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1. Motivation

- Hazards and risk education involves complex, dynamic, and often inaccessible environments
- Traditional teaching can limit spatial understanding and engagement
- VR enables immersive, place-based learning

2. Aim

- To explore the use of VR as a facilitated teaching tool across educational levels

3. Set-Up

- **Software Platform:**
 - Wander (Fig. A) with Google Street View-based VR (Fig. E1, E2)
- **Hardware:**
 - Meta Quest 3 and Quest Pro headsets, plus large digital screen for 'casting'. (Figs. B, C, D)
- **Session Format:**
 - Eight to ten locations selected and bookmarked before tours.
 - Tour leader has a set of detailed notes.
 - Tours in groups of 12-13.
 - Participants given 5' instructions on use of the VR headsets.
 - 40-45' of guided exploration + structured discussion
 - 5-10' at end for students to explore on their own.
 - Focus on hazard processes, exposure, vulnerability, resilience.

4. Virtual Learning Environments

- **Sessions delivered to:**
 - Durham University and Notre Dame MSc and undergraduate students ($n = 24$; 12 students, delivered twice) – **Tour I**
 - Durham University and External Open house events ($n = 21$; 3 events; mixed audience: students to staff) – **Tour I**
 - Durham Sixth Form students ($n = 24$; 2 × 12 students) – **Tour II**
 - Durham University Geography 2nd year undergraduates ($n = 52$; 2 × 13 students, delivered twice) – **Tour III**

Tour I:

- Informal settlements (Kenya) (Fig. E1, E2)
- Earthquake-affected urban areas (Japan; before–after building tilt) (Fig. D)
- Rockfall-prone landscapes (Nepal) (Fig. F)
- Steep Tea Gardens (India)

Tour II

- Coastal environments and hazards, following Mark Evans Oman 3165 (Oman) (Figs. B, G)

Tour III

- Virtual field trip (Israel) (Fig. C)

5. Findings

- Improved spatial understanding
- Ability to compare contrasting hazard contexts
- High levels of student engagement
- Most effective when:
 - guided (not self-directed only)
 - combined with discussion

6. Practical Considerations

- Group size and facilitation
- Accessibility
- Technology constraints
- VR should complement, not replace, other teaching methods

7. Conclusions

- VR can be an aid for hazards and risk education
- VR supports immersive, place-based learning
- Requires careful integration and evaluation

