Geographical careers in coastal management

Royal Geographical Society with IBG
Advancing geography and geographical learning

This resource introduces students to geographical careers in coastal management. It specifically focuses on the role of professional geographer Lauren, a Coastal Project Engineer at Coastal Partners. The resource introduces students to *tracer pebbles*, which is a data collection technique used to track the movement of sediment along the coastline. For more information on tracer pebbles and the geographers behind the project, visit: Tracer Pebbles — Coastal Partners

Prior knowledge required for students to access this resource includes:

- ✓ Understanding of different types of coastal management (hard and soft engineering)
- ✓ Understanding of different processes of erosion, transportation and deposition
- ✓ Understanding of longshore drift

Curriculum Links

This resource is aimed at GCSE students. GCSE curriculum links include:

Edexcel A

Topic 1: Changing landscapes in the UK, subtopic 1A
1.5 Human activities can lead to changes in coastal landscapes which affect people and the environment
1.5, b. The advantages and disadvantages of different coastal defences used on the coastline of the UK (hard engineering, sea walls, groynes and rip rap and soft engineering, beach nourishment and managed retreat) and how they can lead to change in coastal landscapes

Edexcel B

Topic 4: The UK's evolving physical landscape
4.5 - The interaction of human and physical processes present
challenges along coastlines and there are a variety of management options

AQA

Section C: Physical landscapes in the UK
3.1.3.2 - Different management strategies can be used
to protect coastlines from the effects of physical processes

OCR A

Topic 2.C Living in the UK Today
1.1 Landscapes of the UK
1.1.5 Landscapes are dynamic and differ depending on their geology, climate and human activity. Two case studies, one UK river basin and one UK coastal landscape, to cover ...

management, works in combination with geomorphic processes to impact the landscape

OCR B
Topic 3: Distinctive Landscapes
3.2, b. Case study of two landscapes in the UK, one coastal landscape and one river basin, to include the study of ... human activity, including management, works in combination with geomorphic processes to impact the landscape

WJEC
Key Idea 4.2: Managing costal hazards
4.2.1 - How are coastlines managed?
4.2.2 - What is the most sustainable way to manage coastlines in the face of rising sea levels?

Activity Answers

1. Sort into hard and soft engineering coastal management strategies

a. Sea wall - HARD
b. Beach nourishment - SOFT
c. Timber groynes - HARD

2. Circle the correct definition of longshore drift

a. The movement of material along the coastline controlled by people walking along the beach
b. The movement of material along the coastline controlled by the direction of the prevailing wind
c. The movement of material along the coastline controlled by volcanic eruptions

3. Explain why beach nourishment helps reduce coastal erosion

Beach nourishment is a soft engineering strategy where sand is pumped onto the beach to help build it up
This helps to reduce erosion because … a larger beach absorbs more wave energy

Comprehension Activity. Read Lauren's profile and answer the questions

1. **Which section of UK coastline does Lauren help manage and protect from flooding?**
   a. North East (Scarborough) b. South East (Hastings) c. South Central (Portsmouth)

2. **List the *types of data* that Lauren uses to help track storms and monitor changes along the coastline**
   Lauren and her term use wave height and weather data. They also use remote sensing techniques like using drones to track changes in the physical characteristics of the coastline.

3. **What key geographical skills does Lauren use in her work as a Project Engineer ? Tick all that apply**

- ☑ Collecting and recording data in the field
- ❑ Calculating percentage increase and decrease
- ☑ Problem solving
- ☑ Communicating ideas
- ☑ Interpreting OS maps and digital maps
- ❑ Drawing field sketches
- ❑ Writing an extended argument
- ☑ Using geospatial data like remote sensing

4. Write one piece of advice Lauren has for aspiring geographers

Lauren encourages people to do a job that they enjoy and are interested in

Tracer pebbles. **Lauren's favourite project has been using tracer pebbles to track the movement of sediment. Read box 3 and answer the following questions:**

1. Tracer pebbles are an example of a hard/soft engineering strategy (circle correct keyword)

2. Tracer pebbles involve tagging individual pebbles with location data.

True or **False**? They are tagged using radio frequency

3. Sort the statements below into advantages and disadvantages of tracer pebbles

a. Tracer pebbles have high average detection rates of approx. 75% over a two-week period. ADVANTAGE

b. They rely on people surveying the beach with handheld antennas, so some areas of the beach may be missed DISADVANTAGE

c. Tracer tags do not use power so can be left in the field for long periods of time ADVANTAGE

d. Tracers are not easier visible, so are less likely to be disturb by people using the beach ADVANTAGE

e. Tracer pebbles are useful for detecting longshore drift ADVANTAGE

4. Explain how tracer pebbles can be used to manage the coastline

Tracer pebbles help track the movement of sediment along the coastline, which helps track processes such as longshore drift. The tagged pebbles are relocated to areas that have experienced erosion, helping re-build material in areas that have less material

5. Suggest one reason why tracer pebbles are needed to help manage the coastline

Tracer pebbles are needed because they help track how the coastline is changing, which will help identify where coastal management techniques are most needed

Links to further careers support

- Royal Geographical Society's career pages: Choose a career with geography - RGS
- Teacher CPD: Teacher events - RGS
- I am a geographer: I am a geographer - RGS
- Statutory careers guidance for schools: Careers guidance and access for education and training providers - GOV.UK