

# Triple SCIENCE

TS finds out more about an innovative collaboration that's transforming students' experience of STEM subjects in Shropshire...

Science education faces many challenges in UK schools, including a lack of adequate facilities and growing class sizes. In fact, recent research shows that 30% of schools do not have the minimum equipment deemed essential for teaching practical science. The introduction of the more demanding GCSE syllabus announced by Michael Gove looks set to further exacerbate these shortcomings.

Yet there is plenty of hope on the horizon of science education, not least due to some inspirational initiatives like the 'Triangular Collaboration' spearheaded by Shropshire based independent school Moreton Hall, with partners Keele University and local state school, St Martins.

Moreton Hall is one of the UK's leading girls' schools. At A Level this year Moreton was the highest performing non-selective independent school in the country for A\*s and had equally impressive GCSE results. In science, national GCSE results showed that 53.1% of GCSEs were awarded A\* - C, down from 60.7% last year - a drop of 7.6 percentage points (the biggest fall in top results across all the subjects) while eighty percent of Moreton's science GCSEs were at A\* - A grade.

The Triangular Collaboration has been set up to raise aspirations of pupils across state and independent schools, encouraging them to pursue science degrees and careers in the sciences, especially focusing on medical, dental and veterinary science.

Moreton Hall acts as the central hub in the scheme, running regular extension lessons to stretch and challenge the local state school pupils, as well as providing a programme of lectures, practical

sessions and visits by staff and scientists to further enrich learning.

Behind the initiative is the recognition that some UK state schools struggle to find the necessary funds to improve their science facilities and equipment, ultimately leaving many students missing out on adequate practical-led learning which often accounts for some of the most engaging and memorable parts of the learning process. Through the scheme, students from state schools are exposed to resources and facilities that they may not otherwise encounter, as well as having access to alternative teaching methods.

One state school that has been particularly keen to build on its relationship with Moreton Hall is St Martins, near Oswestry. St Martins' connection with Moreton originally began when deputy headmaster, Jim Taylor, approached the school to see what opportunities there were for their most gifted and talented science pupils to attend Moreton's Sixth Form upon completion of their GCSEs. "Moreton showed an interest in working with our most gifted and talented pupils as part of its collaboration with Keele University," he recalls, "so they invited us to join in."

"Pupils at St Martins do not historically see university as an option open to them," Jim continues, "so getting them to realise their potential has been one of our biggest challenges. We have worked hard to instil confidence into our pupils and open their eyes to what their futures could look like. Involvement in schemes like the Science Triangulation initiative brings out their ambition and confidence. Once these children believe in themselves, you can clearly see a renewed enthusiasm, which leads to better performance in exams. It's fantastic to witness."



"The pupils have also had access to guest speakers including eminent academics"



**80%**  
= number of Moreton Hall's GCSE science grades at A\*-A this year

St Martins is a rural state school that has overcome a number of common challenges that many state schools face, including financial and performance related issues. In recent years, it has fought against this adversity, improving its results and beginning to reach its true potential. As a result of its efforts, it was rated as one of the most improved schools in the country this year. It cites its collaboration with Moreton as being one of the key drivers in its improvement.

“The positive effect it’s had on our children is immense – they cannot wait to go back there,” confirms Jim. “I can honestly say that the science initiative is the most exciting project I have been involved in in over 12 years of teaching. Moreton really did welcome us with open arms. They organised free transport and lunches for our pupils and were very enthusiastic towards the students during lessons. They made us feel very welcome on all levels.”

Moreton has also just opened a new Science Centre within its grounds with a dedicated Medical Science Faculty – the only one in a school in the UK. This facility forms part of Moreton’s drive to become a regional centre of excellence in the extension of the scientific curriculum by bringing an element of the practical experience of Higher Education into a school environment; an approach that will not only benefit Moreton’s girls but also the talented pupils from neighbouring comprehensive schools.

Through their involvement in the Science initiative, St Martins’ pupils have undertaken practical experiments that they would not have had access to in their own school. These experiments include extracting genes from jellyfish and transferring them to bacteria; removing lactose from milk using immobilised enzymes; and looking at the effect of heart rate during exercise using a treadmill and an electrocardiogram (ECG). As well as practical experiments, the pupils have also had access to guest speakers including eminent academics and leaders in medicine.

Shannon Matthews is one of the pupils from St Martins who took that part in the science collaboration this year, and at just 14, already has her sights on a career that involves science. “After we discussed science related careers in a group with the teachers at Moreton and took part in loads of really cool practical experiments, I decided that I want to study to be a paramedic in the army,” she enthuses. “My time at Moreton has made me much more excited about science... I love it there.”

“As a teacher that has been working state-side for over 13 years, it has been very interesting to observe teaching of key subjects at an independent school,” adds Jim Taylor. “I was surprised to see how engaged the students were with the challenging approach delivered by the teachers from Moreton’s science team. It’s made me reflect on the appropriate levels of challenge that can actually be applied to our pupils after seeing their reactions when presented with more challenging language and concepts.”

As a result of St Martins’ involvement in the scheme, a number of its gifted and talented scientific students have this year been awarded scholarships to Moreton’s Sixth Form – a strong testament to the success of the initiative.

And, as a sign of the blossoming relationship between Moreton and St Martins, Moreton Principal Jonathan Forster has been invited to join the board of governors at St Martins. St Martins anticipates that his expertise and leadership will help to support their governing body and senior team in further driving up standards and outcomes at the school.

Described as an “inspirational leader” by Tatler magazine, Jonathan Forster comments: “Our intention at Moreton is always to share our expertise and resources with all of those who are interested, and we have been delighted to form an active relationship with St Martins School, our local state secondary school. We believe that the triangulation between state schools, independent schools and universities will become a model for the teaching in the future. The relationship has benefits for us all – St Martins has access to our resources, which helps to raise aspiration amongst their pupils; pupils and staff from both institutions learn from each other; and we have now been delighted to receive a number of outstanding Sixth Form pupils from St Martins after they finish the school in Year 11.”

The third party in the collaboration is Keele University. Through the partnership Keele gains access to gifted and talented state and independent school pupils and has the opportunity to start coaching these pupils for university life. This opportunity has substantial upsides when research suggests that students from non-selective state schools are sometimes under-prepared for the transition to



medical training at university, and less aware of how to make a successful application for highly competitive courses such as medicine and veterinary science.

“This initiative provides a useful opportunity for local maintained school students to extend their science learning beyond the standard school curriculum and gain an awareness of what studying science at university involves,” says Dr Gordon Dent, director of admissions at Keele. “In the future we hope that this powerful triangulation between a state school, a university and an independent school can be repeated so that more students are better prepared to start university.”

Co-ordinator of the Triangular Collaboration at Moreton Hall, scientist Dr David Kelly adds: “It happens that our own vision resonated perfectly with that of our local Medical School at Keele University. Keele has been quick to identify Moreton as its perfect regional partner for stretch and challenge outreach in the northwest of Shropshire and North Wales. In the last academic year we twice piloted collaborative outreach events, with the second attended by over seventy pupils from eight different schools across Shropshire.

“Our experience is that the vision of Moreton Hall as a regional centre of excellence can be realised and that our model provides a much appreciated and valued resource by our local schools and universities. Not only will students from both Moreton Hall and local state school start to study a university-level curriculum ahead of their peers but they will also expand on their GCSE and A Level programmes of study, which will in turn give them the confidence to pursue medical or veterinary careers as they enter higher education.”

The collaboration also fits in with Ofsted’s vision for the future. Earlier this year, Michael Wilshaw issued a direct challenge to independent school heads to actively look towards working with state schools to help improve education nationally, saying, “Independent schools not only have an economic need to help raise standards, they also have a moral obligation. A fundamentally unequal society is no good to any of us in the long term.”

So, it seems that if the education system is to rise to the new challenges being presented by both Mr Wilshaw and education secretary Michael Gove, it must now pull together in order to prepare students for the changes ahead. If more state schools approach independent schools and vice versa with a view to setting up more collaborations like the one at Moreton Hall, it could well help to shape a better education for the future.