

Lumley Infant and Nursery School



How Science Week was used to support teacher CPD



Summary of Content

This is a super, practical example of how staff can be supported in making science progressive, memorable, meaningful, and enjoyable for all!

By focussing on progression within two specific enquiry skills (observing and recording), staff were able to develop strategies to support individuals and ensure they make progress.

Very effective Science CPD that resulted in increased teacher confidence.



What the school says

Science week gave the Science Leader the opportunity to include some “wow” science activities and experiences that the children would not usually meet in an Infant School Curriculum.

It involved all staff in learning about and developing an understanding of where the **scientific skills** they teach and practise fit into the ability and levels of the children in their class / year group.

What we did



We did two days of whole school science *investigations* that involved the same theme, but *differentiated* for each year group by the recording/observation elements.

We concentrated on the *progression of skills* appropriate to different working levels and year groups.

The planning – “Biscuits, bubbles and discoveries”

	Monday 22nd	Tuesday 23 rd	Wednesday 34 th – biscuits!	Thursday 25 th – bubbles!	Friday 26 th
N	New starters	<u>Forrest school based activity</u> Using natural materials to make simple pictures. Use your current topic and encourage children to use sticks, flowers, grass, sand etc. to make a simple picture.	Topic linked: Pirate Pete likes to eat his biscuits soggy, which ones should he buy? Testing a range of biscuits to see what happens when they are soaked in water or milk to find the biscuit that goes the softest / soggiest. Encourage and record the use of language to describe the changes – what happens when the food is left in for a short time, longer time or put into warm water?	<u>Bubbles!</u> Investigating how to make bubbles, can they make bigger, smaller, different shapes? Developing children language and discoveries and discussing the outcomes.	<u>Science and PE</u> Can the tallest person jump the furthest? Put the children in order of height in their bear groups and photograph – develop appropriate language – who is the tallest, shortest etc. compare the size of the children. Using a line, children to jump and record how far they can jump.
R	<u>Forrest schools session</u> Making bird cakes (see KA plan)	<u>Normal (supply)</u>	<u>Pet Dog Biscuits</u> Simple investigation. Someone has bought a new puppy and he can't eat dog biscuits yet! Which dog biscuit would be the best to buy to soften in milk or water so he could chew it?	<u>AM science and PE</u> Can the tallest person jump the furthest? <u>PM - Bubbles</u> Exploring how to make the biggest and best bubble possible! Provide a range of bubble wands, and mixtures to explore, a range of tool such as straws, whisks, spoons etc. Attempt to make a huge bubble with a PE hoop. Encouraging the use of appropriate vocab and making very simple predictions.	<u>Forrest school Session</u> (Linked to RE PSHE, Literacy) Making journey sticks. (see KA plan)
Y1	Supply – as normal	<u>AM – science and PE</u> Can the tallest person jump the furthest? PM – as normal lit / num	<u>Investigation “Which biscuit will make the best “dunker”?</u> Testing a range of supermarket biscuits, predicting which will be the best, looking for simple commonalities with the best ones.	<u>Bubbles!</u> Testing one brand of bubble bath to see how we can make the most bubbles. Try different methods such as whisking, mixing with hands, spoon, blowing with a straw. Comparing the bubbles made.	Activities in both rooms then swap over. <u>Room 1</u> <u>Wow science – lava lamp</u> Task: Floating bugs <u>Room 2</u> <u>Wow science – popping rocket</u> Observe what happens to raisins in a glass of lemonade. Task: Accidental discoveries – coca cola Make a fruity fizzy drink.
Y2	<u>AM – Plastic Milk</u> <u>PM - Accidental discoveries!</u> Making chocolate chip cookies, investigating the best kind of chocolate to make the cookies (linked to the accidental discovery by Ruth Wakefield that “semi sweet” chocolate makes the best cookies as it doesn't melt easily.)	<u>AM wow science – violent volcano</u> <u>PM – science and PE</u> Can the tallest person jump the furthest? Test out the theory, asking children to make a simple prediction. Can they find any patterns between children height and the distance they can jump?	<u>AM – wow science – auto inflate – yeast / pop</u> <u>Investigation “Which biscuit will make the best “dunker”?</u> Testing a range of supermarket biscuits, predicting which will be the best, looking for simple commonalities with the best ones. Measuring how long they can be “dunked” before they go soggy.	<u>AM – wow science – fizzy fountain</u> <u>Bubbles!</u> We have been emailed by a new bubble bath company and want us to be secret spies. Test a range of bubble baths to see which one makes the most bubbles to see if there is the best. Keep the test fair by using the same quantity of bubble mixture, and decide which method to use to make the bubbles and how we will measure and compare them.	<u>Science Stay and play</u> Drops on a penny Whoopee cushion blower Fingerprints Milky planets Floating flowers Dancing cereal Slime time Making butter Picture spinner Setsume sink or float Straw oboe Moving fish Odd one out! Sucking power! Paper plane challenge Making bath bombs

A Whole School Investigation – Bubbles!

This planning grid was adapted from an idea the science Leader gained during her attendance at the “Effective Practical Work and Enquiry” course in York. The planning grid clearly shows the progression of skills appropriate to different working levels and year groups.

Impact:
In terms of staff development, the planning of progression helped staff to focus on the development of enquiry skills at an appropriate level for the children in their class. Looking at the methods of recording and focussing on what is appropriate to match up with children’s maths skills again helped staff to see their place in the development of enquiry skills . It also highlighted the importance of being aware of children’s ability levels in other curriculum areas that are used in Science.



Bubbles!

Progression Planning Grid

Level / Year	Investigation	change	Observe / compare / measure	Present data
N Pre NC	Investigating how to make bubbles, can they make bigger, smaller, different shapes? Developing children’s language and discoveries and discussing the outcomes. Photographic and annotated evidence.	Object / property	Direct comparison – e.g. bigger smaller, more / less, shapes	Observations, verbal presentation of ideas, photographic evidence, possibly pictorial (drawn by the children) or even simple written form (more able Rec?)
R Pre NC	Exploring how to make the biggest and best bubble possible! Provide a range of bubble wands, and mixtures to explore, a range of tool such as straws, whisks, spoons etc. Attempt to make a huge bubble with a PE hoop. Encouraging the use of appropriate vocab and making very simple predictions. Possible record their thoughts in written or pictorial form (more able)	Object / property	Direct comparison – e.g. bigger smaller, more / less	
Y1 L1-2	Testing one brand of bubble bath to see how we can make the most bubbles. Try different methods such as whisking, mixing with hands, spoon, blowing with a straw. Comparing the bubbles made each time. Using the element of time (sand timer to keep the test fair, discuss ways of recording the amount of bubbles made (photographs to compare, size using non-standard units, how much of the bowl they fill?)	Object / property relating to object	Uniform non-standard and measuring instruments – e.g. sand timer, cubes	Pictorial, photographic, written, verbal explanations, simple tables and bar charts.
Y2 L2-3	We have been emailed by a new bubble bath company and want us to be secret spies. Test a range of bubble baths to see which one makes the most bubbles to see if there is the best. Keep the test fair by using the same quantity of bubble mixture (measured in ml), and decide which method to use to make the bubbles (blow, whisk, stir, agitate), and mixing for the same length of time Discuss how we will measure and compare them. (Using standard measures – for example how far in cm do the bubbles come up the jug / bowl? Present evidence in table, graph form	Object / property relating to object	Standard units – timers with minutes / seconds, reading scales to the nearest division	Bar charts, tables, written, photographic

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Impact: progression of enquiry skills are very evident in the whole school investigation and can be shared with staff to help their knowledge and development of skills carefully matched to children's level.

Nursery children investigated different methods of making bubbles. The nursery teacher discovered that many children struggled to shape their mouths and blow bubbles so they investigated different ways – using brushes on the yard made lots!



Reception using different shaped wands to investigate how to make the most bubbles. Owen found out that a sieve worked well because lots of little bubbles were made. The children discovered that no matter what the shape of the wand, bubbles are always round.

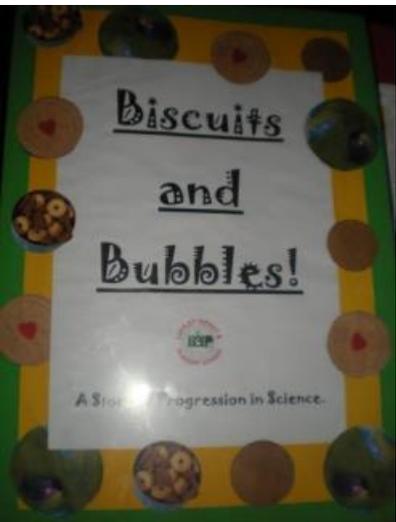


Year one extended their enquiry skills by predicting which method of making bubbles would be best. They chose to try three methods – whisking, stirring, and blowing. They all began making bubbles at the same time and stopped when the sand timer had ran out.(beginnings of fair testing)



Keeping it fair, making predictions, and finding our own way of making and testing each bubble bath. Year Two investigated which bubble bath was the “bubbliest” after we had an email from a new bubble bath company who wanted to know if theirs was the best. They used their sense to make simple predictions such as “Number one will make more bubbles because it is a thinner liquid” they ranked them in order of which they thought was the best.





The Science Leader used observations, comments and examples of recorded work at the end of the investigation to compile a big book "Biscuits and Bubbles - A story of Progression in Science". Looking through the work from each year group progression of scientific language, investigative and enquiry skills, and methods of recording are extremely obvious.

Impact:

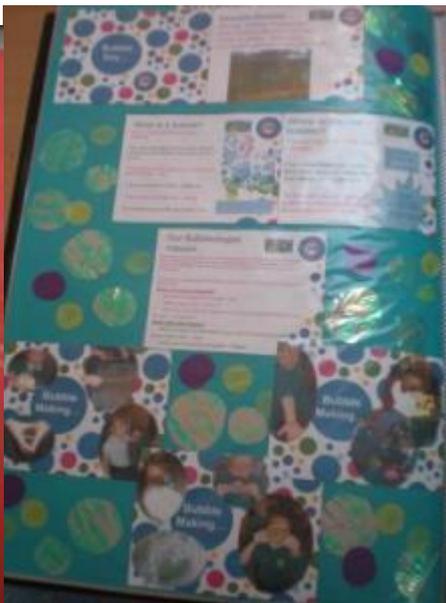
The work has been shared with all staff and they have commented on how obvious progression is in scientific skills between age and year groups.

It has helped staff to have a better understanding of where the level of the children in their class fit in terms of enquiry skills and how to differentiate investigations for more or less able children and meet their needs. This will lead to a planning scrutiny by the Science Leader to ensure skills progression is at the appropriate level for each year group.

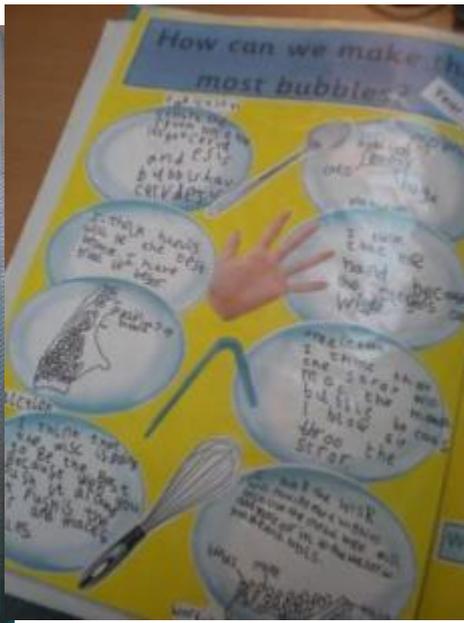
Nursery – annotated photographs show children’s ideas and responses



Reception’s observations in quote form



Year One’s predictions



Year Two – ranking the bubble types

Ranking	Bubble Sort Number	Reason
	1	Because it was the sickest.
	3	Because its like Jelly and a lot of bubbles
	2	Because its like it is the most ranges



The impact for our school was

All staff were clearly able to see where the science they teach fits into the bigger picture and how recording skills are built up each year.

Our NQT described the impact of science week...

“During our recent Science Week, (Science Leader), showed me where I fit as part of the whole school progression in Science. This was really useful as I was able to reflect on engaging the children as well as seeing the range of recording that would be appropriate for Year 1 children. Science Week provided the opportunity to really wow the children and get them excited about Science.”

Science Subject Leaders Comments

All our staff from Nursery to Year 2 found this extremely useful and it contributed to their CPD for Science.

I found the internet very useful to help me research my own understanding of the “Science of bubbles”.



What we will do next

- We would certainly repeat this activity, probably focussing on a different element of “Working Scientifically” within the Science Curriculum 2014
- Next time, I would ensure staff are involved at the planning stage, so the learning is more focussed on their needs.