

Working in Partnership with AstraZeneca

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ENTHUSE Partnerships are a two-year collaboration between STEM Learning, a funder and usually 6-10 schools or colleges. Each Partnership works with pupils, their teachers and subject experts to increase attainment and raise aspirations for STEM careers. This is the story of our partnership with AstraZeneca...

An ENTHUSE Partnership with AstraZeneca is inspiring primary school children to get excited about STEM subjects through fun projects like making burglar alarms to catch Santa.

"The argument behind the Partnership was the strong connection between up-skilling teachers and the knock-on effect on STEM uptake in schools."

AstraZeneca - the global science-led biopharmaceutical company - are keen to get in at ground level and help encourage our scientists of the future.

And this two-year Partnership through STEM Learning was an ideal opportunity.

The company's funding paid for sets of programmable controllers that the children used to create alarms to detect Father Christmas. And the mini panels, known as Crumbles,

can now form the basis of more exciting lessons helping to bring STEM subjects to life.

Schools involved say the Partnership has transformed their provision of design and technology, science and computing through the creation of cross-curricular projects and given teachers a new-found confidence and knowledge in STEM subjects.

Lisa King, external science liaison manager for AstraZeneca, said the company wanted to invest in young people and staff near their Cambridge sites.

"The seeds for this Partnership were planted back in 2017 when a colleague visited STEM Learning in York while he was at the University to deliver an industrial placement talk to undergraduates," said Lisa.

Once the Partnership was agreed in early 2018, science team members from four Saffron Walden schools – RA Butler Academy, Great Chesterford Church of England Primary Academy, Katherine Semar Schools and St Thomas More Catholic Primary School – got together to identify a focus for the grant.



"We have 120 STEM Ambassadors here who all take immense pride in their roles. They have signed up to speak to schools, colleges, staff, science fairs – anywhere they can help spread the word. We feel this is a genuine investment in the future of science."

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Making a difference in STEM education



They voted for engineering with an emphasis on cross-curricular links between science and D&T. And the first project with KS2 classes was to make a burglar alarm.

RA Butler's Liz Cattley, who is lead teacher for the Partnership, said making the alarm called for a range of different skills from computing, problem solving and programme writing to D&T.

"We invested in Crumble Technology for the children's Electricity project," said Liz. "They are super simple controllers the students can programme to make a piece of equipment work.

"It was Christmas term so we decided to make burglar alarms for Santa. We had enormous fun booby-trapping "the chimney" – the classroom was filled with trip wires and pressure pads which would set off flashing lights. The children had to learn how to programme the controllers to turn on buzzers and produce colourful light displays when a circuit was broken with a trip wire or completed with a pressure pad.

Lisa said one of the main benefits of Project ENTHUSE was providing sustained support to students and teachers over time, with CPD playing a major role.

"When the teacher understands a topic more fully they can speak with greater authority and enthusiasm," she said. "They are far more likely to engage their pupils and inspire them."

"There were wires attached to walls and tables and chairs and the children worked in pairs to test them all out. The new equipment really brought the lesson to life.

"Distance sensors have so far only been used by a couple of more able groups as they are incredibly complicated to programme if the children are only introduced to the Crumbles for the first time in Year 6. It has been a good way to stretch them."

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Liz said working through the topic flagged up qualities in some of the Year 6 children that staff hadn't anticipated.

"It was wonderful to see how tenacious some of the pupils became," she said. "When a certain piece of programming didn't work they had to go back and de-bug it by trial and error. They were completely engrossed - totally determined to solve the problem."

Now the schools have their Crumble Controllers - and additional kit like geared motors - they can be used for many more exciting lessons. As they get to grips with the technology, teachers are looking at lesson plans to include moving vehicles – such as Year 5's Forces topic next year - 'detector bots' and a multitude of different games.

"We also plan to start teaching Crumble to Year 4 so they will have basic skills in using the technology and get so much more out of lessons further up the school," said Liz.

And of course teachers benefitted massively from AstraZeneca's funding. The schools involved also plan to help other schools locally, sharing their knowledge and increasing the knock-on effect.

Thirty six members of staff from all four schools were given training sessions by specialist teachers from the local Science Learning Partnership Herts and Essex. Led by schools and colleges with cutting-edge expertise, members team up with teachers and students locally to offer help in STEM subjects.

Bespoke training sessions covered electricity, Crumbles and forces and the result was a huge increase in staff confidence and ability. The forces topic proved particularly useful with plenty of ideas for practical lesson plans.

The primary focus of the ENTHUSE Partnership was to provide Continuing Professional Development for staff, with the added benefit of the "multiplier effect" – train one teacher and reach hundreds of children.

"Gears and pulleys has tended to be a worksheet lesson in school up to now," said Liz. "But next year we will be using the Crumbles to produce a working vehicle that can be programmed to perform a series of actions. It will be so much more exciting and challenging for the class."

The cluster of schools has developed strong links with their SLP over the past year with opportunities to celebrate science in and outside the classroom.

"We have all benefitted hugely in school," said Liz. "We took part in the Big Bang Science Fair – Katherine Semar Schools even won best scientific investigation for their vortex cannons project! It was a fantastic way to promote science and we will take part again this year even if it has to be virtually."

Liz said the Partnership had provided a whole new source of inspiration for the teaching of STEM subjects.

"It's knowing who to contact, knowing what is out there to tap into and then to pass it on to other schools," she said. "The contacts we have made have been very pro-active and encouraging – the way we approach science lessons has completely changed."

Going forward, the schools and AstraZeneca both believe CPD should form a vital part of staff training.

The ENTHUSE Partnership has not only improved the staff and students' enjoyment of their STEM subjects: it has led to a positive impact on results.

Already after the first year of the Partnership, results from a sample of 207 students showed their STEM-related grades had improved by more than 6%. Over a quarter of pupils proved they were capable of study above and beyond what was expected and everyone in the group agreed they were more interested in STEM subjects than before the ENTHUSE Partnership was formed.

Going forward AstraZeneca will continue working with their cluster of schools in Saffron Walden and to build on a relationship that is off to a flying start.

Lisa said: "We are trying to get students into science from a very young age as research shows children start developing their aspirations for the future as early as primary school.

"We hope to ignite the spark of enthusiasm in these young people and get them to think maybe science is for them."

STEM Learning's Chief Executive Yvonne Baker said the results of the Partnership so far had been a huge success. "We are looking forward to working together for the second year," she said. "Hopefully other companies will look at the inspirational things achieved thanks to AstraZeneca's funding and maybe consider getting involved themselves."

AstraZeneca are so pleased with the progress of their first ENTHUSE Partnership they have already signed up to fund a second for 2021-2023. "We will be working with the STEM Hub team in the North West around our Macclesfield site and we are currently identifying the schools most in need of our support," said Lisa. "We are hoping for a combination of primary and secondary schools who we can develop strong relationships with using our STEM Ambassadors, volunteering and apprenticeship networks. We want to connect science discussed in the classroom with real life and explore the practical application of our industry," she said. "We can't wait to get this started!"

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