



---

## STEM Ambassadors

### Linking employers with Further Education

---

As the Government gears up to implement its technical education reforms, it's more important than ever for Further Education (FE) colleges to work closely with employers. Meaningful employer engagement narrows the gap between college-based education and employment, preparing students for the world of work that awaits them and enriching study programmes.

The STEM Ambassadors programme brings volunteers from a wide range of science, technology, engineering and mathematics (STEM) related careers together with students, to encourage and inspire young people to progress further in STEM subjects. The programme presents a great opportunity to deepen existing engagement with employers by working with STEM Ambassadors in a variety of ways.

**Activate Learning is an education and training group based in Oxford, that brings together secondary, further and higher education, along with workforce training, management consultancy, commercial business and social enterprise. Their Director of Technology, Alex Warner, has been quick to recognise the potential offered by the STEM Ambassadors programme and the benefits it can bring to learners in FE colleges:**

"Activate Learning have worked with STEM Ambassadors in a variety of different ways. Some of our activity developed after staff attended STEM Insight placements at IBM; the STEM Ambassador contacts made as a result of those placements have been keen to come back into college and work with staff and students.

IBM came in on multiple occasions – one of their STEM Ambassadors, John Easton, who is also an IBM Distinguished Engineer, came into college to guest lecture. This is someone who has received accolades for his work, taking the time to come in to enrich student experience – it's really inspiring. The ongoing contact has been brilliant – for example, the BTEC computing qualification now has a cyber security module which was sponsored by IBM. This area of industry is moving so fast that teachers just can't keep up-to-date, so developing this area of the curriculum with IBM has been fantastic.

We work with STEM Ambassadors in a range of contexts and we make sure we structure activity, such as guest speaker sessions, in a way that gives maximum impact to the students.

**At our college we have a framework of development called the Five Key Attributes:**

Professional	Confident	Enterprising	Resilient	Aware
				
Digital 	Motivated 	Problem solver 	Adaptable 	Empathic 
Numerate 	Independent 	Business minded 	Self-reliant 	Self-aware 
Communicative 	Inquisitive 	Resourceful 	Commitment 	Reflective 
Customer focused 	Positive 	Risk taker 	Capability 	Respectful 
Team player 	Proactive 	Leader 	Perseverance <b>DON'T QUIT</b>	Mindful 

We want our students to be aware, resilient, confident, enterprising and professional; we know that these characteristics are valued by employers, so we support our students to develop a passport of these attributes. Our work with STEM Ambassadors is excellent for this. It's all about the development of cultural capital, developing attributes that can't just be taught in a traditional classroom context.

Bringing in STEM Ambassadors has a noticeable effect on the motivation, attendance and even the level of maturation of our students. We find the students' attitudes to deadlines is different, for example, when they are working with employers. There is no experience like watching students stand up and present their work back to employers, it's so good for them. They get nervous, the knees wobble...but it's phenomenal at developing their confidence."

**Himanshi Singh, who lectures in IT and computing at one of Activate Learning's FE colleges, has been working very closely with STEM Ambassadors and is enthusiastic about the outcomes:**

"After my STEM Insight placement at IBM, we invited their STEM Ambassadors to come in and work with us at the college. We worked with them to create a project-based learning module for the students. It was all about cyber security.

To launch the project, we arranged for a STEM Ambassador in to come to work directly with the students. I had divided the students up into four teams representing different organisations: the National Health Service, Amnesty International, Activate Learning and a bank, so very different types of organisations. The students had to create a network for these organisations. The STEM Ambassador came to the college in September and spent a whole day talking about cyber security and how organisations needed to protect themselves. The students really liked it – their feedback was brilliant, and it inspired them to go on to the next stage of the project which was all about creating cyber security protection plans for their organisations.

Halfway through the project, we had another STEM Ambassador in to give a boost to the students and help their motivation. The students presented their protection plans back to the first STEM Ambassador in November. The whole project was brilliant.

There's lots of ways to use STEM Ambassadors in a college. I ran a STEM event in July for staff members; it was a "bring your daughter to work" day. We had the help of STEM Ambassadors to put on a day of workshops for 9-14 year old girls. It was brilliant – we had 25 daughters along for the day. I'm going to repeat this for local schools, because I'm really passionate about bringing more young women into STEM."



Ed Ross, STEM Ambassador, RES Group

**As well as working with STEM Ambassadors to develop new areas of the curriculum,**

**Activate Learning have used their expertise to enrich delivery of GCSE mathematics and English. These re-sit examinations are a massive priority for FE colleges, but it can often be a struggle to engage and motivate learners who are disillusioned with the subjects after failing to pass at school. Providing a relevant context for studying mathematics and English is vital to engagement, so teaching staff worked with STEM Ambassadors to provide project-based learning opportunities that were relevant to students' main courses. Chris Parkin, who teaches mathematics and engineering at Activate Learning, gives more detail:**

"We worked with RES, a renewable energy company who develop large scale renewable energy generation projects. We based our project on a large scale off shore windfarm off the coast of Lincolnshire, in the North Sea.

Our STEM Ambassador was Ed Ross. We worked with him to put together a project for English and maths re-take students. The project contextualised the maths and English to apply the skills in real world contexts. At Reading College, we used the maths project with two groups of learners who were on Level 2 engineering courses or Level 3 IT courses.

Once we'd drafted the content, Ed came in and gave us a presentation to about 25 learners in order to give a background to renewable energy and offshore wind. It generated lots of questions from the learners so it obviously generated interest at the start of the project.

The project was timetabled in normal English and maths lessons, it ended up taking about two months to deliver it. Students had to calculate things like the circular swept areas of the blades of a turbine, volume of wind passing through the blades per second, power of the wind, efficiency calculations and annual costs. They even worked out what price they needed to charge for the electricity in order to make a profit.

The project generated more interest among engineering students than in the IT group – even though it was real world calculation it wasn't as relevant to the IT group, so it really shows the importance of making the maths relevant. We'll be re-running it with the engineers this year."



**Using STEM Ambassadors to improve GCSE English classes is an innovative way to improve practice. Alice Eardley, who teaches English at the college, worked with STEM Ambassadors from a local engineering firm:**

"For the last couple of years we have been working with representatives from Peter Brett Associates who have helped us design and deliver English projects for level 1 and 2 engineering and construction students resitting GCSE English.

Students worked in teams and were assigned a location in Oxfordshire that they had to research in detail with the aim of submitting a formal report to PBA, putting forward a case for using that site for the development of 2000 new homes. The project was designed to help students develop their English skills through reading various documents, and planning and writing a formal report for an external audience. Students were also able to work on their attributes or 'soft' skills through, for example, team working, problem solving, and delivering presentations. The project was also really good for getting students to think about the bigger context of their work, such as the UK housing crisis, and environmental issues.

STEM Ambassadors from Peter Brett were fantastic throughout the project; they introduced it to students at the beginning, attended numerous lessons to support students as they undertook their work, and returned at the end to listen to presentations and to award prizes to the winning teams. The winning students also get to do work experience at the firm, which is another boost to their career development and confidence.

The students have responded really well to the challenge of the projects. They don't find this work easy but being pushed out of their comfort zone leads them to producing excellent work. Employers have consistently commented on how impressed they are with the attitudes displayed by the students and by the professional standard of the discussions they have with them."

**With the next academic year in sight, Activate Learning continues to work closely with STEM Ambassadors in many ways - collaboration is ongoing. Alex Warner is clear about the numerous ways in which STEM Ambassadors can support the FE sector:**

"I think the benefit of working with STEM Ambassadors are huge for colleges. We are actually closer to industry than schools and because we have more freedom with the curriculum we are able to be really creative at bringing it to life. You could say we are able to be excellent curriculum architects – STEM Ambassadors can help us with this. They can also help to bring industry context to some of the students who perhaps are the furthest away from employment; the benefits here are huge and the impact is enormous."