



# STEM CAREERS TOOLKIT

FOR CAREERS LEADERS IN  
SECONDARY SCHOOLS  
AND COLLEGES

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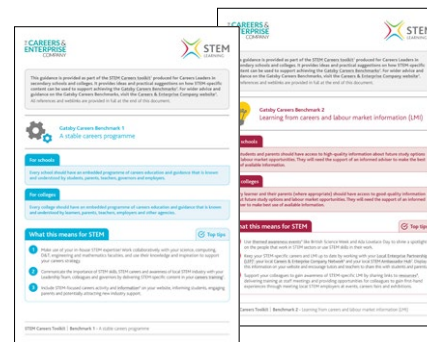
THE **CAREERS &  
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# Welcome to the STEM careers toolkit!

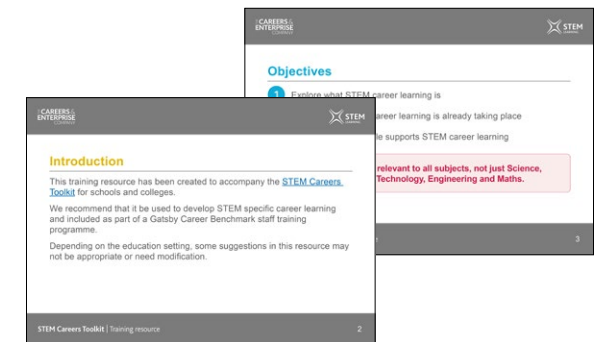
This toolkit for Careers Leaders in secondary schools and colleges includes:



Guidance for using STEM specific content within your careers strategy, supporting all 8 Gatsby Benchmarks



Print friendly guidance for each Benchmark



Training for teaching staff, designed to increase awareness of STEM career learning

[View the full toolkit here](#)

## Introduction

### Who is this toolkit for?

This toolkit has been written for Careers Leaders in secondary schools and colleges.

### How to use this toolkit

This toolkit provides ideas and practical suggestions on how STEM specific content might be used to meet the Gatsby Careers Benchmarks. It provides support for each benchmark and can be returned to over time as you develop your STEM career programme. Depending on the education setting, some suggestions in this toolkit may not be appropriate or need modification.

### For each benchmark the toolkit provides:

- a description of the benchmark
- top tips for what this means for STEM, including 3 suggestions of how STEM can be included in the benchmark
- useful resources, including organisations, documents and resources that support the toolkit's suggestions
- ideas and practical suggestions, a detailed collection of recommendations and guidance to develop STEM specific content for each benchmark
- examples of current practice in secondary schools, FE and Sixth Form Colleges around the country

For wider advice and guidance on the Gatsby Careers Benchmarks, visit the [Careers & Enterprise Company](#).



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8 ways to improve your STEM careers provision

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## 8 ways that STEM can support the Gatsby Careers Benchmarks



1

Make use of your in-house STEM expertise! Work collaboratively with your science, computing, D&T, engineering and maths faculties, and use their knowledge and inspiration to support your careers strategy.

Benchmark 1



2

Use themed awareness events like British Science Week and Ada Lovelace Day to shine a spotlight on the people that work in STEM sectors or use STEM skills in their work.

Benchmark 2



3

When planning careers activity, support students to understand the wide range of jobs available in STEM sectors, including both STEM and non-STEM skilled roles.

Benchmark 3



4

Support your colleagues to bring careers learning into their classrooms by sharing STEM careers resources, like posters, job profile examples, further study route information and labour market information (LMI).

Benchmark 4

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5

Arrange meaningful encounters that expose students to a range of volunteers and alumni from different backgrounds, providing students with a broad view of who can work in a STEM role.

Benchmark 5



6

Use workplace experiences as an opportunity to engage colleagues in STEM careers learning. Where possible, ask your STEM colleagues to support events or accompany students on workplace trips.

Benchmark 6



7

Provide opportunities for students and parents to find out about STEM further study routes at events such as parents evenings, options evenings, careers fairs and celebration events. Consider using volunteers from industry and education to create an authentic experience.

Benchmark 7



8

Equip your Careers Adviser with STEM careers posters, flyers and resources and ensure these are available in any careers areas.

Benchmark 8

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## Gatsby Careers Benchmark 1 A stable careers programme

### For schools

Every school should have an embedded programme of careers education and guidance that is known and understood by students, parents, teachers, governors and employers.

### For colleges

Every college should have an embedded programme of careers education and guidance that is known and understood by learners, parents, teachers, employers and other agencies.

## What this means for STEM

### Top tips

- 1 Make use of your in-house STEM expertise! Work collaboratively with your science, computing, D&T, engineering and maths faculties, and use their knowledge and inspiration to support your careers strategy.
- 2 Communicate the importance of STEM skills, STEM careers and awareness of local STEM industry with your Leadership Team, colleagues and governors by delivering STEM-specific content in your careers training.
- 3 Include STEM-focused careers activity and information on your website, informing students, engaging parents and potentially attracting new industry support.

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## Useful resources

- 1 [STEM Learning STEM Careers resources](#)
- 2 [STEM-specific careers training with the STEM Careers Toolkit: training resource](#)
- 3 Find out about your local [Careers & Enterprise Company Network](#)
- 4 Get in touch with your local [STEM Ambassador Hub](#)
- 5 Evaluate your careers activity using the [evaluation tools provided by the Careers & Enterprise Company and STEM Learning's career evaluation resources](#)
- 6 Find your [Local Enterprise Partnership](#)
- 7 Support your STEM colleagues to better understand your careers strategy with [free online training from STEM Learning](#)
- 8 Find out about [STEM-themed awareness events](#) that happen throughout the year
- 9 Find out about [Gatsby Benchmark 1](#)



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### Develop STEM within your careers strategy

STEM career learning should be woven into your careers strategy and have support from your Leadership Team, governance and, where possible, local employers.

#### Evaluate your current provision:

- ✔ Use the ideas in this toolkit to evaluate your current STEM careers provision and develop strategies for future STEM career activity, mapped to each Gatsby Careers Benchmark.
- ✔ Join your Careers & Enterprise Company Network and access support from your local Enterprise Coordinator and a trained Enterprise Advisor. Use evaluation tools to understand your current career learning provision and how it can be developed.
- ✔ Contact your local STEM Ambassador Hub and find out about STEM-specific events, volunteers and programmes that your school or college can engage in.

#### Develop STEM provision within your careers strategy:

- ✔ Establish leadership buy-in for STEM-specific career learning. Having high-level STEM advocates will support future work, especially if additional commitment for funding and staffing is necessary.
- ✔ Include STEM-specific careers information in your careers training for colleagues.
- ✔ Include STEM career learning opportunities for all students throughout the year, covering a range of STEM subjects and careers. These opportunities could be linked to themed weeks and days delivered as part of the curriculum, enrichment, assemblies, targeted student interventions or part of PSHE or tutor time.
- ✔ List STEM-specific activities in your published careers strategy and provide experience of a range of STEM careers across sectors such as digital, logistics, engineering, healthcare, manufacturing, construction and biosciences.
- ✔ Include extra-curricular STEM activities and competitions in your published careers strategy and work with your STEM faculties to keep an up-to-date list of these events included in your annual plan.
- ✔ Communicate the importance of STEM skills and STEM career learning to parents through events, newsletters, social media and your website.

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### Collaborate with your in-house expertise: science, computing, D&T, engineering and maths departments

Before you introduce a range of STEM career learning opportunities, work with your colleagues to establish where STEM career learning is already happening in both curriculum and extra-curricular provision.

#### Evaluate existing STEM career learning and where possible, incorporate this into your careers strategy:

- ✔ Support your colleagues to better understand where STEM fits within your careers strategy by providing internal training or participating in [free online training from STEM Learning](#).
- ✔ Speak to your curriculum leaders and attend curriculum meetings to find out what STEM career learning is already taking place. Look for examples of good practice in lessons, clubs, competitions and societies.
- ✔ Establish a careers representative for each STEM subject or across departments (ie STEM coordinator) who can work with you to take a strategic view on how career learning takes place across departments.



- ✔ Ensure that there are STEM career learning opportunities in lessons and in extra-curricular activities (see [Benchmarks 4 and 5](#)).
- ✔ Consider sustainability and avoid overloading colleagues. STEM subjects can support a wide range of career learning activities; where possible look to complement existing activity (ie adapting schemes of learning).
- ✔ Support your colleagues to increase their understanding of STEM employers and STEM further study routes (ie A levels, T levels, apprenticeships, degree routes, etc) by sharing careers-linked curriculum resources and involving them in [encounters with employers, further education and higher education](#).

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✔ Explore how STEM career learning can be developed across the curriculum. For example:

- Art – raise awareness of global issues with art projects
- English – creative writing and writing for purpose about, for example, STEM in the news, STEM jobs
- RE – social justice debates about how technology can improve lives and the ethics of technological advancements
- History – exploring the impact of science and technology on society
- PE – researching technical sports clothing and the design of performance sport equipment
- Geography – understanding the technology and engineering infrastructure required to support urban growth



✔ Consider how best to record STEM career learning:

- gather evidence of career learning in curriculum planning and department development plans
- record and celebrate your students' meaningful encounters with STEM employers, further education and higher education. If recording at department level, refer to these records in your careers strategy
- encourage colleagues to keep an attendance record for STEM related extra-curricular activities. These records can be used with Careers & Enterprise Company evaluation tools to profile which students are engaging in extra-curricular activities and support targeting underrepresented groups in future activities

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## Develop a STEM careers network and capture feedback

Create a STEM careers network to support you as you build STEM into your careers strategy. Provide opportunities for this network to evaluate your careers work and use them to communicate STEM careers information.

### Take advice from employers about the current and future STEM labour market:

- ✔ Try to encourage STEM colleagues to attend STEM-specific network meetings, both online and face to face, increasing their professional network.

### Provide STEM careers information to colleagues, parents and students:

- ✔ Share STEM-specific careers resources and information with your colleagues, including posters, videos and curriculum-linked resources.

- ✔ Encourage colleagues across curriculum subjects, PSHE and pastoral time to engage in STEM-themed awareness events (ie British Science Week, Ada Lovelace Day, Pi Day).
- ✔ Publish details of your STEM careers activities in your careers programme and provide advice for parents on where to find STEM careers information on your website.
- ✔ Ensure that your Careers Adviser has STEM-specific information to use during personal guidance time (See Benchmark 8 for more information)
- ✔ Keep STEM careers on the agenda through updates to colleagues, parents, leadership and governors.

### Seek feedback:

- ✔ Use evaluation tools such as STEM Learning's careers activity evaluation resources and evaluation tools provided by the Careers & Enterprise Company to evaluate your STEM careers activities. Try to gather a range of evaluation information from colleagues, students, learners, parents, employers and volunteers.
- ✔ Seek feedback on the STEM content within your careers strategy from your local Careers & Enterprise Company Network, local employers and governors. Does your strategy align with the plan for developing STEM skills in your region?

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AN EXAMPLE OF ...

Embedded STEM careers learning in post-16 education

**Grimsby Institute of Further and Higher Education has developed a department approach to STEM careers learning, offering a curriculum that meets the needs of the local regions that the provision serves and ensures that learners are well prepared to progress to employment, apprenticeships or higher education.**

**Senior leaders are responsive to local need, developing a STEM curriculum that:**

- incorporates detailed and accurate labour market intelligence
- utilises the local knowledge of colleagues and links with partners to inform curriculum decisions and to identify skills gaps
- uses online training to further develop STEM experiences
- embeds the development of employability skills
- allows for a full day of student work-related activities, every week

- encourages participation in competitions to demonstrate high-level STEM skills and abilities
- provides opportunity for learners to receive feedback from employers on skill development and work-readiness

Teachers develop their own industrial expertise and create excellent links with employers and external agencies to help learners develop their employability skills. As a result, learners see them as knowledgeable and credible, and recognise their good understanding of the requirements of the industry or vocational area.

**The college's careers provision works in partnership with STEM faculties, providing:**

- each faculty with a Skills and Employability Trainer allocated to them to work with employers and students on employability skills, including providing work experience placements where available and appropriate
- HE application support, via the Grimsby Aspire programme
- employability skills passports, via the Humber LEP

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AN EXAMPLE OF ...

Working with the Careers & Enterprise Company Network

**Mike Bowen works for Jacobs within the Highways team of their Transportation business. He volunteers his time as an Enterprise Adviser, supporting Carmel College in Darlington. As an Enterprise Adviser, Mike works with staff and students at the College to support their careers programme.**

*“Throughout my career, STEM and STEAM engagement has always been a significant passion of mine. I have been fortunate enough to have been given an opportunity from someone, which kick started my career into the industry. Since then, I’ve always wanted to ensure that I could provide an understanding of the opportunities that exist for others.*

*Being an Enterpriser Adviser enabled me to take my involvement in STEM and STEAM engagement one step further. It also fits perfectly with Jacobs’ values to live inclusion, and invest in our people and culture. The opportunity to work directly and enhance engagement between a school, or college and a business fitted perfectly with our company ethos.”*

Register your interest in your local Careers & Enterprise Company Network and learn more about the support that Enterprise Advisors can provide.



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## Gatsby Careers Benchmark 2 Learning from careers and labour market information (LMI)

### For schools

All students and parents should have access to high-quality information about future study options and labour market opportunities. They will need the support of an informed adviser to make the best use of available information.

### For colleges

Every learner, and their parents (where appropriate), should have access to good-quality information about future study options and labour market opportunities. They will need the support of an informed adviser to make best use of available information.

## What this means for STEM

### Top tips

- 1 Use themed awareness events like British Science Week and Ada Lovelace Day to shine a spotlight on the people that work in STEM sectors or use STEM skills in their work.
- 2 Keep your STEM-specific careers and LMI up to date by working with your Local Enterprise Partnership (LEP), your local Careers & Enterprise Company Network, and your local STEM Ambassador Hub. Display this information on your website and encourage tutors and teachers to share this with students and parents.
- 3 Support your colleagues to gain awareness of STEM-specific LMI by sharing links to resources, delivering training at staff meetings and providing opportunities for colleagues to gain first-hand experiences through meeting local STEM employers at events, careers fairs and exhibitions.

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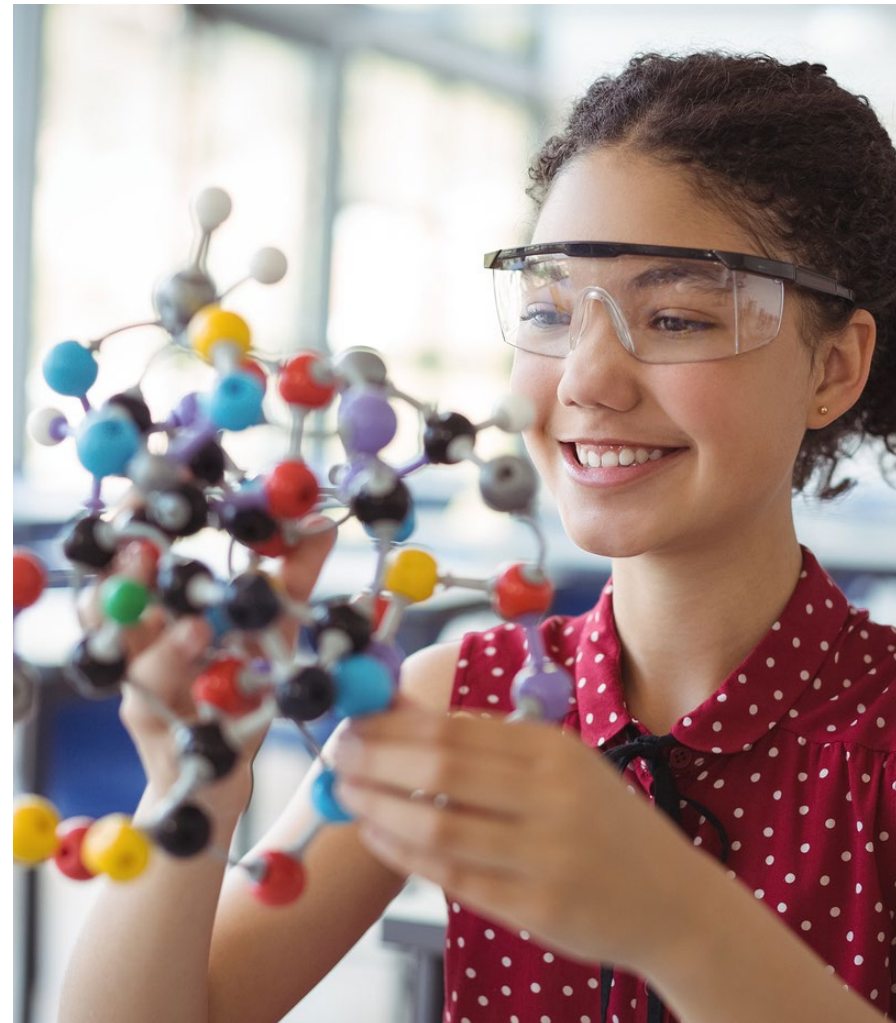
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## Useful resources

- 1 [Search for local apprenticeships and find out more information about apprenticeship training programmes](#)
- 2 Find your [Local Enterprise Partnership](#)
- 3 [Contact your local STEM Ambassador Hub](#)
- 4 Use [Nomis](#) (provided by the Office for National Statistics) to gather local and national UK labour market statistics
- 5 Display LMI on your website using the [Careerometer Widget](#)
- 6 [STEM Learning STEM careers resources](#)
- 7 Find out LMI for specific sectors, through the [Sector Skills Councils](#)
- 8 For engineering-specific LMI, take a look at [Engineering UK's annual 'State of Engineering' report](#)
- 9 Find out about [Gatsby Benchmark 2](#)



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## Collect STEM-specific careers and labour market information

Support your colleagues to share accurate and up-to-date STEM-specific careers and LMI by collating relevant flyers, websites, posters and contacts.

- ✔ Find examples of STEM further study routes and make contact with your local training providers to ensure that the information you have is up to date. Searching for live apprenticeships in your area will help create a picture of local opportunities and the qualification requirements that employers are looking for.
- ✔ Find out who your local employers are and gather information on future STEM workforce trends. Your Local Enterprise Partnership (LEP) will know about the range of local employers in your area and will be able to provide you with a projection of future demand for STEM careers in different sectors.
- ✔ Call on the support of your local Careers & Enterprise Company Network and your local STEM Ambassador Hub to help fill in any gaps. Use Nomis to find out about the STEM related jobs in your local area.

- ✔ Keep it fresh – local LMI can change rapidly. Review your understanding of the local labour market needs each year.



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### Communicate STEM future study options and LMI to colleagues

Your colleagues have an important role to play in sharing STEM-specific careers and labour market information with students. To be effective they must first understand the information themselves and know how best to utilise it.

- ✔ Support your wider teaching staff to work with STEM employers and explore how STEM links to their subject. There are many jobs available in STEM industries that are relevant to subjects such as English, history and languages. For example:
  - Marketing executive – Hannah works for a maths tutoring company, running their offline public relations campaigns
  - Business relationship manager – Gwenth works for a technology company, managing their relationship with large customers
  - Personnel administrator – Simon works for the RAF within the Human Resources Team

- ✔ Raise awareness of different study routes and LMI in meetings and training.
  - do teaching colleagues attend careers fairs and engage with the exhibitors?
  - are your STEM colleagues able to accompany students on STEM-specific visits to education providers?
  - are your STEM colleagues able to support students' understanding of STEM further study routes? (ie A levels, T levels, apprenticeships, degree routes, etc)
  - can you support your colleagues to visit STEM employers and find out about different careers relevant to their curriculum?
- ✔ Provide STEM-specific careers information and LMI for your Careers Adviser and employability teams to use during personal guidance sessions.
- ✔ Invite STEM employers to work with your colleagues and support them to create careers resources for their curriculum. For example:
  - create or share job profiles
  - provide sector information linking to the curriculum (ie future trends, skills shortages, emerging technologies)
  - provide company specific information on further study routes and entry points (ie apprenticeships, direct entry, graduate programmes)

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### Communicate STEM further study options and LMI to students and parents

LMI can be quantitative (how much will I earn?) or qualitative (what is the company culture like?). LMI can be 'hot' (meeting a real person) or 'cold' (facts on a sheet) and everything in between. Your careers strategy should provide students and parents with opportunities to engage with a variety of sources of LMI that include a range of different STEM sectors.

- ✔ Help parents to understand the local need for future STEM skills, the transferability of STEM skills and raise awareness of the wide range of roles involved in the STEM sectors. Use [STEM employers](#) to provide an authentic voice at events where parents may be present, for example open evenings and celebration events.
- ✔ Encourage your colleagues to include [STEM-related LMI](#) in their curriculum planning and extra-curricular activities (see [Benchmark 4](#)).
- ✔ Display STEM-specific LMI on your website using a free resource like the [Careerometer Widget](#). Encourage pastoral tutors to share this with students and parents.
- ✔ Support employers and volunteers to incorporate further study information and LMI into [meaningful encounters](#). Work with them before careers events to build this information into careers activities and support them to share their career journey with students. (See [Benchmark 5](#) for further information on working with employers and volunteers.)
- ✔ Use social media, newsletters and blogs to share STEM LMI and further study options with parents and students.

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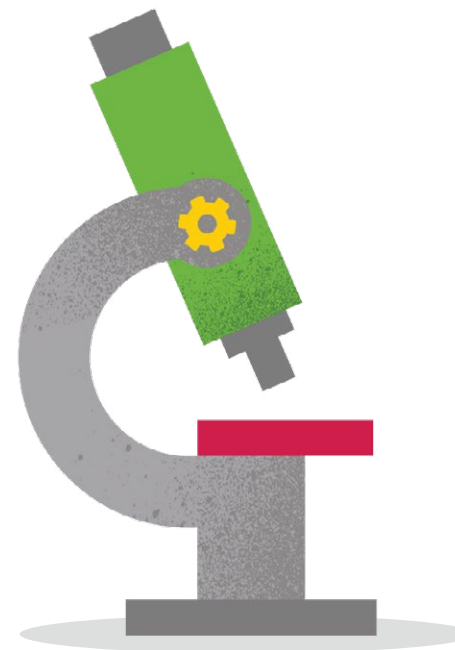
**Providing LMI for parents**

Judgemeadow Community College worked with a STEM Ambassador from the food industry to combine a student awards evening with an opportunity to share LMI with students and parents.

A STEM Ambassador from Pepsico was asked to attend the evening event and present her experiences of working in the food industry. Working with the college, the presentation addressed a number of career learning areas:

- linking her job role to the work that the students were involved in
- explaining her STEM career journey and the work of her company, both locally and nationally
- wider explanation of the food industry sectors and upcoming opportunities

To organise a similar event, work with your local Careers & Enterprise Company Network or contact your local STEM Ambassador Hubs to find a volunteer from a STEM industry to support.



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## AN EXAMPLE OF ...

### LMI-focused teacher training

**North Devon Manufacturers Association and the South West Peninsula STEM Ambassador Hub ran a series of twilight events, inviting local STEM teachers to attend two-hour training sessions at a number of local STEM employers.**

#### The training sessions consisted of:

- a site tour with an overview of the host employer
- up-to-date LMI about the host industry
- a presentation on career routes into the host industry, including current apprenticeship information
- ideas of how to contextualise classroom learning, based on the employer activity
- practical or interactive tasks (where possible)

The aim of the events was to inform teachers about STEM-specific LMI, create ideas for collaboration between local teachers and employers, and create better partnerships between STEM faculties and employers.

#### The impact of the events was that teachers:

- increased their awareness of the labour market, in particular, apprenticeships and local opportunities
- gained ideas for developed employer contextualised curriculum content
- created links with employers, leading to more student workplace experiences
- were more able to invite employers into their lessons and provide meaningful encounters for students

To seek ideas on how to create a similar event for your colleagues, contact your local [Careers & Enterprise Company Network](#), your [Local Enterprise Partnership](#) or [contact your local STEM Ambassador Hub](#).

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### Gatsby Careers Benchmark 3 Addressing the needs of each student / learner

#### For schools

Students have different career guidance needs at different stages. Opportunities for advice and support should be tailored to each of these key stages, with equality and diversity embedded in the school's careers programme.

#### For colleges

Learners have different career guidance needs at different stages. Opportunities for advice and support need to be tailored to the needs of each learner. A college's careers programme should embed equality and diversity considerations throughout.

## What this means for STEM

### Top tips

- 1 When planning careers activity, support students to understand the wide range of jobs available in STEM sectors, including both STEM and non-STEM skilled roles.
- 2 Highlight the transferability of STEM skills to students, in particular, mathematics and digital skills. Support students to understand how STEM skills can support their wider employability.
- 3 Use student voice and evaluation tools from the [Careers & Enterprise Company](#) to identify cohorts of students who would benefit from specific STEM careers information.

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## Useful resources

- 1 Evaluate your careers activities and students' perceptions of STEM with STEM Learning's careers activity evaluation resources and [Careers & Enterprise Company tools](#)
- 2 [Request a STEM Ambassador](#)
- 3 Find out about gender stereotyping with resources from [WISE](#), the [Institute of Physics](#) and [STEMettes](#)
- 4 Find out more about [Science Capital](#) and the [Science Capital teaching approach](#)
- 5 Learn more about [Essential Skills with the Skills Builder Framework](#)
- 6 Find out about [Gatsby Benchmark 3](#)

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## Challenge STEM stereotypes and raise aspirations – is STEM available for all?

Your careers strategy needs to understand your students' perceptions of STEM, challenge any misconceptions they might have around STEM careers and inform students (and parents) of available STEM careers routes and STEM further study options.

The misconceptions that surround STEM careers (and STEM qualifications) may prevent some of your students from seeing STEM as an option for them. Students need to see the benefit of STEM to their lives and recognise the positive impact that STEM skills like mathematics and digital skills can have on their wider employability.

- ✔ Help students and parents to understand the transferability of STEM skills and raise awareness of the wide range of roles involved in the STEM sectors. Use STEM employers to provide an authentic voice at events where parents may be present, for example open evenings and celebration events.
- ✔ Use student voice to understand your students' perspectives on who can do a job in STEM, what exam grades they need and what types of STEM careers are available.



- ✔ Use STEM employers to challenge misconceptions around diversity and academic ability:
  - arrange meaningful encounters that expose students to a range of volunteers from different backgrounds, providing students with a broad view of who can work in a STEM role. (See Benchmark 5 for more support)
  - invite apprentices, and those who studied a diverse range of qualifications, to share their journey through STEM, challenging the misconception that you need a degree to find work in STEM industries
  - reach out to your student alumni currently working with STEM employers. Arrange for them to meet with students who perceive STEM subjects as 'not for them' so that these students can meet someone from their local area who is successful in a STEM industry

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- ✔ Work with your colleagues to challenge STEM stereotypes. For example:
  - can science lessons use examples of scientists that don't work in labs?
  - do learning environments display a balance of gender representation for jobs such as engineering, medicine and construction? Organisations such as [WISE](#), the [Institute of Physics](#) and [STEMettes](#) have resources and careers activities designed to address gender stereotyping.
  - do mathematics lessons highlight maths as a transferable skill by providing examples of it being used across a wide range of careers?
- ✔ Share the [Science Capital](#) research with your STEM colleagues. Science Capital helps to understand why some young people have a science identity, seeing science as being 'for me' and others do not.



### Evaluate your STEM profile

Understanding how your students engage with STEM-specific further study and employment destinations will allow you to build up a STEM profile. Use this profile to target STEM careers activity at those cohorts of students that are most in need of STEM-specific support.

- ✔ Use your destinations data to explore which students go on to STEM careers and STEM further study. Does the data show over or under-representation from particular student cohorts? Should you be targeting STEM career learning to encourage specific student groups?
- ✔ Are there specific cohorts of students that undertake STEM study at Level 2 and Level 3? Can you provide support for your STEM faculties to target recruitment of underrepresented groups?
- ✔ Investigate the STEM profile of your colleagues, governors and parents. Can these local role models share their positive STEM experiences through displays, talks and informal discussion? If students can see the value of STEM to those that they trust, they may be more likely to see the value of STEM to their own lives.

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- ✔ Gather data on your student alumni and invite them to support your STEM careers activities. Invite them to share their experiences of study, employment and life after school or college.
- ✔ Challenge students to reflect on what they have learned from STEM-specific careers activities and prompt them to record these in their careers journal or records. Whilst not all students who have participated in STEM-specific careers activity will end up in a STEM career, helping students to understand the transferability of the skills that they develop will benefit their wider employability.
- ✔ Use student voice and evaluation tools from the Careers & Enterprise Company to identify cohorts of students who would benefit from specific STEM careers information, ie do you have a group with an interest in engineering, medicine, gaming etc? Look at putting on specific sessions for them, inviting industry professionals to share their stories and providing tailored careers information.



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AN EXAMPLE OF ...

Using extra-curricular activity to target underrepresented groups

**East Barnet School** is a mixed-gender secondary school that uses robotics as a hook to engage female students in engineering. The school runs a successful VEX Robotics Club that specialises in creating all-female teams that design, build and program their own robots for regional, national and international competitions.

The Club Leader is a design and technology teacher who, after finding out about the low number of females working in engineering, decided to use robotics as a way to engage female students in engineering and technology.

*"I believe everyone should have the opportunity to experience this type of activity. For me it's more than robotics, it's about learning to work with different people from different cultures, it's about developing confidence in public speaking, it's developing perseverance when your robot needs improving or has a problem. We've found that robotics definitely changes students' views on what they think engineering is and has nudged some of our students in a direction that they may initially not have thought of."*

*"It's also changed the perceptions of some parents too, so much so that I have a group of enthusiastic parents that like to show their support at competitions!"*

**Stephen Sadler, Club Leader.**

The Club recruits female students by advertising in D&T lessons, Club advertisements and in assemblies. Having successfully recruited female teams for a number of years, they now employ their student alumni to mentor teams as they progress through the UK championships. More recently, the Club has developed into an outreach provision for local primary schools, using the expertise of current female students to support younger children to find out about robotics. This provides leadership opportunity for the Club members and encourages them to develop their communication skills with a different audience.

To start a similar club activity, why not target your recruitment drive around a STEM competition or event? [These STEM competitions](#) will provide you with some inspiration.

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AN EXAMPLE OF ...

Students recording their careers experiences in STEM

**Studio West** are a Studio School in Newcastle upon Tyne. The school has a heavy emphasis on preparing their students for the world of work and they do this through close relationships with employers who offer extended work placements, project-based learning briefs and a whole host of tailored activities.

Studio West students use the [globalbridge](#) online platform to capture their careers activities, raise awareness of themselves with local employers and explore advertised work placement opportunities. Each student receives a digital profile that captures videos, photos and web links to projects that the students are involved in. Students are encouraged to capture activity inside and outside of their lessons, helping to build a profile of all their careers-related activities.

For one Studio West student interested in digital careers, creating an online career profile enabled them to gain an extended work placement at an employer, leading to an IT degree apprenticeship with the same employer at university.

The student had undertaken a range of careers activities in school and after recording these on their profile, decided to share their profile with a local employer. The student was invited to an interview and after a successful placement during sixth form, went on to successfully interview for an apprenticeship.

To replicate this activity consider how your students record their careers experiences. Are these records available to students for them to curate and reflect on? Is there content that they can record that will help them with future job applications?



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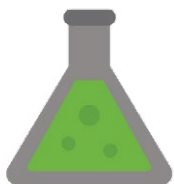
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## Gatsby Careers Benchmark 4 Linking curriculum learning to careers

### For schools

All teachers should link curriculum learning to careers.

### For colleges

All subject staff should link curriculum learning to careers,  
even on courses which are not specifically occupation-led.

## What this means for STEM

### Top tips

- 1 Support your colleagues to bring careers learning into their classrooms by sharing STEM careers resources, like posters, job profile examples, further study route information and LMI.
- 2 Use themed awareness events like British Science Week and Ada Lovelace Day to shine a spotlight on the people that work in STEM sectors.
- 3 Collaborate with your colleagues across all subjects to explore how STEM careers can link to their curriculum. STEM careers are not exclusive to STEM subjects. STEM industries need a broad range of skills and qualifications to be successful with roles available for both STEM and non-STEM skilled employees.

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## Useful resources

- 1 Careers & Enterprise Company (2017) [Careers in the curriculum: what works](#)
- 2 Free online training: [Linking Curriculum Learning to STEM Careers](#)
- 3 Find out about [Gatsby Benchmark 4](#)
- 4 Learn more about [Essential Skills with the Skills Builder Framework](#)
- 5 Make links with STEM employers with [STEM Ambassadors](#)
- 6 **Curriculum-specific resources:**
  - [STEM Learning's free STEM careers resource collections](#)
  - [Institution of Engineering and Technology](#)
  - [Institute of Physics](#)
  - [Royal Society of Chemistry](#)
  - [Royal Society of Biology](#)
  - [Institute of Mathematics: Maths Careers](#)
  - [Royal Academy of Engineering](#)

- 7 **Ideas for enrichment resources and STEM-themed events and competitions:**
  - [Resources and training to support STEM Clubs](#)
  - [Neon - inspiring engineering experiences & careers resources](#)
  - [The Big Bang Fair and The Big Bang Near Me](#)
  - [Royal Institute Masterclass](#)
  - [TeenTech Awards and events](#)
  - [IET Faraday Challenge](#)
  - [F1 in Schools](#)
  - [VEX Robotics Championships](#)
  - [FIRST LEGO League](#)
  - [FIRST Tech Challenge](#)
  - [BP STEM Challenge](#)
  - [UK Youth Rocketry Challenge](#)
  - [Greenpower Challenge](#)
  - [Biology focused competitions](#)
  - [British Physics Olympiad](#)
  - [CREST Awards](#)
  - [Practical Action STEM resources](#)

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## Develop high-quality STEM career learning within your curriculum

STEM career learning can be delivered through specific career lessons, PSHE, curriculum lessons and through extra-curricular activities. It provides awareness of STEM further study routes, the range of careers available in STEM industries (including both STEM and non-STEM skilled roles) and supports students to see the wider transferability of STEM skills, such as mathematics and digital skills.

### Support colleagues to understand how STEM career learning can be developed in their curriculum:

- ✔ Communicate the importance of STEM career learning in the curriculum with your Leadership Team, colleagues and governors by delivering STEM-specific content in your leadership careers training.
- ✔ Provide training for colleagues about what good STEM career learning looks like and how each department has a role to play in its delivery: whether that be creating wall displays, sharing personal career stories, planning career-themed lesson content, facilitating meaningful encounters, competitions or extra-curricular clubs.

Content from this [online training from STEM Learning](#) will support your STEM colleagues to better understand how to build careers links into their lessons.

- ✔ Work with colleagues to review what STEM career learning is already taking place:
  - do the learning environments make careers visible?
  - is STEM career learning planned into the taught curriculum? Where can you see evidence of this?
  - are a range of STEM careers and sectors used in examples or are departments providing a narrow range of experiences for students?
  - do colleagues know where to find [STEM careers resources](#)? Do they have their own STEM experiences that they can use to inform lesson content?
  - use your STEM career learning review to identify where additional activity is needed (ie curriculum, pastoral or extra-curricular)
- ✔ Broaden your colleagues' knowledge of STEM careers and further study routes by providing opportunity for colleagues to visit employers and find their own examples of their curriculum being used outside of the classroom.

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### Embed STEM careers learning into department planning:

- ✔ Share STEM-specific careers resources and information with your colleagues, including posters, videos and curriculum-linked resources.
- ✔ Start with the easy wins and introduce small tweaks to lessons that can be replicated across subjects
  - use a video profile to set the scene for a lesson topic, identifying careers that use the skills and knowledge developed during a project
  - show an image that links the topic you are teaching in a world of work setting, (ie architects using geometry to design structures such as bridges or skyscrapers) and ask students to make links between the two
  - show an advert for a local job or apprenticeship, linking a skill or task that the job involves to the content of the lesson
- ✔ Avoid overloading colleagues by gradually developing career learning into lesson planning. Test what works and encourage your colleagues to share good experiences during training or meetings.
- ✔ Establish a careers champion for each STEM subject or across the STEM faculty (ie STEM coordinator). Use these contacts to share resources and work with colleagues outside of STEM, developing a broad range of STEM careers experiences for students.
- ✔ Encourage colleagues to make a wide range of STEM careers visible and challenge STEM-specific stereotypes in teaching material or displays (See Benchmark 3).
- ✔ Encourage colleagues to emphasise the transferability of mathematics and digital skills across all subjects.
- ✔ Use existing recording methods where possible to record career learning in the curriculum, ie lesson plans, learning journeys.
- ✔ Introduce STEM-related career learning into your PSHE curriculum
  - the WISE 'My life, my skills' quiz engages girls to explore STEM careers linked to their skills and interests (Linked to PSHE Core Theme: Living in the wider world)
  - NHS Health Careers resources provide a wide variety of materials to help with career decision-making (Linked to PSHE Core Theme: Living in the wider world)
- ✔ Work with your STEM colleagues to organise STEM-themed enrichment days. These can be run internally (for example using materials from DIY Faraday Challenge or Practical Action) and potentially supported by STEM volunteers or delivered by an external provider (for example The Smallpeice Trust or IET Faraday Challenge days).
- ✔ Use STEM-themed awareness events as an opportunity for tutors and colleagues to share information about STEM careers, for example, British Science Week, Ada Lovelace Day, Pi Day.

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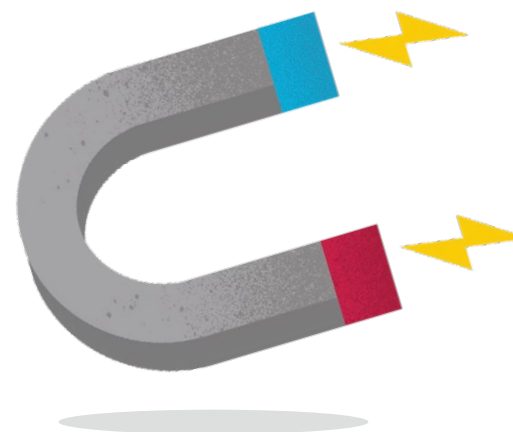
### Offer extra-curricular STEM activities

STEM extra-curricular activities help students to develop their employability skills as well as their interest in a subject. Typical activities might include a [STEM Club](#), [Code Club](#), robotics competitions, attending STEM-themed events, Engineering Club and Science Club.

#### Incorporate STEM enrichment into your careers strategy:

- ✔ Work with your STEM departments to understand your current enrichment provision and which colleagues are responsible. Record this as part of your annual careers plan.
- ✔ Are your colleagues aware of the STEM-specific extra-curricular support available to them? Signpost [resources](#), [funding](#), competitions and events that you may be aware of through your careers networks.
- ✔ Raise awareness of STEM extra-curricular activities in the local community through your website, social media, newsletters and blogs.

- ✔ Support the sustainability of your STEM extra-curricular provision. Is your Senior Leadership Team aware of the importance that STEM enrichment plays in careers learning? Does enrichment form part of workload planning or is it in addition to the teaching timetable? Are there specific members of a department at risk of overloading?
- ✔ Encourage your colleagues to keep an attendance record for all STEM-related enrichment activities and competitions. These records can be used to profile which students are engaging in extra-curricular activities and support targeting of underrepresented groups in future activities.



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### Develop career learning in the curriculum with support from STEM employers

STEM employers can help to bring the subjects to life, giving real applications for the knowledge learnt in both STEM and non-STEM lessons.



### Incorporate STEM employers into career learning:

- ✔ What STEM employer contacts do your colleagues already have and how they are used? (ie presentations, activities, collaborative lesson planning) Encourage your colleagues to share their contacts with you as they make new connections, helping to keep your STEM employer database up to date.
- ✔ Do your STEM employer contacts cover wide range of different STEM sectors? (ie healthcare, life sciences, engineering, manufacturing, digital, construction, finance and logistics) (See [Benchmark 5](#) for ideas to develop your network.)
- ✔ Support both your STEM and non-STEM colleagues to make their own contacts across STEM industries. Help them to consider how best to use employers in their curriculum; some employers will be able to provide student activities, others may be better suited to supporting curriculum planning with teachers.
- ✔ Work with your departments to plan STEM employer engagement opportunities within subject lessons, enrichment days and extra-curricular activities.
- ✔ Include curriculum-linked STEM employer activity as part of your careers strategy and review annually.

Work with the [Careers & Enterprise Company Network](#) and your local [STEM Ambassador Hub](#) to identify new employer contacts.

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AN EXAMPLE OF ...

A STEM-themed challenge day

**IET Faraday Challenge Days** are cross-curricular STEM activity days that draw upon and reinforce learning from science, maths, and design and technology lessons. The challenges give students the opportunity to research, design and make prototype solutions to genuinely tough engineering problems, encouraging the development of students' problem-solving, teamwork and communication skills within a real-life STEM context.

Recent challenges have included developing applications for the micro:bit, sports engineering linked with the Land Rover Ben Ainslie Racing America's Cup challenge, designing a new attraction for Thorpe Park Resort and assisting the engineering mission of the James Webb Space Telescope.

By taking part in an IET Faraday Challenge Day, students meet the criteria for achieving a CREST Discovery Award and an Industrial Cadets Challenger Award.



IET Faraday Challenge Days also provide opportunities for students to work with STEM volunteers, who share their experience and insight into working in a STEM career.

**To take part in an IET Faraday Challenge Day you can either:**

- take part in an IET delivered challenge as a visiting school
- apply to host an IET delivered challenge day in your school
- run a DIY IET Faraday Challenge day. DIY Faraday Challenges enable you to run your very own challenge in your own time and on a theme that suits your students. Electronic resources and guidelines are provided by the IET for free.

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AN EXAMPLE OF ...

An employer-linked programme of study for science

**Parkside School** worked with a local engineering company, **GESIPA**, to develop careers links in their key stage 4 science curriculum. With support from their Careers Leader, colleagues made contact with a rivet manufacturer and arranged for a tour of their factory, as a training activity.

Following the tour and after discussions with the employer, the science department created a list of key stage 4 curriculum links to focus on for further development. These included:

Unit	Link content
<b>Organic chemistry</b>	Use of oil as a lubricant in machines
<b>Chemistry of the atmosphere</b>	Emissions from the employer site/machines, Carbon footprint
<b>Using resources</b>	Life cycle assessment of engineered products
<b>Energy</b>	Energy costs and the efficiency of site machinery

The learning plans for each topic were updated, highlighting the employer careers links and planned opportunities to develop employability skills.

**For example:**

Year 11 GCSE Combined Science: Using Resources (six-week plan)

- student visit to the employer to look at the factory. Focus on the purpose of rivets and manufacturing process
- choosing the best metal to make a rivet
- life cycle assessments of a rivet
  - extracting of raw materials - to make wire coils
  - cost of metal and availability
  - manufacture of rivet (including energy costs)
  - manufacturing and packaging to suit customer
  - distribution of production – worldwide
  - use and operation during its lifetime - length of time a car is used for
  - disposal - most of the product is waste, scrap metal and recycling

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## Gatsby Careers Benchmark 5 Encounters with employers and employees

### For schools

Every student should have multiple opportunities to learn from employers about work, employment and the skills that are valued in the workplace.

### For colleges

Every learner should have multiple opportunities to learn from employers about work, employment and the skills that are valued in the workplace.

## What this means for STEM

### Top tips

- 1 Arrange meaningful encounters that expose students to a range of volunteers and alumni from different backgrounds, providing students with a broad view of who can work in a STEM role.
- 2 Use Careers Partners to store formation about individuals and organisations who can help deliver careers activities for your institution. Careers Partners is a tool in Compass and Compass+ systems.
- 3 Work collaboratively with employers to create high-quality meaningful encounters. Make time to plan activities together, ensure that an informed colleague is present during the activity and seek feedback in preparation for your next event.

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## Useful resources

- 1 Find out more about your local [STEM Ambassador Hub](#) networking events
- 2 Contact your [Local Enterprise Partnership](#)
- 3 Find out about your local [Careers & Enterprise Company Network](#)
- 4 Find an activity to support Benchmark 5 using the Careers & Enterprise [Activity Finder](#)
- 5 Appropriateness for STEM, [Youth Social Action Toolkit](#). Develop youth social action projects that link to careers in STEM.
- 6 **Employer volunteer programmes:**
  - [STEM Ambassadors](#)
  - [Inspiring the Future](#)
  - [Speakers for schools](#)
  - [Founders4Schools](#)
  - [SIP Ambassadors](#)
  - [The STEM Exchange](#)

- 7 Evaluate your careers activities with [evaluation tools provided by the Careers & Enterprise Company and STEM Learning's career activity evaluation resources](#)
- 8 Learn more about creating and evaluating meaningful encounters with resources from the [Careers & Enterprise Company: Gatsby Careers Benchmark 5](#)



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## Organise STEM-specific meaningful encounters

STEM-specific meaningful encounters should help to inform students and colleagues about a wide range of careers and increase understanding of the transferability of STEM skills, such as maths and digital skills.

### Support colleagues to understand how employers can support STEM career learning:

- ✔ Work with your colleagues to understand their existing STEM employer relationships and record current employer involvement in curricular and extra-curricular activity. Encourage strategic use of employers, as part of your careers strategy, and work with your colleagues to measure the impact of their efforts through surveys and student voice.
- ✔ Reduce student time off-timetable by working with colleagues to plan employer activity that supports curriculum content. Employers and teachers will need to plan this type of meaningful encounter together which will likely increase the time needed to prepare for the event.

- ✔ Support your colleagues to see the value in employer input and work with them to use employers as a context for learning. As with Benchmark 4, provide opportunities for colleagues to develop their awareness of STEM employers by visiting employer sites and meeting STEM Ambassadors at networking events. Why not invite STEM employers to participate in a training session? Meaningful encounters can be useful for teachers as well as students!
- ✔ Provide colleagues with invites to STEM-themed employer events and opportunities that can be used to complement their curriculum offer.
- ✔ Include your STEM colleagues in meaningful encounters that are relevant to their curriculum. Ask them to support a group of students taking part or request cover so that they can observe and use the experience to make links to their own curriculum.
- ✔ Working with your STEM colleagues, organise meaningful encounters around a STEM-theme awareness event. You could link to an existing theme week such as British Science Week or organise your own week, dedicating a day to each of the four areas of STEM. Invite suitable employers to support activity and do a reflection and knowledge-sharing day on the Friday. For recognised themed weeks, be sure to book employer volunteers early as these are peak times for volunteering.

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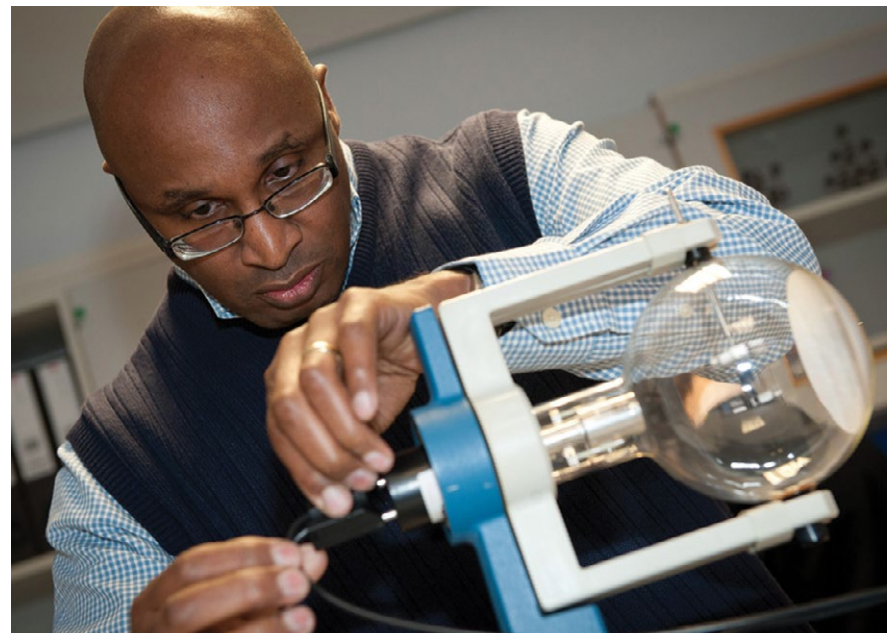
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- ✔ Support colleagues to work effectively with employers and volunteers. This includes:
  - contact before an activity to share your requirements, explore the expertise available from your employer or volunteers, share appropriate knowledge of students (ie what level to pitch content), discuss specific plans for activities (ie timing, resources) and where possible, provide curriculum links
  - providing support during an activity to manage classroom behaviour, support the arrangement of any group tasks, direct student engagement and help with resources (where appropriate)
  - seeking and providing feedback after the event to help both your colleagues and employer or volunteer to further develop their careers learning expertise and potentially plan further activity

**Embed STEM employer encounters in your ongoing careers strategy:**

- ✔ Track the types of STEM sector (ie digital, logistics, engineering, healthcare, manufacturing, construction, biosciences) that students have experience of through their meaningful encounters. Ensure that students experience a range of experiences during their time with you.
- ✔ Provide students with the opportunity to learn about non-STEM skilled roles in STEM employers (ie marketing, HR). Use these experiences to challenge the perception that 'STEM isn't for me' and show students that awareness of STEM employers will support future employment in a range of careers.

- ✔ Use meaningful encounters to challenge STEM stereotypes. (See [Benchmark 3](#) for further information.)
  - arrange meaningful encounters that expose students to a range of volunteers from different backgrounds, providing students with a broad view of who can work in a STEM role
  - invite apprentices to share their journey through STEM, challenging the misconception that you have to go to university to work in STEM industries



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- ✔ Use meaningful encounters to raise the STEM aspirations of your students.
  - ask STEM-skilled student alumni to work with students who perceive STEM subjects as 'not for them', allowing them to see someone from their local area achieve in STEM
  - ask a local STEM employer to talk to students about the different roles they need within their organisation and the entry routes to these roles. Support students to understand what their next steps might be (ie apprenticeships, graduate entry, technical / academic further study)
- ✔ Provide students with the opportunity to learn about the transferability of STEM skills.
  - ask employers to share how mathematics and digital skills are used across their business in a variety of roles
  - explore the common skills that employers need through job descriptions and understanding more about interview processes
- ✔ Invite employers to support pastoral and extra-curricular activities (ie invite employers to run a themed assembly, help deliver a STEM Club, support a STEM-themed competition or provide a STEM careers talk at options and parents evenings).



### Create and maintain your STEM employer database

Your STEM employer database should contain the employer contacts held across your organisation, and ideally, be accessible by colleagues who are looking to arrange their own employer activity.

- ✔ Increase your STEM employer database by working with your colleagues to contact local employers directly, contact parents and keep in touch with your student alumni. Work with your Local Enterprise Partnership, Careers & Enterprise Company Network and local STEM Ambassador Hub to identify new contacts. Take a look at the Benchmark 5 resources section for links to employer volunteering programmes.
- ✔ Use Your Careers Partners to store formation about individuals and organisations who can help deliver careers activities for your institution. Your Careers Partners is a tool in Compass and Compass+ systems. This tool and the database of Careers Partners can also be accessed through the Tracker/Plans tool, so you can attach Careers Partners to your planned activities and see that information reflected in Your Careers Partners.

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- ✔ Remember that non-STEM employers may have STEM-trained volunteers who can support your careers activities (ie IT, accounting). Likewise, STEM employers may have non-STEM skilled personnel who can provide a different perspective on working in the STEM industry (ie Project Management, HR, Marketing, Sales).
- ✔ Provide your employers with a point of contact within your organisation. Where possible, empower your STEM colleagues to develop their own contacts through [STEM Ambassador Hub](#) networking events, and ask them to share new contacts with you as they develop.
- ✔ Keep employers engaged in your careers strategy by sending out information on careers activity and highlighting upcoming opportunities for support. Review your contacts annually to ensure that your database is up to date.
- ✔ Alongside your database of contacts, ensure that you record all of your employer encounters (including those arranged directly by teachers). Use [evaluation tools provided by the Careers & Enterprise Company](#) (or similar) to record your meaningful encounters.



### Quality versus quantity

STEM employers are often keen to support careers activity and there are many STEM initiatives available to increase employer partnerships with education. Quality checks will support you to choose which opportunities work best for your students, colleagues and education environment.

- ✔ Assess the impact of your employer encounters with students, employers and teachers. Use the [Making it meaningful checklist](#) to support your planning and evaluation. Share a summary of feedback with colleagues and your Leadership Team.
- ✔ Work with employers before an activity to help them plan for your event. Share your requirements and give them an insight into your students' interests and abilities. After an activity, discuss feedback with the employer and be open about whether your outcomes have been met. Further activity with the employer will likely be dependent on developing a good working relationship.

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- ✔ Prepare students for an employer encounter by sharing an overview of the upcoming activity, explaining why it is important and what you want them to get from the experience. Ideally in partnership with a STEM teaching colleague, set students preparation work to research a particular STEM career or find out about the employer that is going to visit them.
- ✔ Think about the different approaches required for students at different stages in their education. For example, key stage 3 may focus on exploring student interests in STEM subjects and challenging misconceptions about STEM careers. Key stage 4 and Level 2 might support students to explore what skills STEM employers are looking for and the different STEM study routes available. Key stage 5 and Level 3 place greater focus on next steps, looking at higher education STEM opportunities and Higher Apprenticeships.
- ✔ Seek feedback from your colleagues on which STEM employers they would like further information or contact from. Regularly review this feedback as requirements may change as curriculum needs change.
- ✔ If it works, shout about it! Use evaluation tools provided by the Careers & Enterprise Company to help record activity and share a summary with colleagues and your Leadership Team. Share news of your successful employer encounters with parents, governors and the wider community via newsletters and blogs, through your website and social media.

- ✔ Engage parents in employer encounters. As key influencers in students' careers decisions, parents will have questions of their own and, potentially, misconceptions about STEM opportunities. Invite parents to be part of an encounter through holding events alongside parents evenings, options evenings and open events.



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## AN EXAMPLE OF ...

## Linking employer activity to Tomorrow's Engineers Week

Working with Network Rail, secondary schools in the Milton Keynes area hosted engineering activity days for Year 9 students. The activity days were scheduled during Tomorrow's Engineers Week, enabling schools to raise awareness of engineering careers and, more specifically, encourage girls to see engineering as an option for them. Engineers from Network Rail visited each school and ran a full day of engineering-themed challenges and careers presentations.

### The careers content of the sessions included:

- an overview of Network Rail and the breadth of services they provide
- examples of the types of roles that support engineering (STEM and non-STEM)
- highlighting diversity within engineering
- practical challenges, with a focus on teamwork, planning and communication

Evaluation data from the students showed a 24 point rise in the number of students who would consider a career in engineering (30% to 54%). Of the 162 female students that took part, the number that would consider a career in engineering rose from 23 to 72.

To get involved in a similar event for engineering, take a look at events themed around [Tomorrow's Engineers Week](#), [International Women in Engineering Day](#) or [IET Open House Day](#).

To set up your own event, contact the employer volunteer programmes in the resources section or work with your [STEM Ambassador Hub](#), [Local Enterprise Partnership](#), or [Careers & Enterprise Company Network](#).

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AN EXAMPLE OF ...

Linking employer activity to extra-curricular clubs

**Hanson School has a number of extra-curricular opportunities running within their design and technology department. Each club, activity or competition aims to partner with at least one volunteer group, drawing support from employers and the local university.**

The largest extra-curricular club in the department is **F1 in Schools** and is attended by students across key stages 3, 4 and 5. The club has a number of teams that each design, analyse, manufacture, test and then race miniature compressed air-powered cars made from F1 model block. Supporting this activity are a number of employers from the local area:

- a local racing team provides expert advice for the marketing and promotion part of the competition. Volunteers from the employer visit the students and run sessions on cultivating and managing sponsors, supporting the students to develop new sponsorship and raise funds for the team to compete in the regional and UK championships. As well as expertise, the students are also gaining awareness of a range of roles within a STEM employer that do not require STEM-specific further study

- a local engineering company provides engineering advice for the design of the car, visiting students during club time and hosting visits to their on-site design and testing facility. Students have the opportunity to meet real engineers and improve their F1 in Schools car design using industry-relevant knowledge
- a local graphic design company is supporting students with the design and manufacture of their exhibition stand for the national championships. Volunteers at the company are working remotely with students, providing critique of the design ideas, brand identity and team presentation. As well as developing an important part of their competition entry, this work also helps to develop the students' communication and presentation skills
- a local university visits the club over a number of weeks to work with a range of students on a new timing gate system. This part of the project will enable the students to monitor the performance of the car themselves and through working with university students, they are also gaining an insight into the different engineering degrees

The connections with both employers and the university were made with support from the LEP, manufacturing groups and knocking on 'virtual' doors. The teacher responsible for the club attended networking meetings organised by the LEP and used this opportunity to cultivate new contacts and pledges of support. The students wrote letters and made use of social media to approach employers, passing successful connections to their teacher for follow-up.

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## Gatsby Careers Benchmark 6 Experiences of workplaces

### For schools

Every student should have first-hand experiences of the workplace through work visits, work shadowing and/or work experience to help their exploration of career opportunities and expand their networks.

### For colleges

Every learner should have first-hand experiences of the workplace through work visits, work shadowing and/or work experience to help their exploration of career opportunities and expand their networks.

## What this means for STEM

### Top tips

- 1 Use workplace experiences as an opportunity to engage colleagues in STEM career learning. Where possible, ask your STEM colleagues to support events or accompany students on workplace trips.
- 2 Work experience, work shadowing and workplace visits can all contribute to the STEM career experience that you provide for your students. Work with your careers networks and [The Careers & Enterprise Company Network](#) to find out what support your local STEM employers can offer and keep a database of experiences to draw from in the future.
- 3 Use virtual tours to give students experience of STEM workplaces that have working environments that are unsuitable for workplace visits.

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## Useful resources

- 1 Find out about your local [Careers & Enterprise Company Network](#)
- 2 Contact your [Local Enterprise Partnership](#)
- 3 Find out more about your local [STEM Ambassador Hub](#) networking events
- 4 [Careers & Enterprise Company: How to Engage Employers](#)
- 5 [STEM Work Experience Handbook for Students](#)
- 6 [Support Y12 students to apply for a Nuffield Research Placement](#)
- 7 Find an activity to support Benchmark 6 using the [Careers & Enterprise Activity Finder](#)
- 8 Find out about [Gatsby Benchmark 6](#)
- 9 **STEM-specific workplace experience programmes:**
  - [The Smallpeice Trust](#)
  - Programmes from the [Engineering Development Trust](#)

- 10 **STEM-specific award programmes:**
  - [Industrial Cadets](#)
  - [Engineering Education Scheme](#)
  - [Big Bang Awards](#)
  - [CREST Awards](#)



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## Develop relationships with STEM employers

Setting up workplace experiences with some STEM employers can be challenging, particularly where health and safety considerations prevent under-18s from entering a site. Developing relationships with a range of STEM employers will give you more potential workplace opportunities to draw from.

- ✔ Increase your STEM employer database by contacting local employers directly, contacting parents and student alumni and working with your [Local Enterprise Partnership](#) or [Careers & Enterprise Company Network](#) to identify new employers. Contact STEM-specific organisations that can provide employer workplace experiences for students and teachers, for example [The Smallpeice Trust](#), [Engineering Development Trust](#).
- ✔ Use [labour market information \(LMI\)](#) to provide workplace experiences around key local STEM sectors (eg digital, construction and manufacturing). This takes advantage of employers that are likely to be more interested in working with students, in an effort to secure a talent pipeline and it also supports students to explore sectors that are more likely to be a local destination.



- ✔ Advertise your requests for workplace support through an employer newsletter. Creating and circulating an employer newsletter will help you to keep employers engaged in your careers strategy and prompt for specific help as you plan your workplace provision.
- ✔ Provide your employers with a point of contact within your organisation. Where possible, empower your STEM colleagues to develop their own contacts through attending their local [STEM Ambassador Hub](#) networking events and share any new contacts with you as they develop.
- ✔ Use workplace experiences as an opportunity for colleagues to gain ideas for linking a workplace to their curriculum. Ask colleagues to support events or accompany students on workplace trips.

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### Consider a flexible approach for STEM employers

When working with a STEM employer, consider a flexible approach to developing workplace experiences, combining opportunities such as traditional work experience, structured tours of workplaces, world of work weeks and work-related challenges.

- ✔ STEM workplaces can often have working environments that limit students from entering site and as a result, these employers might not be able to offer traditional work experience to students. Some STEM employers provide structured work experience programmes that run for a specific time during the year. Other STEM employers may be open to providing a limited work experience offer, arranging activities that avoid limiting environments or working with students online via a platform like [Skype in the Classroom](#) or [Google meet](#). Work with your [Careers & Enterprise Company Network](#) to understand the options that are available to you.
- ✔ Workplace visits provide a tour of a STEM workplace, ideally involving several departments and showcasing as many different STEM careers as possible.

Visits can often be developed with an employer and with planning, can be targeted to focus on a particular curriculum area:

#### For example:

- **Design and technology:** tracking the journey of a product through a factory
  - **Science:** visiting a power station as part of a topic on energy generation
  - **Maths:** visiting a local retail store to understand stock levels, pricing and how many sales are required per week to attain a certain level of profit
  - **Computing:** visiting a software company or exploring how IT is a core business function for most employers
- ✔ Work-related STEM challenges support students to work on an employer project, ideally tackling a typical problem that employees might face. Some employers may have a challenge in mind, others may be able to create a challenge with support from STEM teaching colleagues. Work-related challenges are a good way for students to experience workplace roles and develop their [Essential Skills](#). Consider using STEM award programmes such as [Industrial Cadets](#), [Engineering Education Scheme](#), [Big Bang Awards](#) or [CREST Awards](#), as these will provide additional accreditation for your students' efforts.

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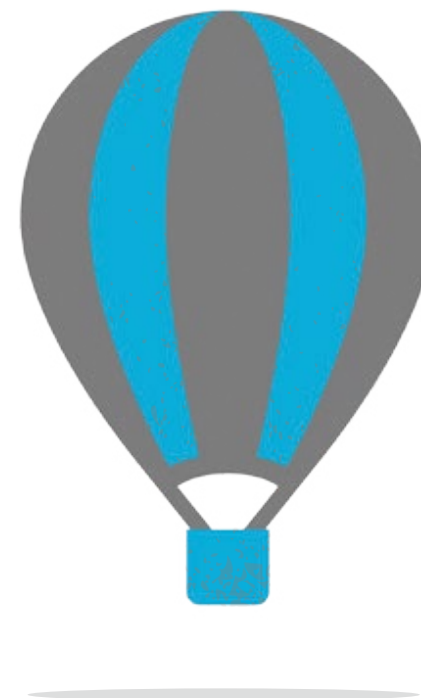
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- ✔ Multiple experiences of workplaces will help to develop a wider range of STEM experiences for students. Some employers may be able to combine their experiences to create a programme of support across multiple sites. Other employers may work with you to develop a programme of support, contributing tours, presentations and careers sessions as and when they have capacity. Ask your [Careers & Enterprise Company Network](#) for support to create a programme of activities.
- ✔ Consider providing STEM-specific experiences by exploring STEM skilled roles in non-STEM sectors, such as fashion or hospitality.
  - **Textile technologist** – working within the fashion industry to ensure that products meet the standards required of them before going to retail
  - **Operations director** – managing the costs and supporting staff management for a chain of hotels
- ✔ For general guidance on collaboration with industry there is lots of information in the [Careers & Enterprise Company guide on How to Engage Employers](#).



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## Quality versus quantity

Considering the time and effort needed to arrange workplace experiences, it is important that you assess the impact of your STEM workplace programme and identify any gaps in provision. Use data from students, colleagues and employers to create a picture of what works.

- ✔ Plan achievable outcomes for workplace experiences that are developed in partnership with the employer. Work with tutors and STEM colleagues to share the outcomes with students in advance of their experience and develop pre and post content that supports students to plan and reflect. Create opportunity for students to discuss and record their experiences, focusing on questions such as: what STEM careers did they find out about? What routes into STEM careers did they find out about? What did they enjoy during the experience?

- ✔ If it works, shout about it! Use evaluation tools provided by the Careers & Enterprise Company to help record activity and share a summary with colleagues and your Leadership Team. Share news of your successful workplace experiences with parents, governors and the wider community via newsletters and blogs, through your website and social media.
- ✔ Work closely with employers to ensure that both you and your employers expectations are understood. Take a look at this STEM-focused Work Experience Student Handbook from Cogent Skills and share this handbook for STEM employers with your employer contacts, to help their planning.
- ✔ Support employers to understand the key deliverables for an experience. For example, providing students with:
  - experience of different entry routes such as apprenticeships, college and university
  - increased awareness of the range of roles within STEM sectors
  - opportunity to develop Essential Skills, relevant to the workplace

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AN EXAMPLE OF ...

## A STEM-specific workplace experience programme

**Industrial Cadets** is an accreditation programme for industry-related work experience and activities. The award is recognised by industry employers as an objective demonstration of the level of time, passion and dedication students have shown whilst engaging in workplace-relevant experiences.

Young people take part in a structured programme of activities including project work, site visits, presentations, hands-on team tasks, workshops and role model interaction. They gain recognition for their experience and achievements, and graduate as Industrial Cadets.

### The Industrial Cadets framework allows:

- young people to have the opportunity to get an insight into industry and demonstrate experience and progression. Their skills and knowledge are built and enhanced whilst being supported by industry, engaging with role models and developing skills. They receive recognition at the end of their experience, building their Industrial Cadets portfolio and are signposted to further opportunities

- schools to enrich the curriculum, with inspiring experiences that provide unique insight into courses, careers and routes to employment whilst engaging with local communities

Five levels of accreditation are available, each requiring various working or learning hours to complete the competencies and skills per level. Contact [Industrial Cadets](#) to find out more about the programme.



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AN EXAMPLE OF ...

A 'team effort' approach to workplace experiences

**The Pledge Partnership, part of the Cheshire and Warrington Local Enterprise Partnership (LEP), have developed sector-specific 'experience of work' weeks that provide small groups of students with a coordinated week of themed workplace experiences, working with local employers, further education and higher education provisions.**

The experiences are themed around a chosen sector (ie digital, construction) giving groups of students the opportunity to understand a range of experiences within their chosen sector.

**The activities for the week include:**

- a trip to a FE provider and themed activity related to further study in the chosen sector
- a trip to a HE provider with a tour of the relevant courses and faculties linked to that sector

- a day of activities and student presentations in school, partnering with an employer. The activities are themed around a contextualised problem to solve, ideally linked to the employer
- a day of visits to local small and medium-sized enterprises involved with that sector
- a day of mock assessments and interviews, followed by reflective tasks to evaluate the week

To replicate this type of experience yourself, advice provided in [Benchmarks 5, 6 and 7](#) of this toolkit will support you to develop contacts with employers, further education and higher education. Your Enterprise Coordinator and Local Enterprise Partnership can help you to identify local businesses with an interest in engaging with education in order to spot future talent.

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## Gatsby Careers Benchmark 7 Encounters with further and higher education

### For schools

All students should understand the full range of learning opportunities that are available to them. This includes academic and vocational routes, and learning in schools, colleges, universities and in the workplace.

### For colleges

All learners should understand the full range of learning opportunities that are available to them. This includes both academic and vocational routes, and learning in schools, colleges, universities and in the workplace.

## What this means for STEM

### Top tips

- 1 Provide opportunities for students and parents to find out about STEM further study routes at events like parents evenings, options evenings, careers fairs and celebration events. Consider using volunteers from STEM industries and education to create an authentic experience.
- 2 Use Careers Partners to store formation about individuals and organisations who can help deliver careers activities for your institution. Careers Partners is a tool in Compass and Compass+ systems.
- 3 Develop your colleagues' awareness of STEM further study routes, including apprenticeship, by arranging for them to accompany students to further and higher education careers events.

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## Useful resources

- 1 Find out more about your [local STEM Ambassador Hub](#) networking events
- 2 Contact your [Local Enterprise Partnership](#)
- 3 Find out about your local [Careers & Enterprise Company Network](#)
- 4 Evaluate your careers activity using the [evaluation tools provided by the Careers & Enterprise Company, and STEM Learning's career activity evaluation resources](#)
- 5 Find out about [University Taster Events](#)
- 6 Find out more about [Government apprenticeships](#) or the [Young Apprentice Ambassador Network](#)
- 7 Find out about [Gatsby Benchmark 7](#)

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### Organise STEM-specific experiences of further and higher education

Work with local colleges, training providers and universities to highlight their STEM offer to your students. The offer must showcase the breadth of routes available for STEM further study, identify the entry requirements needed for these routes and, where necessary, allow students to gain experience of being in the learning environment.

- ✔ Contact your local providers to arrange visits, invite guest speakers and setup collaborative activity. Many further and higher education institutions will have a dedicated outreach department that can provide career learning activities such as presentations, challenges, competitions and mentoring.
- ✔ Work with your Careers & Enterprise Company Network to find out about open days and taster events. Where possible, try to arrange for STEM colleagues to attend these events with students, increasing their awareness of further study routes that link to STEM subjects.



- ✔ Review the existing STEM further and higher education activity that your colleagues are involved in. Incorporate these activities and contacts into your careers planning.
- ✔ Take advantage of STEM-themed awareness events as a way of highlighting STEM further study routes.
  - use British Science Week to highlight apprenticeships that link to science-related roles
  - use International Women In Engineering Day to highlight study routes into engineering
  - use Ada Lovelace Day to highlight study routes linked to computing and maths

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### Create and maintain your STEM further and higher education database

Keep a record of the further and higher education contacts that you and your colleagues have. This database of contacts should cover a range of different STEM faculties and, ideally, be accessible for your colleagues to use in their own planning.

- ✔ Build up your address book by using contacts from your colleagues, governors, parents and student alumni. Use your Careers & Enterprise Company Network and your local STEM Ambassador Hub to fill in the gaps.
- ✔ Share your database of contacts and your knowledge of upcoming events with your colleagues in meetings and training events. Use this information to plan future careers activity, linking to curriculum subjects where appropriate.
- ✔ Use LMI and information from your [Local Enterprise Partnership](#) and [Careers & Enterprise Company Network](#) to understand which STEM sectors are growth areas for the future. Ensure that these sectors are included in your contacts and form part of your STEM further and higher education encounters. ([Benchmark 2](#) has more information on finding local LMI.)

- ✔ Provide a point of contact for STEM education providers so that they can keep you informed of any events and activities. Keep your contacts engaged by including requests for support and updates on student activity in social media, blogs and newsletters.
- ✔ Analyse your STEM provision database regularly to ensure that you are showcasing a wide range of STEM further study routes (including A Levels, T Levels, apprenticeships, etc), across the full range of STEM subjects. Use evaluation tools provided by [the Careers & Enterprise Company](#) (or similar) to record your further and higher education encounters and share a summary with colleagues and your leadership team.



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## Quality versus quantity

Assess the impact of your STEM-specific further and higher education experiences using student data, colleague feedback, [evaluation tools](#) and support from your [Careers & Enterprise Company Network](#).

- ✔ Seek feedback from your colleagues on which STEM further study routes they would like more information about. Encourage this information to be shared across departments and used as part of lesson planning and extra-curricular activity.
- ✔ Create opportunity for students to discuss and record their experiences, asking questions such as: what STEM qualifications did they find out about? What are the different routes into STEM careers? Which routes would they like to explore further? How might they go about finding out more?
- ✔ Assess the impact of your FE and HE encounters with students and teachers. Use the [Making it meaningful checklist](#) to structure your feedback, share the results at department meetings and with subject leaders.



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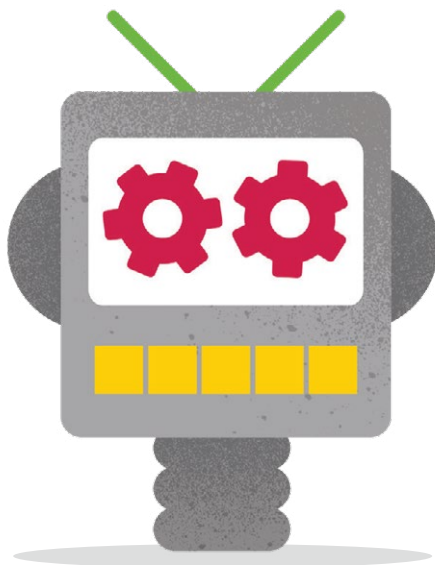
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- ✔ Work with tutors and STEM colleagues to prepare students for their encounters and reflect on their experiences after events.
- ✔ Evaluate destinations data for your key stage 4 and post-16 students and identify any deficits in take-up of STEM pathways, subjects or courses that could be addressed by better tailoring of your careers strategy.



- ✔ Support providers to understand the key deliverables for an experience, for example:
  - inviting a university science outreach team to work with students and challenge the misconception that science is for 'geeks'
  - working with higher education providers to explore the wide range of courses that link to design and technology
  - arranging for a careers presentation from a local training provider, explaining the application process for apprenticeships
- ✔ If it works, shout about it! Use evaluation tools provided by the Careers & Enterprise Company (or similar) to help record activity and share a summary with colleagues and your Leadership Team. Share news of your successful encounters with parents, governors and the wider community via newsletters and blogs, through your website and social media.
- ✔ Engage parents in further and higher education encounters, ensuring they have opportunity to find out about A levels, T levels, apprenticeship and degree routes. As one of the key influencers in students' careers decisions, parents will have questions of their own and, potentially, misconceptions about STEM opportunities and progression routes. Invite parents to be part of an encounter through holding events alongside parents evenings, options evenings and open events.

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AN EXAMPLE OF ...

STEM-themed experience of higher education

Loughborough University provides a STEM-themed 'Loughborough Maze' activity day for four schools, 120 students. The day is delivered for Years 8 and 9, targeting students who are about to, or have just made, their GCSE choices.

Inspired by the TV game show 'The Crystal Maze', students participate in three zones of activity, each with its own STEM focus:

- Murder Mystery Zone: using forensic chemistry techniques, students are placed in a mock crime scene and challenged to try and solve the crime
- Rocket Zone: focusing on aeronautical engineering, students are challenged to competitively design and test a rocket
- Geo Zone: exploring the science behind our rivers, students look at river ecology on a microscopic level to understand the biological systems that keep our rivers healthy

As part of each activity, Student Ambassadors from Loughborough University provide information on what studying these subject areas at higher education involves. The students are also given an insight into what qualifications they would need to take after GCSE to progress into these subject areas, as well as handouts and links to online tools that will help them investigate what careers link to these subject areas.

Each session is led by either a Loughborough Academic or Outreach staff member, supported by existing Student Ambassadors who are studying STEM courses at Loughborough. The Student Ambassadors also act as chaperones for the students between zones and during lunch, giving them the opportunity to ask any questions they may have on STEM, higher education study or student life.

For more information on these events, visit [Loughborough University Outreach](#). To create your own STEM-themed university event, contact your [STEM Ambassador Hub](#) to find out the details of local university STEM-specific Outreach teams.

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AN EXAMPLE OF ...

Long term  
collaboration with  
higher education

**University College London (UCL) Engineering faculty offers a number of STEM programmes and activities that focus on sustained, meaningful engagement with teachers and students.**

At the core of their engineering engagement strategy is the aim to strengthen and diversify the engineering workforce, by encouraging young people from all backgrounds to consider career pathways both "in" and "from" engineering. Their engagement with young people and schools seeks to create an ethos where engineering is seen as intrinsically worthwhile and relevant to pupils from all backgrounds, promotes diversity and gender equality, and - above all - is inclusive.

The STEM Career Pathways and Skills Exploration programme is offered to Key Stage 3 and Key Stage 4 pupils from state schools in the UK. Sessions are supported by UCL Engineering student STEM Ambassadors, acting as role models and tutors throughout the duration of the programme.

#### The programme aims to:

- raise awareness of the exciting and wide-ranging STEM career and degree pathways
- support young people to make informed choices in order to fulfil their potential

#### The programme consists of:

- **Workshop sessions:** supporting young people to discover and acknowledge their own talents and strengths, building their resilience and confidence, while exploring and developing skills that different careers require
- **Speed-networking sessions:** offering pupils the opportunity to find out about different areas of engineering, creating connections and meeting STEM experts from industry, academia and government
- **Research sessions:** supporting students to research and build their STEM profession profiles, accessing a large number of career-related resources and learning about best ways to research STEM jobs, degrees and career options
- **"Learn and Reflect" sessions:** providing students with tutoring support for their STEM subjects, supporting them to achieve a deeper understanding of how STEM subject choices relate to engineering careers and degrees

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## Gatsby Careers Benchmark 8 Personal guidance

### For schools

Every student should have opportunities for guidance interviews with a Careers Adviser, who could be internal (a member of school staff) or external, provided they are trained to an appropriate level. These should be available whenever significant study or career choices are being made. They should be expected for all students but should be timed to meet their individual needs.

### For colleges

Every learner should have opportunities for guidance interviews with a Careers Adviser, who could be internal (a member of college staff) or external, provided they are trained to an appropriate level. These should be available for all learners whenever significant study or career choices are being made. They should be expected for all learners, but should be timed to meet individual needs.

## What this means for STEM

### Where to start?

- 1 Equip your Careers Adviser with STEM careers posters, flyers and resources and ensure these are available in any careers areas.
- 2 Help your Careers Adviser to signpost STEM opportunities during their personal guidance sessions, by providing them with a calendar of your STEM-specific events and activities.
- 3 Check that your Careers Adviser is aware of the local STEM Ambassador Hub Network and has access to STEM volunteers to support with careers interventions.

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7 Encounters with further and higher education

**8 Personal guidance**

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## Useful resources

- 1 [Find your local STEM Ambassador Hub](#) and attend a STEM careers networking event
- 2 [STEM Learning STEM careers resource collections](#)
- 3 Find out about [Gatsby Benchmark 8](#)
- 4 **Employer volunteer programmes:**
  - [STEM Ambassadors](#)
  - [Inspiring the Future](#)
  - [Speakers for Schools](#)
  - [Founders4Schools](#)
  - [SIP Ambassadors](#)
  - [The STEM Exchange](#)



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### Communicate the STEM features of your careers programme to your Careers Adviser

As well as supporting students, your Careers Adviser (and any associated employability teams) are another source of STEM-specific information for colleagues, students and parents. Use their expertise to support your careers strategy and make the best use of the careers expertise available in your organisation.

- ✔ Make your STEM colleagues aware of your Careers Adviser provision and, if possible, enable your colleagues to ask for further careers support in their subjects.
- ✔ Where possible, invite your Careers Adviser to join trips to STEM employers, further education and higher education providers. This will help them to gain first-hand experience of local STEM opportunities.
- ✔ Provide your Careers Adviser with a record of the STEM careers activities available so that the Careers Adviser can signpost them as part of personal guidance sessions.



### Provide STEM careers materials for guidance

Your Careers Adviser will need access to STEM-specific careers information, in preparation for personal guidance sessions.

- ✔ Check that your Careers Adviser has access to STEM-specific LMI and that they are aware of future local demand for STEM skills. (See [Benchmark 3](#) for ideas of how to access STEM-specific LMI).
- ✔ Provide STEM-specific careers materials in your careers areas and library. Collect [STEM careers posters, flyers](#) and [resources](#), and share these with your Careers Adviser.

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## Signpost STEM-specific careers networks

Your Careers Adviser may be able to help create additional links to STEM employers and training providers.

- ✓ Find out about the STEM-specific networks that your Careers Adviser is involved in. Are they aware of the network support that you are accessing?
- ✓ Check that your Careers Adviser is aware of the local STEM Ambassador Hub Network and is aware of how to access STEM volunteers. (See Benchmark 5 to find out more about how to arrange support from employers and volunteers.)
- ✓ Where possible, invite your Careers Adviser to attend local careers networking meetings and STEM-specific careers events.



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AN EXAMPLE OF ...

Using an employer to support STEM-specific careers advice

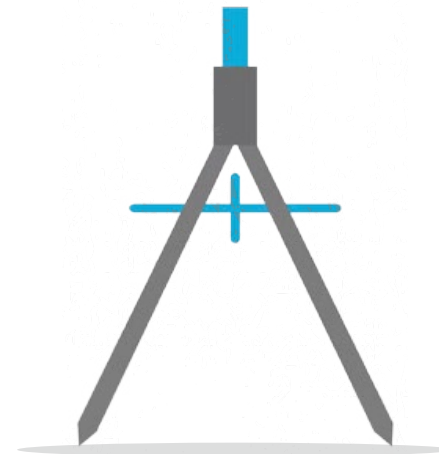
**Cheshire College South & West, Crewe Campus** wanted to prepare learners on the BTEC National Diploma Level 3 Engineering for the next stages in their careers. They made contact with a local engineering recruitment agency employer and arranged for them to provide support in a careers session run by the Careers Adviser.

*“Working with employers on campus helps to bring authenticity and reality to employability and careers work. It validates the advice we give to learners and shows the genuine expectations of employers and opportunities available. For example, what to expect in selection processes and potential future earnings with professional development.”*

**Careers Adviser**

**The session included:**

- guidance on job application processes, including how to present their skills, experience and qualifications on their CV
- information on the local engineering labour market, including recruitment trends within the engineering sector
- an opportunity to discuss how the skills and experiences learnt during their studies will be applied to the world of work



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AN EXAMPLE OF ...

Using industry  
experience to support  
personal guidance

**Dany Green is the Careers Leader at XP School in Doncaster. She undertook a 3 day work placement with the Radiotherapy Department at Musgrove Park Hospital, as part of the Grand Challenges, ENTHUSE Placement programme.**

*“As a school, we are really strong at providing experiences within IT and engineering. The healthcare industry was an identified knowledge gap so I decided to take part in a placement within this industry to personally update my own knowledge, gain first-hand experience of different healthcare careers and build a relationship with the NHS.*

*Before I went on the placement I had already had many conversations with students wanting to know more about healthcare and the pathways into healthcare careers. Children always think of careers such as; doctor, nurse and physiotherapists but they don't always understand how to get there or that there are lots of other careers related to healthcare. Being part of the industry for three days has increased my awareness of healthcare careers and how these can be linked to other areas of the curriculum.*

*I now feel like I can more confidentially guide students and have contacts in the industry who can keep us up to date as career information changes.*

*The next steps for me are to continue to grow our relationships with the NHS, exploring new careers activities and work experience opportunities for students.”*

If you are interested in organising a short work placement for yourself or a colleague, contact your local careers networks to explore setting up an opportunity ([Careers & Enterprise Company Network](#) and [STEM Ambassador Hub](#))



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## Acknowledgements

[Careers & Enterprise Company](#)

[Cheshire College South & West, Crewe Campus](#)

[F1 in Schools](#)

[Grimsby Institute of Further and Higher Education](#)

[Hanson School](#)

[East Barnet School](#)

[Industrial Cadets](#)

[Judgemeanow Community College](#) (in association with [STEM Ambassadors](#))

[Network Rail](#) (in association with [STEM Ambassadors](#))

[North Devon Manufacturers Association](#) (in association with [STEM Ambassadors](#))

[Parkside School](#)

[Jacobs](#) (in association with the [Careers & Enterprise Company](#))

[STEM Ambassadors](#)

[STEM Clubs](#)

[Studio West](#) (in association with [globalbridge](#))

[The Institution of Engineering Technology](#)

[The Pledge Partnership](#): Cheshire and Warrington Local Enterprise Partnership (LEP)

[XP School](#)

[VEX Robotics](#)



STEM Learning is the largest provider of education and careers support in science, technology, engineering and mathematics (STEM). We work with schools, colleges and others working with young people across the UK.

Our mission is to improve lives through education and ensure that every young person across the UK can access the world-leading STEM education they deserve. Inspirational teaching is vital and supporting teachers, alongside students, is fundamental to our approach. We provide teachers with professional development, educational resources, access to [STEM Ambassadors](#) and support for [STEM Clubs](#).

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[www.stem.org.uk](http://www.stem.org.uk)