

## Teacher's Notes for a Design Task - Build a Machine. Level C/D

If pre-topic assessment shows little prior knowledge of floating and sinking please refer to worksheet activities B/C.

Remit: to design and build a vehicle to travel over land/water for 1m.

### Lesson 1 The Design Task

Discuss the task and identify possible approaches. Discuss possible resources and methods of propulsion e.g. wind, electric motor and stored energy (elastic bands, balloons)

Children work in pairs to draw their designs.

Then they identify resources and label their design with their chosen materials. At this point children decide upon their method of propulsion and show this on their plan.

Children gather resources in preparation for the next lesson.

### Lesson 2 Building the Machine

Prepare an area with access to tools such as hacksaws, hammers, craft knives, glue etc.

Using their plans and chosen materials, children construct their machines in their pairs.

This process may take several sessions.

### Lesson 3 Trial Run

Children trialled their vehicles to ensure they moved!

Some children had to make adjustments because their vehicles were top-heavy; veered to the side; capsized or toppled; spun round in circles or didn't work at all!

Some children also found difficulties with propulsion particularly the balloons; attaching the blown-up balloons; insufficient energy to propel vehicle.

#### Lesson 4 The Testing

Discuss guidelines for a fair test;

- Fixed starting point
- Same test course to be used
- When using a hairdryer, feet had to remain behind the starting point

Land vehicles were tested over a marked out course in the gym hall.

Water vehicles were tested in an infant's water tray. This was not ideal and a larger area would be preferable.

The children measured the distance covered with a measuring tape and recorded the results.

The children evaluated their own and each others results and offered suggestions for improvements.

The children used a digital camera to record the testing.

#### Lesson 5 Presenting Results

Children entered their results on a spreadsheet( Microsoft Excel) and produced graphs of their results. Some children then used the graphs with their digital photographs to make a Powerpoint presentation. These children then cascaded their expertise to their peers.

Children also produced a report on the computer of how they carried out the task and included digital photographs.