

Ready4Disasters: A Scalable 3D Mobile Gamification Framework for Multi-Hazard Emergency Response Training

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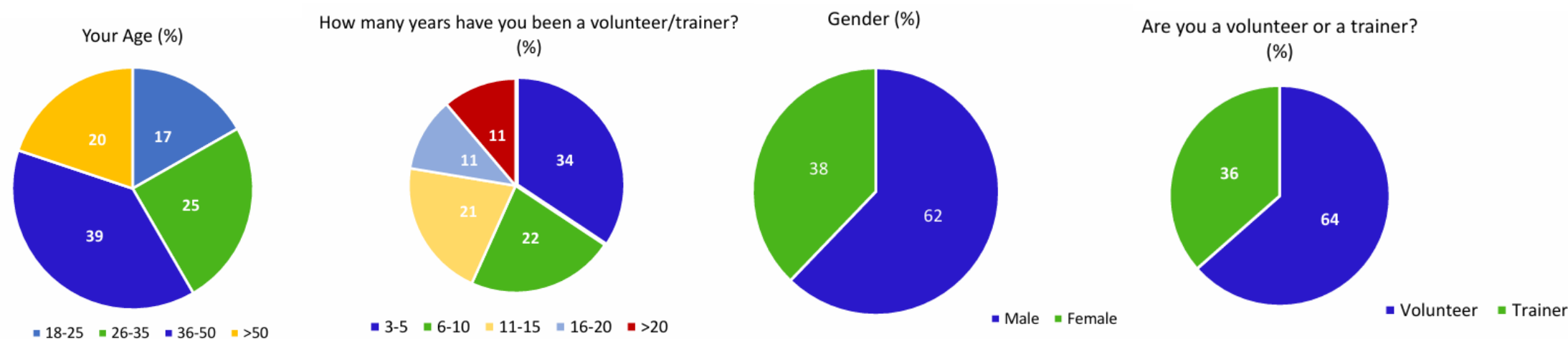
INTRODUCTION & AIM

Gamification improves memory by turning passive instruction into active learning. 3D simulations specifically replicate complex environments, building the spatial awareness and immersion needed for high-stakes training. This study evaluates the "Ready4Disasters" mobile application - an interactive platform developed within an Erasmus+ project - as a digital tool for simulating high-stress disaster scenarios.



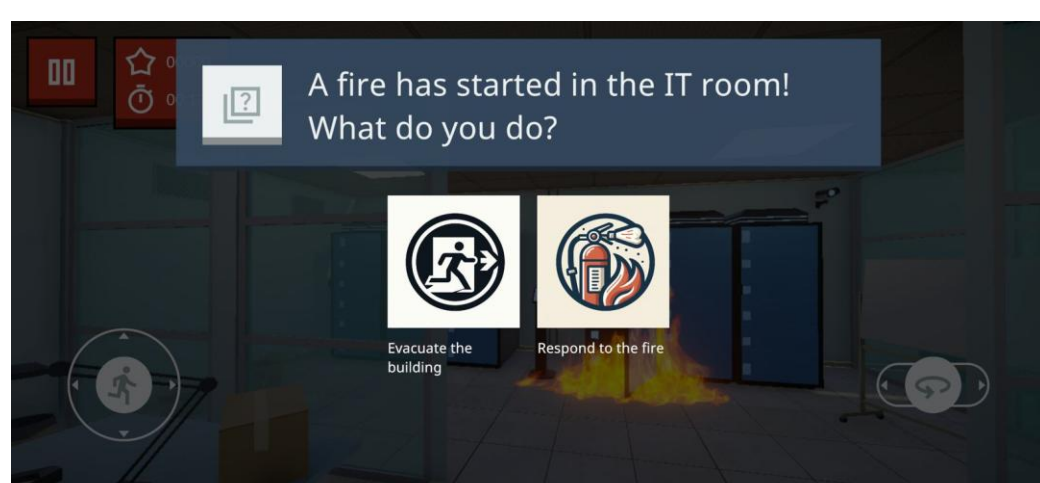
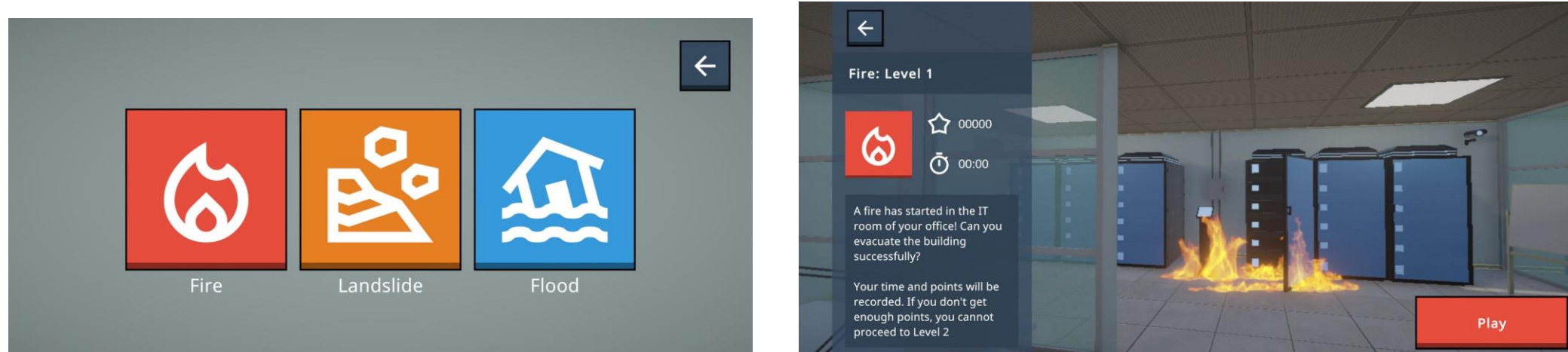
METHOD

By utilizing a modularized pedagogical approach, mobile applications facilitate the delivery of specialized disaster response training through several key instructional modalities: Scenario-Based Simulations, Gamified Engagement, and Just-in-Time Training. This framework promotes robust information encoding and mitigates the decay of technical competencies across critical hazard domains, specifically indoor fire, floods, and landslides. The study employed a mixed-methods research design to establish a baseline for disaster response competencies. A 33 questions with a 5-point Likert scale was administered via MS Forms and Google Forms to a total sample of 159 experienced volunteers and trainers across Turkey (n=51), Italy (n=51), Greece (n=36), and Georgia (n=21). Analysis involved descriptive statistics to identify priority training areas and thematic coding of expert comments to drive iterative refinement of the 3D modules. Knowledge transfer was defined as the shift from theoretical instruction to applied procedural readiness, measured by analyzing the delta between initial competency gaps and final performance within the simulation.

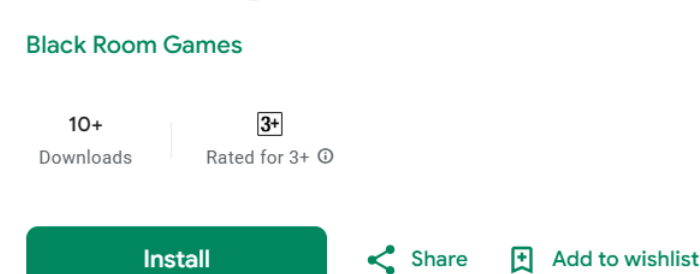


Game Framework

Game consist of flood, landslide and fire disasters

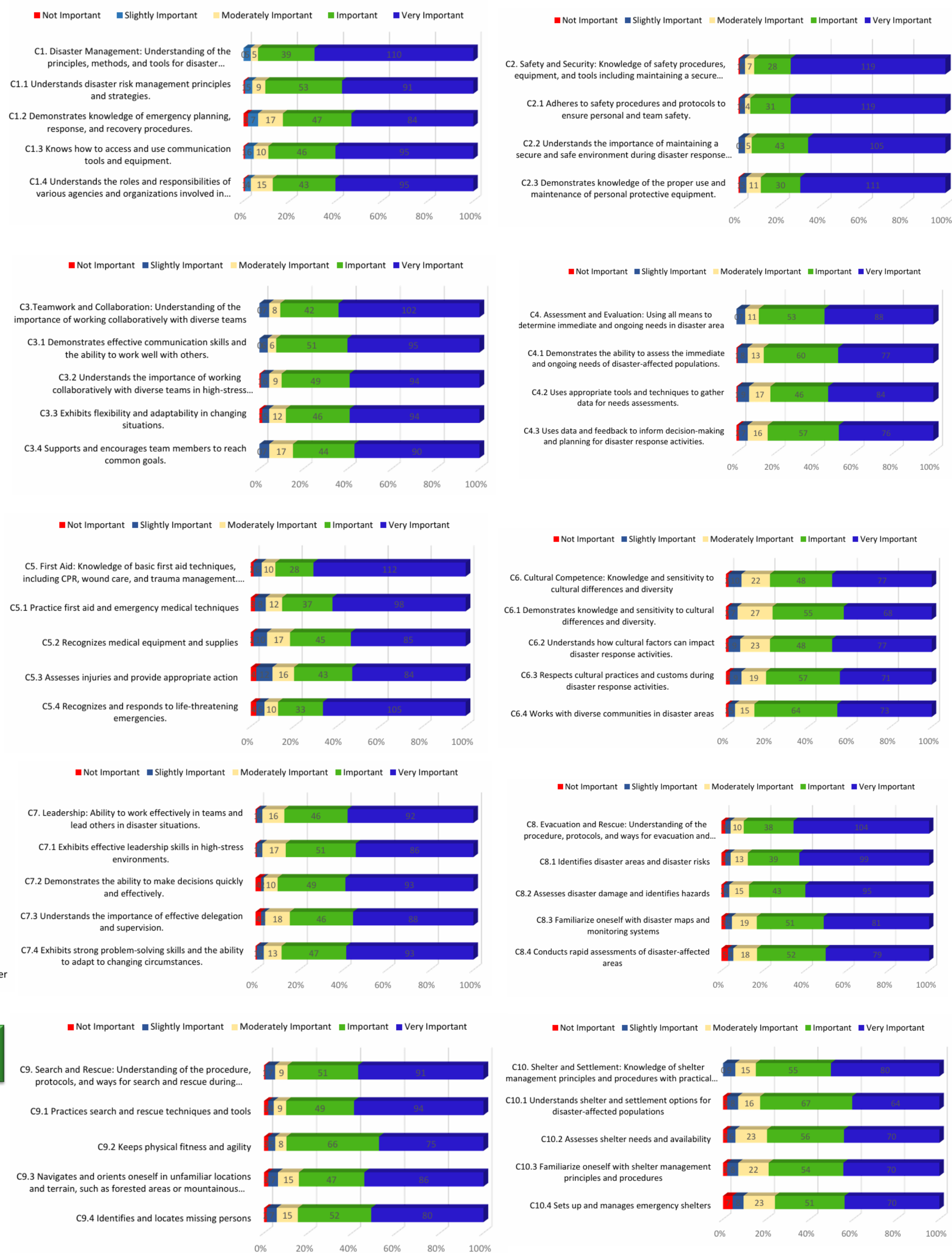


Ready 4 Disasters



RESULTS & DISCUSSION

Pilot data prioritized Safety (66%) and Leadership (62%), revealing a 61% deficit in existing flood-response tools. Furthermore, 38% of participants (ages 18–25) rejected traditional manuals in favor of digital solutions. Final evaluations confirmed significant gains in knowledge transfer and high application usability (>80%), particularly regarding landslide and flood scenarios.



CONCLUSION

The Ready4Disasters framework validates 3D mobile gamification as a cost-effective, scalable training solution for multi-hazard preparedness. The results indicate that immersive environments effectively bridge the gap between theoretical instruction and applied response capability for decentralized volunteer networks