



How is the shoreline protected from the action of the sea?

Overview



Lead Subject: Geography

Introduction: Children will walk a stretch of coastline and will record and discuss the ways in which the coastline is protected (or not) from the sea.

Rationale: Children will learn more about the dynamic environment of Morecambe Bay by recognising that the action of the sea is a powerful force, especially during high water tides and during storms. Children will learn to recognise the possible future effects of such actions due to climate change.



Impact and Outcomes



Outcomes: to make critical decisions regarding coastal defence strategies based on on-site investigation experience and to illustrate such thinking by outlining and justifying a beach defence strategy.

Impact:

- greater knowledge and awareness of forms of coastal defence that can be utilised to protect the coastline.
- to be able to identify, understand and evaluate different forms of coastal defence, whilst recognising their as well impact on the environment.
- children will develop an understanding that climate change will result in more extreme weather in the near future and that decisions need to be made about what and how to protect the coastline.

Curriculum Links, Prior Learning & Key Vocabulary



Geography

- use geographical vocabulary to refer to key physical and human features
- describe the location of features and routes on a map
- use simple fieldwork and observational skills to study the key human and physical features of its surrounding environment.

PSHE: responsibility to your world around you. **Maths:** (links to) calculation, measurement and area

Science: (links to) forces and materials

Prior Learning

To be familiar with the shape and identity of Morecambe Bay. Children will be introduced to a large map of Morecambe Bay and will follow the coastline from Fleetwood to Walney Island noting the features and places they can identify on the way – this could take the form of an annotated coastline horseshoe shape of the bay to record their findings on.

Children should be asked to complete a mind map with illustrations about what they can recall about any ways in which the coastline of the bay is protected from the sea.

Key Vocabulary: Coastal defence, coastal protection, engineering, soft/hard engineering, aesthetics, wave energy, sea level, climate change, man-made structure, dispersion, seawall, groyne, jetty, revetment, gabion, barrier, rock armour, riprap, backwash.

Locality-Based Experience



Children will conduct an extensive walk along a stretch of coastal path and will observe and record the ways in which the coastline is (or is not) protected from the sea. Children will describe the attempts to protect the coastline and will note how they think each form of defence they encounter works. They will discuss the conflict between defence of the coast and the aesthetic of the method of protection and will identify the condition of each method encountered. Children will also discuss and rate how effective they think each method they find is at defending the coast. Children will also note what the defence is actually protecting and should it be protected in future.

Suggested Learning Opportunities



“In the Locality”



Children will:

Conduct an extensive walk along the coastal path along the coastline of a long section of the bay. (e.g. from Half Moon Bay at Heysham to the clock tower in Morecambe). Along their journey children should observe and record the way that the coastline is protected from the sea, if indeed it is. Children should note evidence of damage caused by the action of waves and should describe, sketch and take photographs of any coastal defences encountered which they will then try to correctly name back in the classroom.

Children should follow enlarged photocopied OS sections of the coastline chosen for study and should use felt tips to survey and record the beach defence sections they encounter, whilst noting any defences that project onto the beach or into the sea.

Orange = metal cages filled with rocks

Grey = concrete wall

Red = sloping concrete

Yellow = large rocks

Brown = fencing

Purple = other form of defence (make a note)

Green = no protection

“In the Classroom”



Children will:

- Review what was discovered on the coastal walk and will then be introduced to images of the coastal defence strategies listed below. Children will discuss in groups ‘how’ each defence strategy might work and were any of these strategies noted on their coastline walk and if so, were they adapted in anyway and what were they protecting?
- work in groups to discuss what the pros and cons of each form of defence might be by drawing a question card from an envelope (see additional list of possible questions).
- take part in the ‘Coastal Defence Challenge Activity’ (see additional resources).

Groyne, breakwater or jetty: relatively slim long wooden, concrete or rock structure stretching out into the sea from the beach often at an angle

Gabions: collections of rocks encased in metal frame wire frames (these could form other structures mentioned here)

Seawall: a large often vertical concrete structure protecting the shoreline

Revetments: sloping form of seawall, that often contains indentations and cavities

Rock armour (AKA ‘ripraps’): deliberately placed boulders.

Sand fencing: wooden chains of fences that help prevent sand loss

Beach nourishment: sand has been dredged from the sea floor or transported in to replenish or build up the beach.

Further Links



<https://thefloodhub.co.uk/wp-content/uploads/2021/03/Multiple-Benefits-of-Coastal-Management.pdf>

<https://thefloodhub.co.uk/wp-content/uploads/2018/09/Sea-Walls-2.pdf>

<https://www.north-norfolk.gov.uk/media/7725/coastal-protection.pdf>

