Lesson 3 (DE 3.1)

BUILDING SEA WALLS

You will need:

- Large tray or container, at least 20 cm deep and a minimum of 40 cm across
- Large plastic mat/newspaper to put underneath the tray
- Water
- Sand/pebbles/small stones etc. (each group must use the same quantities)

1. Your task is to build a 'sea wall' of sand and pebbles that will withstand a 'rising tide' for as long as possible!
2. Your sea wall must stretch from one side of the shortest side of the container/ tray to the other.
3. It can be whatever height, width, depth etc. as you think appropriate.
4. Once built, an independent judge (your teacher or other adult) should slowly pour a jug of water into the tray, followed by another and another until your wall has collapsed or the tray is full!
5. Note the following:

    - How long before water begins to seep through onto the other side of the tray?
    - How much, if any, sand flows out through the other side?
    - What part of the wall collapses first? Why do you think this is?
    - Is there any relationship between the size of the pebbles and stones and how quickly the water seeps through?
    - Does any of your wall stay standing? Which parts? Why is this?
    - Is there a relationship between how wet the sand and pebbles are and how quickly or slowly things happen?

How does this relate to a real coast?

Water flows through any gaps it can find between sand, stone, pebbles etc. If there is a large gap and the water is moving quite slowly it may all pour through this gap and leave the rest of the 'wall' standing, BUT sea walls need to be uniformly strong as just one weakness could allow a small gap to be created and water will flow through. There are smaller gaps between each grain of sand than between pebbles and stones, BUT if there is more energy in the waves, then the smaller sand particles will get moved more easily up and across the shore (long shore drift).