Rolls-Royce Science Prize Finalists 2017-18

Boston West Academy

April Diary

Our project is about 'Establishing Firm Scientific Foundations in Foundation Stage'. An explicit focus on Science will not only improve children's engagement with the subject and promote an enthusiasm for it, but will be the tool to impact on Communication and Language too. Children and parents will work together to see how Science is relevant in their everyday lives, promoting an enthusiasm for the subject both at home and at school, ultimately setting them off on a scientific journey that lasts beyond their first years at school.

Amanda Pickwell

Having a few weeks off over the Easter holiday has naturally given us time to stop and reflect on the project so far, the things that have worked really well and where we go from here. Although the project has a timescale in when we have to report and share our findings, the project itself was never intended to be completed and finalised by a specific date. The actions that have been identified to work well in the project and have a positive impact will continue, with the project then evolving over the coming year and beyond. The attitudes of children and parents as well the positive impact on data so far has shown the successful impact of the project and so we will now consider how to ensure this continues to be in place for next year's EYFS children. More importantly, we want to make sure the project is built upon as this year's cohort of children move into Year One and beyond with parents still being encouraged to take an active role in their child's Science learning at home and at school. I will be meeting with the Year One teachers later this month to begin to plan what this will look like for next year.

The pre-school Science afternoon went well with the pre-school children, reception children and Year 6 working together in groups of three to help model and encourage the communication and language. The impact of that afternoon has seen the majority of the parents trying at least one of the experiments included in the pack at home with their child, several being uploaded onto the Pre-Schools on-line learning journeys. It was commented on by their staff that 'the activities really engaged the children and made them want to talk about it'. The pre-school staff are now going to focus on one of the activities (from the pack that we gave all children) a week, allowing their children time to explore scientifically whilst modelling and encouraging their Communication and Language skills. This could have a big impact for us as a school in that we would then have children starting with us with an interest and enjoyment of Science, which could be built upon further. I am excited to see where this development will go and will keep in touch with the pre-school this term to offer our support with this.

Science has become really high profile within the Foundation Stage classrooms over this year for both adult led and child initiated learning. Our grounds offer a multitude of Science opportunities but on reflection, the one area we had not thought about was the Foundation Stage outdoor area. Although there are planters and natural areas, the Science in the classrooms has had such an impact that we wanted to develop permanent child-initiated learning opportunities outside too. Although not part of the original project, we are currently developing a large area of that outside space. Children will then be able to freely access a large fully equipped STEM shed, a Science based reading corner where we can provide a weatherproof space for both non-fiction and fiction books based on a Science theme. There will also be a new bug hotel and some permanent Science vocabulary relating to the natural world. We are still awaiting delivery of several items but we are keen to set this up with the children, as not only this year's children will benefit from this, but every cohort from now onwards.

Becky Storey

April has been a month of reflection, and one in which I have considered the impact of the Science project on myself professionally, the children, and other parents.

When I was first asked to be part of the Science team, I was both excited and apprehensive! From the perspective of an upper KS2 teacher, I had absolutely no idea how Science worked in Foundation Stage. I have learnt a huge amount about how the children are allowed to explore independently, and how to promote their thinking through carefully targeted questioning. It has taught me about following the lead of the children, and facilitating their curiosity by providing the things they need to further their investigations. This in turn, has impacted on how I have allowed my son to explore his own scientific ideas at home; acting as facilitator, rather than leading his thinking; allowing him to explore and investigate, knowing that sometimes his ideas will work and others they wouldn't (but valuing the fact that there would be learning, whatever the outcome of his explorations). I now feel that I'd like to spend more time working with the younger children, as I can see the endless, exciting, scientific learning opportunities that could be provided, to stimulate their curiosity.

I have already commented on the impact the project has had on myself, as a parent, and interestingly, there have been some similarities for other parents too. The two key influences that the Science project has had, for the parents who I have spoken to in depth, are that they have learnt to let their children try new things / their own ideas, even when they knew the outcome would not necessarily provide what we as parents would consider to be 'the right result'. It has also given them the confidence to try scientific activities that they would not have attempted before, because they felt it was 'beyond' their child. They have learnt that even the most basic observations made by their children, could be the foundations for future learning, and that while the children may not at this stage fully understand what they are experiencing, they are learning what it means to explore, observe and recognise simple things, which may be understood at a greater level, at some point in the future.

I have spent time talking to the 12 sample children, with whom I conducted a baseline assessment at the beginning of the academic year, to consider the impact of the project so far.

In November, the children's responses to my baseline assessment questions were very limited, with only a couple of children saying they had heard of Science, and none being able to tell me anything else about it. Five months later, and their responses were considerably more detailed. 67% of the children were able to verbalise, in varying ways, what Science is, including things like;

"When you do experiments."

"When you see what happens."

"When you find out things you don't know."

Although not all of the children could verbalise what Science is, they were all able to give examples of Science activities they'd participated in at school, and did so, in many cases, in great depth. This demonstrated that, while not all could say exactly what Science is, they knew that they were experiencing it within the classroom environment.

Some children simply recalled an experiment or two that they'd participated in. Others could recall several examples and described in detail the outcomes of their investigations.

'M' described a number of experiments, and used some lovely ideas to verbalise what had happened;

"When you put the tablet in, the food colouring came to life."

"The Mars Mouse flight was really high with the big bottle."

"The colour came off the Skittles and the water captured it."

'M' also demonstrated how he was able to link his learning within the classroom, to his wider knowledge. When talking about an investigation to do with ice, 'M' said, "You can get ice from cold places like the bottom of the world, Antarctica, and the top of the world."

There is also evidence that the children questioned have been exploring / want to explore their own ideas, stimulated by activities introduced in the classroom.

'An' – described how she'd like to mix soap with poppy petals, to see if they would melt. She also wanted to know what would happen if she put chewing gum into Coke.

'Al' – What would happen if I mixed, water, food colouring, oil and glue?"

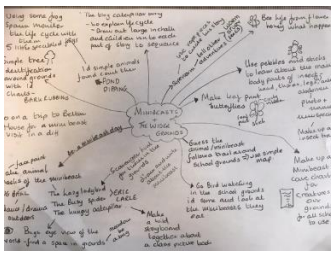
'H' – Described a variety of things she would like to try mixing, including butter and milk / milk and flour (she predicted that this would, "Turn pale").

'M' – Had tried putting felt tip pens in water, because he thought it would make the colour come out, but discovered that the pens didn't work anymore.

During my questioning of the sample group of children, others would occasionally join in a conversation. One child in particular, 'W', spoke very eloquently about how to help animals escape from some ice (an investigation that had been set up in the classroom). The child being questioned at the time, 'F', talked about cracking and smashing the ice, whereas 'W' said, "No, you just needed to put the ice in your hands. The warm from your hands would melt the ice." 'W' then wanted me to look at his dinosaur keyring, which he told me was made out of metal. There were some magnets close by, and he said he thought it would be magnetic. He went to test his idea, then proceeded to show me other things that were magnetic. This demonstrated two things;

1. The sample group are just that, and do not necessarily represent the depth of knowledge held across the entire cohort.
2. Other scientific knowledge is held and can be demonstrated, but did not come up as part of my questioning.

Finally, I found that the children used a good range of words, to describe their investigation observations; e.g. pour, mix, explode, fiz/fizzy, bubbled, popped, flew, capture, rainbow of colours, melt, crack. This demonstrates the development in their vocabulary, and the use of appropriate descriptive language to verbalise their learning.





Jade Brockington

This week we have started our topic of 'Minibeasts' and have already been exploring the outdoor grounds for various minibeasts! The children fully enjoyed searching under logs and investigating in the plant life whilst also engaging in some pond dipping where we found lots of tadpoles, even bringing some back to the classroom! The children are excited to look at what changes they can see each day after having learnt all about the frog life cycle – even some parents have commented saying their child has gone home talking about tadpoles and frogs! Next week we have caterpillars being delivered for our introduction to caterpillars and butterflies where the children will be developing their technology skills creating an animation of the butterfly lifecycle. Throughout the term we are using the topic and hands on experiences to provide a rich stimulus for writing. We are going to be developing butterfly diaries with the children writing about the changes they can see each week, bee safety posters, minibeasts fact sheets, a shopping list for the hungry caterpillar and a wanted poster for the thief's in 'What the ladybird heard'. Minibeasts have also provided a great stimulus for Maths learning this week with lots of counting butterfly wings in twos, minibeast pattern, as well as estimating the number of minibeasts legs!

We are continuing parents engagement with science through homework, this week's being to go on their own minibeasts hunt at home in the garden or local park to look for various minibeasts. We have also invited some parents onto our trip to Belton House this term where the children will be engaging in a minibeast safari and pond dipping seeing what minibeasts they can find. Utilising our school grounds this term is also a great opportunity to invite parents in to help for different sessions, we have several parents coming in next week to take groups of children out to plant seeds and make minibeast pictures using the natural resources found outside.

Emma Schofield

As we see a new term on the horizon, Foundation staff asked for a web of ideas to develop the use of the wider grounds in the teaching of their Science topics for growing and minibeasts. I considered various picture books that could inspire the children and how the science and links to outdoors could be developed to aid the class teachers with their planning for the term. I then produced two webs that also included ideas for trips linked with the environment and Science to widen and enhance the children's learning.

We have our annual Spring tidy up with parents coming up and will be developing our planting skills further to ensure that our raised beds are filled and the children will develop a clear understanding of the growing cycle. By developing this work in school we hope to inspire our parents to talk about the Science of growing at home and hopefully developing the growing carried out at home. These Eco Sunday clear ups really have a positive outcome with our parents in developing their understanding and awareness of the impact they and their children have on our environment. We include photographs of this next time!

Expenses Update

Total Awarded: £6000

With the Easter holidays we haven't spent any money this month- we are waiting the delivery and instalment of our new Science outdoor area. The remaining money will be spent on making sure it is fully equipped and that any resources we have bought this year are added to, to ensure the project is sustainable over future years. The project will then be able to continue without any (or very little) additional funding

Date	Purchases	Cost
Money spent to date		**£3,631.09**
Total Expenses to date		**£3,631.09**
Remaining Money		**£2,368.91**