

# Wonderland Sheffield



**Education programme.**

**2 days of art, science and inspiration.**

**Observed and documented by Kamina Walton, photographic artist.**

## Introduction

*Wonderland* Sheffield offered an ambitious and highly accessible exhibitions programme in public spaces across the city during June and July 2008. It also provided the opportunity for children and young people in local primary and secondary schools to engage with the work, discuss issues related to the exhibition with Professor Tony Ryan, and have hands-on experience of a range of mind-bending science experiments involving dissolving plastics and stretchy polymers with a host of scientists, chemists and PhD students.

I attended, photographed and thoroughly enjoyed two of these days in early July, the first with a Year 6 class from St Wilfrid's C of E Primary School and the second with 85 young people from a number of the city's secondary schools.



## Magical Mystery Tour 2 July '08

29 x Year 6 children from St Wilfrid's C of E Primary School  
3 teachers plus 1 parent

I travelled with a class of Year 6 children from St Wilfrid's Primary School on a mystery coach tour around the city. The aim of the day was to give the children first hand knowledge of the *Wonderland* exhibition with Professor Tony Ryan as our guide. The first stop was Meadowhall Shopping Centre on the outskirts of town. The children already had been introduced to the exhibition via the web site and the aim of the day was to encourage them to think about plastics, sustainability of our planet and the way forward.

Tony has a huge amount of charisma and relates brilliantly to children and there was great excitement about where they were going and what they were going to see. Once at Meadowhall the children were transfixed as they watched the fabrics from the dresses dissolve in the huge fish bowls.

While looking at Mabel's Frock one girl commented:

"I think it's about the environment and how it reflects it with all the leaves and stuff. I like all the colours and the top of it where it looks like a beehive. It's good coz when they walk past lots of people can see it, and there's lots of clothes shops here." Jemima, Year 6

When asked at the end of the day what the most memorable thing had been for them almost every child exclaimed "The dresses!"



**Groups gathered around each bowl and a great amount of discussion was generated.**



**“It’s getting destroyed like monsters.  
The water’s ripping away at the dress -as if it had invisible piranhas in there.”**

- “I liked the way they dissolved and I liked the designs coz they were really cool.”
- “When they dissolved they swam round.”
- “Well it’s really exciting because you didn’t really know what types of colours would come out of the dress, and it sort of just fell to the bottom and when we went back later all the water was a different colour and stuff.”
- “At first I thought when my mum chucked my clothes away I didn’t think about it – just get some more... I want to save my clothes now and give them to my little brother, even if they are out of fashion – or I could give them to my cousins. I think it’s a brilliant idea, using the biggest Mall in Sheffield. Lots of people will see it and it will make them think. I feel really privileged to go and do this.” George, Year 6



**Tony explains the dress-lowering wheel mechanism.  
“It’s like moving up a gear in science – stepping up a level,  
so you feel like you’re doing A Level work.”Year 6 boy**

We spent an hour in Meadowhall and the children, without exception, were engrossed throughout that time. There were opportunities for them to dissolve different coloured fabrics in the bowls, to see some 'firework' buttons explode, and learn about the mechanics of the scaffolding structure that lowers the dresses into the water. They were making connections with environmental issues in their homes and their locality, there were discussions around consumerism, and they expressed their responses to the work through poetry, numeracy, art and science.

We moved from the dresses at Meadowhall across the city to the site of the dissolving bottles at the Botanical Gardens. On arriving and seeing the first sign for *Wonderland* one child exclaimed:

"Wonderland is everywhere. It's Alice in Wonderland's gardens.  
Look for the white rabbit."



Again, Tony held his audience captive while explaining the science behind the dissolving bottles and their potential for recycling, and re-growth. He managed not to be phased by the fact that at the same time he and the children were being filmed for CBBC's *Newsround*.

After listening intently and studying the display the children had a lot to say:

- "I think if you could make a bottle disappear it would just be amazing, coz if you just think of all these bars that have loads of bottles every night, just to pour some water on it and for it to vanish would be amazing."
- "I think it was really interesting – spectacular! It's not every day that you get to see bottles turning into plants and stuff – it's just weird!"

When asked if they learnt anything like this in school they replied:

- "It's different... it's a lot more exciting. It's not just like a normal lesson, it's something really interesting and unusual."
- "No, well we learn about dissolving and evaporating and things like that in science lessons, but we don't actually do it physically."

I also asked them at the end of the day if there was anything that could have been done differently and the only suggestion was to "Give us a sample of the stuff that dissolves so you could go home and show it to your parents."



### **Chemistry day at the Edge, University of Sheffield 7 July '08**

85 x Year 8 students from 3 Sheffield secondary schools:

King Egberts School

Notre Dame High School

Birley Community College

6 teachers

Year 8 students from three different secondary schools were invited to The Edge, Sheffield University's conference venue, to participate in a day of hands-on science activities relating directly to the work developed through *Wonderland*. The aim was to give the students the opportunity to gain first hand knowledge of the *Wonderland* project and to make them think about science in a different light and reflect more on the way they live.

Tony Ryan and colleagues gave a presentation on the development of *Wonderland*. They explained how by working together Professor Helen Storey, Tony Ryan and colleagues from the Sheffield Polymer Centre have been able to use their different backgrounds and knowledge to spark these new ideas and discover practical solutions to current ethical issues such as the dissolving plastic bottle.

Young people didn't have to wait long for the opportunity to try out some hands-on activities as, while explaining the science behind *Wonderland*, Tony had them stretching rubber bands across their lips to learn how polymers hold and release energy (known as the 'configurational entropy of the polymer').



Towards the end of the morning students were invited to create their own postcards expressing how they thought they might save their futures in relation to what they had learnt that morning. The winning submission is being used as additional publicity for *Wonderland's* next and final destination, Belfast, and will be included on the *Wonderland* website.



**The winning postcard entry**

The afternoon activities provided great support to areas of the Key Stage 3 Science curriculum, particularly in relation to the modules on 'Compounds & mixtures' - recognising and distinguishing between chemical change as a process in which atoms join together in new ways, and 'Heating and cooling' where students are learning about mechanisms of heat transfer and the expansion and change of state in solids, liquids and gases.

When asked if they felt that they had learnt anything new from the day the response was strongly affirmative:

- "Yeah, loads. We've learnt about polymers and that sort of stuff. Most of it's like really good, it's all really good."
- "You learn a lot better by doing practical things, that's what this has been. We're learning by doing the practical experiments."
- "It's a lot more interesting when it's creative."
- "It's been very good – interesting yeah, it's a new experience. It's something completely new, I've never really investigated something like this before."
- "I think it's good the partnership between science and art that's been created. I just like the way science can become art in a way."



**Students experience making 'goo' polymer chains. They also decorated gloves made from polyvinyl acrylate – the material used for Wonderland's dresses.**

The day was a great success with students engaged, excited, animated, working collaboratively and sharing experiences. Learning was heightened because of the opportunity to try experiments themselves and play with materials.

### Summary and suggestions for going forward

Between London and Sheffield *Wonderland* has proved its huge educational potential for both primary and secondary students, teachers and artists alike.

By working imaginatively across a city to make the work accessible the project has developed further in Sheffield, and children and young people have been made aware of their environment and creative approaches to ethical and environmental issues in new and challenging ways. Maybe the next step could be to try and engage children and their parents in order to reach a wider audience and extend the learning from *Wonderland* in the future.

There was a real improvement with the presence of 'invigilators' at Meadowhall to explain the significance of the dresses. I watched them as they engaged the public in the work, gave them the opportunity to ask questions and thus gain a better understanding of the concepts behind the project. It was a challenging environment to work in and many might argue that this kind of conceptual presentation is better placed in a gallery context. But by offering *Wonderland* out in both Meadowhall and the Botanical Gardens there is no doubt that the project reached people who would otherwise not have encountered the work and been effected by it. The presentation in the Botanical Gardens was beautifully conceived.

The siting that was less successful was the floor vinyl at Millennium Galleries. Apart from the vinyl there was no information about *Wonderland*, no publicity or maps showing where the main venues were. In fact you could almost have missed it as it blended into the architecture of the building.

It would be interesting to track the impact *Wonderland* has had on some of the young people involved in these workshops and education days, to see if it is possible for a one-off creative experience to have a lasting impression on participants. Many of the children and young people I met in both cities said the experience had changed the way they thought about their environment - and science – and that they would think differently about recycling in particular from now on. In London the most important and striking impact was on teachers realization of the value of young people's ideas and learning alongside them. Very little long-term tracking has taken place around the impact that creative projects might have on children and young people, but as the place of creative thinking in education regains its foothold there is some fascinating research to be done.



**Kamina Walton**

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