



STEMNET



Report

**Exploring the engagement of
STEM SMEs with education:
Key Findings Research
Summary**

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1. Introduction

This key findings research summary presents information on the engagement of SMEs with education. Small and Medium-sized Enterprises (SMEs) are defined as organisations with fewer than 250 employees. The research focused on SMEs in STEM sectors, including SMEs from three priority sectors:

- digital and creative industries (e.g. architecture, computer games, ICT, technology-related, sound/lighting engineering)
- advanced manufacturing and manufacturing (e.g. nanotechnology, design engineering, advanced materials and manufacturing, research and development)
- healthcare and life sciences (e.g. bioscience, biotechnology, pharmaceuticals, agricultural biotechnology, medical technology)
- broader STEM areas (e.g. science, technology, engineering and mathematics, aerospace, electronics, mechanical, metals, automotive).

This research was commissioned by the Science, Technology, Engineering and Maths Network (STEMNET). STEMNET helps employers to create effective links with education. More than 3,000 employers, large and small, are already inspiring young people through the STEM Ambassadors Programme, with many more supporting STEM in other ways (see www.stemnet.org.uk).

The research explored the engagement of SMEs with education, investigating issues such as the level and nature of engagement, the challenges that SMEs face in engaging with education and the benefits they perceive or experience as a result of engaging with education. There is a paucity of evidence focusing on the engagement of SMEs with education, with most existing evidence exploring the engagement of employers more generally. In addition, there has been very little research exploring the engagement of SMEs in STEM sectors with education. As a result, this research provides important insights as to the specific experiences and perspectives of SMEs in engaging with education, and particular insights into the experiences and perspectives of SMEs in STEM sectors.

The findings are generated from two main research methods:

- **a rapid, top-level review of the existing evidence on the engagement of SMEs in education.** This review involved searches of relevant databases (e.g. Social Policy and Practice, British Education Index and British Education Index Free Collections) and websites of organisations supporting relevant businesses and STEM industry (e.g. Chambers of Commerce, Sector Skills Councils, Federation of Small Businesses) and focused on evidence from 2002 onwards. The search strategy produced 81 references in total, 64 of which were deemed to contain some relevance to the study. Much of the evidence uncovered by the review was not specific to SMEs or employers within STEM sectors
- **telephone interviews with consultees from 53 SMEs from across the chosen sectors and from across the UK.** Consultees were predominantly the CEO/Director/Managing Director/Owner/Founder/Partner/Chairman of the SME.

The SMEs consulted were of varying sizes in terms of the number of employees. Involved in the consultations were: 23 SMEs with nine or fewer employees; 17 SMEs with 10-99 employees; and 13 SMEs with 100-250 employees. The sample included SMEs with varying degrees of current engagement with education.

2. The engagement of SMEs with education – key findings

Levels of engagement with education

Employer engagement with education is a fairly common activity. However, there is a relationship between the size of businesses and their tendency to engage with education; with smaller businesses being less likely to engage than larger companies. This trend continues within the overarching ‘Small and Medium-sized Enterprises’ category as there is a positive association between SME size and level of engagement with education; as company size increases, so does the frequency, range of activities and formality of engagement with education. This research indicates that a significant proportion of SMEs may not be engaged with education. For instance, over half of SME consultees identified no current or recent involvement with education or only a low level of involvement. Consequently, **smaller SMEs may need greater support and encouragement to engage with education** than their larger counterparts. Smaller companies tend to engage with education on a more ad hoc and infrequent basis and with a narrower range of activities. Thus, **some SMEs may have a limited view of what type of activity constitutes engagement with education**. This highlights the need to extend SMEs’ perceptions of what types of activities constitute engagement with education – there may be scope to engage some SMEs with education and schools in ways in which they had not previously conceived.

Types of engagement with education

STEM-related SMEs are involved in education in a similar range of ways as employers generally. The **most common ways for STEM-related SMEs to be involved with education** include:

- **links with universities and colleges** (e.g. offering graduate and undergraduate placements; lecturing, teaching and mentoring; and providing careers talks). The popularity of these types of activities may relate to SMEs’ interest in graduate aged and skill-level recruitment, as opposed to school students
- **offering work experience placements** (e.g. offering short-term work experience placements to school-age students). These placements appear to vary both in terms of their formality (e.g. from annual programmes of work experience to one-off placements organised for a personal contact of the company) and constructiveness (e.g. opportunities to work on real projects to undertaking unskilled, menial tasks)
- **involvement in specific schemes and projects** (e.g. the Engineering Education Scheme, Young Enterprise, business mentoring, the STEM Ambassadors Programme, rotary club activities and projects). Often, this type of involvement tends to involve the employer having a significant degree of involvement with the young person and in supporting their STEM learning.

Other ways for STEM-related SMEs to be involved with education include: subject talks and practical demonstrations; post-16 and post-18 apprenticeships; careers fairs, careers talks and mock interviews; company visits and tours; input to curriculum and course design; providing equipment, sponsorship and donations; and engaging with parents.

There is evidence to suggest that **size and sector may influence the nature of SMEs' engagement with education**. For instance, company visits and tours, and apprenticeship schemes, appear to be less popular activities amongst smaller SMEs in comparison to their larger counterparts. Furthermore, there is some variation in the nature of SMEs' engagement with education depending on their sector. For instance, SMEs in healthcare and life sciences are typically the least involved with education overall. SMEs from advanced manufacturing and manufacturing sectors are most likely to participate in a broader range of activities with education, including apprenticeship schemes.

Very few SMEs have dedicated personnel available within their company to support engagement with education. SME engagement is often driven by individuals who are passionate about the benefits of employer engagement in education.

3. Benefits of engaging with education – key findings

The literature and interviews suggest a **wide range of benefits for employers of engaging with education**; benefits are both actually experienced by those that engage with education and perceived by those that do not. Predominantly these benefits include:

- **enhancing the skills pipeline and long-term recruitment to the sector** - engaging with young people in education is seen by SMEs as a means of helping to develop the next generation of the STEM workforce through, for example, inspiring young people and equipping them with skills and experience in STEM sectors. This type of benefit is particularly salient given the skills shortages in many STEM-related careers and declining numbers entering these careers
- **professional development of staff** - through engaging with schools and young people, staff gain presentation and mentoring skills, increased confidence and the opportunity to further develop their communication skills. Further analysis of the data indicates that, the more engaged an SME is with education, the more likely they are to recognise professional development of staff as a major benefit. The professional development outcome appears to be less of a concern to micro-businesses (i.e. those with one to nine employees)
- **promoting a positive image of the company/sector** - the engagement of companies with education helps to raise the profile of their company in the local community and professional circles and to promote themselves as a positive, conscientious and innovative establishment. It can help to gain further recognition of the company name and brand, provide favourable publicity, improve public relations and dispel misconceptions about the nature of the industry. There is also scope for businesses to widen their networks and experience commercial gains as a result of meeting new potential clients and customers through working with schools. This type of benefit tends to be identified more by SMEs with medium and high levels of engagement with education and amongst the larger of the SMEs
- **capitalising on young people's ideas, skills and productivity** - employer engagement with young people provides opportunities to: pick up fresh ideas; explore different perspectives; gain knowledge of the latest technology and social media; gain marketing insights; better understand the current education system and STEM curriculum, skills and qualifications; and engage students in activities that contribute towards the work and productivity of the company. This benefit is most likely to be identified by SMEs with no current engagement with education and the smaller of the SMEs
- **direct recruitment to the company** - SMEs can benefit from recruiting students, who have undertaken work experience placements, both as apprentices or permanent employees. In addition, they can promote their business amongst young people to raise young people's awareness of the company when they are making career and work choices. This benefit is identified more frequently as SME size increases
- **personal satisfaction, enjoyment and motivation of staff** - SMEs identify engagement with young people in education as fun, rewarding, and refreshing for their staff. They particularly enjoy witnessing young people enjoying STEM

subjects and being inspired by STEM. This type of benefit is more often identified by highly engaged SMEs and the smaller of the SMEs (with fewer than 100 employees).

SMEs also commonly identify the **altruistic nature of their involvement with education and the benefits realised by young people** as a result of them being provided with opportunities to engage with businesses and industry. This type of benefit is seen by SMEs as an **opportunity to 'give something back'** by passing on knowledge and experience. Young people gain experience of different practical skills, the real-world applications of STEM subjects, and advice, insights and inspiration for STEM careers, as well as more general employability skills, which they may otherwise not have access to, or be able to develop, in school. Opinions vary regarding the extent to which this form of benefit for young people is also coupled with benefits for the company or sector. The smaller SMEs (with fewer than 100 employees) are more likely to identify engagement with education in altruistic terms than the larger SMEs.

Corporate Social Responsibility was seldom identified as a main benefit by the SMEs involved in this research, despite being identified as a benefit for businesses more generally in the reviewed evidence.

SMEs highly engaged with education typically identify slightly more and different types of benefits than those not engaged with education at all or those with only low levels of engagement; this indicates that **the range of benefits may not be well understood by some SMEs** with little or no experience of engagement with education.

There is a considerable degree of consistency regarding the benefits identified by SMEs from the different STEM sectors.

4. Challenges for SMEs to engaging with education – key findings

The literature and interviews indicate that **many of the challenges in employer engagement in education are generic** – they are common for most organisations but are often amplified within small organisations. The main challenges identified in the literature and in interviews tend to relate to:

- **time, capacity and financial constraints** - SMEs often have limited time to dedicate to working with young people in education where this distracts them from core business responsibilities and impacts on productivity. SMEs may find such activities time-consuming and costly in terms of health and safety requirements, CRB checking, insurance and scheduling and planning appropriate activities. The implications of this time loss are less easily absorbed in SMEs particularly; an even more profound challenge in the current economic climate. SMEs' involvement with education is thus often partially or wholly achieved through the good will of the employee/s. SMEs often have limited capacity for engaging with education, with no Human Resources staff to facilitate this activity, limited space to bring young people for visits or work experience and limited manpower to support, train and manage young people. In addition, they are often in highly skilled and niche areas with limited scope for making their activities of wider relevance to school-aged children. Time, capacity and financial constraints are consistently challenges for SMEs from all sectors and sizes, and are more prominent challenges for SMEs with no or low engagement with education
- **low awareness and understanding of schemes and how to link with education** – SME consultees were unclear about how they could engage with education (e.g. the types of activities they could undertake), how this would work (e.g. what kind and level of commitment would be required, what would the employer/employee have to do, how long they would need to plan and prepare for activities) and how could they should go about it (e.g. what kinds of support agencies there are, the best ways to link with schools and who to contact). This is particularly a challenge for SMEs from the digital and creative sector and for smaller SMEs.

Other challenges include:

- **lack of commitment and interest of schools and pupils to engaging with industry** - some companies had experienced an unresponsive or negative reception from schools and intimated that it was not particularly common to receive approaches from schools to elicit a partnership. Some SME consultees felt that schools, and sometimes students, had been poorly organised and enthusiastic in their interactions with them, displayed little appreciation of the business culture and environment and were inclined towards academic rather than vocational career routes and skills
- **health and safety constraints and bureaucracy** – SMEs find it time consuming and costly to meet the necessary health and safety requirements to work with young people (including CRB checks and insurances). On-site activities with school children may be precluded due to dangerous machinery and materials, expensive apparatus and security and privacy issues. These bureaucratic

challenges are amplified for SMEs by the lack of HR staff in SMEs who might otherwise be responsible for these issues

- **lack of staff confidence and skills** – staff in SMEs may feel that they do not possess the relevant skills as part of their day job or profession to engage and communicate with young people and teachers who are non-specialists and provide relevant and appropriately pitched information on the nature of their work
- **low awareness of benefits** – some SMEs lack a clear understanding of the benefits of engaging with education for both the business and the school, or question the extent of benefits
- **lack of skilled young people to engage with** - some SMEs experience challenges in terms of young people's inadequate skills and readiness for working in STEM industries which prohibits activities such as work experience and apprenticeships
- **issues in relating the business activities to the curriculum and making a relevant partnership** - some interviewees did not feel clear on how they could potentially relate the nature of their business to what students are studying in school for science, technology, engineering and mathematics - seeing their work as too complex, niche or commercially sensitive to involve school pupils in. Other challenges in this regard pertain to the timing of student involvement with the business, for instance, at certain times in the production process students will gain very little from seeing the industry in action
- **time constraints for schools** - teachers have limited time available for working with employers as they are busy in school, which means that contacting them can be difficult. In addition, the structure of the school day means that it is sometimes not possible to take pupils out of other lessons and off timetable which limits the type of activity that can be undertaken with employers and particularly visits to, and activities based on, company sites, when travel also has to be factored in.

SMEs who are highly engaged with education tend to report, on average, fewer challenges than SMEs with no or low levels of engagement with education. However, this finding may be encouraging in that highly engaged SMEs presumably find these challenges surmountable.

Concluding comment

Both the reviewed evidence and interviews with SMEs indicate that there is a **willingness and interest amongst some SMEs to engage, or engage more, with education** – providing scope and potential to increase the engagement of SMEs in education. SMEs do face challenges in engaging with education, not least, an often limited understanding of how to engage. Hence there **may be a need to raise awareness of the support available, the opportunities for engagement with education and the benefits for SMEs of engaging with education**. As the size of business appears to be a factor in engaging with education, **SMEs, and particularly smaller SMEs, may need greater support and encouragement to engage with education** than their larger counterparts. As smaller companies tend to engage with education on a more ad hoc and infrequent basis, and with a narrower range of activities, **some SMEs may have a limited view of what type of activity constitutes engagement with education** and there may be scope to engage SMEs with education and schools in ways in which they had not previously conceived.

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