



Discovering talent, developing skills

Helping STEM employers engage
with schools and colleges

The STEM framework

The 'STEM Action Programme' report identified five main target areas (made up of 11 Action Programmes) to improve the delivery of STEM initiatives. These target areas are:

1. Getting the right people to become teachers and lecturers, covered by Action Programme (AP) 1;
2. Encouraging continuing professional development (CPD) for mathematics teachers and science teachers (APs 2 and 3, respectively) and to engage teachers in technology and engineering (AP4);
3. Bringing real-world context and applications of STEM into schools and colleges to enrich the teaching of science (AP5), technology and engineering (AP6) and mathematics (AP7);
4. Showing young people the rich range of career opportunities that STEM study opens up (AP8; see box, p.7).
5. Getting the STEM curriculum and infrastructure right. This is covered by APs 9, 10 and 11. In turn, these aim to improve access to the science and maths curriculum, enhance the quality of practical work in science, and build the capacity of the national, regional and local infrastructure.

For further information about AP8 and to find out more about getting involved, please contact the National STEM Careers Coordinator at: stemcareers@shu.ac.uk

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Foreword

STEM careers awareness is one strand of a major DCSF programme of work on STEM education. There is good progress, with year on year increases in the number of 16 year olds getting two good science GCSEs; a doubling since 2002 in the number of maintained schools – now 40 percent – offering triple science at GCSE; a record year in 2009–10 for specialist science and mathematics teacher recruitment; and continuing increases in the numbers of students gaining A levels in physics, chemistry and mathematics.

But there are still too many young people giving up STEM subjects at age 16 because they are unaware of the breadth of rewarding opportunities to which STEM can lead. There are many excellent initiatives to improve STEM careers awareness led by Government, business, HE and other groups within the scientific community, but they would be more effective if they were better coordinated. That is Kate Bellingham's role as our National STEM Careers Coordinator, and this publication is designed to help employers and others work better together and with the school system to encourage more young people to opt for STEM.



Helen Williams, Director of Curriculum and Pupil Wellbeing, Department for Children, Schools and Families (DCSF)

If the UK is to have a workforce with the skills necessary for future economic success, employers must play a major role in inspiring the next generation to pursue STEM study. Improving interactions with the world of work will be one key aspect, just as it is necessary to ensure that all young people have access to impartial, high-quality careers advice so they're aware of the exciting opportunities open to them. But to be truly successful, we need to harness the energy of teachers, careers advisers, parents, students and employers – the routemap that has emerged as a result of the STEM Careers event for gatekeepers and enablers should be a very useful tool to help achieve this aim.



Richard Wainer, Head of Education and Skills Policy, Confederation of British Industry (CBI)

Executive summary

- The DCSF STEM Careers Programme aims to make all young people in schools and colleges aware of STEM careers, and to inform their choice of subjects to study. Working with stakeholders, including employers, is vital to achieving this.
 - The Programme team has been working with a number of ‘gatekeepers’ and ‘enablers’ who support employers that use or value STEM skills and qualifications. A gatekeeper conference, attended by representatives from 50 organisations, was held in September 2009 to develop ideas for increasing employer involvement.
 - The ‘routemap’, aimed at supporting gatekeepers’ work with employers, uses business drivers as its starting stimulus. It gives examples of how employers can engage with education and how STEM engagement can bring business benefits. It also gives details of useful partners and where to find more information if you need it.
 - To have a long-term, positive impact, any engagement between employers and education needs to have mutual benefits, and be of a high quality. For example, it needs to include planning and evaluation, and awareness of equality and diversity issues.
- Mutually beneficial engagement can be helped by:
 - promoting cross-STEM careers awareness;
 - providing a continuum of STEM careers experiences;
 - providing consistent messages about STEM careers;
 - embedding engagement in the school and employer ways of working;
 - finding new opportunities by linking with other education–employer activities.
 - STEM careers work should not be practised in isolation, but should embrace the current and changing landscape of initiatives.
 - Partnership is vital for effective employer–education engagement. Any employer who needs or values STEM skills and qualifications should have the chance to get involved. The Programme encourages all employer gatekeepers to see how they can support their members, or make a difference within their sector or region.

Introduction

It has been well documented that there is a shortage of appropriately qualified entrants into the STEM (Science, Technology, Engineering and Maths) sector¹. We also know there is a need for more people with STEM qualifications and skills to go into other areas of employment, such as Management and Finance².

In 2006, the Government responded to these issues by creating a STEM framework, comprising eleven different Action Programmes (see inside front cover). AP8 focuses on careers, and aims to “improve the quality of advice and guidance for students (and their teachers and parents), and to inform subject choice” (see box, p.7). This aim includes coordinating the STEM-careers-related work that is undertaken by stakeholders (such as employers, HE and FE, and professional bodies such as the Science and Engineering Institutions).

The role of employers

Many employers are already involved in activities that support STEM teaching and learning in schools and colleges. They may also support careers work by providing role models to speak to and inspire young people. Some larger companies offer practical resources, such as curriculum packs and information booklets, both to subject teachers and to careers libraries. Educational bodies already recognise and value the role that employers play in informing student decisions about subject and career choice. However, could we achieve more by encouraging increased engagement and better coordination between employers and those involved in education?

Creating a ‘win-win’ for employers and education

Any useful engagement must have value for both sides – it must be a partnership of mutual benefit. The target for AP8 is to reach “all young people”. This suggests that we need to encourage more employers to take part, as well as to maximise the effectiveness of the existing work that employers do. But, reaching out to potential employer partners is not a task the National STEM Careers Coordinator can undertake single-handedly, particularly when many STEM employers are small or medium-sized enterprises (SMEs). We are therefore calling for help from ‘gatekeepers’ and ‘enablers’ – organisations that already have a dialogue with these employers – with the aim of cascading the information about employer opportunities that really make a difference to young people, and also have business benefits.

¹ Engineering UK 2009/10 Report

² CBI Education and Skills Survey 2009

The gatekeepers and enablers event: 29 September 2009



Rather than simply creating an information pack to send out and hoping this will inspire action, we have decided to run two conferences in which we, the STEM Careers team, and the gatekeepers and enablers who can influence and support STEM employers, can work in partnership to share ideas. The first conference was held at the Royal Society in London on 29 September 2009, with the main aim to bring together a selection of gatekeepers and several organisations that have an interest in supporting STEM careers work in schools.

Active participation and positive outcomes

Representatives from 50 different organisations attended the September event. After an overview of the STEM cohesion programme and the work of AP8, delegates heard five case studies (see Findings) taken from different kinds of STEM careers engagement. Delegates were then split into six working groups to address a number of questions, covering such issues as:



- What are the business benefits to employers of getting involved in STEM careers work?
- Would a 'routemap' for engagement be useful? If so, what should it look like?
- How can we ensure the maximum benefit to students and stakeholders from engagement?
- What is the best way forward for the AP8 team given the changing landscape of STEM careers activity?
- What messages would we give to high-level STEM careers employer 'advocates'?
- What messages should these advocates give to young people and their influencers?

The 'routemap' activity

Armed with marker pens, post-it notes, lists of suggested benefits and themes for engagement, the delegates were thrown into a 'ground-work' activity to explore the idea of a routemap to STEM careers engagement. The aim of the activity was to try to unravel whether or not it was possible to:



- define clear starting points (for example, by sector, company size or business drivers);
- lead through potential partnerships (such as with existing STEM support organisations);
- end up with activities to support teaching and learning (such as an organisation sending its employees into a school, offering work placements or funding existing activities).

The mixture of discussion and the opportunity for everyone involved to write, stick and rearrange their ideas led to lively debate and animated activity. The results are drawn together in the Event Findings section of this report (see pp.8–17).

The changing landscape

At the September conference, Kate Bellingham mentioned a number of initiatives that have since come to fruition. As it is seen as such an important area, the landscape for STEM careers engagement seems to be constantly changing. This makes it even more important to coordinate work, to ensure that the employer benefits of invested time and money are maximised, and that young people can get the most from increased employer activity. For example, recent changes include:

- the publication of *Quality, Choice and Aspiration*, the DCSF strategy on Information Advice and Guidance;
- the launch of the Education and Employer Taskforce, and their websites www.employers-guide.org and www.teachers-guide.org;
- the Department of Business, Innovation and Skills expert group reporting on Science for Careers;
- the setting up of 'Manufacturing Insight' to improve the public image of UK manufacturing capability.

There is crossover between all these initiatives and the AP8 STEM Careers Programme.



Thanks

We value enormously the contributions of those who attended the event. Their ideas have a direct impact on the way we take forward the work of the STEM Careers Programme. Thanks to the hard work of our facilitators, we have a record of the comments made by each group at the conference, which we have been able to share with our Stakeholder Advisory Group. There was a clear sense that the conference activity was a different way to tackle the issues, enabling a fresh approach that has avoided the situation in which a complete plan of action has faced rubber-stamping or outright rejection. We are very grateful for the time and commitment of those who have been involved so far, and look forward to working with more gatekeepers and enablers over the coming months, and at our second, follow-up conference in 2010.



Action Programme (AP) 8

AP8 tackles the significant shortfall in STEM-skilled staff in our emerging workforce. Through AP8, the aim is to bring together industry and education to provide high-quality careers guidance that shows teachers, students, parents and carers that pursuing STEM subjects beyond the age of 16 can open up fulfilling, highly paid career paths, both within STEM industries and without them. The work of AP8 includes:

- A three-year communication campaign – ‘Science and Maths, see where they can take you’ – to encourage greater numbers of students into post-16 STEM study.
- ‘Future Morph’, a website resource for young people that demonstrates the vast range of STEM careers available.
- A range of careers awareness resources to support teachers, schools, and careers professionals.
- A research project that has placed mentors in 28 schools to monitor the provision of STEM careers advice, support future planning, and encourage collaboration between STEM departments and careers’ services.

Event findings

All the delegates at the STEM careers event for employer gatekeepers were clear that we need to do more to help employers engage with education. However, pinning down what help to give was less straightforward. Could we create a routemap as a step-by-step guide for employers who are thinking of getting involved with schools or colleges? Could this be a simple directory that would guide employers to an appropriate partner who would then match



DON'T WATCH FROM THE SIDELINES, GET INVOLVED.

them to a school and support any engagement? The answer was no – there are too many variables.

However, given the experience, creativity and vision of all the attendees, representing 50 different organisations, ideas for improving employer engagement came thick and fast. The presentations made at the conference, and the discussions among the delegates, have given us the following findings to help all those who have the role of facilitator or employer gatekeeper.



Who are we trying to reach?

All employers can benefit from the findings.

- **Employers with no previous engagement**
Many employers who value STEM expertise and skills, whether or not they would describe themselves as 'STEM companies', have no direct engagement with schools or colleges. Often, these are small companies that see no role for themselves in education, or feel they cannot justify the effort. These companies are an untapped resource for promoting STEM careers awareness.
- **Employers who have made first steps to engagement**
Plenty of opportunity exists to improve the impact of current engagement.

The business case

To be effective, any engagement between education and employers must be designed to give maximum benefit to both the students and the employers. For both parties, engagement should be a clear response to a need, and should not feel like a duty or a burden. Busy teachers and financially pressed employers will not get involved in something worthy but time consuming in a vague hope they will get something out of it.

Employers may have a number of business 'drivers' that are specific to their location, the type or size of their business, the STEM sector in which they operate – and numerous other parameters. There is no 'one size fits all', but there are several common drivers that could lead employers to spark off ideas about their own, specific needs. For example:

- a need to improve the public image of the industry sector;
- a need to develop staff or the skills of the next generation or to recruit new staff;
- a need for a positive community role.

Case study 1: Jackie Wilbraham AstraZeneca

Sharing our passion for STEM

“AstraZeneca is a world-leading pharmaceutical company. It has about 65,000 employees worldwide, about 17 percent of whom are in the UK. It is vital for AstraZeneca that we continue to develop the next generation of scientists and engineers to meet the challenges that face healthcare and new medicine into the future. But, we have some concerns about recruiting first-degree graduates. In particular, we find there’s a lack of maths skills and of hands-on practical experience. So what are we doing about it?

We believe that partnership is key and we are fully engaged in promoting STEM through a number of partnered initiatives. Our priorities include working with the Government to increase the number of young people studying STEM and to enhance the teaching of STEM in all schools.

We want to be partners in science, taking time to participate in teaching in universities and teaching

hospitals, and shaping course content. We actively encourage sandwich students and other industrial placements.

AstraZeneca has about 200 STEM Ambassadors in the UK, who bring science into school classrooms. The company is proud to be a sponsor of ProjectENTHUSE, set up by the Wellcome Trust, and is the founder of the AstraZeneca Science Teaching Trust, both of which help to ensure the continued professional development of STEM teachers. We have worked with the Brightside Trust to pioneer a project called Scientists in Schools, which aims to address the question of how STEM Ambassadors can be more effective in the



classroom, and we endorse the hands-on Life Science Centre in Cumbria, which gives practical experience of STEM subjects to students and teachers alike.

Finally, we also work with other pharmaceutical companies, and in particular the ABPI, to ensure our industry communicates the real need to provide practical opportunities for students, and to make better use of resources now to nurture and support science skills for the future.”



R&D Policy Director Jackie Wilbraham talks about AstraZeneca’s many routes to engagement.

What can a routemap offer?

It's clear that a comprehensive guide for employer engagement is not viable, but the delegates found that the concept of a routemap for employer gatekeepers had mileage.

Through the routemap we can:

- give examples of business drivers;
- show how different activities can help respond to various business needs;
- illustrate the importance of using partners, such as STEMNET and the Industrial Trust, to ease a relationship with a school or college;
- point employers towards other resources that offer guidance, and to case studies that illustrate effective engagement;
- illustrate the different kinds of partnership available, so that if one route doesn't work, it's clear there are others to try.

Using the routemap

Gatekeepers can use the routemap produced as a result of the findings to talk to employers about education engagement to spark ideas, provoke confidence in the support available and show evidence of tried-and-tested initiatives.

The routemap on pp.18-19 provides a tool for gatekeepers.

1. **Starting point – ‘What do I want to achieve by employer engagement?’** Our routemap gives common examples of business drivers that are catalysts for employers to think about their own business needs.
2. **Pathways to follow – activities and outcomes** These are the cornerstones of engagement, the activities that make it all worthwhile. The routemap makes suggestions of the kinds of activities and outcomes that our delegates have found can really make a difference.
3. **At every step – ‘Where can I find help?’** In most cases, employers could make direct contact with schools, but for those who need additional support, or who need more information to get the ball rolling, the routemap gives examples of information sources and of organisations that can help.
4. **Where else to look – ‘I need more information’** The routemap is specifically intended to support gatekeepers by using an employer's business drivers as a starting point; and to complement existing resources, not replace them. The footnotes list other useful contacts, and, with the routemap, can inspire a wealth of mutually beneficial new and reinvigorated engagements.



Case study 2: Angela Borman Siemens

Working in partnership

“With 1,600 employees, most of whom are engineers, Siemens Industrial Turbo-machinery is Lincolnshire’s largest private employer. We need to maintain our supply of skilled people to ensure our industry’s future.

Since 2003 we’ve operated a ‘Females into Industry’ challenge for 20 Year 8 girls from Lincolnshire schools. When they reach Year 9, the same group of girls is invited back for another challenge, and each girl is offered a work-experience placement in Year 10. With permission, we keep the girls’ names on file to send them details of our entry-level opportunities at the appropriate time. Altogether we offer students around 450 days of work

experience per year. Visits to site are linked to the curriculum and students are able to see the relevance of STEM subject areas in the working world.

Importantly, we’ve struck up working partnerships with bodies such as Aimhigher and the Lincolnshire & Rutland Education Business Partnership, and we’ve supported their aims to engage employers to inspire students into STEM. I give presentations to other businesses about our education programmes and identify how such schemes could work for them.

The best example of working in partnership is the East Midlands STEM Partnership, which is the



region’s voice of STEM. It helps me share information and best practice and understand what’s going on elsewhere in my region. It’s brought opportunities for students in Lincolnshire, who might otherwise have been on the outskirts of regional activities.

Since 2003, Siemens has seen a 30-percent rise in suitable applicants for our apprenticeships. Since 2007, 21 percent of those who had placements on the work-experience programme applied for an advanced apprenticeship position.

Working in partnership ensures that we have access to organisations that know what is on the schools’ agendas so that we can minimise our risks. Without partnership we wouldn’t see the business benefits of investing in education that we do today.”

Work experience and visits to site enable students to gain practical experience working alongside Siemens engineers.



Maximising the benefits

The delegates made it clear that, to avoid misunderstandings and disappointment, we need to take steps to ensure the quality of any engagement between employers and education. Any quality engagement should include planning on both sides and meaningful evaluation, and should also take account of equality and diversity considerations.

STEM is a springboard to loads of interesting and important careers.



The conference identified five themes to consider when embarking on education–employer engagement in order to maximise the benefits. These themes are:

1. Cross STEM promotion

In schools and colleges, science, technology and maths (and engineering, where it is a curriculum subject) are usually taught separately. Employer engagement provides an opportunity to demonstrate how STEM comes together in the world of work. While there is no need to be expert in all areas of STEM, employers can usefully highlight which aspects of STEM they value, and give positive messages about STEM as a whole. AstraZeneca (see Case study 1, p.9) supports a wide range of engagements, and reinforces positive messages about the value of studying STEM.

2. A continuum of experiences

It's important that students have a continuum of experiences throughout their educational journey to reinforce the positive opportunities that STEM offers. A continuum is impractical for one employer, but, working in partnership, employers and other stakeholders can together offer a range of experiences for every student

– from school visits by STEM Ambassadors to work placements. Siemens (see Case study 2, p.11) is part of the East Midlands STEM Partnership, which coordinates the region's offerings to schools and colleges.

3. Embed engagement

Even with the best planning, things don't always go brilliantly the first time. Rather than opting for a single 'event', it is better for an employer to build up a relationship with a school or college. They can work together to evaluate and improve opportunities, and to embed engagement in both the employer's and the school's way of working. Liz Allen, Head of Newstead Wood School (see Case study 3, opposite), has developed different kinds of industry links, which are now embedded in the school's regular activities.

Case study 3: Liz Allen Newstead Wood School

Taking industry back to school

“Newstead Wood School was a traditional girls’ grammar school, but we wanted to bring the school out of its traditional identity to release the amazing creativity that’s in all young people. And, being a girls’ school, we wanted to contradict the view of Lawrence Summers (former president of Harvard) that ‘women are innately less suited than men to be top-level scientists’! Now, the school has specialist engineering status and we have lots of super things happening.

One early example of best practice in a school–business partnership is between a school in Maidenhead and locally based Nortel, a communications multi-

national. Through a link with a parent-governor, Nortel and the school developed sustainable STEM programmes for the girls from Year 9 upwards. Nortel were able to spot prospective talent from work with the students, and access professional support and development opportunities for their employees. This was a truly mutually beneficial relationship.

At the other end of the scale, a specialist engineering school in Essex has developed a relationship with a surgical instrument maker, a one-man band. He can’t afford any kind of ongoing scheme, but allows students from the school to go and watch him – and it’s



enough. The fascination the young people have for this man’s intricate, unique work is hugely inspirational.

At Newstead Wood itself, Justin Brooks, an local engineer at SEM Controlled Motor Technology, initially helped one student with one project. Several years on, following conversations with students and the school’s engineering staff, Justin has found ongoing ways to work with us through a series of industrial visits and linked assessment activities.

It’s taken 17 years to get to the position we’re in. There are no quick fixes – involvement from employers has to be embedded. It’s challenging, but my message is to be alert. All it takes is one link from a parent or local business to open up the long-term possibility for tremendous opportunities for the students.”



Inspired by such events as the Institute of Civil Engineers’ Rapid Response Challenge, by 2010, 20 girls at Newstead Wood had opted to take the new Engineering Diploma.

4. Consistent messaging

Every employer engages in its own way, enthusing young people about its branch of STEM. However, to get the most from the connection and avoid confusion about STEM, young people need to have consistency in the messages they receive. For example:

A partner such as the Industrial Trust (see Case study 4, opposite) offers employers the benefits of its broad experience and its expertise in communication, so that young people receive consistent, positive messages about STEM careers.



Avoid reinventing the wheel – join in what's already out there and working.

- STEM is a springboard that leads to a wide range of interesting, worthwhile careers.
- Studying STEM keeps options open – these are not ‘specialist’ subjects that narrow a young person’s long-term choices.
- STEM is not a ‘pipeline’ to reach a specific job – instead of saying, for example, “To become a Chemical Engineer, you need A levels in chemistry, physics and maths,” you could say “Studying chemistry, physics and maths can lead to many jobs, including Chemical Engineering.”

STEM careers information must be accurate and up to date. If you lack expertise, recommend the students visit trusted sources, such as www.futuremorph.org or www.mathscareers.org.uk.

5. Look for new STEM careers awareness opportunities

Schools may see ‘careers’ as separate from subject teaching or enrichment activities. Similarly, employers may engage with schools but not take advantage of that as a STEM careers awareness opportunity. Gatekeepers can encourage employers to see new opportunities, or to make better use of their existing connections.

RES (see Case study 5, p.17) has a wide variety of engagements – from school visits and curriculum support materials to highly popular community open days, when scientists and engineers are on hand to share their enthusiasm for their work.

Case study 4: Dr Kevin P Stenson The Industrial Trust

Talking the right language

“Around ten years ago the MD of Sharp Laboratories of Europe (SLE), Dr Stephen Bold, identified two challenges. First, to raise the profile of the Laboratories in the community, and, second, to encourage more people into research careers. With only 115 employees, SLE is quite a small company, but many of those employees have either a first or second degree in a STEM subject.

Stephen believed that schools had a crucial part to play in addressing his two problems. He made contact with a local school and he and the headteacher committed to work together. However, both found the logistics of building a sustainable relationship too time consuming. Stephen called in the help of the Industrial Trust and, in 2003, I went along to talk through some of SLE’s challenges. To open up positive, practical communication, I arranged a one-hour meeting between a local, motivated teacher and a scientist from SLE. The teacher was able to map SLE’s work onto the

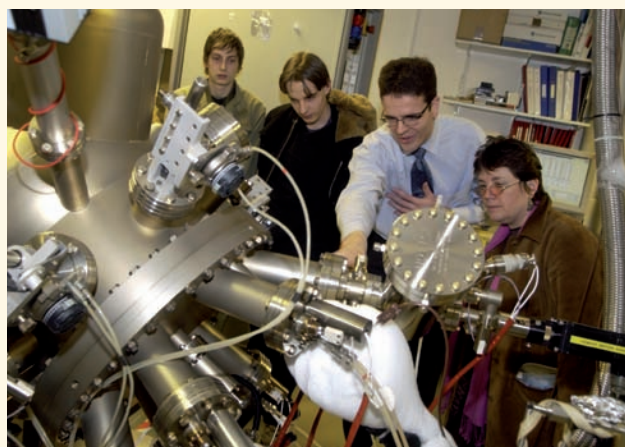
GCSE curriculum, while the scientist saw how working with the school could inspire children into STEM subjects and improve the company’s image. By the end of the meeting, we had the bones of SLE’s schools programme.

When it came to the day of the first school visit, the teachers had identified the pupils most likely to benefit from the experience and the scientists knew what to present. To make sure the day ran smoothly, I’d managed all the logistics, including the programme, health & safety information, and transportation.

Six years on, more than 200 students come through SLE’s doors every year in an embedded programme



of monthly visits. In 2004, SLE won an Investors in Education award, and local teachers often approach me to praise the role SLE plays in educating young people. SLE’s programmes can inspire pupils to do STEM GCSEs and A levels and then perhaps a degree in physics. Graduates who visit the website can see that SLE is a ‘human’ company that shows interest in its local community. We hope that, one day, they will come to work at SLE itself.”



Local press visit Sharp Laboratories of Europe to report on students witnessing the company’s breakthrough laser technology.

The way forward

We asked the delegates to identify how the STEM Careers Programme could help gatekeepers and, through them, employers, to benefit from engaging with education. These were their suggestions:

- There is no need for new initiatives – work to improve what’s already going on.
- STEM careers awareness is not a stand-alone programme – it must fit with other STEM work, and with other careers work.

existing and future activity. In 2010, we will hold another conference to review the work we’ve done as a result of these findings.

Although there are some excellent examples of mutually beneficial education– employer relationships that spread the message about STEM careers awareness, it’s clear there is still much to do. The STEM Careers Programme can initiate and support, but partnership with employer gatekeepers is



- Look beyond schools and industry – the greatest benefits lie in broader connections with FE, HE and schools, and with private, public and third-sector employers.
- Any messages will have greater impact on employers if they come as a business-to-business connection, rather than from education or government.

Conclusion

The findings from the conference carry strong messages for action, and some helpful guidance for avoiding pitfalls. We intend to share these with other groups working on employer engagement, and use them to inform

vital to reach out to all but the largest or most active employers.

The delegates left the event with a real sense of optimism – the changing landscape shows a window of opportunity to have a genuine impact on young people’s perception of STEM careers. But it was also clear we must encourage all who reach out to STEM employers, or employers who value STEM skills, to get involved and demonstrate the benefits of supporting education to their sector and member companies. This can no longer be left to the trail blazers – it’s time for all employers to play their part in the future of STEM in the UK.

Case study 5: Annie Heaton RES

Breathing life into STEM

“RES has around 250 UK employees, but it made a commitment to invest in education from its smallest beginnings. The company offers a range of renewable energy technologies, all of which have a requirement for STEM skills, not least because the Government has a target to reduce our carbon emissions by 20 percent by 2020. In fact, by 2020 we will need around 60,000 jobs in the wind-power sector alone. Who are the people we need for these jobs? They are engineers (civil, mechanical and electrical), physicists, and environmental scientists.

RES is involved in ‘a continuum of educational investment’. Every summer we hold public open days at Beaufort Court, our low-carbon head office, in which the very young to the very old can come along and talk one-to-one with an engineer and ask questions about new technologies. Here, we also run term-time school trips, so that pupils can see our renewables in action and carry out practical activities.

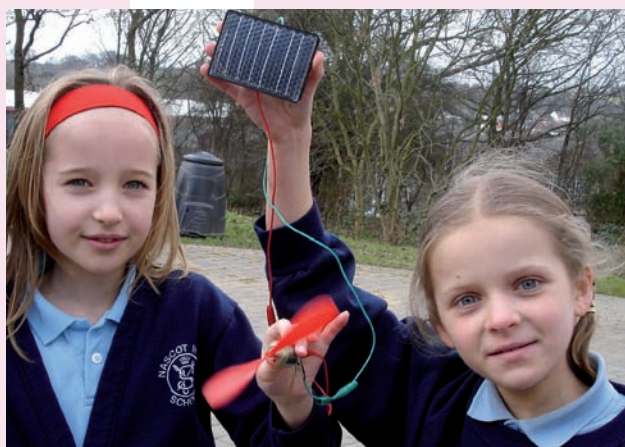
For example, children as young as six can power a propeller using a solar cell; while secondary school students can quiz our turbine engineers about what they do. This presents a fantastic opportunity to get a first-hand insight into engineering in the real world. We also run higher- and further-education visits – not only to inspire students, but also to train teachers about the practical application of their subjects. Around the country, we work with CREATE to bring workshops on climate-change topics to schools.

We tend to contact schools directly, but there are some areas where we find it useful to work with partners and gatekeepers.



One of our partners is the Engineering Development Trust, whom we’ve worked with to set Year 8 and Year 12 students long-term engineering projects, mentored by our engineers.

So, how can I summarise the value of educational investment for a small company like RES? Never underestimate how your staff can bring to life the world of work for young people, nor the benefits of investing in education – as one day it all comes back.”



Primary school children proudly display their solar-powered propeller – the result of a task set during a visit to RES head office.

The routemap

Gatekeepers can use the routemap to show other employers how just a single business driver can inspire many kinds of engagement activity – so there should always be an activity to suit their needs. The map also shows where employers can find help.

Teacher placement

STEPs at Work (Science, Technology and Engineering Placements) is a national programme of industry placements for teachers and careers staff.

Where can I find help?
www.iebe.org

Workplace visits

Student visits can be managed by a broker, or coordinated by your staff, giving development opportunities.

Where can I find help?
www.industrialtrust.org.uk
and www.safevisits.org.uk

Diploma support

The Diploma is a new way to teach and learn that covers core skills and applied learning, including a work placement. Schools need employer partners to enable them to deliver diplomas.

Where can I find help?
www.direct.gov.uk/diplomas gives information and gives details of diplomas that are offered in your area.

What do you want?

... to recruit new staff

... to improve perceptions of our sector

... to develop staff skills

... a positive community role

Financial support

Direct financial support or providing equipment to 'sponsor' a school can raise the company profile without having to commit time. Organisations that run activities for schools also need sponsors, as do local and regional science and engineering competitions.

Where can I find help?
www.ssatrust.org.uk to support local specialist schools and academies; www.britishtscienceassociation.org for regional and national science and engineering competitions; www.stemdirectories.org.uk to support an engagement organisation.

Supply a school governor

Offer leadership and management expertise, with a valuable knowledge of STEM, through a school's board of governors.

Where can I find help?
School Governor's One Stop Shop at www.sgoss.org.uk

Science and engineering clubs

Supporting or helping to run a school science or engineering club gives the staff involved a chance to develop their skills.

Where can I find help?
www.britishtscienceassociation.org
or www.youngeng.org

Want to get involved? Try ...

- www.employers-guide.org for an overview of getting involved in education
- www.stemnet.org for your local STEMpoint, supporting STEM in schools and colleges

- www.iebe.org for local education business partnership organisations
- www.nationalstemcentre.org.uk to find your regional STEM cluster. Also your trade association, or your supply chain for ideas in your sector

Work experience and STEM projects

With the right planning, these can have major impact and be development opportunities for the staff supporting the students.

Where can I find help?

Local Education Business Partnership Organisation via www.iebe.org. For specialist projects go to: www.nuffieldfoundation.org for Nuffield Science Bursaries; or www.engineering-education.org.uk for Engineering Education Scheme. Also www.nationalstemcentre.org.uk for a link to the STEM careers work-experience pack.

Apprenticeship taster days

Students come to your site to find out what it is like to be an apprentice, and to take part in practical activities.

Where can I find help?

The National Apprenticeship Service at www.apprenticeships.org.uk

Develop careers materials

These could be leaflets for the careers library or classroom materials linked to the curriculum.

Where can I find help?

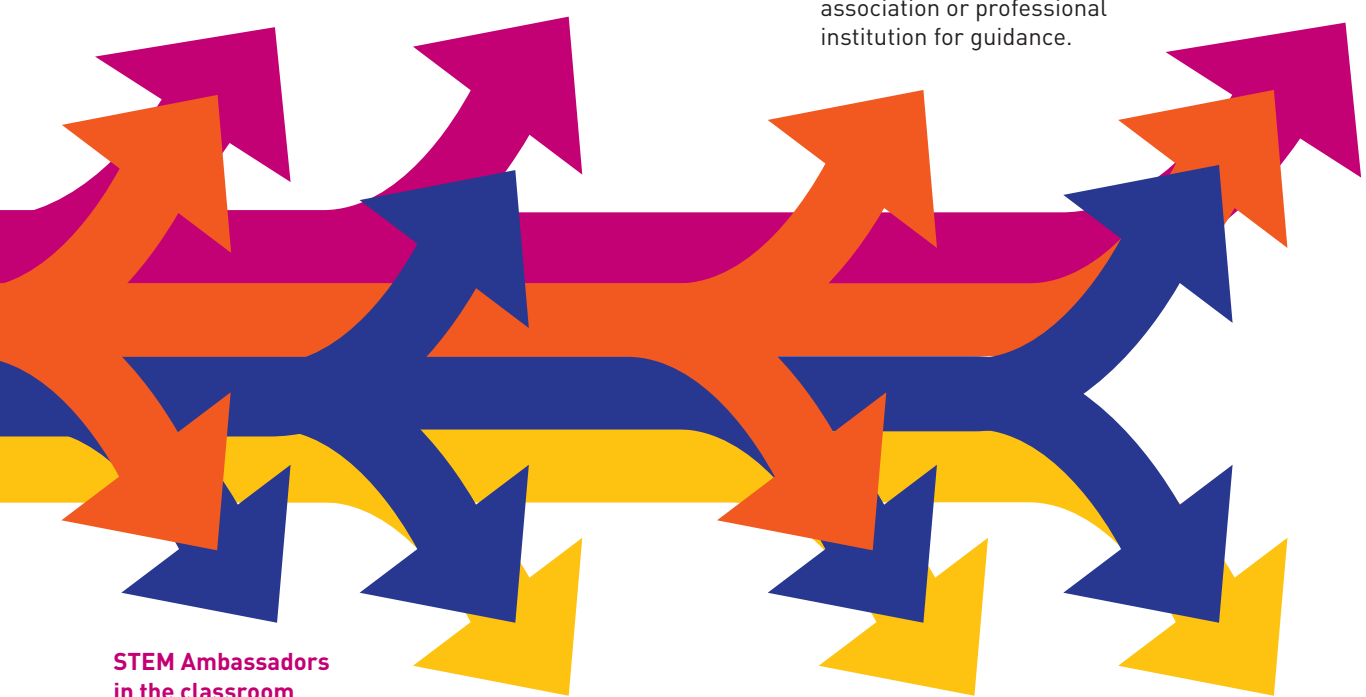
www.nationalstemcentre.org.uk and 'Careers from Science' at www.sciencecouncil.org has a best-practice guide. Contact your trade association or professional institution for guidance.

Provide speakers at careers events

Your staff could man a stand, speak to a group, or host 'speed networking' – having a series of short conversations with young people.

Where can I find help?

www.stemnet.org.uk or www.growingambitions.org



STEM Ambassadors in the classroom

Encourage your staff to register as STEM Ambassadors, support subject teachers and talk to young people about their career path.

Where can I find help?

www.stemnet.org.uk

STEM Ambassadors on activity days

Most schools have activity days during which the pupils are 'off timetable' to do a series of activities, or to devote the whole day to a single, more in-depth project. Alternatively, companies can host activity days themselves.

Where can I find help?

www.stemnet.org.uk

Online case studies

A short article and photo or a video (of the company or individual role models) are useful ways to inspire young people and inform teachers and parents.

Where can I find help?

www.futuremorph.org, www.mathscareers.org.uk, www.careersbox.co.uk or icould.com

Other volunteering

Other volunteering with schools, which brings staff into direct contact with young people, but isn't directly STEM related, can give the chance for young people to meet someone using STEM in their work.

Where can I find help?

Look up 'Employee Volunteering' at www.do-it.org.uk

Looking for new ideas? Try ...

■ 'Building Stronger Partnerships – Employers: How you can support schools, colleges, children and families', a report on the DSCF website, www.dcsf.gov.uk

■ 'Backing Young Britain' at <http://interactive.bis.gov.uk/backingyoungbritain>
 ■ www.stemdirectories.org.uk to find out what others are doing

Useful contacts

General

www.employers-guide.org provides an overview of how to get involved in education from the Education and Employers Task Force.

www.businesslink.gov.uk has a section on employing young people, with information that includes work experience and diplomas.

www.iebe.org.uk is the professional body for educational business partnerships.

www.ssatrust.org.uk can provide all kinds of support if you want to get involved with schools. Go to the Businesses section to find a range of information on supporting Specialist Schools – from giving staff time, expertise or skills all the way through to sponsorship.

www.sscalliance.org is the employer skills organisation and gives information about what's happening in training and careers in your sector. Look up your trade association or your supply chain partners for ideas in your sector or contact your local Chamber of Commerce to find out about local schemes, including visiting speakers to schools.

www.edge.co.uk is an independent education foundation raising the stature of practical and vocational learning. They host a number of projects to promote business links with schools.

www.dcsf.gov.uk/14-19 is home to the report on 'Building Stronger Partnerships – Employers: How you can support schools, colleges, children and families'.

<http://interactive.bis.gov.uk/backingyoungbritain/> Backing Young Britain is a cross-government campaign to support employers across all sectors to provide more opportunities for young people.

www.bitc.org.uk supports businesses in their local community in education, employability and economic renewal.

www.careeracademies.org.uk is a national organisation bringing schools and employers together to raise aspirations of all 16 to 19 year olds.

www.stemnet.org gives details of your local STEMpoint, supporting schools and colleges.

www.stemdirectories.org.uk will help you to find out what others are doing.

Contact the local Regional Development agency to find out if they have a STEM partnership, such as www.emstempartnership.org.uk.

Work experience and work-related learning

www.iebe.org.uk or www.trident-edexcel.co.uk/tsec4.asp will help you find your local education business-partnership organisation to find out about work experience and work-related learning, as well as mentoring schemes.

www.work-experience.org is the National Council for Work Experience with a focus on how to promote opportunities to students of further and higher education.

www.hse.gov.uk/youngpeople/workexperience/index.htm offers specific information related to work-experience placements provided by the Health and Safety Executive.

www.direct.gov.uk/diplomas will help you to find out how to support the diploma in your sector and area.

www.futuremorph.org provides links to STEM careers work experience and role-model training packs or email info@careersinstem.co.uk

STEM is amazing!

STEM opens doors.

www.apprenticeships.org.uk will help you to get involved in providing apprenticeships.

www.workinspiration.com is a Business in the Community campaign to improve work placements.

Visits and role models

www.industrialtrust.org.uk provides help with school visits and www.safevisits.org.uk will help check out safety requirements.

www.stemnet.org.uk gives information on how to become a STEM Ambassador.

www.growingambitions.org is a non-profit organisation that brings speakers together with relevant schools and colleges.

Contributing careers materials and case studies

www.sciencecouncil.org has a best-practice summary in the Careers from Science/recent activities section.

The STEM careers online collection hosted at www.nationalstemcentre.org.uk provides a ten-point checklist linked to the National Information, Advice and Guidance Standards.

www.icould.com or www.careersbox.co.uk enables you to be an online video case study.

www.futuremorph.org or www.mathscareers.org.uk enables you to become a video case study or to provide a profile.

A focus on equality and diversity

www.ukrc4setwomen.org is the lead organisation supporting women in Science, Engineering and Technology. They host the GetSET database where schools can find female role models and speakers.

www.wisecampaign.org.uk gives information on how to provide female role-model case studies and support the campaign to promote STEM subjects to girls.

www.stem-e-and-d-toolkit.co.uk is the toolkit provided as part of the STEM Careers campaign and informs and supports all those who want to make STEM careers more inclusive.

Other activities

www.etrust.org.uk/what-company.php and www.smallpeicetrust.org.uk The Engineering Development Trust and the Smallpeice Trust are amongst those who can offer a range of ways for employers to make links to schools to support STEM enrichment and careers.

www.stemnet.org.uk or www.britishscienceassociation.org or www.youngeng.org provide information about supporting science- and engineering-based clubs.

www.sgoss.org.uk gives information on how to be a school governor.

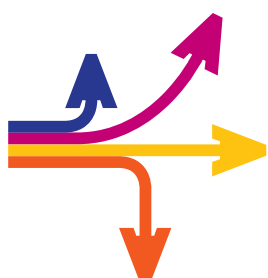
www.britishscienceassociation.org provides access to competitions and sponsorship, and coordinates National Science and Engineering Week.

www.do-it.org.uk is a national volunteering database with a section on employee volunteering.

Organisations that attended the gatekeepers and enablers event: 29 September 2009

- Association of the British Pharmaceutical Industry (ABPI)
- Association for Careers Education and Guidance (ACEG)
- Antech
- Association for Science and Discovery Centres (ASDC)
- AstraZeneca
- Beacons for Public Engagement
- British Science Association
- Campaign for Science & Engineering in the UK (CASE)
- Confederation of British Industry (CBI)
- Chemical Industries Education Centre
- Council for Industry and Higher Education (CIHE)
- Cogent – Sector Skills Council for Science Based Industries
- Career Development Organisation (CRAC)
- Centre for Science Education, Sheffield Hallam University (CSE)
- Department for Business, Innovation and Skills (DBIS)
- Department for Children, Schools and Families (DCSF)
- Department of Health
- East Midlands STEM Partnership
- Engineering Development Trust (EDT)
- Education and Employers Taskforce
- EEF: The Manufacturers' Organisation
- Engineering UK
- e-skills – Sector skills Council for Business and Information Technology
- Higher Education STEM Programme (HE STEM)
- ICG
- Institute of Mathematics and its Applications (IMA)
- Industrial Trust
- London Engineering Project
- Made in London
- National Council for Excellence in the Teaching of Mathematics (NCETM)
- National STEM Centre
- Newstead Wood School
- National Science Learning Centre (NSLC)
- Nuffield Foundation
- RCUK
- RES
- Royal Academy of Engineering
- Society of British Aerospace companies (SBAC)
- Science Council
- Science Community Partnership Supporting Education (SCORE)
- SEMTA – Sector Skills Council for Science, Engineering and Manufacturing Technologies
- Siemens Industrial Turbomachinery
- Skillset – Sector Skills Council for Creative Media
- Smallpeice Trust
- SNS
- STEMNET
- UK Science Skills Forum
- UK Electronics Alliance (UKEA)
- University of Warwick
- VT Enterprise
- Young Engineers

SCIENCEANDMATHS.NET
SEE WHERE THEY CAN TAKE YOU



A Department for Children, Schools and Families initiative to promote subject choice and careers in Science, Technology, Engineering and Maths (STEM)