



## Breaking the Cycle Education – The Andes The Altiplano & The Atacama Expedition

### Lesson Plan

### INNOVATION

Time Allocation

60 mins



Age Range

10-14

*“Exploring is the driving force behind humankind.”* Kate Leeming

#### Learning Outcomes:

- To understand innovation
- To begin to make connections between the Global Goals.
- To explore innovation for change

<https://www.globalgoals.org/>

#### LEARN

This lesson focuses on SDG # 9 Industry, Innovation & Infrastructure

What is this goal all about?

<http://bit.ly/2H7wMLf> Global Goals



Goal- Build resilient infrastructure, promote inclusive & sustainable industrialisation and foster innovation.

#### THINK

Kate Leeming has one major piece of equipment- the bike. Kate’s bike has been purpose built to be an AWD bike. Power is transferred to both the rear wheels when she pedals. The result is better traction and mobility on snow, sand & variable terrain.

The system is so efficient that when Kate switches it on, it is hard to tell that it’s working, until she needs it. Due to a slight gearing differential, the front wheel is not powered on smooth level ground. However, the moment the back wheel slips, power is instantaneously transferred to the front wheel and it pulls Kate up and out of sandy, rugged and steep terrain.

Watch this short clip on the innovation of the AWD Fat Bike. <https://youtu.be/pACop8Pjr74>  
Christini Fat Bikes



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### ACTIVITY:

What does Innovation mean?

Write this question on board or chart- ask students to add their own definitions

Work as a class to come up with a general definition that can be understandable and usable for these lessons. Display definition in a prominent place in classroom.

A bike is an innovation that is universal. It is a form of transport that relies on human power- nothing else

ACTIVITY: Kate will need to be carrying a lot of her equipment and will be carrying 20 kgs of it. To be innovative, you need to think outside the square. What equipment would Kate need to carry with her for this ride? She is being accompanied by a film maker on a motor bike, but he will have a lot of his equipment on there so there won't be much room for anything else.

There is a good chance of rain at the start of the expedition and temperatures will be around 15C on the Altiplano, but down to freezing at night. It will be much colder on the climbs. Kate can't carry very much on her bike, so it is a case of lots of layers with clothing.

An innovation for this expedition is a special breathable rain jacket is being made for Kate that is also perfect for keeping the wind out on the mountains. The Hydronaut material is the same as she will use in Antarctica.

In pairs write down all the essential things, Kate will need to pack. You will need to stretch your thinking for this one. Make a class list of all the items- prioritise them in small groups then share as a class. What is essential and what is a luxury.

### FEEL:

#### ACTIVITY:

Picture yourself in Kate's shoes or in another explorer. You are about to head off to explore a new frontier. What three items would you take with you?

You will need to justify your answers, to convince your classmates that they are essential items.

### ACT:

What can we do to help work towards this goal?



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- Donate your old bike to a charity who repair them and send them to be developing countries
- Ride a bike- it's a great innovation
- Modify your own bike- what could you add to your bike

### Conclusion Activity:

Add yourself to the map on the Home Page

<http://www.breakingthecycle.education>