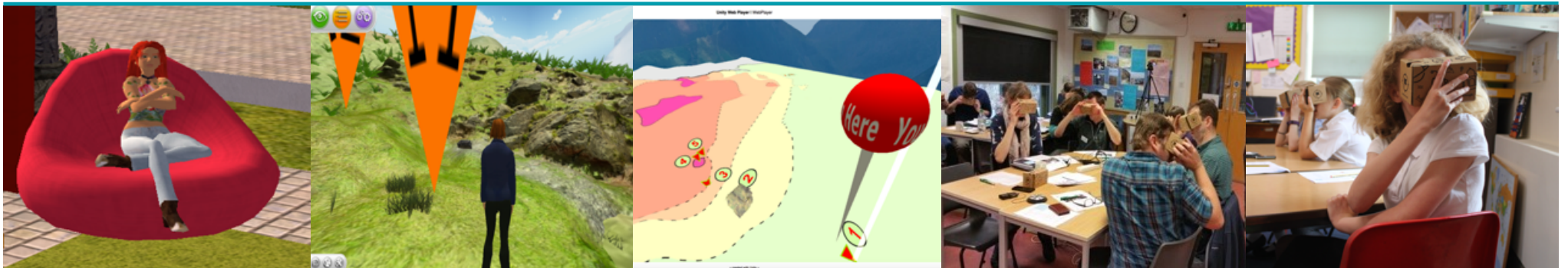# Virtual reality in education

Shailey Minocha and Ana-Despina Tudor

20 September 2017

3D virtual environments and virtual reality

Second
Life

Virtual Skiddaw:
3D Geology Field
Trips (Unity 3D)

360-degree
videos in the
browser

Virtual reality
viewers

Mobility

'As if I have met you'

> "…I get a feeling of meeting you face-to-face…even though I engage with avatars, I am aware that behind them there is a real person…"

Realistic and non-realistic spaces

Realistic space

Non-realistic space

" I think students can't deal with the whole space. Each learning scenario works if it is task oriented. Students obviously would need to know where to be and what is expected of them. "

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Reconstructing reality

Preparing for the real world
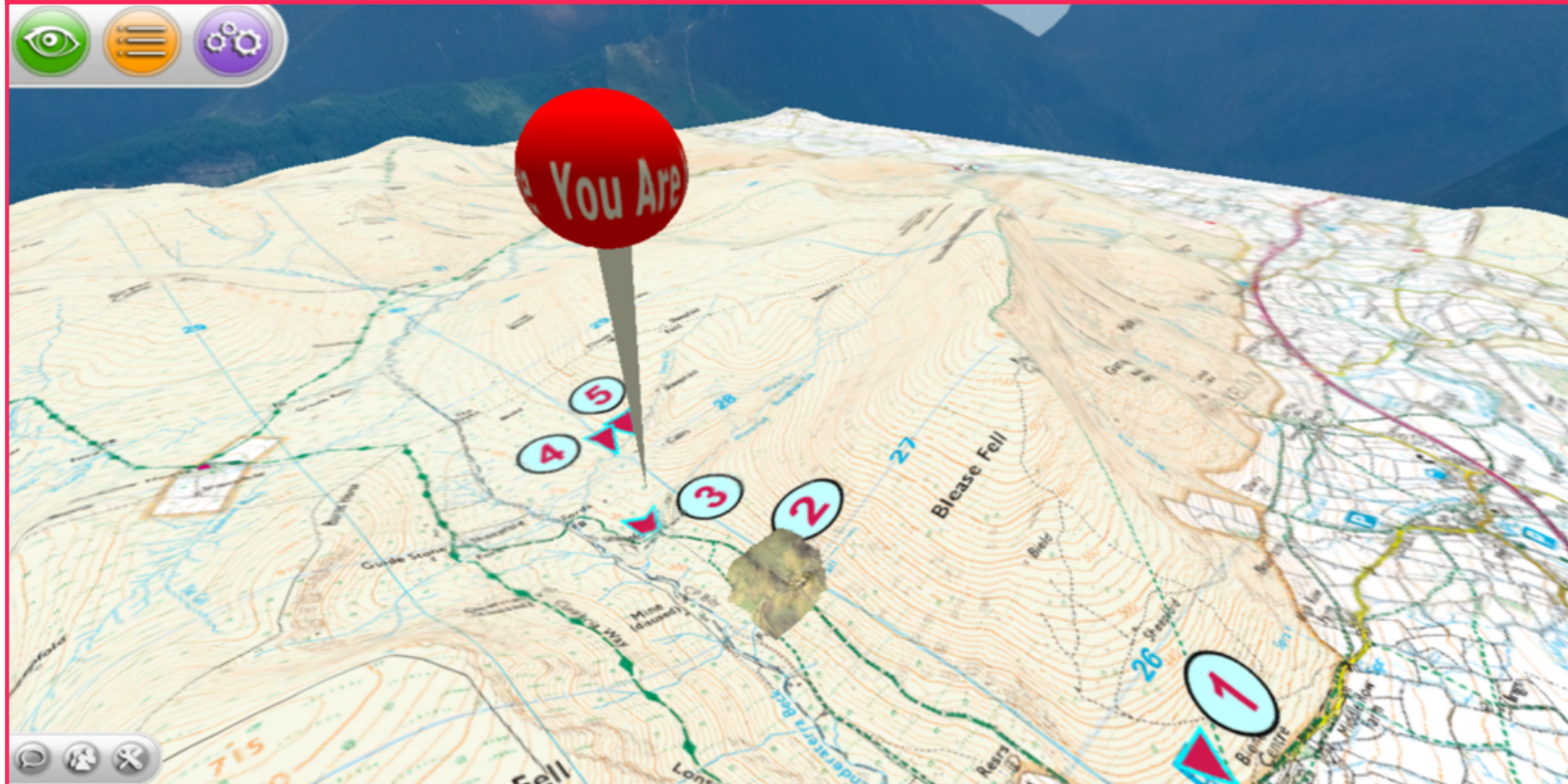
Lab in the field

On-the-spot analysis

Beyond reality

Seeing what is there beneath our feet

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360-degree videos in the Chrome browser

VR in brain surgery
https://www.youtube.com/watch?v=1H9qNaP0W9o

Ocean: A 360-degree tour of the
mysterious, magical corals of Palau;
The Economist
https://www.youtube.com/watch?v=jvtvFHPRcsY

3D virtual environments and virtual reality

Second
Life

Virtual Skiddaw:
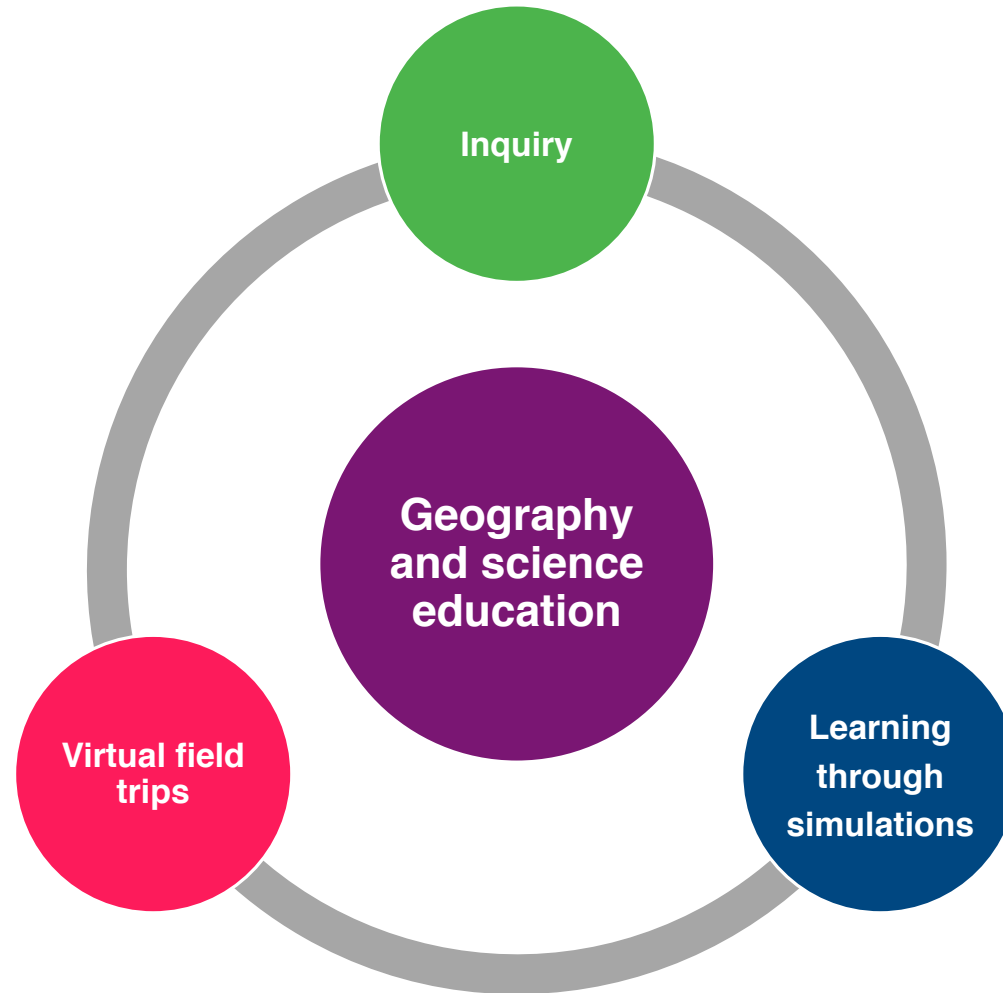3D Geology Field
Trips (Unity 3D)

360-degree
videos in the
browser

Virtual reality
viewers

Mobility

Google Expeditions – mobile virtual reality

Inquiry

Geography and science education

Virtual field trips

Learning through simulations

Empirical research

Lessons in schools

students (n=549)

year 4 to year 11

science (n=11)

geography (n=9)

Interviews

science teachers (n=11)

geography teachers (n=9)

curriculum experts (n=6)

Workshops

field workers (n=19)

educators (n=55)

Class preparation

Inquiry-based learning activity sheet

Tropical Rainforests

Activity 1: Now that you have looked at the Tropical Rainforests in Virtual Reality, please write down questions you have about the characteristics of Tropical Rainforests.

Why are certain plants found in rainforests?

Could some trees evolve and adapt to have transparent leaves so other plants get more sunlight?

How do some plants adapt so well and others don't?
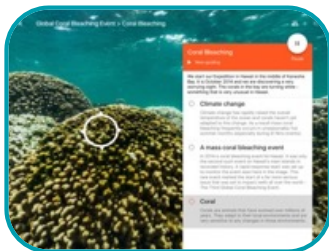
Affordances

360-degree visual authenticity

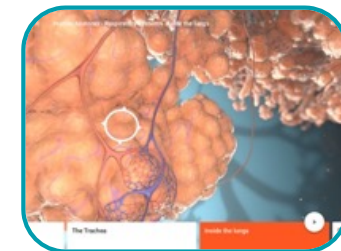360-degree navigation
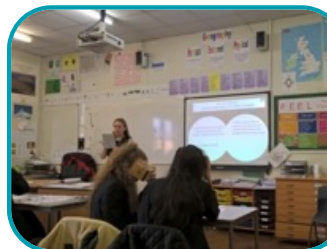

3D view

Emphasis
and
In-situ contextual information

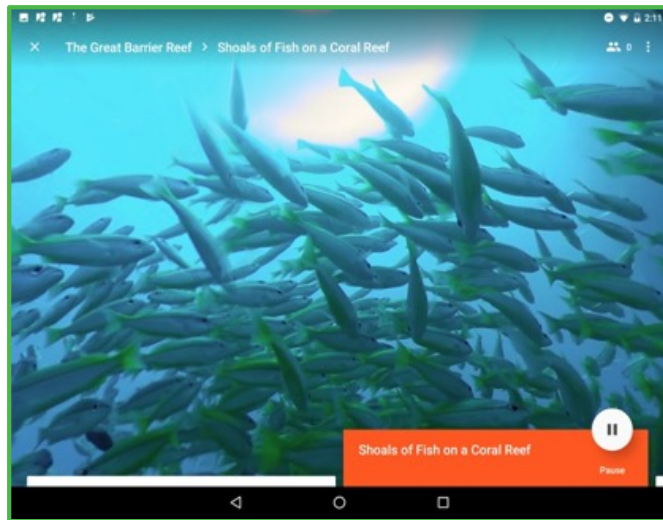First-person perspective

Simulation

Single-user handling

Synthesis
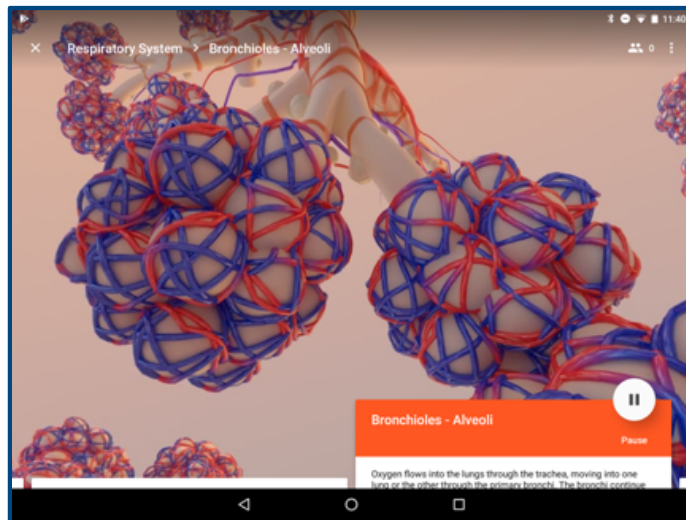

Visualisation

Experiencing the invisible

Real places

" The virtual reality helped me
because I could see
for myself what was happening
without having to imagine it. "

Learning through simulations

Simulations

" the animation was very realistic; therefore, I could take more knowledge away from the lesson [...] these images can [...] help me explain about the respiratory system in a much larger amount of detail. "

Local to global – and – global to local

Local to global

Global to local

"It helped me to understand the Chilterns is an area of natural beauty compared to some places in the world. It helped me to feel more caring about the Chilterns."
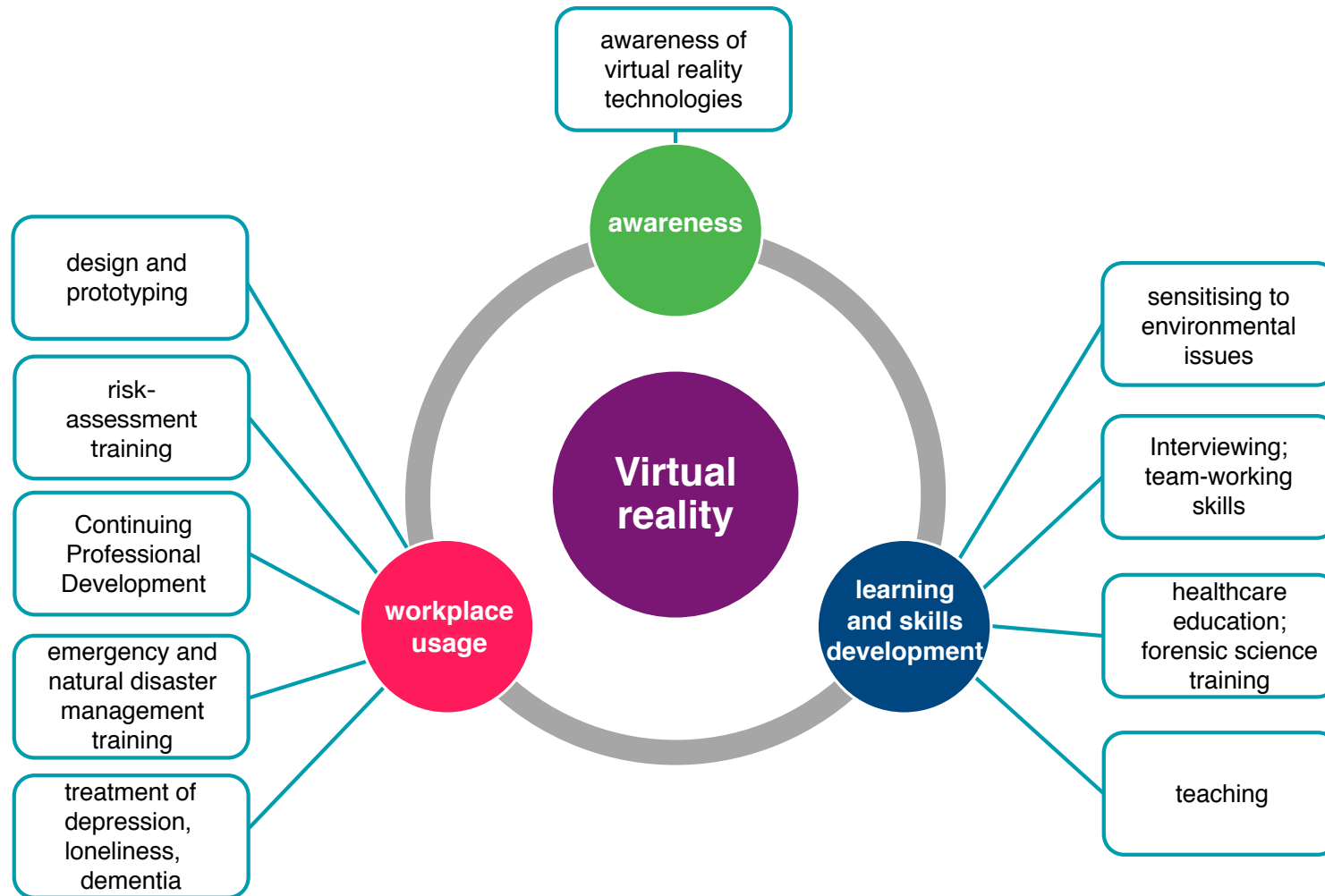
Employability

" A set of capabilities and achievements that support students in developing their careers, raising their aspirations and enhancing their contribution to society. "

The Open University Student Employability Policy Statement

Virtual reality and employability

Virtual reality and employability

awareness of virtual reality technologies

awareness

design and prototyping

risk-assessment training

Continuing Professional Development

emergency and natural disaster management training

treatment of depression, loneliness, dementia

workplace usage

Virtual reality

learning and skills development

sensitising to environmental issues

Interviewing; team-working skills

healthcare education; forensic science training

teaching

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The future