

GSK finds new ways to inspire the next generation of scientists and engineers



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ENTHUSE Partnerships are the gifts that keep on giving – as GSK is finding out three years down the line.

The first commercial company to get involved when the Partnerships were launched in 2018, GlaxoSmithKline plc sponsored six projects and is now seeing just how effective and enduring those gifts are proving.

Dr Rhiannon Lowe works as an immunotoxicologist in research and development for the company and heads up their Ware ENTHUSE Partnership.

"We're passionate about STEM as a company," Rhiannon said.

"At GSK, we're finding new ways to inspire the next generation of scientists and engineers, because without them, who will cure diseases and help solve the health challenges of the future?"

As one of 450 STEM Ambassadors in GSK, Rhiannon is proud to be part of the scheme which she believes will leave a legacy of long-term benefit for the staff and pupils involved.

"We support 32 schools across the UK through Project ENTHUSE. It's not just a pot of money to be spent in a short

period of time, it's empowering the teachers to use and share their knowledge going forward," she said.

The two Ware Partnerships are made up of leads Richard Hale School and BMAT STEM University Technical College, with five cohort schools – both with different themes and at different stages of completion.

Dr Louise Morris, Director of Science for Richard Hale, said their project was nearing its end but the results of ENTHUSE would benefit the school for years to come.

Their main theme is: 'To improve the teaching and learning of mathematics in science, resulting in the raising of attainment in science', which was chosen after new specifications were announced for GCSE and A level exams.

Staff have also benefited from a range of STEM training to help the school long term, including residential courses on teaching maths in science, and maths in science for special educational needs students.



We support 32 schools across the UK through Project ENTHUSE, to bring about inspired science teaching through the Continuing Professional Development of teachers of science across the UK.

How to get involved

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"The exams had a lot more maths content than before and we found students who weren't so good at maths were then doing less well in science," said Louise. "We also realised that the curriculums for the two subjects were often out of sync.

"So at our Kick Off meeting with GSK we got teachers together and decided to come up with ways to solve this. We went on to compare lessons and found, for instance, pupils are not taught to draw graphs in maths lessons using the same skills that are required in science lessons.

"We needed to work around the problem – either by moving topics about or by upskilling our science teachers to deliver the necessary maths themselves. We now have a new approach to maths which works really well and is something we will build on."

The schools' awareness of STEM careers has also improved as a result of the Partnership. Louise and her colleagues were invited to events at GSK where they discovered the different paths, training and qualifications staff had taken to end up in their particular discipline.

"We then fed back to our teachers and students," said Louise. "We have Schemes of Work in school and as a result of the careers talks we now make sure to include information in our lessons about the many STEM occupations involved."

Careers are certainly high on the agenda for the other Ware lead school BMAT STEM Academy. In fact, Assistant Head Paul Andrew, said employment is "at the centre of everything" BMAT stands for.

"The ENTHUSE Partnership has been brilliant in helping me get to grips with careers information for us and the four schools in our cohort, Forest Hall, Burnt Mill, Epping St Johns (Essex) and Royal Docks Academy (East London)," said Paul.

"One of the things the Partnership data has flagged up is our

schools are struggling to incorporate careers guidance into the curriculum. I am trying to make staff realise they can weave careers information into their lessons – it doesn't need to be a stand-alone topic.

"For example, a lesson on disease might incorporate something about the NHS, statistics, diabetes, research skills – to make pupils aware there are many possible routes and applications of STEM subjects."

Paul had up close and personal experience of careers information when he visited GSK on a three-day course at the start of the Partnership in 2019.

"It was superb," he said. "I was mixing with other teachers to share ideas and experiences, and we got the most amazing insight into how GSK actually works."

Paul said the visit opened his eyes to the many possibilities on offer within the company.

"Those three days were so inspiring. We even got a look at their cancer therapy development and some of the genetics behind the research."



**450 STEM
Ambassadors are in
partnership with STEM
Learning, to bring
about inspired science
teaching.**

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"It made me focus on ways of getting all this information over to the students – to tell them about all those roles and the different ways of getting into the jobs. I found out a lot about their apprenticeship route and work experience offer – we'll definitely be sending our Year 10s when COVID allows!"

BMAT's main ENTHUSE theme is 'Supporting the mid-ability Year 10s' – with the aim of improving their GCSE grades.

Part of the GSK funding paid for Paul to become a qualified STEM Facilitator so he can now deliver any STEM.org.uk course to staff and pupils in areas needing extra work. Funds are also dedicated to the continued upskilling of teachers to improve their ability and confidence in the classroom.

"We have staff and students on regular courses and webinars," said Paul. "And one of the main things we have learnt from this Partnership is to work more closely together. We aim to be more strategic and to share our resources. There are many dedicated and inspired staff in our cohort and we plan to make a difference and make the most of every ENTHUSE opportunity."

Going forward, Paul has faith the long-term effects of the Partnership will help cement a stronger working relationship between the schools. And that grades will rise. "If you can grab students' attention by making the lesson interesting and get them focused on a potential career to aim for, the grades will come along too," he said.

At the other end of the country in Angus, Scotland, a third ENTHUSE Partnership is coming to the end of its three-year plan.

But Angela Barclay, Principal Teacher of Technologies at Monifieth High, said the relationships built up were far from over.

The theme for this cluster – Carnoustie High, Grange Primary, and Dundee and Angus College led by Monifieth, was

'Increasing the coverage of technologies outcome in primary school'.

"The aim was to make learning more consistent so that when primary school pupils come up to secondary, teachers can crack on with lots more exciting projects," said Angela. "We were able to deliver some of the science and tech outcomes to primary pupils which they wouldn't normally have learnt until secondary."

STEM UK's Race for the Line became the focus for the schools and, thanks to ENTHUSE funding, Monifieth was able to buy its own racetrack and wind tunnel.

Pupils create rocket-powered cars, test them for drag coefficient in the wind tunnel and, after making any necessary changes, race them round the track.

"Having our own equipment has made such a difference," said Angela. "In the past we had to book a short slot at Dundee University which meant not every pupil got to race and there was no wind tunnel. Now we can roll the activity out to the whole of S1.

"We have a spectacular Race Day with members of the armed forces coming along to run the timing gates and officiate – it's a really exciting day for the pupils. The winners go through to regional and national finals. Our kids made the Scottish finals!"

And some students are so inspired by the activity they go on to take part in the international competition F1 in Schools.

"We now have younger pupils taking part in the competition at the Development level and seniors participating in the Professional Class," said Angela. "It's a great showcase for flagging up how many disciplines there are in STEM – the kids have to create a pit display, design uniforms, make folios. It really broadens the pupils' horizons and gets all sorts of young people involved."

GSK's funds also paid for a teacher from Grange Primary to take a week-long course on the introduction of STEM in primary schools. As a result, they created an all-school

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Eco-House Design project – with pupils looking at everything from solar panels and lighting to building materials and energy efficiency.

The project went down so well the school ran a second STEM scheme the following year on the topic of upcycling.

“ENTHUSE kicked this off and now it’s an ongoing plan,” said Angela.

The same goes for the cluster’s Young Stem Leaders project which they took on as one of the pilot schools for Scotland. Pupils from NS2 – so 14-year-olds – initially went into primaries to deliver generic STEM input, taking K’Nex to build bridges and explain some basic engineering.

Now the schools have Young Stem Leaders across S2, 3, 4, 5 and 6.

“The scheme has really taken off,” said Angela. “We were given the opportunity and we ran with it. All the competitions and courses we had access to have really helped – we couldn’t have done it without the funding. Teachers are keen but without the money you can’t take time out from the classroom.

“It’s vital we engage young people at an early stage as there are so many different careers open to them via STEM and we need people trained up for the future of the country.”

One of the courses Angela benefited from was a week-long residential placement. As with Paul, Angela was thrilled to meet like-minded people from a wide variety of disciplines.

“I got talking to staff who had set up barista and nail bar projects in school,” she said. “I thought this was a great idea. We now have senior students running a barista coffee shop - Stagg Coffee - and a nail bar - Top Coat Nail Gallery - at our own school. So the pupils are accessing the Young STEM Leaders Programme and are being presented for SQA Level 5 qualifications in Barista Skills, and Manicure and Pedicure.

“These are exciting, worthwhile hands-on qualifications which would have been out of reach without the funding.”

Staff have really embraced the STEM ENTHUSE Partnerships – so much so that a member of Angela’s staff, and Angela herself, won major awards this year.

“I nominated my Technical Teacher Derek Boath for an Excellence in STEM Teaching Secondary 2019. He won!” said Angela.

And nominated the same year by her line manager for the School Leadership Award, Angela also walked away with the prize.

“Part of our responsibility in gaining the awards is to try to spread the knowledge of what we have been doing and to encourage other schools to come on board,” said Angela.

“This is also what we are already doing via ENTHUSE and our participation in the Education Scotland STEM Nation Award. It’s a living legacy and we plan to keep the momentum going.”

GSK’s other Partnerships and themes are:

- Barnard Castle: Raising pupil attainment in key stage 3 science, especially among white working-class boys.
- Weybridge: Raising attainment in science of Pupil Premium students.
- Stevenage: Raising the attainment of Year 9 Pupil Premium students through improving understanding of maths in science.



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