continuous during the five-week endeavor.
4.	All artwork, music, and stories will be original or copyright-free.
5.	Children aged 7 to 12 will find the game entertaining and educative.
6.	There will be no substantial scope modifications after Sprint 2.

Constraints

Constraint Type	Details
Project Start Date	05/26/2025
Launch/Go-Live Date	06/25/2025
Project End Date	06/25/2025
Hard Deadline(s)	Final submission on 06/25/2025 Weekly assignments due each Sunday
Key Milestones	June 1: Alpha v1 June 8: Alpha v2.0 with timer & two eras June 15: Beta version June 22: Near-final version June 23: Final presentation

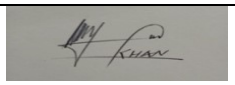
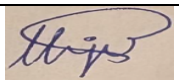
Budget Constraints	There is no monetary budget, thus the only options are free software and student resources.
Quality or Performance Constraints	Game must operate well on the Scratch platform. Visually and conceptually suited for the target age group. Functional game logic and sound integration.
Equipment/Personnel Constraints	Five team members rotate duties on a weekly basis. There is no external recruiting or aid authorized.
Regulatory Constraints	Must follow Scratch community standards. Avoid copyright difficulties by using only royalty-free or unique content.

Risks

S. No.	Risk	Category	Impact
1.	One or more team members may miss meetings or fall behind on their assigned work.	Team/Operational	Delays in sprint completion and decreased quality.
2.	Technical difficulties with Scratch or Microsoft Teams may impede development and communication.	Technical	Inability to test or distribute game aspects, which disturbed meetings.
3.	Creative differences (art, storytelling, mechanics) can impede decision-making.	Interpersonal	Decreased team cohesiveness and delayed approvals.
4.	The final game may not match user expectations (for engagement or learning objectives).	Product Quality	Game may fail to educate or entertain its target audience.
5.	Scope creep occurs when new ideas are incorporated late in the process.	Scope	Missed deadlines, unfinished or defective features.
6.	Inadequate testing may result in a faulty or unstable final product.	Quality Assurance	Poor user experience; potential failure to complete course requirements.
7.	Inconsistent involvement or exhaustion among team members.	Human Resource	Missed duties or an imbalanced burden.
8.	Dependencies across roles (For example, artist → coder → tester) may cause delays in process.	Schedule	Bottlenecks and idle time.

Sign-off

The sign-off section confirms that all project team members have reviewed and approved the scope, objectives, deliverables, timelines, and responsibilities outlined in this document. By signing below, each member acknowledges their understanding of the project's goals, agrees to the outlined constraints and commitments, and affirms their role in delivering the final product.

Name	Signature	Date
Bismark Owusu Afriyie	***B.O.A***	6/5/2025
Dhruvi Ketan Sheth	*DhruviS*	6/5/2025
Junaid Khan		6/5/2025
Urja Ishwarbhai Trada		6/5/2025
Yashika Bhawar	*YBhawar*	6/5/2025

References

Schwaber, K., & Sutherland, J. (2020). *The Scrum Guide: The Definitive Guide to Scrum: The Rules of the Game*. Scrum.org. https://scrumguides.org