



Guidelines for STEM School–Business/Industry Partnerships

These guidelines provide the basis for both primary and post-primary schools and business/industry to form quality, inclusive and relevant educational links, to improve the STEM/Digital learning experience and secure enhanced outcomes for all learners. The overall goal of these guidelines is to promote partnerships in schools across all regions and give support to those that currently lack opportunities; it is about encouraging and inspiring more of our young people to specialise in Science, Technology, Engineering and Mathematics. Furthermore it envisages that learners will develop relevant digital skills during their education and training so as to open the doors to exciting and fulfilling jobs, careers and life opportunities, including in business, industry, academia, etc.

The STEM Education Policy Statement 2017-2026 (<https://www.education.ie/en/The-Education-System/STEM-Education-Policy/stem-education-policy-statement-2017-2026-.pdf>) states that ‘STEM learning opportunities present themselves in both formal and informal settings’ and that ‘business and industry will engage in partnerships with schools with a focus on how they can best support STEM education in our schools and provide learners with an insight into how STEM learning can develop into a career in STEM’. The Digital Strategy for Schools 2015-2020 (<https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf>) looks to ‘enhance ICT capacity and awareness in the education system in partnership with industry’. There are several commonalities between the Digital Strategy for Schools and the STEM Education Policy Statement in relation to their aims and goals for partnerships and engagements between schools and business/industry.

There is currently a higher demand for STEM/digital related skills and capable STEM/ICT graduates across all industries. There is a need for both education and business/industry to increase awareness among learners of the importance of STEM/ICT education in order to nurture their overall lifelong learning, as well as the impact it could have on their future careers.

STEM education focuses on developing a range of key skills that are essential for living and working in today’s world. Learners will engage in a range of activities that include:

- Using their skills and content knowledge to creatively solve problems
- Imagining, questioning and exploring
- Collaborating with others
- Engaging in inquiry and analysis
- Innovating, designing and making
- Testing and modifying their solutions to complex problems



Curricular reform, with its increased focus on developing key skills through more experiential and autonomous learning, has been a significant step in effecting change and progressing many of the qualities being promoted in STEM education.

When Digital technologies are used effectively, it can provide opportunities for all teachers, learners and parents/guardians to support the development of these key skills.

It is acknowledged that business/industry-school partnerships are a way of providing real-life and on-the-job education opportunities for learners. Collaboration between schools and business/industry is integral to how we create and develop engaged STEM/Digital Technologies learners. STEM/Digital Technologies are for all and it is important to recognise that the underpinning aim of any initiative or collaboration should always be what is best for the learner.

The guidelines set out in this document are designed to enable both business/industry and schools to collaborate more effectively with one another. It is also hoped that this document will guide and support them on their STEM/Digital Technologies journey as they develop sustainable partnerships.

Case studies on effective business/industry engagement with schools and other resources are available on our online toolkit, which includes information on STEM activities, fairs and events, professional development opportunities and access to STEM resources. <https://www.education.ie/en/The-Education-System/STEM-Education-Policy/stem-partnerships.html>



General Priorities for Positive Engagement

Relationships between schools and business/industry should foster mutually beneficial collaboration. The following priorities should be established to ensure success in promoting meaningful and effective partnerships:

- 1) The benefits for learners and the learning experience should be central to the partnership plan being put forward by either the school or business/industry and there should be clarity as to roles and responsibilities of all parties. This may be informed by Learning Outcomes on the subject specification.
- 2) The activity/ initiative should have clear, tangible links to the curriculum, the STEM Education Policy Statement, the Digital Strategy for Schools, school priorities and other relevant policies.
- 3) Consideration should be given to the scale and sustainability of the plan over short, medium and long-term
- 4) Those engaging with schools must adhere to any relevant codes of practice in the school, in particular in relation to child protection, health and safety and General Data Protection Regulation (GDPR). For clarification on the good practice guidance for primary and post-primary schools in the use of programmes and/or external facilitators, please see the following on the Department of Education and Skills website:
 - Circular 42/2018 (https://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0042_2018.pdf) and Circular 43/2018 (https://www.education.ie/en/Circulars-and-Forms/Active-Circulars/cl0043_2018.pdf)
- 5) It is important that the teacher is present, and involved at all times when there is interaction between the business/industry and the learners. Focus should be on the transfer of skills and knowledge from the business/industry to the teachers and learners.
- 6) It is important that the activities are appropriate for the audience. Activities should take into account prior knowledge of the group. For example, at junior primary, pupils may use play or small world scenarios to understand; older primary pupils may have a deeper knowledge and understanding to work on a project or similar; at Junior Cycle, learners may be interested in investigating a particular area or the work of a business/industry in more detail; at Senior Cycle learners could expand on this further by looking at how and why something works, the practical implications for the career and the pathways to the career.
- 7) The learning experience should be interactive and inclusive of all learners. If learners can interact with the process they will engage better, having a practical task for learners to do on site or in a classroom situation is important.



- 8) Connecting real world experiences to STEM education is important to help the learner understand the practical application of what they study as well as identifying the different pathways they can take toward a STEM career. The business/industry should tap into what young people want such as to help society or the environment, so projects could be focused on, for instance, something that helps people with a specific disability, or addresses a specific environmental problem in their area. It should also support the provision of information and experience on future skills needs.
- 9) Business/industry should give great consideration to the staff who engage with schools. Presenters should be enthusiastic, engaging and inspiring and able to relate to their audience. It is important to keep presentations brief and relevant, in order to keep the audience engaged.
- 10) It is important to look towards sustaining the momentum beyond the engagement itself. Some companies give out a goodie-bag, a pen or note pad at the end of a visit. It might be preferable to engage learners with an activity to follow-up with at home or school, something that can further develop their STEM/Digital skills and bring parents into the process. It is also important to consider creating a follow-up activity for the teacher, in order to sustain the impact of STEM/Digital Technologies learning for all.



Guidelines for Schools:

Bringing real-world content into the classroom so learners can see that what they learn at school is relevant to things that they care about is very important. Increasing awareness of the STEM subjects and how the study of these will unlock opportunities in STEM/Digital Technologies related careers as well as the opportunities that can be unlocked in other careers by those with STEM/digital skills is required. Career education must start at a young age in order to develop these necessary STEM/digital skills. This will serve to inspire learners to make subject choices that will prepare them for a wide range of career paths. A partnership with business/industry is one way to progress the necessary STEM/digital skills, in order to establish such a partnership, schools should consider the following:

- 1) The buy-in of the whole school community is essential in sustaining positive partnerships, particularly a strong commitment and support from the school principal and school leaders. A core STEM team should be established to include school leaders, learners, parents and Board of Management. In the case of post-primary schools, teachers should be from a range of disciplines. A designated contact should be appointed within the school.
- 2) Schools should plan in advance of contacting a business/industry, setting out clear roles, objectives and goals. Schools must work with business/industry to agree a final plan, which is inclusive, flexible and includes a set of measurable outcomes. There should be consideration of connecting in with third level and/or further education. A rubric for reviewing/evaluating the process should also be developed, in partnership, by both parties.
- 3) If there is no suitable business/industry in the locality, schools should look at others further afield. Consideration could also be given to joining with other schools (primary, post-primary) and run a joint project in order to engage together with a business/industry.
- 4) It is important that the teacher is present and involved at all times when there is interaction between the business/industry and learners. The main focus should be on transfer of skills and knowledge from the business/industry and its employees to the learners and teachers. The development of knowledge and skills transfer by the teacher is essential to achieving better outcomes for the learners.
- 5) The collaboration between the school and business/industry should be highlighted within the school, on the school's website, with parents and in the local community. This helps to bring others on board and inform the wider community of what has, and is being, achieved.
- 6) At post primary level there should be involvement of the Guidance Counsellor who can advise on, for example, subject choice, education pathways, the abundance of career opportunities, and develop links with Science Foundation Ireland, etc.



Guidelines for Business/Industry:

Industry can provide a means for teachers and learners to understand the latest developments in STEM, STEM careers and how STEM benefits society. When setting up a partnership with a school, your organisation should:

- 1) Be pro-active in contacting schools and looking at how to contribute to the learner's experience. Link the partnership/activity to relevant curriculums, STEM Education Policy Statement, school priorities and other relevant policies.
- 2) Establish an education liaison team or person, with a dedicated contact for schools.
- 3) Plan in advance of contacting schools, setting out clear roles, objectives and goals. Business/industry must work with schools to agree a final plan, which is inclusive, flexible and includes a set of measurable outcomes. A rubric for reviewing/evaluating the process should also be established between both parties.
- 4) Work with schools in order to engage with parents as well as learners.
- 5) Be cognisant of the duration of the school year, (September to May at post-primary and September to June at primary), when approaching schools to engage. School planning for each year takes place before the end of the previous school year. Business/industry should consider this when they approach the school so that the school can allocate appropriate time for the initiative and plan accordingly.
- 6) Include the transfer of STEM/digital skills and professional learning opportunities for teachers as part of the project plan. Ensuring that teachers have access to up-to-date and relevant information is a key pillar of the STEM Education Policy Statement.
- 7) Use technology where distances to schools present challenges.
- 8) Consider providing mentors the whole way through primary and post-primary school.
- 9) Support their own staff with the expertise to engage with schools, providing appropriate context and content.
- 10) Provide facilities or technical capabilities, as well as real examples of how curriculum knowledge is useful in the workplace. Providing concrete links between STEM/digital skills in school and pathways to employment opportunities through careers information is important for the learner.
- 11) Consider providing financial support, for example seed funding.
- 12) Use a balance of female and male employees, in addition to persons of diverse nationalities and backgrounds.