

LOW CARBON ENGINEERING WITH DR DANIELLE DENSLEY TINGLEY

TALKING POINTS

KNOWLEDGE

1. What is a circular economy?
2. How does the construction industry contribute to greenhouse gas emissions?

COMPREHENSION

3. Why is it so difficult for the construction industry to become a circular economy?

APPLICATION

4. How would you try to persuade construction companies to start designing and developing circular buildings?

ANALYSIS

5. What do you think is the most difficult building material to recycle? What about the most difficult to reuse?
6. How could people use buildings differently to reduce embodied and operational emissions?

SYNTHESIS

7. How can the arts contribute to sustainable construction and the circular economy?

EVALUATION

8. Do you think it is possible to achieve a circular economy with current technology? How important do you think behavioural change is in creating a sustainable built environment? Does it matter more or less than technological advances?

CREATIVITY

9. How would you design a building to accommodate as many different uses as possible over its lifetime – a school, an art gallery, a shop, a hotel, an office building?

ACTIVITIES YOU CAN DO AT HOME OR IN THE CLASSROOM

- Look at the building around you and make a list of the materials you think are in it. If the building were about to be demolished and you wanted to avoid creating any construction waste, how would you recycle or reuse all of these materials?
- What do you imagine an eco-friendly home should look like from an aesthetic perspective? Can you draw a sketch of it? You can use some of the resources linked below for inspiration.

MORE RESOURCES

- Danielle's personal page on the University of Sheffield's website can be found here: www.sheffield.ac.uk/civil/people/academic/danielle-densley-tingley
- The Regenerate tool built by Danielle and her PhD students for analysing the circular design of a building can be accessed here: regenerate.urbanflows.ac.uk/
- Learn about Earthships, a type of sustainable home built from reused rubbish, from this short National Geographic film, 'Earthships: A House Made from Beer Cans Sparks a Movement': www.youtube.com/watch?v=Gfw5kwPzhPO
- Have a go at Green the Building (persuasivegames.com/game/greenthebuilding), a game about sustainable design and construction. Make buildings more sustainable and manage a portfolio of properties.
- Dezeen (www.dezeen.com/features/green/) has articles about many examples of green architecture and sustainable buildings, including vertical gardens and biomaterials, urban farms and energy-efficient design.