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Problem Statement Title:	Gamified Learning Platform for Rural Education
Problem Statement ID:	25048
Theme:	Smart Education
PS Category:	Software
Team Name:	Team GeForce

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QUESTIFY

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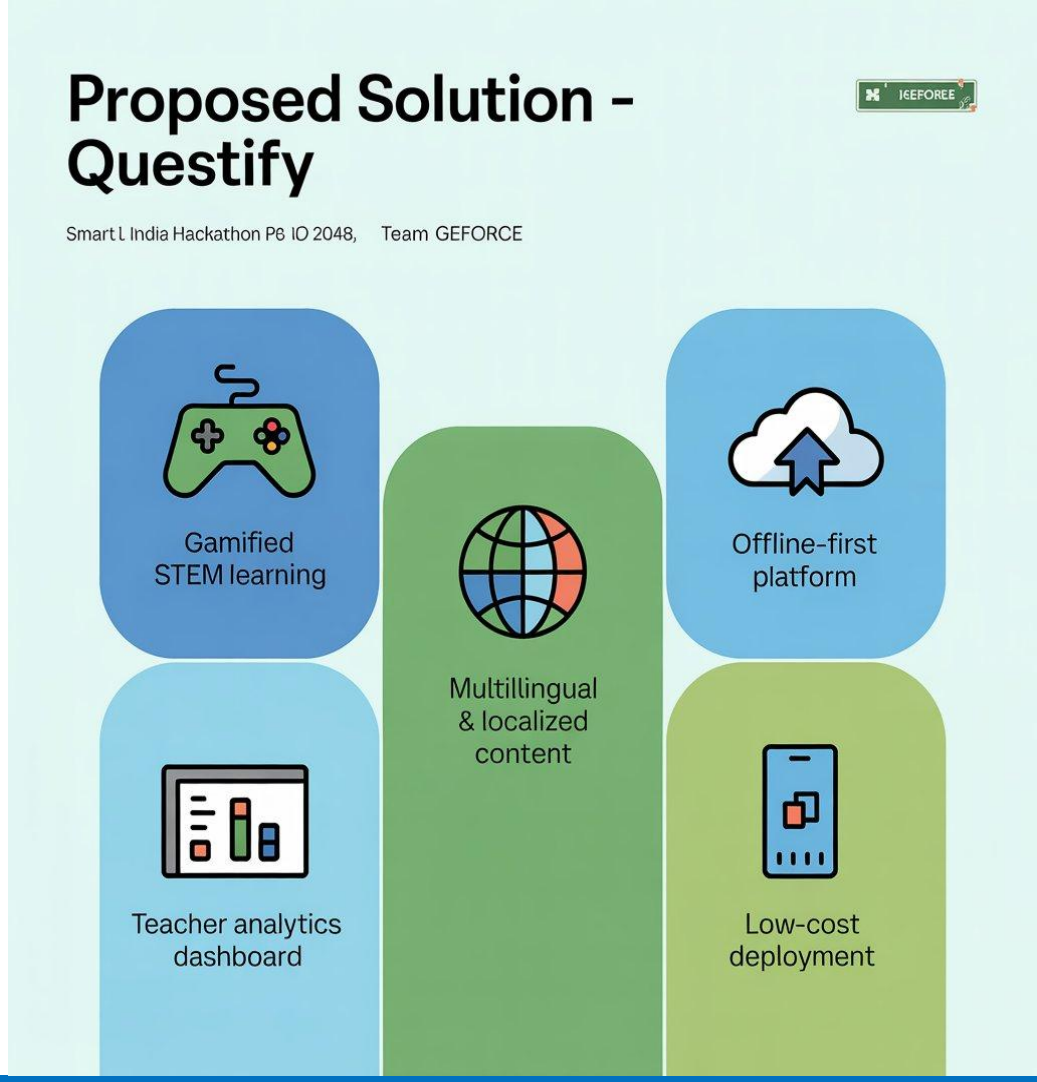
❖Proposed Solution

- Gamified STEM Learning – Interactive games, quizzes & challenges for Grades 6–12
- Multilingual & Localized Content – Regional language support for rural students
- Offline-First Platform – Works without internet, syncs when online (PWA-based)
- Teacher Analytics Dashboard – Track student progress and provide feedback
- Low-Cost Deployment – Runs smoothly on affordable smartphones & PCs



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TECHNICAL APPROACH

Technologies

- Frontend: HTML5, CSS, JavaScript (for lightweight, offline-compatible web apps).
- Backend: Node.js / Python (for APIs and content management).
- Gamification: Open-source game frameworks (e.g., Phaser.js, Unity Lite).
- Database: SQLite / Firebase (lightweight, sync when online).
- Content: Multilingual content support (local language packs).

Methodology & Process

- Develop interactive STEM game modules.
- Integrate multilingual text/audio content.
- Implement offline-first architecture with local caching.
- Build teacher dashboards with analytics.
- Pilot in rural schools, collect feedback, and iterate for usability.

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FEASIBILITY AND VIABILITY

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Feasibility Highlights

- Lightweight Design: Optimized for low-cost Android devices and standard web browsers.
- Uninterrupted Access: Offline-first capability ensures learning continuity without constant internet.
- Cost-Effective: Leverages open-source frameworks to minimize development and deployment costs.

Anticipating Challenges & Risks

• Device compatibility in diverse remote school environments.
• Effective training for teachers on utilizing dashboards.
• Crafting engaging, age-appropriate game design for all levels.

Overcoming Obstacle

Optimize for Low-Memory Devices

Collaborate for Game Content

Comprehensive Teacher Training

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IMPACT AND BENEFITS

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Social

Democratizes quality STEM education, making it accessible to previously underserved student populations.

Economic

Offers a low-cost, scalable solution usable in resource-limited schools, maximizing impact per investment.

Educational

Gamified learning methodologies enhance retention, deepen understanding, and cultivate critical thinking skills.

Environmental

Reduces reliance on physical textbooks and paper resources through efficient digital content delivery.

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RESEARCH AND REFERENCES

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- **National Education Policy 2020:** Directly addresses its focus on digital and multilingual learning, critical for equitable access.
  Link:-itforchnage.net
- **UNESCO Reports:** Informed by global insights on the efficacy of gamification in educational contexts and its potential to engage learners.
- **Offline-First Studies:** Draws from studies on the effectiveness of offline-first web applications as viable digital solutions for rural connectivity challenges.
  Link:-tesladigitalhq.com
- **Open-Source Frameworks:** Utilizes well-documented open-source tools like Phaser.js and Progressive Web App (PWA) documentation to ensure scalability and maintainability.
  Link :-developer.mozilla.org

Working Flowchart