

Evaluation of the ENTHUSE Partnership programme (2014-17)

Case Study: Churchend Partnership

Background

The Churchend ENTHUSE Partnership is a partnership of 5 primary schools in Reading, Berkshire, led by Churchend Primary Academy, a teaching school. The ENTHUSE partnership was set up in September 2015 as part of the third cohort of ENTHUSE partnerships.

Prior to the ENTHUSE partnership, Churchend Academy was a finalist entry in the 2014-2015 Rolls-Royce Science Prize competition with its ECOMAD project and winner of the Eden Project award. Churchend school looked to build on this success and actively sought out partner schools to expand science projects and professional collaboration beyond their school. Nearby schools, Park Lane Primary, Moorland Primary, English Martyrs Catholic Primary and St Michael's Primary joined with Churchend Academy to form the ENTHUSE partnership.

Context

The main focus of the partnership has been raising teaching standards. At the programme outset, science attainment in the new partner schools was behind that of Maths and English. Also, there were large differences in skills and confidence in science: one school had two teachers with science degrees, elsewhere teachers had not studied science beyond GCSE. The partnership leader and Churchend science co-ordinator at the outset of the project, Nik Allen, is a trained Physicist with a PhD in Particle Physics and 15 years industry experience in IT and Telecoms. Given this range of experience and expertise in STEM and teaching STEM subjects, existing links with STEM experts and Churchend's status as a teaching school, the partnership was in an ideal position to share expertise and develop teaching through collaboration and schools learning from one another.

The partnership set an ambitious CPD target of 75 hours per year which included a programme of training, knowledge sharing, shared resources, personalised lesson observations and mentoring. Building staff confidence, subject knowledge and addressing individual school needs were all targeted from the outset. There has also been a drive to improve teaching with an enquiry approach and extensive practical work. All of this aimed to raise children's attainment and aspirations, and engage them with practical science and real scientists.

"We will maintain and extend our links with science and industry (STEM) experts, and with local community projects to generate interest amongst pupils and help them understand and visualise what being a scientist means"

Partnership Action Plan



Churchend Academy were a finalist in the Rolls-Royce Science Prize 2015 with the ECOMAD project

Impact on Pupils

The project has resulted in several benefits for pupils including improved engagement and motivation in science and increases in academic attainment, in particular for pupil premium pupils. After 10 months, 70% of children in the partnership agreed that they enjoyed science lessons, up 2% from the previous year. Data from the first 10 months of the EPP shows that attainment improved with the number of children meeting age related expectations or higher increasing from 46% to 51%. Success in lifting pupil attainment has been stronger in two of the five partnership schools as these had not engaged in school-wide science projects and practical enquiry- based learning before and therefore had most to gain. At two schools, the change was 34% to 80% and another was 47% to 67%. 82% of children made or exceeded expected progress in the first 10 months of the ENTHUSE partnership. Data were collected via Pupil assessment tools from STEM Learning, pupil perception surveys across the 5 schools and common summative assessments to assess the impact on pupil attainment.

“[We learnt about] the digestive system and saw acids like bile. We made our own system. We learnt that it takes a long time to digest. When we made our system, it actually looked real!” – Year 4 pupil



Pupils mix oil and water and investigate which materials float above or below each layer in a practical lesson starter.



Pupils launched rockets during ‘Space Week’ (above). There was also an exhibition where partnership schools met together to discuss what they had made/experimented with for Space Week. The children took it in turns to look around other exhibitions whilst others remained on their exhibition stall to teach pupils from the other schools about what they had learnt and made during their project.

The ENTHUSE partnership has been successful in encouraging practical, child-led investigative science. Practical starter activities (see left) are being used to promote scientific discussion and investigation. Pupils in another school wore lab coats and goggles for science, asked ‘what if?’ questions and were given the opportunity to explore scientific equipment – all of which promoted rich discussion and use of scientific vocabulary and thinking.



Use of class project books helped allow a greater emphasis on practical science and investigation

“We received training on using class books which generates a high level of discussion and draws out where the children want to take their learning.” – Science coordinator

Impact on Teachers

Teachers reported increased confidence to take a more practical approach to science and give the children ‘free reign’ to investigate and ask questions with well-designed practical resources. One particularly valuable activity supporting this and thereby having an impact on teaching was training in and sharing of practical lesson activities and lesson starters. Engaging activities inspire pupils and teachers and promote rich discussion and investigation.

Teachers in the Churchend partnership received training from the local Science Learning Partnership and other experts in teaching STEM subjects including from Oxford Brookes. The programme has both targeted and wider-reach impacts on teachers. Twilight training focussed on practical science and accurate assessment. At one point the project engaged 75 teachers and gave them first-hand experience of practical science and assessment strategies. Feedback from the twilight CPD indicates that teachers left ‘inspired’.

“After the meetings and the training that we have had, there been a buzz, [teachers] want to go out and try their ideas, one of the lead teachers has been great at sharing lesson starters to engage the children at the beginning of the lesson, and that had a really big impact on the children” - Coordinator/teacher

Impact on Partnership Schools

Partnership reporting and the external evaluation agreed that the profile of science has been significantly improved across the partnership, with staff and pupils more enthusiastic about science. There has been a high level of commitment from all schools and regular meetings between the science coordinators. Commitment from school leaders has grown as the benefits of the partnership arose.

Schools have maintained and made a rich variety of links and engagement with STEM experts and organisations throughout the project. There have also been succession planning and handover activities, as new teachers take on coordinator roles and newly qualified teachers are involved in the professional learning.

“Over the year, we’ve working in Bracknell Forest Council, Reading University, Imperial College, Reduce Energy Ltd, Kew Gardens, a STEM ambassador and local conservation groups to expose children to the life of real scientists” - Partnership Qualitative Report



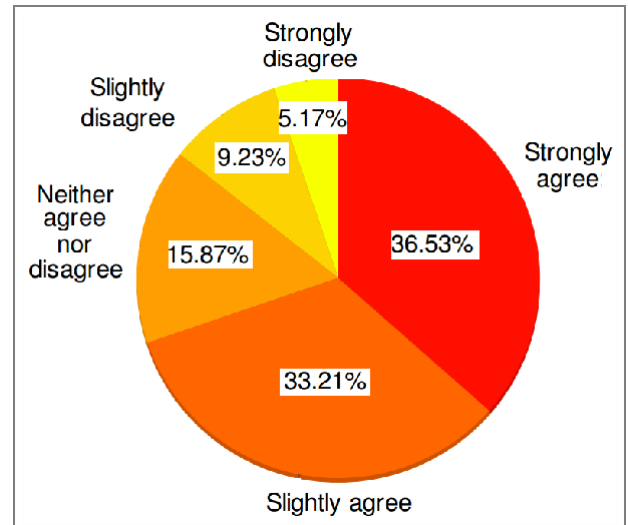
As a Teaching School and the leader of The Reading Teaching School Alliance, Churchend Academy has been able to spread professional learning widely, engaging with around 20 to 30 other schools.

Key Partnership Professional Development Activities:

- lesson observations across schools
- an in-house training programme from professional STEM trainers
- twilight CPD sessions
- sharing of resources, lesson starters and teaching activities.
- regular meetings and planning sessions
- a lecture programme from Oxford Brookes

Key Successes

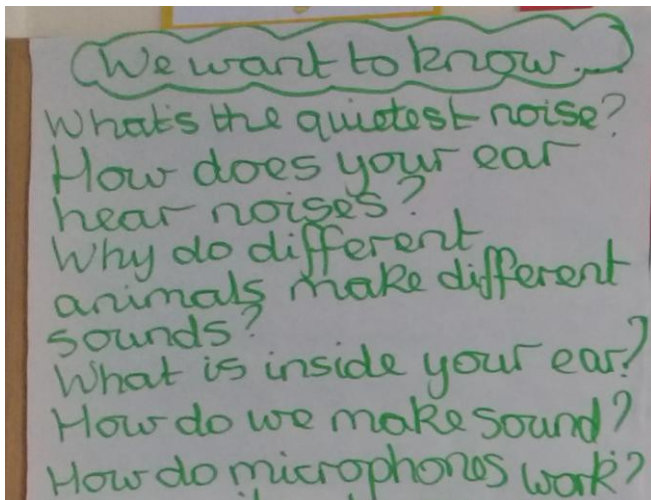
One key success of the partnership has been to increase children’s enthusiasm for (see right) and aspirations in STEM and help them understand the link between classroom activity and future careers. One initiative was to hold a ‘speed networking’ session with STEM Ambassadors from a range of STEM backgrounds including electronics, computing, chemical engineering, chemistry. Pupils spoke to each ambassador about the link between STEM subjects and their career. Ambassadors also spoke about their own school experiences in STEM subjects and school more generally to help the children see that they too can pursue STEM careers. This is one of many opportunities children have had to engage with ‘real’ scientists.



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Ongoing and Future Plans and Aspirations

As the partnership develops, they aim to continue to move from prescriptive and pre-designed experiments to child-led practical enquiry, formalising the enquiry approaches and developing experience and expertise with the use of practical equipment and in supporting children’s investigation and knowledge. Other areas for partnership development include building capacity and expertise in science assessment, especially to capture rich scientific investigation and making links across curriculum, building skills to support science in mathematics and literacy for example.



Children created their own questions to explore during their topic on sound (above). The whole class then investigated how sounds were made using musical instruments and other materials.



Year 6 Pupils at Churchend Academy building wind turbines to generate electricity. ‘Hands-on’ approaches to science like this were evident across all of the partnership schools.