THE CAREERS &
ENTERPRISE
COMPANY

STEM LEARNING

This guidance is provided as part of the STEM Careers toolkit[1] produced for Careers Leaders in secondary schools and colleges. It provides ideas and practical suggestions on how STEM-specific content can be used to support achieving the Gatsby Careers Benchmarks[2]. For wider advice and guidance on the Gatsby Careers Benchmarks, visit the Careers & Enterprise Company website[3].

All references and weblinks are provided in full at the end of this document.

Gatsby Careers Benchmark 5
A stable careers programme

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[4] 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.

2 Create and maintain your STEM employer address book, with support from your colleagues, governors, parents and local careers networks. Keep a broad database of contacts, including employers from a range of different STEM sectors.

3 Work collaboratively with employers to create high-quality meaningful encounters[5]. 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.

Useful resources

1. Find out more about your local STEM Ambassador Hub[6] networking events

2. Contact your Local Enterprise Partnership[7]

3. Find out about your local Careers & Enterprise Company Network[8]

4. **Employer volunteer programmes:**

   - STEM Ambassadors: www.stem.org.uk/stem-ambassadors/find-a-stem-ambassador

   - Inspiring the Future: www.inspiringthefuture.org/schools-and-colleges

   - Speakers for Schools: www.speakersforschools.org

   - Founders4Schools: www.founders4schools.org.uk/educators

   - SIP Ambassadors:
     www.scienceindustrypartnership.com/sip-ambassador-programme/information-for-schools

   - The STEM Exchange: www.stemexchange.co.uk

5. Evaluate your careers activities with evaluation tools provided by the Careers & Enterprise Company[9] and STEM Learning's career activity evaluation resources[10]

6. Learn more about creating and evaluating meaningful encounters with resources from the Careers & Enterprise Company: Gatsby Careers Benchmark 5[4]

Organise STEM-specific meaningful encounters

STEM-specific meaningful encounters[4] should help to inform students and colleagues about a wide range of careers and increase understanding of the transferability of STEM skills, such as mathematics and digital skills.

Support colleagues to understand how employers can support STEM careers 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[10].

☑ 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 <u>STEM Ambassadors</u>[9] 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 <u>STEM-themed awareness event</u>[11]. You could link to an existing theme week, such as <u>British Science Week</u>[12], 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.

☑ 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 participate in a range of experiences during their time with you.

☑ Provide students with the opportunity to learn about non-STEM skilled roles in STEM employment (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

☑ 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 or 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[13], support a STEM-themed competition[14] 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[7], Careers & Enterprise Company Network[8] and local STEM Ambassador Hub[6] to identify new contacts. Take a look at the Benchmark 5 resources section for links to employer volunteering programmes.

☑ Record sector information in your database to help you understand the breadth of your contact list. Try to avoid bias for a particular area of STEM, ensuring that you showcase a wide range of careers and employers. Work with your Local Enterprise Partnership[7] and Careers & Enterprise Company Network[8] to ensure that your employer database reflects the strategic economic plan for STEM in your region.

☑ 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[6] 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 <u>evaluation tools provided by the Careers & Enterprise Company</u>[9] (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 <u>Making it meaningful checklist</u>[5] 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.

- 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 <u>evaluation tools provided by the Careers & Enterprise Company</u>[9] 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.

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[15], International Women in Engineering Day[16] or IET Open House Day[17].

To set up your own event, contact the employer volunteer programmes in the resources section or work with your STEM Ambassador Hub[6], Local Enterprise Partnership[18] or Careers & Enterprise Company Network[8].

AN EXAMPLE OF ...

Linking employer activity to extra-curricular clubs

Hanson School[19] 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[20] 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.

References

[1] www.stem.org.uk/rxgajd

[2] www.careersandenterprise.co.uk/schools-colleges/gatsby-benchmarks

[3] www.careersandenterprise.co.uk

[4] www.careersandenterprise.co.uk/schools-colleges/gatsby-benchmarks/gatsby-benchmark-5

[5] www.careersandenterprise.co.uk/sites/default/files/uploaded/1207_-_meaningful_encounters_checklist_1.pdf

[6] www.stem.org.uk/stem-ambassadors/local-stem-ambassador-hubs

[7] www.lepnetwork.net/

[8] www.careersandenterprise.co.uk/schools-colleges/join-our-network

[9] tools.careersandenterprise.co.uk/login

[10] www.stem.org.uk/lxg7uo

[11] www.stem.org.uk/lxfq39

[12] www.britishscienceweek.org/

[13] www.stem.org.uk/stem-clubs

[14] www.stem.org.uk/enrichment/competitions-challenges

[15] www.tomorrowsengineers.org.uk/tomorrows-engineers-week-2019/

[16] www.inwed.org.uk/

[17] www.engineer-a-better-world.org/whats-on/

[18] www.lepnetwork.net/growth-hubs/

[19] www.hansonschool.org.uk/

[20] www.f1inschools.co.uk/

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.

www.stem.org.uk