

# Case study: Guiseley Secondary School

Lead Practitioner: Andrew Mangham.



// After learning the science then designing and building our equipment, it was great to see it played back in lesson so we could see exactly what happened. //

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## Cola Exploration

The project was based around using the Visualiser to examine close up what happens when you drop Mentos mints into a bottle of Diet Coke. It was known that this would create a Coke fountain but the idea was to examine the reaction in detail to see how the effect could be maximised.

## Key objectives

- Link science and technology TEM agenda requirements – Pupils studied the reaction in science then designed their own trigger system for delivering the mints.
- Using new technology like the visualiser to study the reaction
- Use PLT – Draw conclusions from the visualiser observations and suggest a way to improve the design system.

## Description

Pupils were shown the basic reaction and the key concepts outlined to the group during a science lesson. These were essentially delivering the mints quickly whilst maximising the surface area in contact with the Coke and doing this from a distance so they were not immersed in Coke. Pupils were then asked to design a system that would do this. Pupils subsequently made the system in Technology and tested its effectiveness whilst the visualiser filmed the reaction. Pupils later discussed how they would improve the system in light of what they had seen via the visualiser videos.

## Outcomes

The video footage obtained and the ensuing discussion showed the success of the project. The general group conclusion reached by those participating was that the next delivery system should be designed to do all the above but encourage the production of small bubbles not the large ones seen on the video because they quickly rose to the top of the bottle but took little Coke with them which meant they contributed little to the fountain of Coke.

## Special considerations

We constructed a special shower resistant jacket for the visualiser and cut a collar in acrylic to the exact size of the lens shoulder using the laser cutter. The focus and direction of the camera were then controlled remotely using the computer controls and the hand set.

## Issues to consider

The main problem that we encountered was timetabling the pupils so they could first work in science then move on to technology. This wasn't easy and only achieved once year eleven pupils had left school and freed up some more timetable slots.

## The next step

The next step is to take the video obtained last academic year and use it as the starting point for next year's exploration so the project can move on.

'Watching the video allowed us to see exactly what was going on inside the coke bottle and link it back to the science behind it!'

'I could see on the video where we went wrong and what we could do to improve it next time.'

Quotes from pupils

'The visualiser allowed us to study the experiment up close and the remote control allowed us to position the video camera to see the detail quite easily without having to constantly return to the lens. It sort of mimicked the industrial situations where cameras are used in hostile environments to see what is happening without endangering the operator. In this experiment it basically meant that the operator wouldn't get covered in Coke. The pupils had to work together in

order to coordinate the use of the visualiser and trigger the reaction which meant team work was involved and finally they were able to see the reaction up close and plan how to improve the performance next time. This covers at least two Personal Thinking and Learning Skills. It also demonstrates the visualiser which is an amazing piece of technology in itself and shows what is available in the modern technological world.' **Lead Practitioner, Andrew Mangham**