

CASE STUDY

Styal Primary School

Outdoor Science Workshop - April 2016

This is a case study to show how a workshop around rainwater harvesting, siphoning, using a water pump in a muddy kitchen and sowing wildflower seeds had a positive impact on the curriculum.

Information

Client name and details: **Styal Primary School, Styal**

The demonstration took place on 14th April 2016 and lasted for 2 hours 30 minutes. The children were primarily a class from Year 3, we also presented the workshop to the after school gardening club.

Project description including project aim

The aim of this project was to introduce the children to motion and force in action. It was also a way to show the children and teachers a way of taking science outside to provide practical links to the things children learn in the classroom.

To initiate the workshop, we introduced ourselves to a year 3 class and then presented them with some key words like siphoning, rainwater harvesting and forces. We took the children to the area at the back of a classroom where four Intermediate Bulk Containers (IBC) stood, each containing 1000L of rainwater. We started by asking the children where they thought the water in the tank came from, some of the children suggested the tap. We then discussed rainwater and what they thought rainwater harvesting is. The children were then asked to suggest some of the uses for the rainwater to which they replied watering plants. We then discussed that Earth has plenty of water but we are starting to run out of healthy drinking water as progressively more people are living here on this planet. We encouraged the children to think about their toilets, or using the water for watering your back garden or lawn. That way you won't have to waste fresh tap water.



Extracting the water from the tank was the next area of discussion with the children. This is where we introduced the word *siphoning* and asked them what they thought this word means. We then told the children that the word siphon refers to a wide variety of devices that involve the flow of liquids through tubes, but for our activity the word siphoning refers particularly to a tube in an inverted 'U' shape. This causes a liquid to flow upward, above the surface of a reservoir, with no pump, but powered by the fall of the liquid as it flows down the tube under the pull of gravity, then discharging at a level lower than the surface of the reservoir it came from. We then provided the children with some tubes and asked them to siphon the water out by starting siphoning action with a small hand pump.

The activity, using the hand pump to start the siphon action, then moved us onto our next demonstration. We took the children into their forest area where they had a muddy kitchen. We asked the children how we could get water from the tanks to the kitchen so they could wash their pots, some suggested siphoning to which I told them the water never stops coming out. We then installed a hand pump action tap to the muddy kitchen and attached a hose from the tanks to the pump. We asked the children how the hand pump works, which moved the discussion on to forces. We told the children that forces are just pushes and pulls in a particular direction. We also explained that if two balanced forces are acting on an object, that object will not change its motion whereas unbalanced forces *do* change the way something is



moving. Unbalanced forces can make objects start to move, speed up, slow down, or change direction. As a result of this, the tap is pulling the water towards the tap and pushes it out of the tap spout. The children were very excited to try out the pump and play in the muddy kitchen.

When the children had tried out the pump we took them to an area of grass where we discussed and looked at wildflower seeds. We talked about the differences in the seeds and what wildflowers could be used for and some of the children suggested food. We then told them that some wild flowers are used for medicines, foods and how important they are to wildlife such as bugs and birds. The children then spread the seeds all over an area of grass next to their classroom.

Positive outcome

One of the positive outcomes that came from this demonstration was the engagement of the children who sometimes have a hard time concentrating in the classroom. The demonstration was mostly hands-on and practical which engaged all of the children. One reason for this could be that the staff in Styal Primary School are predominately female and Mrs Shaw stated “you are a fresh new face and male role model”. This is imperative for the children’s education as it can cement learning that has been taught by the teachers in the classroom.

The demonstration also gave children the understanding of how water moves and comes through the taps as Mrs Shaw suggested “children just expect that things happen” like water coming from a tap. When children go into the muddy kitchen in the forest school area they now understand how it works and how the water gets there making the learning outcomes from the demonstration purposeful. It also gives the children an understanding of new concepts and a link back to force and motion in their maths lessons.

The Future

After the workshop the teachers asked us to do the same presentation with the gardening club, which the children also thoroughly enjoyed. To extend future demonstrations we will make mini-models of the siphoning activity and show children how to use water in pipes as a level gauge. The teacher has also asked us to come back to the school for a presentation during Aspirations Week on the different jobs and skills that the Great Grounds team have.

If you would like to find out more, contact our Environment Coordinator James Smith by email j.smith@GreatGrounds.co.uk