



Role of smartphone-driven virtual reality field trips in inquiry-based learning

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The bottom of the slide features a row of five logos: The Open University, FSC (Bringing Environmental Understanding To All), The Association for Science Education (Promoting Excellence in Science Teaching and Learning), Geographical Association, and Google Expeditions.

Outline

- Virtual reality
- Smartphone-based virtual reality: Google Expeditions
- Our research goals
- Geographical enquiry and role of virtual reality
- Results from our empirical research

3

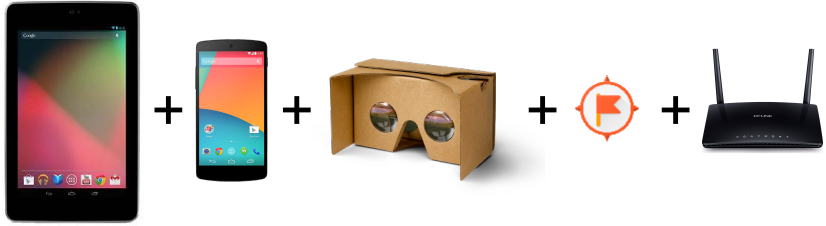
What is virtual reality?

A simulated environment on a computer or **mobile platform** (e.g., smartphone, tablet):



4

Google Expeditions



Tablet
Smartphone
Cardboard Viewer
App
Router

5

Google Expeditions App

- Free app, available on Android and iOS platforms
- Over 500 expeditions (three types)
 - physical locations, e.g. London Olympic Park, International Space Station
 - simulations, e.g. process of photosynthesis and pollination
 - career expeditions, e.g. day in the life of a software developer, Dean of an Engineering Faculty
- Each expedition has
 - Photospheres (360° view) with some explanatory text, points of interest and questions (Guide mode)
 - Google Cardboard viewer gives the 3D view (follower mode)

6

Our research goals

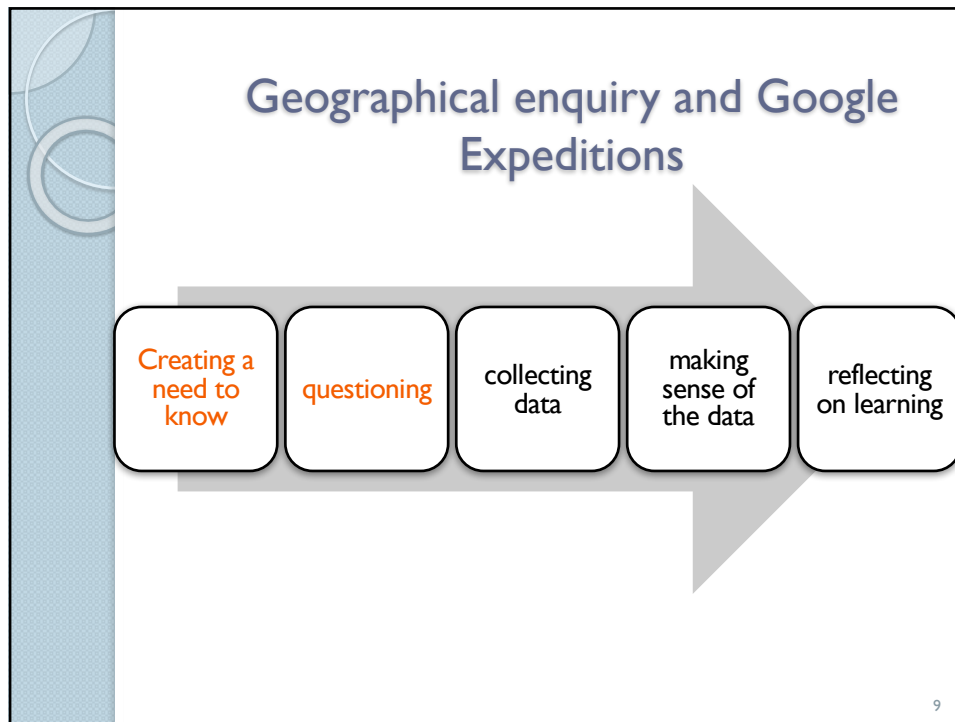
- Whether and how virtual reality-based Google Expeditions (GEs) can be integrated in the **Geography and Science curriculum**
 - Teaching concepts and phenomena
- How can GEs support enquiry?
- How can GEs complement physical field trips?

7

Our empirical work

- in schools
- workshops
- interviews
- qualitative data analysis

8

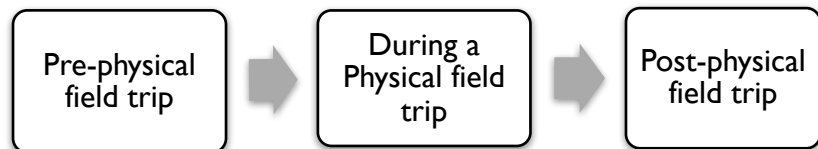


Geographical Enquiry – Lesson Example

- Tropical rain forests and plant adaptations in Borneo
 - introduction of the topic and learning outcomes by the teacher
 - students look at the expedition; carried out think-pair-share activity
 - after the expedition: students completed an activity sheet individually – writing the questions that they would like to investigate
 - capturing their experiences: how did virtual reality help you to understand the characteristics of Tropical Rainforests?

10

Enquiry for physical field trips



11

Pre-physical field trips

- Planning the enquiry process
- Example – visiting London Olympic Park
 - To assess East London in its wider geographical context and its **economic** potential post-Olympics, particularly the **transport and commercial infrastructure** in Stratford
 - To evaluate how far this is likely to be a **sustainable regeneration**
 - To **assess the feelings of local people** about the regeneration of Stratford including the 2012 Olympic and Paralympic Games.

12

How enquiry is facilitated by virtual reality

- case study or story
- as initial stimulus material or an initial 'hook' to raise curiosity and interest
- initial question as a trigger for evidence collection

13

Resources and contact details

- Project website:
<http://www.shaileyminocha.info/google-expeditions/>;
has links to blog-posts
- email addresses: shailey.minocha@open.ac.uk
ana.tudor@open.ac.uk
- Twitter: @ShaileyMinocha @AATudor

14