

Encouraging girls into STEM-related careers: Sandbach High School and Sixth Form College

URN: 136340
Region: North West
Remit: Schools

Provider background

[Sandbach High School and Sixth Form College](#) is an 11–18 years girls' school, which is committed to nurturing talent, realising potential and encouraging participation across all aspects of the curriculum. The school provides opportunities for all to achieve the highest possible standards in academic subjects, sports, music and the arts, while actively encouraging girls to pursue non-stereotypical careers such as those offered in STEM-related areas. Alongside this, the school supports the girls in developing their interpersonal skills and places great importance on helping them appreciate their responsibilities in school and in the wider world.

Brief description

The school seeks to achieve its high aspirations for the girls through: strong careers education, information, advice and guidance; meaningful work experience; a wide range of extra-curricular activities; competitions; and a celebration of girls' contribution to STEM activities. The school also seeks to increase girls' participation in the sciences and technical subjects including: chemistry, biology, mathematics, physics, computer science, textiles and food engineering.

The good practice in detail

Careers education, information, advice and guidance

Work to generate girls' interest in STEM subjects begins right at the start of Key Stage 3 with strong provision in this area. Understanding and awareness of STEM options are then promoted during Year 9 to encourage girls to choose these for their Key Stage 4 study options. This is supported by one-to-one and group guidance as well as access to online information. In Key Stage 4, the careers programme

supports students in researching career options with a strong focus on STEM-related careers.

In careers lessons, the girls engage in activities such as 'The Money Mountain', a learning tool that focuses on the importance of good qualifications for entry into well-paid careers and the fact that jobs in the financial, scientific and technical sectors attract the highest salaries.

A careers topic entitled 'Who Gets the Band on the Road?' highlights not just the range of careers needed to take an *imaginary* band on the road but just how many STEM subjects are involved. This activity aims to show that while they cannot all be the 'star of the show' they can, with the right qualifications, support the 'star' through STEM-related careers.

Work experience

All Year 10 students undertake a one-week work experience placement. Over the past three years, more than 10% of each cohort has undertaken STEM-related placements at businesses, such as Bentley Motors, Siemens, Carillion Engineering Construction, Barclays Bank, and at Keele University where the girls have, among other things, learnt how to make 'street legal' paracetamol to help test production methods for a university research project.

Visits and visitors

Each year, approximately eight girls attend the 'So you want to be a doctor' day at Keele University where students attend short lectures in the morning and complementary laboratory work in the afternoon. Although a day about becoming a doctor, students enjoy mixing with medical students who can talk about their experiences of the sciences and mathematics generally.

Students who attend the Science, Engineering and Technology week have the opportunity to take part in a range of events and showcase their own work alongside major employers and local universities. This involves a wide range of STEM areas from fashion to physics, chemistry and cooking, and leads to great enthusiasm from the students with the following comments from the STEM employers:

'It is so good to see students having so much fun in STEM subjects'

'I love the way the girls just get it that all science and technology subjects and careers are intertwined'

Extra-curricular clubs and competitions

The school offers a diverse range of extra-curricular clubs that help promote STEM-related careers.

The Complete and Utter Chaos club (CAUC)

The CAUC is the schools electric car club where students get the chance to design, build, maintain and race several electric cars, most notably at Goodwood. CAUC has been running for over 10 years. It is led by students from Years 9 to 13 and is supported by teachers, parents and representatives from local industries, including Bentley Motors and Siemens.



Racing at Goodwood



Girls in the electric car club

The STEM club

The STEM club has been running since spring 2010 and has quickly grown from a handful of Year 8 students to a membership of nearly 50 from Years 8 to 10.

Year 8 girls in STEM club are encouraged to work in small teams to pursue projects and competitions that interest them. They design experiments, test theories and evaluate their results. Many of the teams go on to enter competitions, which has led to a number of regional and national successes. In 2014, three teams from Sandbach High School were selected for the [National Teen Tech final](#) where they met a host of celebrities including James May, Dallas Campbell and Stephen Fry, but most notably the Duke of York, who welcomed the winners to Buckingham Palace.

In July 2014, eight teams from the school entered the regional North West Young Engineers competition. Three teams were selected for the National Final at the NEC in March 2015 and three teams won additional prizes for their efforts.

An example of an assignment developed by a Year 8 team is the 'Emergency street lighting project'. This focused on stricken areas following, for example a natural disaster or conflict, where people are forced to live in the dark. The girls recognised that the first step to making conditions safer for people is to make their environment safe, so designed an emergency street lighting mechanism that can be easily clamped onto any structure.

A Year 9 team designed the 'Sleep Tight Pillow' to help children sleep by creating an environment in which they can feel safe and comfortable. They achieved this by having the pillow play music or a recording of a parent's voice. The pillow also

monitored sleeping patterns, heart rate and breathing, which could be sent to the customer's phone. It was primarily aimed at children with special needs that potentially affect sleep such as autism and could be tailored to the specific needs and interests of the child. Research undertaken by the girls led them to conclude that the product could improve daytime behaviour if the affected child was able to get a good night's sleep.

Working with businesses

Year 9 girls have been working with the German technology company Balluff. Twenty-five students have assembled an electronics alarm circuit using Balluff sensors while having to learn to translate the instructions from German.

Year 10 is taking part in a nationwide project to engage female students into STEM subjects and encourage them into engineering apprenticeships. The Girls Engineering the Future project is delivered by [the Smallpeice trust](#) and [The Outward Bound Trust](#) supported by BAE Systems, Bentley Motors, Network Rail and Rolls Royce. Projects have included building a new generation loudspeaker to use with a mobile phone or MP3 player and designing and constructing a wave-powered generator to supply electricity to a small island. Students have also had the opportunity to meet and be mentored by female engineers from Bentley Motors and to attend an outdoor experiential learning course to help equip them with important skills needed to achieve in this typically male-dominated sector, including communication, leadership, teamwork, resilience, personal responsibility and trust.

Destinations

The impact of a long standing and growing commitment to STEM subjects is reflected in the destinations of the school's Year 13 leavers. In 2014, 35% of those students who got into universities studied STEM-related courses such as medicine, mathematics, biology and creative computing. The numbers leaving to take up apprenticeships in STEM-related fields rose from 28% in 2013 to 62.5% in 2014 with 10 students taking up trainee positions in accountancy, geographical surveying and information technology.

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