

Evaluation of the ENTHUSE Partnership programme (2014-17)

Case Study: Woodford Halse iMAT Partnership

Background

The Innovate Multi Academy Trust (iMAT) is a group of 4 village primary schools in the Northamptonshire countryside. For two years prior to joining the ENTHUSE programme the schools have collaborated to develop the teaching and learning of literacy and maths. The partnership wanted to boost attainment in science and raise its profile, making science 'part of the identity' of the schools. The Woodford Halse ENTHUSE Partnership began in September 2016 as part of the fifth ENTHUSE cohort.



The Woodford Halse ENTHUSE Partnership built on the pre-existing Innovate Multi Academy Trust (iMAT) partnership.

“Since the demise of Science SATS at Key Stage Two, the priority for science has been lower in comparison with the other two core subjects. Using this project, we are keen to redress the balance...”
Partnership Action Plan

Context

A key aim for the partnership is to improve the levels of attainment and progress of all year 5 and 6 pupils in science. At the outset of the project, however, there were no year 5 or 6 teachers with science qualifications beyond GCSE and limited experience of working with a focus on scientific enquiry. While the iMAT had a collaborative relationship based around other subjects, the profile of science was low and there was little science collaboration either within the iMAT or with external organisations or individuals.

The schools did a staff skills audit at the outset which identified that teachers needed more input for ideas and activities, as well as the skills and confidence to adopt a more practical, enquiry-based approach to science learning. Pupils' attainment in the targeted year 5 and 6 groups was around the national average. Yet, when the schools conducted a baseline pupil voice survey, they found that many pupils were unsure of what science actually was and had a limited understanding of its real-world value and applications. The schools planned to develop the skills of their teachers through continuing professional development and learning (CPDL) and through establishing new links to local STEM business, industry and other organisations. They also decided that each of the 4 schools would apply for the Primary Science Quality Mark (PSQM) bronze science award to provide additional impetus and profile for science.



Impact on pupils

Although yet to complete the first year of the partnership, early indicators suggest some significant progress in science attainment, especially for pupils with below average attainment. Outcomes for years 5 and 6 (age 9-11) are a focus for ongoing evaluation of the impact of the partnership. Baselining activities also identified boys attracting pupil premium funding as a group for particular attention and monitoring.

Parents are reporting that their children are excited by science and come home talking about what they have learnt. This is an early indication of impact against a key partnership aim to make science 'come alive' and make it more practical and engaging. Teachers and science co-ordinators across the partnership schools visited also commented that pupils are more aware of the value of science and expect this to be reflected in future pupil voice surveys.

"Children have responded very well to the enquiry approach and are making faster progress because of higher motivation...There is a strong buzz about Science as a result."

Partnership Qualitative Evaluation



Whole-school science assemblies and demonstrations from Atomic Tom and Cosmic Chris were so successfully that take up of after-school science clubs jumped to over 50 children.

The partnership has also worked hard to help pupils understand the value and applicability of science. Many trips and visits have taken place or are planned including a trip for children attracting the pupil premium to visit a local university, where they extracted DNA from a strawberry; visits from local businesses such as an electrician and a visit from a family support worker who helped pupils investigate the sugar content of fizzy drinks. Pupils have also learnt about parents who are scientists and the applicability of science to many jobs.

A rich, enquiry-based approach to science was evident across the partnership schools. During CUREE's visit, Year 6 children across the schools were testing solar-powered buggies which they had made and investigating their own questions such as whether the intensity of the light or terrain matters. One class were trying to find out whether covering the solar cell with cellophane made a difference and whether there were differences by the colour and opacity of the cellophane. This investigative approach extended right down to the youngest children. Reception children described their investigation into helping the gingerbread man cross a river using bridges they designed and made.



Across the partnership, displays were filled with children's enquiry questions, scientific explanations, examples of their work, photos of practical science investigations and scientific vocabulary.

Impact on Teachers

Teachers have developed skills, ideas and confidence to allow children to take a more practical approach and to investigate their own scientific questions. Prior to the partnership science teaching often heavily relied on presentations, videos and prescribed experiments.

Teachers are also making more extensive and targeted use and application of mathematics in science, another area of focus. The effective use of mathematics to measure, record and present data was evident in pupils' work and the lessons observed during the evaluation visit.

Representatives from each school attended CPD from their local Science Learning Partnership in Northampton. External CPD has also been coupled with in-house training from the partnership leader, and embedded throughout the schools through approaches like lesson study and in collaborative planning.

There have also been opportunities to develop leadership in STEM subjects. To have maximum impact, external CPD was then cascaded to all staff by the science co-ordinators. Opportunities to work collaboratively across schools and key stages, handover of responsibilities (such as running science clubs or science co-ordination) and working with Newly Qualified Teachers during the first year of the partnership have built capacity and developed leadership. Staff have also benefitted from joint planning of science into thematic curricula and from sessions designed to identify links between STEM subjects and other curriculum areas, numeracy and literacy in particular. Professional development has also extended to support staff who – as well as teachers - have been using 'ReachOut CPD' online courses to refresh subject knowledge on current topics.

“Teachers blog about their classes’ science activities and use the iMAT Google site to share ideas and resources. It has also been possible for pupils to share the results of their scientific investigation with other pupils across the ENTHUSE partnership.”

Impact on Partnership Schools

The profile of science has been raised across of the partnership schools. This is supported by the commitment from all schools to achieve a Primary Science Quality Mark (PSQM) bronze science award. Schools have all agreed to contribute £3000 over year 1 and 2 to the partnership as well as paying for the PSQM. Funding has also been raised from parents for optional after-school science and funding has been sourced from businesses for science resources. Activities, funding and buy-in from all stakeholders are seen as complementary, providing impetus for improving science teaching and learning and creating sustainable collaboration.

“There is much more collaboration [within the iMAT] now. Real collaboration right on through with shared aims and objectives ... It’s quite exciting”

Science co-ordinator

Partnership Professional Development Activities:

- joint planning
- network meetings
- external CPD sessions
- assessment moderation
- lesson study
- coaching and mentoring
- attending an Association for Science Education (ASE) Conference.

Key Successes

Opportunities for Sharing and Collaborating for Children and Adults

The ENTHUSE partnership greatly improved the collaboration previously established through the iMAT by enabling the schools to plan joint science events and lessons, including children sharing results with others across the partnership. Joint working enhanced the value of existing activities such as moderation as it was possible to see the results of the same activity across the partnership and for teachers to learn from each other's experiences. There has also been chance for lesson observations across schools, team teaching and joint planning. One collaborative activity from near the outset of the ENTHUSE partnership was to develop a list of common principles for science linked to the PSQM. These joint principles were then displayed in all classrooms and the principles were clearly evident during the CUREE evaluation visit. Building on existing collaborative structures in the iMAT and sharing ideas and working collaboratively online allowed cost-effective and sustainable approaches to collaboration to develop.

As well as the partnership leader and science co-ordinators, a key supporter of the partnership has been the Woodforde Halse school governor who has a background in science and a director with Association for Science Education (ASE). She played a key role in writing the partnership action plan, attends staff meetings and sources funding and opportunities to support teaching and learning across the partnership.

Ongoing and Future Plans and Aspirations

Now nearing the end of their first year the partnership is looking for further sources of funding, looking to establish further links with the community and local businesses. They are also looking to establish links with a secondary school and are considering a transition project to support pupils moving from primary to secondary. Initial plans in this area were frustrated by the closure of the local University Technical College.



The partnership arranged a 'Colour Chaos' science week where each class took part in the same investigation and shared the results on the iMAT website. Activities across different year groups included using sorting diagrams and keys to classify Liquorice Allsorts by their colours and properties; an experiment into the water solubility of skittles and how factors such as water temperature or acidity affected this (left); an experiment in which ice cubes were left to melt on different coloured pieces of paper; and using colour spinners, blacked out room and prisms to investigate light and colour. Pupils spoke to the CUREE researcher with great enthusiasm and understanding about what they had learnt.

"The skittles experiment was very fun and we had a great time doing it. One day can we do it again?"

Year 4 Pupil