SPLATS

Martin Wesley

Students Presenting Learning And Teaching Science is a two-day experience for secondary students to develop transferable skills while enabling primary pupils do practical science.

One of our company's services is to deliver practical science workshops in schools. As we cover the whole country, we see pupils from a very wide range of schools and since 2000 we have worked with many pupils (over 700,000) and their teachers. Several years ago, we were asked if we could adapt our activities to enable some cross-phase work between a secondary school and its feeder primary schools. This was an exciting opportunity which we were delighted to meet. And so was born SPLATS: Students Presenting Learning And Teaching Science.

We quickly realised that in order to maximise the benefit of this project to all parties, we needed to incorporate more than just delivering our practical science workshops. The secondary students would have a relatively short space of time in which to be trained and it would be unrealistic to attempt to turn them overnight into science teachers. Instead, we decided to focus on the development of their transferable skills using science activities as the medium.

The format is usually to involve sixth-form students (aged 16 and 17 in their penultimate year of studies) and Y5 pupils (aged 9 and 10 in the penultimate year of primary school) before they have chosen which secondary school to attend.

A typical SPLATS project starts with us delivering a training day for the students. The first section is devoted to them experiencing six practical activities as if they were the primary pupils themselves. They get a short time in which to try out the activities and to discover just how easy they are to learn to present. Having understood what is involved, each team of three plans the logistics of the second day: the event day for the primary pupils.

Each team presents two activities, one in the morning and one in the afternoon, each one three times. However, we soon discovered that the alternative (the students taking the same group of pupils around all six different activities during the day) was not only logistically complex but failed to give students and pupils such a worthwhile experience. When we tried that format, the students arrived at a room needing simultaneously to seat the pupils, locate the equipment and begin their planned presentation.

In their teams, the students decide who in each session will be the lead presenter and who will present and explain each section of the activity to the pupils. They also need to agree on how they will organise the room, the children, the equipment and resources and, most importantly, the available time.

Each team member can have a turn leading the activity and doing the other tasks involved. They try out different ideas as they gain confidence in

Students making marble runs

presenting and knowing the activity better. Their initial apprehension soon disappears. Seeing three different classes also gives them scope to interact with different pupils.

Time management is essential to ensure the whole activity runs smoothly and pupil groups switch round simultaneously on time. However, the most important skill for the students is coping with the unexpected (a class detouring to the toilet and arriving late for the session, for example) by thinking on their feet and adapting the activity accordingly. If the group arrives late, what shortcuts can the students take; if the class arrives early, what extension can be included?

The final part of the training day provides a chance for the students to familiarise themselves with the equipment and rooms in which their activities will be based. They soon realise that activities and lessons don't just appear as if by magic – thorough preparation is required.

Solar circuits in action

The event day starts with the students arriving early and doing last-minute preparation before the imminent invasion of about 200 primary pupils and their teachers. Once all the visitors have arrived and we have briefed them about the format of the day, they are divided into six equally-sized groups. Each group is collected by one of their student presenters who escorts them to the first activity.

The morning goes very quickly indeed. Everyone gets absorbed into the quick pace – not only of the individual activities but also of the changeover from one activity to the next. We facilitate this so the students can tidy up after one group and prepare for the next – in less than five minutes.

Time is critical as the primary pupils need to be transported to and from the venue within their own school day so prompt starts, changeovers and finishes are essential. Realistic timings for lunch and comfort breaks within the parameters of the host school's daily timetable also need to be planned.

Making rollers

Lunch is a welcome respite and the students are usually by now as excited as the primary pupils. As well as eating, this is also an opportunity for them to feedback to each other how the activities are going – offering tips about specific aspects. They compare notes about the different classes and are normally surprised at how much the primary pupils can do and what they can access. Keeping all their visitors so occupied, they respond in amazement when we point out that there are children with special educational needs among the visiting schools – the activities are accessible to all and so there are no issues.

The exact choice of activities is agreed with the host school but among the most popular are:

- Marble runs – using a limited amount of materials within a fixed time, each team of three has to design a runway for a marble. The best runway (which the team gets to take back to school) is the one where the marble takes the longest to roll down it.
- Solar circuits – pupils have a chance to find out more about photovoltaic cells and how they can be used. They make simple circuits to make different electrical components work.
- Rollers – each pupil builds a simple wind-up toy (based on the cotton-reel tank) and then, with a partner, investigates the variables that affect how far the rollers travel.
- Kites – everyone makes a simple kite from card, cotton and tissue paper and then flies them to find out more about how kites move through the air.

Making kites

The afternoon is a repeat of the morning session with the teams of students eagerly delivering their second activity. They are more relaxed and confident in what they are doing although, by the sixth session the primary pupils (and, sometimes, the students) are starting to flag as they have been so busy all day long. The final feedback from both age groups and their staff is always overwhelmingly positive.

Other variations we have used successfully include:

- having more than one event day
- involving Y9 or Y10 students instead of sixth-form students
- involving more secondary students
- taking the activities into local primary schools
- involving younger primary pupils

A SPLATS project generates the following outcomes:

- secondary students develop confidence in presentation, communication, planning and organisational skills;
- primary pupils and their teachers enjoy hands-on science activities which develop science enquiry and investigation skills;
- the Y5 primary pupils meet secondary staff and students before choosing their secondary school;
- the secondary school develops closer links with the primary schools.

Each activity is accompanied by resources for the primary school teachers for follow-up work.

The best evidence comes from satisfied customers:

I was shocked to discover the pressure I felt when teaching the kids and I surprised myself in my ability to think on the spot and be responsive to the children and teachers.

Having to plan a 45 minute activity to ensure that it wasn't too long or too short was very difficult and due to all of us never having presented anything we didn't quite understand how difficult it was going to be but after presenting the first one we gained confidence in teaching and I think it reflected in how our other activities went after the first one.

I think that it is a great experience. I felt that it was well explained and thought out. We felt comfortable to ask any questions which was encouraging.

Overall an excellent project that both sets of students gained a lot from. I would recommend it.

It was Brilliant!!!!

Case Study 1

I was chosen to take part in SPLATS by my head of chemistry, having shown a great interest in chemistry and sciences during my GCSE studies. Initially we were taught the many activities that we would be teaching the year 5 pupils. These ranged from practical activities such as 'candle dipping' and 'wind up car making' to more theoretically based activities such as the formation of the solar system.

We were then put into teaching teams of 3 and over the course of 2 days gave lessons to classes of year 5 pupils from surrounding schools in the local area.

Through being involved in SPLATS I have been inspired to focus my sixth form education towards becoming a chemistry teacher. I would highly recommend SPLATS as it has both improved my teamwork and confidence skills whilst being a thoroughly enjoyable experience.

Alfie, Y10, Queen Elizabeth Grammar School

Case Study 2

The first session of teaching the children was very memorable because we had no idea what to expect and it was a challenge at seeing how we were able to apply the knowledge Martin had taught us. It was the first time I had ever done anything like that so it was a great opportunity to see how well I was able to apply the knowledge

The team

as well as making sure the children could clearly understand what we were explaining.

All the sessions ran very smoothly and we worked well collaboratively throughout all the sessions and had a very positive experience teaching. And although our confidence grew as we did more sessions I think it surprised me how we did begin we a decent level of confidence which enabled us to be able to teach well.

I would definitely do it again, it was a great opportunity and I was able to learn and develop a lot of skills and it gave me an insight into the teaching profession.

Amber, Y10, Wakefield High School for Girls

Case Study 3

It's hard to choose just one moment out of the many memories I made. I think probably it was seeing how interested the kids were and how they remembered our names for the afternoon sessions too.

I was most surprised by how tiring it is to be a teacher – by the end of the day I was sure my legs would fall off. Even more surprising was that I was still enthusiastic to keep teaching the next day!

Of course I would do it again. I think I was a bit sad as soon as it was over and I find myself wishing it was longer … even though I know I'd be knackered by the end of it. I'm not sure I'd want to do teaching if not for having this experience, as before just the idea of being with children all day was enough to turn my blood cold.

Sarah, Y10, Wakefield High School for Girls

Acknowledgement

All photographs were taken at a SPLATS event in Wakefield and appear with the permission of Wakefield Girls High School and the Queen Elizabeth Grammar School.

Martin Wesley is one of the three working directors of Sphere Science (since the company was formed in 2000) and has run workshops in hundreds of schools across the UK, practical science courses in many universities, CPD and INSET courses and both large-and small-scale family events for the public. This has also involved working in both Nigeria and Thailand supporting teacher-training.
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