\*\*Project Specification: Local Gamified Classroom Web App\*\*

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\*\*Project Title:\*\* Classcraft-Inspired Classroom RPG (JSON-Driven Version)

\*\*Overview:\*\*

This local web app is a Classcraft-style gamification platform designed to increase classroom engagement through role-playing mechanics, behavior tracking, and reward systems. The application will store all persistent data in local JSON files rather than using a centralized or SQL-based database. It supports both teacher and student roles, class sorting, team collaboration, quests, and an in-game economy.

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\*\*Key Roles:\*\*

- \*\*Teacher (Admin Role):\*\*

- Assign students to classes (Warrior, Mage, Healer, etc.)

- Award XP or deduct HP/AP manually or via custom behavior triggers

- Create and manage quests

- Trigger random events

- Customize game rules (XP values, item availability, behavior rules)

- \*\*Student (Player Role):\*\*

- Select or be assigned a character class

- View and manage XP, HP, AP, gold, and powers

- Participate in quests and earn rewards

- Use character powers and purchased items

- Collaborate with team members

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\*\*Core Game Mechanics:\*\*

- \*\*XP (Experience Points):\*\* Earned through positive behavior and quest completion

- \*\*HP (Health Points):\*\* Lost due to negative behavior or game events

- \*\*AP (Action Points):\*\* Used to activate character powers

- \*\*Gold:\*\* In-game currency used to purchase items

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\*\*Character Classes:\*\*

- Warrior: High HP, tank role with protective powers

- Healer: Mid HP, can restore teammates' health

- Mage: Low HP, high AP, utility and AP-sharing powers

Class stats, powers, and progression are defined in `classes.json`. Players can level up and unlock new powers over time.

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\*\*Data Storage (Local JSON Files):\*\*

- `users.json` — Student and teacher user accounts

- `characters.json` — Character stats and class assignments

- `teams.json` — Team structures and memberships

- `store.json` — Items available for purchase with gold

- `inventory.json` — Items owned by each character

- `classes.json` — Definitions for each character class

- `powers.json` — Powers and their effects, AP cost, unlock level

- `quests.json` — Custom quest storylines and progress tracking

- `game\_actions.json` — Logs of actions like XP awarded or HP lost

- `events.json` — Random events triggered by the teacher

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\*\*Frontend Features:\*\*

- \*\*Login Screen:\*\* Differentiates between teacher and student roles

- \*\*Dashboard (Student):\*\* Displays stats, inventory, powers, team members

- \*\*Dashboard (Teacher):\*\* View and manage all students, behaviors, and quests

- \*\*Store Screen:\*\* Purchase items with gold, display inventory

- \*\*Quest View:\*\* Interactive quest navigation and completion tracking

- \*\*Admin Settings:\*\* Custom rule configuration (XP/HP values, powers, random events)

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\*\*Backend Features (Node.js + Express):\*\*

- REST API to read/write JSON files safely

- Endpoints for character/class management, XP/HP/AP changes, quest progression, item purchases

- Secure local authentication and role checks

- JSON file locking/queueing to avoid race conditions

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\*\*Optional Enhancements (Phase 2+):\*\*

- Real-time updates via WebSockets (e.g., team HP changes)

- Desktop version using Electron

- In-class voice-activated events or quiz interactions

- Export/import game state (for backups or multi-classroom use)

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\*\*Deployment:\*\*

- Run on local server (teacher laptop or classroom PC)

- Browser-based front end accessed by students on same local network

- All data remains local and offline-compatible

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\*\*Summary:\*\*

This gamified classroom platform replicates the core engagement mechanics of Classcraft while remaining lightweight, fully local, and flexible for teacher customization. It supports classroom management, collaboration, formative assessment, and intrinsic motivation through RPG-style gameplay with persistent JSON-based storage.