



Figure 1 A student helps children learn about candles



JEN AND STEVE SMYTH

EXPLAIN HOW TRAINEE

TEACHERS RAN SCIENCE

DAYS AND SET UP SCIENCE

CLUBS FOR LOCAL SCHOOLS

ENHANCING SCIENCE in inner-city schools

London Metropolitan University in Islington, North London, is very much part of the local community. A very high proportion of the students come from the areas around the university, and an even higher proportion go on to take up posts in the immediate inner-city environment. The education department was therefore very keen to foster already-existing links between its trainee teachers and local schools, and conversations between link-schools and tutors suggested that science was an area where schools would welcome additional support.

After discussion with Mary Linington, Education in the Community project manager for

Islington, and Sara Cinamon, gifted and talented consultant, we decided on a three-pronged strategy. Firstly, a 'science day' would be organised, with workshops run by students from the university. Secondly, a series of 'science clubs' would be established, which would be run by year 5 children (9/10 year-olds) for year 2 children (6/7 year-olds), but could be enhanced by visits from students during the blocks of time when they were timetabled for lectures (but not when they were on teaching practice). In order to achieve a holistic approach across the full age range we incorporated a third strand for secondary pupils to receive university-based teaching. This initiative was already in place and has been running very

successfully for the past few years, led by Professor Chris Branford White. It forms part of the full age spectrum approach aimed at delivering extra-curricular science in Islington.

The plan is to extend the enhancement across all Islington primary schools, over two to three years. So far science days have been held for 6 schools, and clubs set up in a further 12. Eventually, we aim to offer a club and support in

all Islington schools, together with places on science days for 12 schools each year. In order to raise the profile of this coordinated approach, each child taking part in the scheme receives a 'record of achievement' booklet, which they will carry with them throughout the various stages of their primary/secondary education.

Science for early-years children will also form part of our next step, through students working with parents/carers, nursery workers and teachers in delivering appropriate science activities for early-years children. This has already been trialled in Newham and has proved to be very popular.

The science day

Six workshops of 40 minutes each were organised, as outlined below. Each school moved around the workshops in circus fashion.

Wax

In this workshop children got the chance to investigate paraffin wax, to look at changes of state, and to compare the translucence of different samples. They also made close observations of how a candle burns and the functioning of the different components of a candle. Finally, they got to dip their own candle, in large cylinders of different-coloured liquid wax, contained in a large water-bath. This was an activity where it was useful to have a large number of

our students, to supervise the queues and ensure safety, and also to ensure that as many of the children's creative ideas as possible were put into effect (Figure 1). Using tape to mask parts of the candle, and then removing it before allowing a second dip in a different-coloured wax, gives astonishingly beautiful patterns. When the students demonstrated this activity, there was a gasp from the 'audience' each time the demonstration candle was shown off – a real 'awe and wonder' moment. This was an extremely popular activity, because the children had an end product to take home. It was also the most difficult activity to pack up at the end – because all the students wanted to come and dip a candle before the tank was switched off! Many of the students have subsequently contacted me to ask if they can borrow the candle-making apparatus for their new schools in the run up to Christmas.

Flying and falling

In this activity children were shown how to make a helicopter from a sheet of A4 paper (Figure 2). They were then encouraged to investigate the use of different numbers of paper clips (as weights), different sizes of helicopter – did the length or

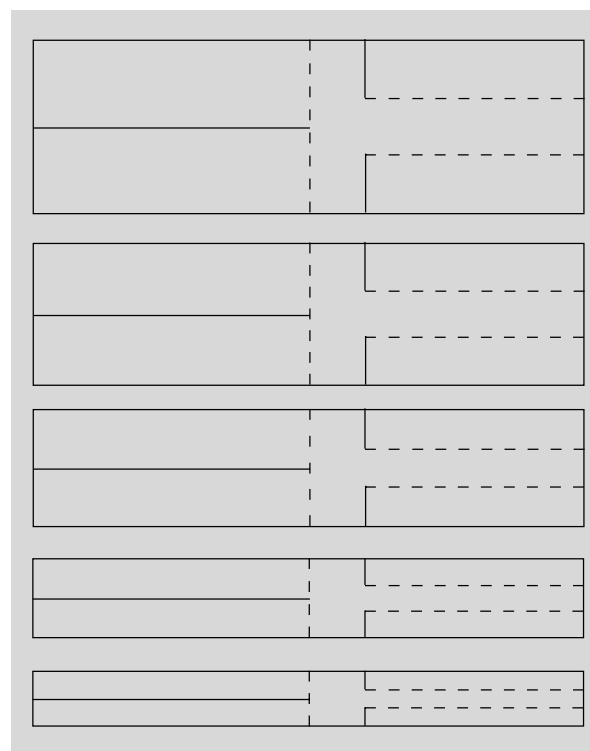


Figure 2
Templates for making paper helicopters

width of the wings affect the speed of the descent? This provided an enjoyable way of discovering the effects of gravity and air resistance, and also allowed the children to engage in fair-testing. The activity provides a wonderful example of useful scientific investigation being carried out at a negligible cost and proved to be one of the most popular workshops. The 'well' created by four staircases enabled the children to carry out extensive testing, although I doubt that the excited babble accompanying the activity has enhanced my position within the university!

Solar power

We have a very useful atrium within the education department and this was the perfect setting for the solar power investigations. Although many schools have some solar cells for use within science lessons, this aspect of science still creates excitement. We were lucky to have a bright sunny day (although reading lamps were available for use if necessary). The children were encouraged to construct simple circuits, which included a motor and propeller, using solar cells as the power



Figure 3 **Children construct simple circuits, including a motor and propeller, using solar cells as the power source**

source (Figure 3). Various investigations were then carried out and sustainable energy issues discussed.

Elastic-band power

This activity was a variation of the 'cotton reel' tank and investigated forces and energy changes. The students helped the children to construct an elastic-band roller and then set up investigations around varying the size of the dowelling legs, the width of the rubber bands, the number of

the planets was devised for children to discuss in teams and agree on an answer by holding up a letter. Perhaps the most useful aspect of this activity was allowing the children to work cooperatively, whilst at the same time enhancing their knowledge of this area of the curriculum. The quizzes proved to be very popular, especially when our students provided small prizes for the winning teams.

Summary

Most of these activities are not new, many of them originated in, or were adapted for, the Inspire Community Science Clubs. However, the idea of enabling schools to deliver practical science provision across the entire age range of children/students serves as the pivotal reason for this initiative – a working partnership between school, home and university.

inspire the children taking part to return to their schools and start the clubs as quickly as possible. Bringing the children into the university and treating the day in much the same way that a training day for adults would be delivered enabled the children to experience a new kind of learning and also strategies for delivering the activities.

What we achieved: the bottom line

In terms of achieving our learning intentions the training days and workshop days seemed to work very well. The students were given an opportunity to work alongside children within the university setting and also to carry with them to their first teaching posts the enthusiasm that we have tried to engender throughout their course. The children enjoyed being part of a much bigger educational setting and taking part in interesting and useful science activities. As primary science educators the 'bottom line' is a continuing need to make science enjoyable and also to ensure that it remains a central part of the school timetable.

Acknowledgements

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Figure 4
Constructing elastic-band rollers for fair-testing

times the rubber bands need to be wound up, etc. (Figure 4).

Small slopes

This activity encourages children to produce 'runs', using corrugated plastic sheeting and a sheet of A4 paper, and test them to find out which one a marble takes the longest time to run down. Again this is an activity that needs little in the way of equipment but is an excellent means of carrying out fair-testing and introducing forces. The children produced some very imaginative designs; the activity became very competitive but also helped the children to work cooperatively.

Planetary quiz

This activity was designed to give the children an activity in which they could sit and reflect – very valuable during a physically active day. A series of questions about

Science club training days

The pattern of science clubs adopted was the SEEDS clubs, developed by Sphere Science. SEEDS (Sustainable Environmental Educational Development Sessions) clubs are designed to be operated by a small group of year 5 pupils for the benefit of a class of year 2 children. The children in this case were selected as part of the gifted and talented strand in Islington schools. They were year 4 pupils, selected in July, just prior to their move to year 5 in September. Six children, together with a teacher (either science coordinator, or gifted and talented coordinator), were invited to London Metropolitan University for a training day. Two days were used for training, with six schools attending on each day. These days were very useful and served to

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