Chamber of Challenges

Context of the school

This was an initiative developed by CALMAST – The Centre for the Advancement of Learning of Maths, Science and Technology. The initiative encourages children to become interested in science and technology by introducing them at a young age to the wonders of science. The event is based loosely on James Bond and Harry Potter. For effect, the event is held in a gothic chapel, with smoke machines, lights, music etc for effect. Children from schools in the south east of Ireland for 9 to 12 years old have participated.

Pedagogical Grid

Identification	
Establishment:	CALMAST
Teacher's name:	Eoin Gill (egill@wit.ie)
Subject:	Fun science challenges for primary school pupils
1. **Context**	
Class: level	Primary school children
Number of pupils	30
Date/Hour	Dec 2006
Duration of the observation (when applicable)	2 hours
Learning/teaching objective	
Summary description	To show primary school children that science can be fun, exciting, challenging and that science is for everyone.
Description of the sequence	
Intentions of the teacher	The teacher aims to teach the children science though a series of challenges. The children feel they are playing a game, but they are in effect learning science as they do so.
Description of the activity stage	A series of chambers are made up. In each chamber, a science challenge has been set up. The chambers are connected by minefields. To cross the minefield, a challenge must be carried out to give you the safe zones through the minefield etc. The event is loosely based on James Bond and Harry Potter. Each activity is based on the primary science curriculum. The activities can be varied to suit the age group involved. Prior to the challenges the children have a science show where they are introduced to the various science activities and principles that they may need to complete the challenges. All the chambers have an adult present to help the children complete the science challenge. The activity presents science in a non traditional manner.
Pupils' output	They learn about the wonder of science. They gain confidence in doing science. It also builds up team work.

Concrete Case Study Introduction

The Chamber of Challenges is a one day and regional event.

All schools in the region are invited to apply for tickets, and schools each day are selected to partake. The children are generally between 10 to 12 years old.

The Chamber of Challenges brings the excitement of James Bond and Harry Potter to the children. The Chamber of Challenges consists of five interconnecting chambers. In each there is a challenge that only science can overcome. Solving the challenge gives either the safe codes to move through a minefield, the codes for a safe where the next challenge lies or a piece of equipment that will be helpful though the journey through the other chambers.

Set up

The day before the event, four or five volunteers set up the chambers and tunnels. The Chambers are made from small gazebos and the connecting tunnels are made from plywood. In each chamber, a challenge is set up. All of the equipment required for each challenge is left in each chamber, along with detailed instructions about each challenge.

The event

The children when they arrive are divided into groups of four. This will be the team they will work with throughout the challenges. The group as a whole are introduced to the Chamber of Challenges by the overall co-ordinator of the programme, and are given a brief talk about the type of science activities and challenges they will encounter as they move through the challenges.

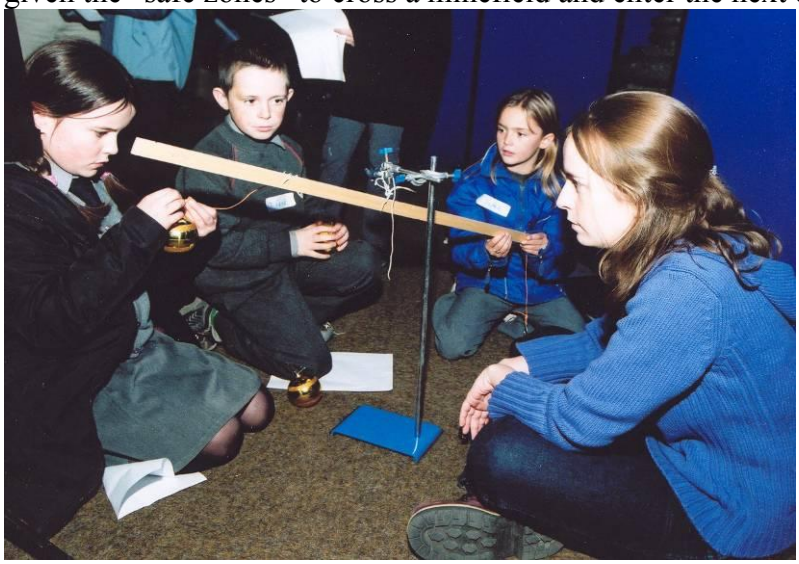
As the students enter each chamber, clear instructions on what they need to do are written on panels for them to read. Materials which may be needed to complete the challenge are present in the chamber. The children must decide what is the best way to solve the challenge based on the activities they have done or seen previously. They may or may not need all of the equipment provided. There is an adult in each chamber to help them if they need it. All of the activities are fun things to do, and there is great emphasis on teamwork, and also on making sure that everyone can do the challenge required.

Once the challenge has been completed, the participants are given an item that will help them as they progress through the chambers. It may be the safe zones through a minefield, the codes to open a safe, a gold coin that is needed to pay for their passage through another chamber.

Some of the activities are very simple, others more complicated.

For example:

Chamber 1
In this chambers are four gold balls. Only one of them is real gold. The students are told that the gold ball is the heaviest. Lying in the corner of the chamber is a piece of string, a meter stick, and a clamp stand. The students need to construct weighing scales from these materials, and then find the heaviest ball. Once this is accomplished, the students are given the "safe zones" to cross a minefield and enter the next chamber.



Chamber 2:

A message giving the safe zones in a minefield have been places at the back of a dark tunnel, which is too small for the students to enter. However, they have been given a remote control robot, a battery and a bulb circuit. The students must build the circuit, strap it onto the robot and then they can see where to send the robot to get the message. Getting the message tells them the safe zone through the minefield and into the next chamber.

Chamber 3:

The safe zones for the next minefield are placed on a wall too high to look over. The students are given some cardboard, 2 mirrors and they must find a way to get the safe zones message. They must make a periscope, get the safe zones and move safely through.

Chamber 4:
The students must find the gold coin hidden in sand, using magnets.

Atmosphere:
There is a real sense of anticipation and trepidation as they move through the minefields.

Each team carries out each challenge, and when the team is finished, there are a number of further fun activities for the children to carry out as they wait for the other teams to finish.

All of the activities involved in the Chamber of Challenges relate to the Primary Science Curriculum. But all of them are presented in a fun and exciting way. The children get very excited and are very proud when they complete a challenge. It gives them a sense of achievement, they see how useful science can be. In general, they leave with a buzz about science.

Added Value

The added value for this activity is that the children get really excited about doing science. They all want to solve the challenge, and see it as a game, while learning science at the same time. The children are really happy when they have accomplished a task, and

have moved safely though the minefields. It builds confidence, the children all believe that they can do science. While all of the activities relate to the primary science curriculum, they are presented in a fun way. The children see it as a game, and for children who thought that science was too hard for them, now they could and did want to do science. Thus this activity makes science accessible to everyone.

Transferability

This activity is very transferable. For every event new challenges can be developed. The challenges can be altered to suit the age group involved.

Obstacles:
The main obstacle to running the chamber of challenges is the time taken to set up the chambers. This typically takes one full day. In addition, each chamber needs an adult helper to supervise the children and to make sure that each of the children can complete the task required. It is very important that everyone feels they can do the task, so that everyone feel they can do science and that they take that with them when they leave.

It is difficult to get 7 people many times throughout the year.

Other ways of staffing the chambers are being looked into, for example using secondary school students to help primary school students.

Once the children are finished the Chambers themselves, they must wait for the rest of their class to finish. More activities need to be developed for them to do once they have finished.

Teachers report that the children have become excited about science, and have increased confidence about science in school once they have completed the project. They also report that their team work improved.