

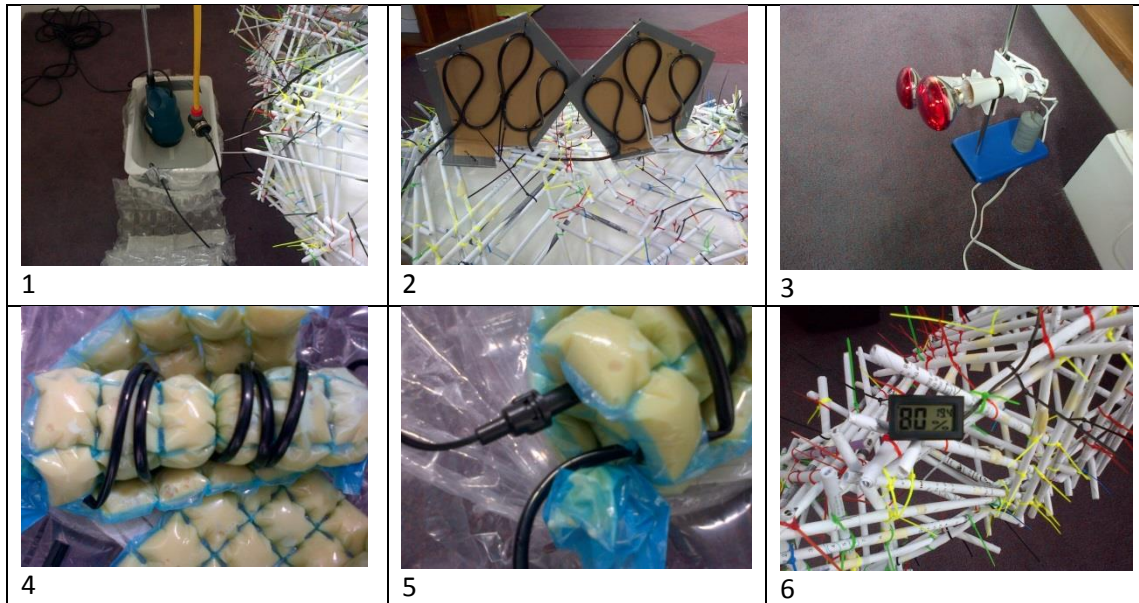
Edward Jenner School Model to Test Function of Stegosaurus Plates

Inspired by the BBC story 3/12/14 "Scientists seek to solve mystery of Stegosaurus plates" introducing 'Sophie' the Stegosaurus (<http://www.bbc.co.uk/news/science-environment-30301895>) who is now resident at the Natural History Museum; we began creating two of our very own Stegosaurus models to experiment on. The theories surrounding the back plates of the Stegosaurus include: protection, decoration and heat regulation - we chose heat regulation; specifically warming. On Thursday 26th March we conducted our 12 hour experiment measuring data every 30 minutes, the results were truly remarkable.



The first stage of the project involved using STEM principles to design and make our 2 paper Stegosaurus. We used recycled A4 paper and created dense tubes using a rolling kit designed and made by Darcy Taylor - Urban Knitting. These tubes (some 1600 of them) were produced and then constructed into 200 triangular units using cable ties, which provided a rigid structure for the Stegosaurus. Over 4000 cable ties were used to create the two models!

Next we prepared the children by working on a topic involving Heating and Cooling. We then constructed our own warming system for the Stegosaurus consisting of:



1. A garden water pump to act as the heart which stood in an insulated water reserve providing the fluid for the circulatory system.
2. Black irrigation piping travelling backwards and forwards across the plates.
3. Reptile warming lamps shining on the back plates; two lamps also shone on the control dinosaur, which had no circulatory system, but was identical in all other ways.
4. The circulatory piping wrapped around the internal organs of the Stegosaurus - made from ice cube bags filled with custard chosen for its Specific Heat Capacity (it is good at getting warm).
5. The bags were wrapped in more custard 'organs' and the temperature probe was inserted into the core. The 'innards' were placed inside the dinosaurs, deep within the polystyrene beads which filled the body cavity.
6. The temperature probe readout was attached to the outside of the Stegosaurus to allow readings to be taken from both dinosaurs every 30 minutes.
7. A thermometer was set up to read the room temperature.

The experiment started at 8.45 am 26/3/15 results were recorded every half an hour until 20.45 pm:

Time	Control Dinosaur Temperature °C 'Steg-Bob-Norm'	Circulatory System Dinosaur Temperature °C 'Steg-Ed-Jen'	Room Temperature °C
08:45	5.5	6.1	12.5
09:15	6.2	8.1	14.0
09:45	6.5	11.0	15.0
10:15	6.7	11.6	15.0
10:45	7.0	16.2	16.0
11:15	7.2	18.5	16.0
11:45	7.5	20.7	18.0
12:15	8.1	22.5	18.0
12:45	8.2	24.0	18.0
13:15	8.6	25.5	19.0
13:45	9.2	27.0	18.0
14:15	9.5	28.2	18.0
14:45	9.5	29.1	17.5
15:15	10.4	30.1	17.5
15:45	10.0	30.8	17.0
16:15	10.0	31.5	17.0
16:45	11.0	32.0	18.0
17:15	11.2	32.3	18.0
17:45	12.0	32.5	19.0
18:15	12.2	32.7	19.0
18:45	12.7	33.0	19.0
19:15	12.8	33.5	19.0
19:45	13.0	33.6	19.0
20:15	13.2	34.0	19.0
20:45	13.5	34.8	20.0

Following a fish & chip supper, the children recorded the last reading at 20:45 with parents and siblings present.



We were delighted to be followed by Dinolab, at the National History Museum, on our live twitter feed during the day and are currently in contact with the museum to share our findings.

We think our adaptation of their research is unique and would love to inspire other schools around the country to create their own Stegosaurus investigations. To have Steg-Ed-Jen on display next to Sophie and the Natural History Museum would be a dream...

We look forward to hearing from you if you would like to talk to us further about our unique STEM project inspired by a BBC news report.

Manda and Phil Brookes and the children from Edward Jenner School, Gloucester.