UK Atomic Energy Authority

connectr Early Engagement

STEM Engagement across Oxfordshire: Research findings

1st September, 2025

Contents

Introduction

UK Atomic Energy Authority (UKAEA) is the UK's national fusion energy research organisation, with a mission to lead the delivery of sustainable fusion energy, maximising both the scientific and economic benefits. UKAEA does this by being technical experts, partnering with companies and the international research community. UKAEA is committed to building and enabling a strong, well-matched, and diverse talent pipeline across the fusion sector that is fundamental to the UK reaching key economic strategic goals. UKAEA is an executive non-departmental public body of the Department for Energy Security and Net Zero (DESNZ).

CEE are early engagement specialists who plan and deliver school and college engagement programmes to empower disadvantaged young people. CEE work with some of the UK's biggest employers on their youth engagement programmes, including leading STEM organisations. CEE's bespoke engagements lead to tangible outcomes for young people and employers. UKAEA's Fusion Futures' skills programme 'FOSTER' (Fusion Opportunities in Skills, Training, Education and Research) in partnership with Connectr Early Engagement, set out to map STEM engagement across Oxfordshire. We wanted to understand what opportunities exist for young people inside and outside of school, what is working well, and the barriers people face when it comes to STEM engagement in the region.

A thriving STEM workforce is key to driving economic growth and achieving key national goals, in areas including Net Zero and Artificial Intelligence. The STEM skills shortage limits the capacity for certain key sectors to build this workforce[1].

STEM engagement for young people is important to reducing this skills shortage. Employer interactions reduce young people's likelihood of becoming Not in Education, Employment, or Training (NEET) post- 16[2], and young people are three times as likely to gain a STEM degree if they are interested in science-related careers at age 14[3].

Within Oxfordshire, improving STEM skills is a priority. The Local Skills Improvement Plan (LSIP) reported a disconnect between business and education, as well as barriers for some young people to further education and training. Many of its seven priority areas are within the category of STEM[4]. The 2025 LSIP update called for continued efforts to improve relationships between employers and colleges in the Manufacturing, Science and Innovation sector, as well as additional work insights opportunities within Life Sciences[5].

This report shares six themes for impactful STEM engagement, to demonstrate what's happening now and contribute to a long-term vision in which young people in Oxfordshire have increased access to best practice STEM engagement. The first three of these themes focus on the power of collaboration to enhance STEM engagement, and outline separate but related practices which would ensure that collaboration is as impactful and effective as possible. The following three address how best to work with young people to maximise the positive benefits of STEM engagement. These six themes are best understood as a system framework, to be adopted by all stakeholders who lead or run STEM engagement in order to create a shared approach for best practice. Please see appendix 1 for more information.

1. UK Parliament POST, UK STEM Skills Pipeline, 2025
2. Education and Employers, Employer Engagement in the school-to-work transition of young Britons, 2015
3. Kings College London, ASPIRES Report: Young People's Science and Career Aspirations age 10 – 14, 2013
4. LSIP Oxfordshire, Local Skills Improvement Plan: Oxfordshire Priorities, 2023.
5. LSIP Oxfordshire, Oxfordshire Local Skills Improvement Plan: Progress Report June, 2025

The research project

Local context
Oxfordshire's unemployment rate for 2024 – 2025 was 4%, compared to a national average of 3.8%, and its economic inactivity rate was 19.8%, compared to 21.4%. Employment rates in the county are largely shaped by its renowned educational institutions, with 30.2% of the total workforce employed in education compared to a national average of 8.6%[6].

The county has pockets of deprivation. 10 of Oxford's neighbourhood areas are in the most 20% most deprived areas in the UK, and 26% of children living in Oxfordshire live below the poverty line[7]. Due to comparably high property prices, it is difficult for school leavers or other young people to move to the county for work, worsening the skills gap by reducing opportunities for young people from other areas to start their career in the county.

Defining STEM engagement
We define STEM engagement as "activity which is looking to inspire individuals to study and undertake a career in Mathematics, Physical Sciences, Computing, Engineering, and Technology, facilitated by schools, STEM educators or employers." The research focused on young people between the ages of 4 and 18 years old. Some organisations work in geographic areas which are broader than just Oxfordshire, and others are Oxfordshire-specific.

For more information regarding what we deem to be successful STEM engagement, please see appendix two.

Key stakeholders
For the purposes of this research, key stakeholders were grouped into the following categories:

- Educators and schools
- Employers or employer networks
- STEM Providers
- Young People

Stakeholders from these different communities participated in surveys, interviews, and/or roundtables. Desk-based research was also used to find out more about STEM engagement activities or where it was not possible to speak to a stakeholder directly. Connectr expertise ensured that peer-reviewed and evidence-based recommendations were utilised to support any claims made in this report.

6. All data from the Office for National Statistics
7. Oxford City Council, Poverty and Deprivation Statistics

The research project continued

The following information was used to form the basis of this report:

Educators and schools	Employer or employer networks	STEM providers	Young people
26 surveys 4 interviews	35 surveys 6 interviews	13 surveys 9 interviews	138 surveys 1 roundtable

Research limitations

This research uses evidence-based claims, all of which have been supported by survey responses, interviews, or desk-based research. However, due to constraints of the research and external factors, there are some limitations to the findings.

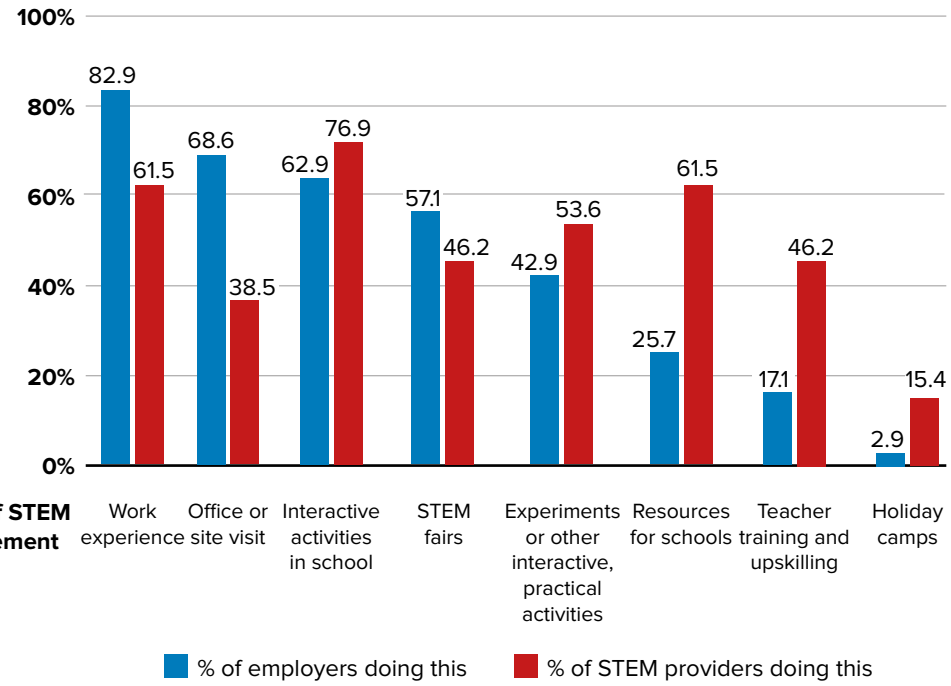
- **Small sample size** – Survey and interview data has formed a significant basis of the findings for this report, as these interviews and surveys are taken as illustrative of broader themes which would be shared across the county. However, the sample size for these is relatively small. This is particularly true of STEM providers, which is the stakeholder group with the smallest number of responses. This may lead to gaps in the findings of this research, which has been countered with desk research to corroborate these surveys and interviews.
- **Over-representation of secondary, STEM specialist schools** – Almost half of the individuals that responded to the request for surveys and interviews worked at schools or colleges with some level of STEM specialism (46.2%), meaning that they are likely to be more engaged in STEM than other schools in Oxfordshire. Also, nearly all of the schools that completed surveys or interviews were either secondary, sixth-form, or college, or some combination of the three (92.3%). As a result, there is a lack of information in the findings regarding primary schools. No Special Educational Needs schools responded to the requests for interviews or surveys.
- **Lack of diversity in student responses** – The majority of young people who contributed to the research identified as white heritage, and boys were slightly over-represented compared to girls or non-binary people. Young people who had been eligible for free school meals and/or a sixth form bursary were also underrepresented – 9.4% of survey respondents had been eligible for free school meals or a sixth form bursary, compared to 16.1% of students across Oxfordshire who are known to be eligible for free school meals. All of this means that the students who are most represented in this research are also those who are most represented in STEM across the whole, and that the research does not equally reflect the experience of students who are underrepresented in STEM.

What's happening in STEM engagement across Oxfordshire?

The most common types of STEM engagement

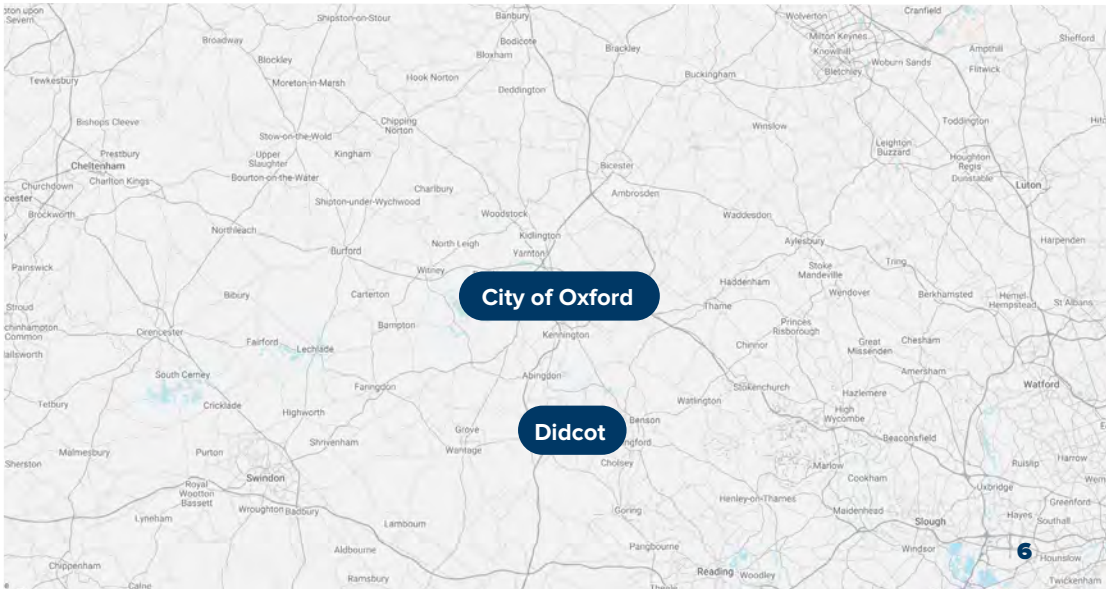
- Schools told us that the most common types of internal STEM engagement are STEM assemblies or presentations (57.7% of respondents), or STEM clubs (53.8%). They shared that the most common types of STEM engagement offered by external providers are experiments or other practical activities (76.9%), and office and site visits (73.1%).
- The most common types of STEM engagement offered by employers are work experience (82.9%), office visits (68.6%), and interactive activities in school (62.8%). By contrast, resources for teachers are less common – only 25.7% create resources for schools and 17.1% engage in teacher training.
- The most common types of STEM engagement offered by STEM outreach organisations are interactive activities in school (76.9%), work experience, and resources for schools (61.5%). The least common are holiday camps (15.4%), and office or site visits (38.5%).

Most common forms of STEM engagement



Communities who have access to STEM engagement

- Research shows that the gender gap continues in STEM, which is in line with our research findings. Of young people aged 15 and above, girls and non-binary young people are underrepresented in all STEM subjects with the exception of biology (56.7% of female or non-binary respondents studied biology at age 15 or above, compared to 30.7% of male respondents). The biggest gender gap was in engineering (54.2% of boys vs 16.7% of girls and non-binary people).
- Young people who had been eligible for Free School Meals or a bursary were less likely to want to pursue a career in STEM than those who were not – 74.3% compared to 38.5%.
- There is a cluster of employers providing STEM engagement in the City of Oxford and Didcot. Other areas in the county are less well-served by STEM engagement.
- STEM outreach organisations were more likely than employers to target their STEM engagement to specific communities of students. 31.4% of employers said that they don't target their STEM engagement to any specific communities, compared to 7.7% of STEM outreach organisations.
- The majority of STEM interventions targeted young people who are aged 14 and up. The most common STEM interventions offered by employers are for KS5 students, aged 16-18 (80% of employers) followed by KS4, aged 15-16 (77.1%).



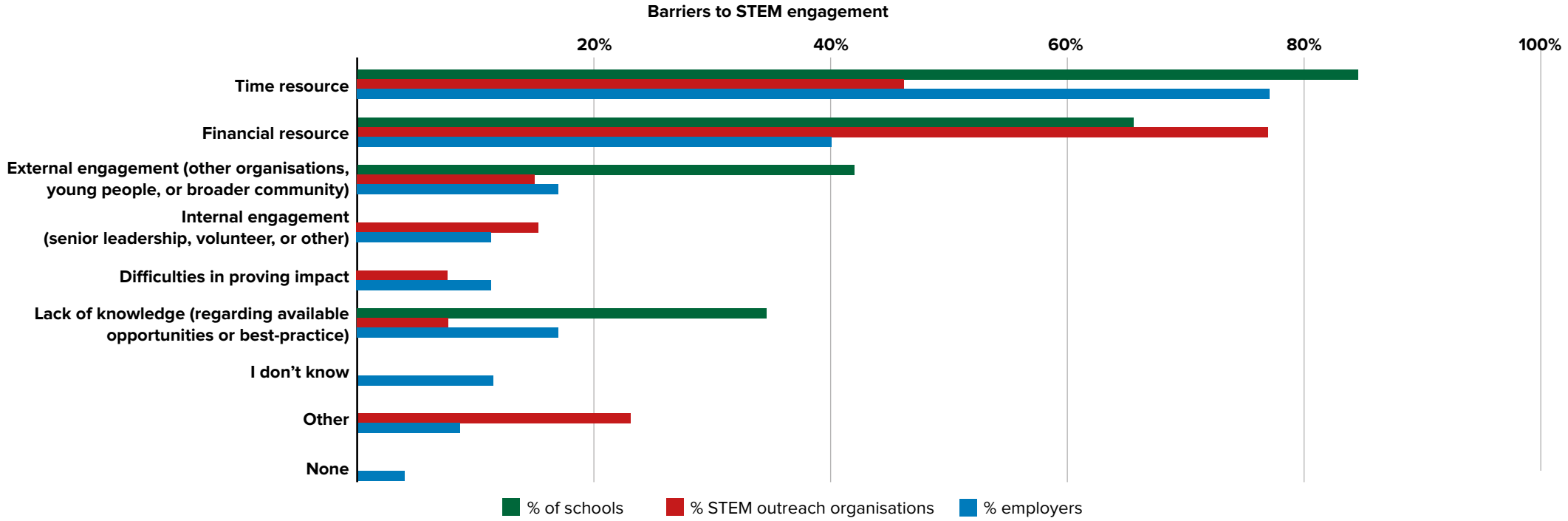
What's happening in STEM engagement across Oxfordshire?

Views on the effectiveness of STEM engagement

- Teachers view the most effective STEM engagement activities as work experience, interactive activities, or office/site visits (92.3% of respondents said they were effective or very effective). This is closely followed by experiments or practical activities (88.4%). It's worth noting that these are also the types of activities which are most commonly offered by employers and STEM educators.
- Within the category of 'interactive activities', educators specifically mentioned two different types of events as being particularly impactful: challenge days and competitions, both between and across schools, or project-based learning. Both of these can take place in the short-term, or can happen over prolonged periods such as a school term. This may explain why STEM clubs remain popular with a number of schools and educators, as this provides opportunities for these kinds of activities.
- When asked to describe a particularly successful STEM engagement opportunity, the most common response from employers was regarding work experience programmes or similar activities which pipelined young people into further training or career roles, such as internships or apprenticeships.
- STEM outreach organisations shared a broader range of activities that they deemed to be successful, with work experience being mentioned alongside science fairs, virtual offerings, and school-based workshops. The difference between these two groups demonstrates how success is viewed and defined in different ways depending on the organisation type and its strategic goals.
- Importantly, we did not ask respondents what they understood to be 'successful' in terms of STEM engagement, and are keen to further investigate how this could be defined by a variety of stakeholders. We have made some assumptions about this, which can be found in appendix 2, but these were not shared with respondents to surveys or interview attendees.

Barriers to STEM engagement

- Teachers told us that their biggest barrier was a lack of staff or teacher time (73%), the lack of time within the school year due to focusing on curriculum, and the lack of financial resources to pay for STEM engagement (both 65.3%)
- Employers told us that their biggest barrier was time (77.1%) followed by budget restrictions (40%). Employers also told us in interviews that a lack of adequate physical space is a barrier.
- STEM outreach organisations perceive the biggest barriers to be a lack of financial resource (76.9%).



Theme 1: Collaboration to avoid competition and duplication

There is clearly appetite for collaboration. Across all survey responses from stakeholder groups, 71.6% agreed that they would be interested in opportunities to collaborate with other organisations to improve, promote, or develop STEM outreach. Despite this, only 40.5% of respondents are already a member of a STEM network. Everyone that we interviewed had an appetite to improve collaboration.

There is a lot of fantastic STEM engagement happening across the county, including:

- Employers offering work experience at their offices, which schools shared were some of the most impactful experiences.
- STEM outreach organisations run a broad range of activities to benefit young people, educators and families.
- Specific projects to target young people from under-represented backgrounds, particular girls or non-binary young people.

The research highlighted the need for this good work to not lead to excessive duplication. In fact, a more collaborative approach would help remove some of the barriers to meaningful STEM engagement. For example, employers shared that one limiting factor was not having the space to invite young people into the office. Effective collaboration would make it possible to run alternative events such as workshops, career talks, or experiments within the schools themselves, or to share office space with other organisations to host students. This is particularly valuable because a large proportion of employers in Oxfordshire are Small or Medium-sized Enterprises (SMEs) who have less resources to plan and run programmes themselves (latest ONS data shows that 83.7% of Oxfordshire's registered enterprises are registered as 'micro').

Collaboration would also create opportunities to use financial resources more appropriately. STEM outreach organisations told us that financial resources are limited, but adopting a collaborative approach would mean that funding pools could be shared and allocated according to specific areas of speciality, to maximise efficiency and impact. This would be a move away from a more competitive approach to funding, which limits opportunities for collaboration.

Case study of collaboration: Milton Park

Milton Park has over 270 companies based at its site, not all of whom have the time or space available to host students directly. To support their occupiers to offer meaningful STEM engagement, the Milton Park team organise a centralised schools engagement programme for local students, which includes in-person work experience at Milton Park. This enables small organisations to participate in meaningful work experience, in person panel discussions, interview practices in local secondary schools, and local students benefit from seeing a broader range of organisations. This collaborative approach has enabled Milton Park to work with 84 volunteers across 27 different companies in two years, and work with over 1,500 young people. Other networks of organisations, either based on shared interest or geographic location, should consider similar opportunities for collaboration.

71.6%

of survey respondents agreed that they would be interested in opportunities to collaborate with other organisations to improve, promote, or develop STEM outreach

Theme 2: Building shared understanding between different stakeholders

Some examples of best-practice STEM engagement came from long-standing, collaborative relationships:

- Employers that work regularly with specialist STEM outreach organsations to create year-on-year impact for young people.
- Schools that work with a select number of employers across multiple years.

However, a common theme from all stakeholder groups was the difficulty in connecting and building relationships with other types of organisations. Below are some suggestions of best-practice for creating these meaningful relationships.

Build relationships based on open dialogue. This is key to ensuring that different groups of stakeholders understand the other's drivers, motivators, and limiting factors. Defining and transparently sharing the objectives for STEM engagement would contribute to this open dialogue, as both internal and external stakeholders would be able to address these. When there is internal staff turnover, it is also important that effective handover processes are put in place to maintain ongoing collaboration. This approach is often most effective when organisations partner with specific schools for multiple years.

Long-term relationships can maximise impact. It ensures effective planning across multiple academic years for schools, increasing efficiency and removing some of the logistical barriers. This would also benefit STEM outreach organisations, who can plan for future provision through multi-year funded programmes.

Case study: Activate Learning Education Trust

Activate Learning Education Trust's (ALET) Digital Futures Programme has been rolled out to all four of the Trust's University Technical Colleges to prepare young people for a career in digital industries. The programme fosters strong long-term relationships between educational institutions, employers, and students, to provide students with varied interventions across two – four years. This includes curriculum workshops, challenge days, employability skills days, and site visits. ALET works with 12 national and international employers who commit 30 days per year to spend in school or with students. On average, students have 8 employer interactions per year between years 10-13, which are tracked by an online dashboard. ALET regularly collaborates with other Trusts and shares learnings from the Digital Futures Programme, supporting them to build stronger relationships with employers to address the skills gap.

Theme 3: Sharing expertise to maximise impact

Different types of stakeholders, as well as different individual organisations, have varying areas of expertise regarding STEM engagement, and sharing this knowledge offers an opportunity for all to maximise the impact of their work. Throughout our research, it became clear that organisations across all stakeholder groups have specific areas of strength and speciality, as well as gaps in experience. A collaborative approach to sharing knowledge would help maximise impact for young people.

For instance: only 2.9% of employers participate in holiday camps, but there are multiple specialist organisation running holiday camps across Oxfordshire. 14.3% of employers said that a barrier to improving their STEM engagement is a lack of knowledge about how to build activities or content, but schools and colleges have the understanding of the national curriculum and young people themselves which would help unlock this. Only 7.7% of STEM outreach organisations work specifically with young people who are care-experienced, but community groups and charities work effectively with this group on a regular basis.

Bringing early careers in STEM outreach: Building the talent pipeline is a particularly important reason for employers to participate in STEM engagement - 71.4% of employers said that early careers, talent pipelining or addressing the STEM skills gap was a key reason for their company to participate in STEM engagement. We know that early engagement contributes to achieving this: young people who have 4 employer interactions are 86% less likely to be NEET at 18.[8] However, only 42.9% of employers said they had a strategy to pipeline young people, and of these 80% said that STEM engagement was part of this.

Early careers specialists should be involved in STEM engagement to ensure these pipelining goals can be met. Early Careers Teams should contribute to planning an outreach strategy which reflects challenges or goals in the early careers pipeline, and share specific information which should be provided to young people regarding early careers opportunities. External relationships can also be leveraged to support early careers teams, for instance by working with third-party experts who support a particular community of young people.

8. Anthony Mann, Elnaz T. Kashefpakdel, Jordan Rehill, and Prue Huddleston, Contemporary Transitions: Young Britons reflect on life after secondary school and college, 2017.

Work with specialists to collaborate. Within the sample of stakeholders who participated, employers from over six different specialisms are represented, and within these specialisms there are further specific areas of areas of knowledge. This small pool represents only a portion of the broad range within STEM, presenting a fantastic opportunity to share varied information with young people. In order to maximise on this opportunity, these companies should build relationships with other organisations who specialise in working with young people directly.

STEM employers and schools could collaborate to ensure that resources provided by employers reflect the school curriculum requirements, whilst also sharing the technical knowledge that the individual companies lead on. This would ensure that resources would be made more relevant to schools, thus increasing their usefulness. Collaboration with non-STEM organisations should also be considered. For instance, we heard from one organisation which is building relationships with cultural organisations across Oxfordshire to run interactive science activities which reflect the ways that cultural education and STEM education overlap with one another.

Theme 4: Equitable Science Capital: Target programmes to young people who need them the most

Communities of young people continue to be under-represented in STEM careers includes, but is not limited to: girls and non-binary people, disabled people, those from lower socio-economic backgrounds, and Black Heritage people[9].

The ASPIRES 2 project calls for a Social Justice model to be applied to STEM education, which will help build the science capital of young people from under-represented backgrounds by considering how social factors contribute to their interest and knowledge of science[10]. Science capital, as defined by UCL, refers to all of the science-related knowledge, attitudes, experiences, and social contacts than an individual may have[11].

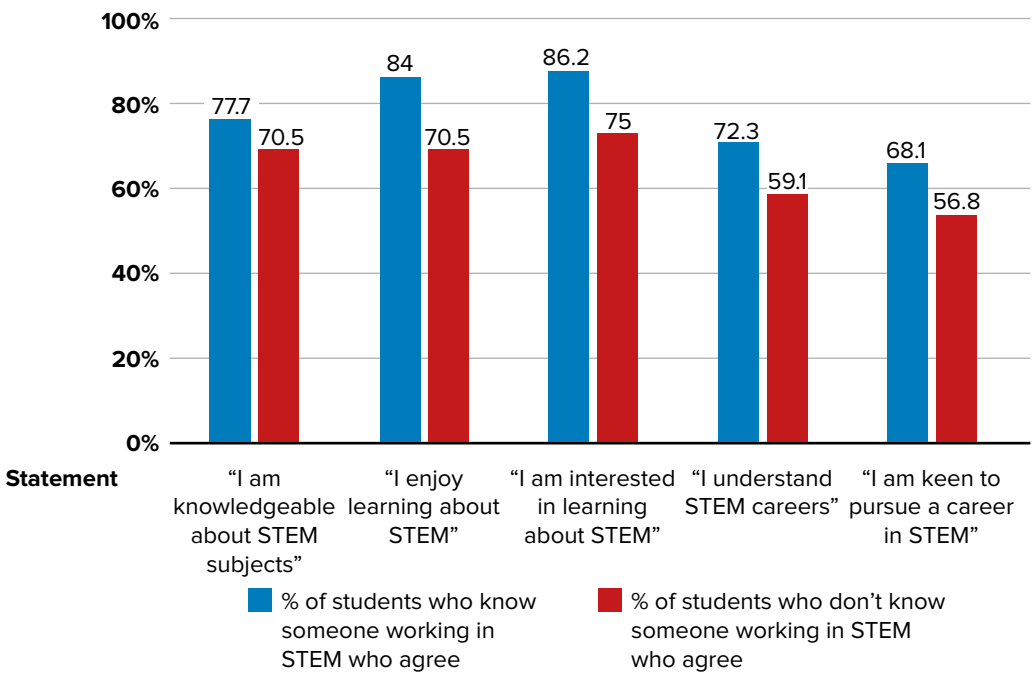
Our research demonstrated that employers were fairly unlikely to target their STEM interventions to any specific communities – the most common targeted community was girls and non-binary young people, of whom 40% of respondents said they specifically targeted with their work. This lack of targeting is a missed opportunity.

Our research highlighted that young people who know someone working in STEM reported a better understanding of STEM careers (59.1% of those who didn't know someone working in STEM said they understand STEM careers, vs 72.3% of those who did) and were keener to pursue it as a career (31.8% vs 68.1%).

Role modelling
One way that STEM engagement can more specifically support young people from underrepresented backgrounds is through working directly with role models from their community. Our research highlighted lots of good practice happening in this already, especially working with girls and introducing them to women in STEM, but further effort could be used to progress this with other underrepresented communities.

Engage networks and influencers (families and wider communities)
Another suggestion is to engage with families and wider communities of young people from underrepresented backgrounds. Families are key influencers in young people's lives, including their career decisions, as are other community organisations such as clubs or religious groups. Some of the best-established STEM engagement in Oxfordshire use strategies to engage these communities directly.

Differences between students who know someone working in STEM vs those who don't



> *"I'm not sure where I want to go in the future career wise but I have quite a lot of influence from my family. My step dad is an engineer and works with cars...and my older sister is studying neuroscience. I came to this school because I knew there'd be opportunities to work in these kinds of areas."*
>
> **Secondary-school student.**

9. The Royal Society, A picture of the UK scientific workforce, 2014.
10. UCL, ASPIRES 2: Young people's science and career aspirations, age 10 – 19, 2020.
11. University College London, The Science Capital Teaching Approach: Engaging students with science, promoting social justice, 2017.

Theme 5: Starting early to build science capital

STEM outreach organisations are far more likely than employers to engage with young people in primary school. 61.5% of STEM organisations, compared to 31.4% of employers, work with students who are younger than 11. This may reflect the different motivations for leading STEM engagement for STEM organisations compared to employers, for whom pipelining is a priority. In order to build young people's science capital, it's important to start STEM engagement early, especially those from under-represented groups.

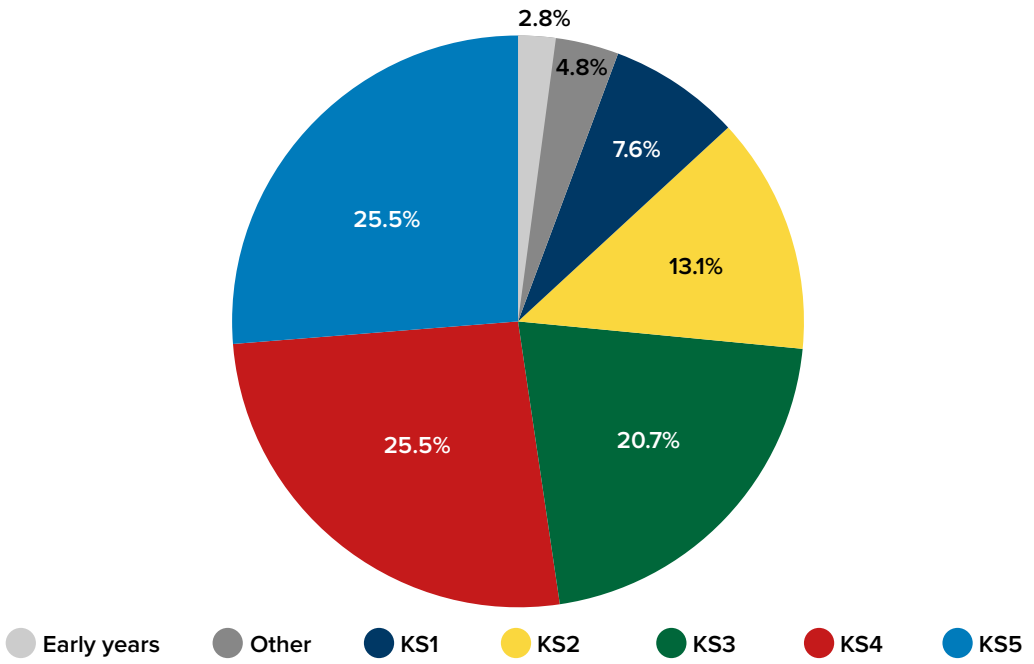
Primary school engagement: The benefits of early engagement are evident in the Careers and Enterprise Company's pilot of careers education in primary school, in which 87% of teachers reported fewer students limiting their career aspirations due to gender stereotypes[12]. Of the employers that engaged in the research, only 31.4% ran STEM engagement for primary school students.

Primary to secondary pipeline: By building young people's engagement in STEM early-on, later STEM engagements become more effective. This means that any attempts to support primary-age young people to engage in STEM will result in improved outcomes for STEM engagement in secondary schools. Some of the schools that contributed to the research are looking to build this opportunity by supporting secondary school students to mentor primary school students in STEM.

Case study: The Oxford Trust

The Oxford Trust runs STEM education and engagement programmes across Oxfordshire and Buckinghamshire through Science Oxford, reaching over 30,000 people in 2024/25. In East Oxford, the Trust has focused partnerships with 12 primary schools to provide bespoke support. At the heart of these programmes is the Science Oxford Centre, a hands-on, indoor-outdoor science education centre that engages primary pupils through interactive, in-person activities. These include the hands-on exhibits in the Exploration Zone, pond dipping, STEM shows, curriculum-linked workshops and woodland walks – all aimed at sparking curiosity and deepening scientific understanding. The Oxford Trust also supports teachers through professional development courses based on the Thinking, Doing, Talking Science approach, enabling them to make primary science lessons more creative, practical and challenging.

% of organisations (STEM Outreach organisations and employers) working with different age ranges



12. Careers and Enterprise Company, Insight Briefing 12 The promise of primary, 2025.

Theme 6: Using and collecting data

In order to create the most meaningful STEM engagement, data should effectively be used to a) target interventions to communities who need it most, b) measure outcomes for students, and c) make continual improvements. Interestingly, our interviews with stakeholders highlighted that many organisations are not collecting or using data in these ways.

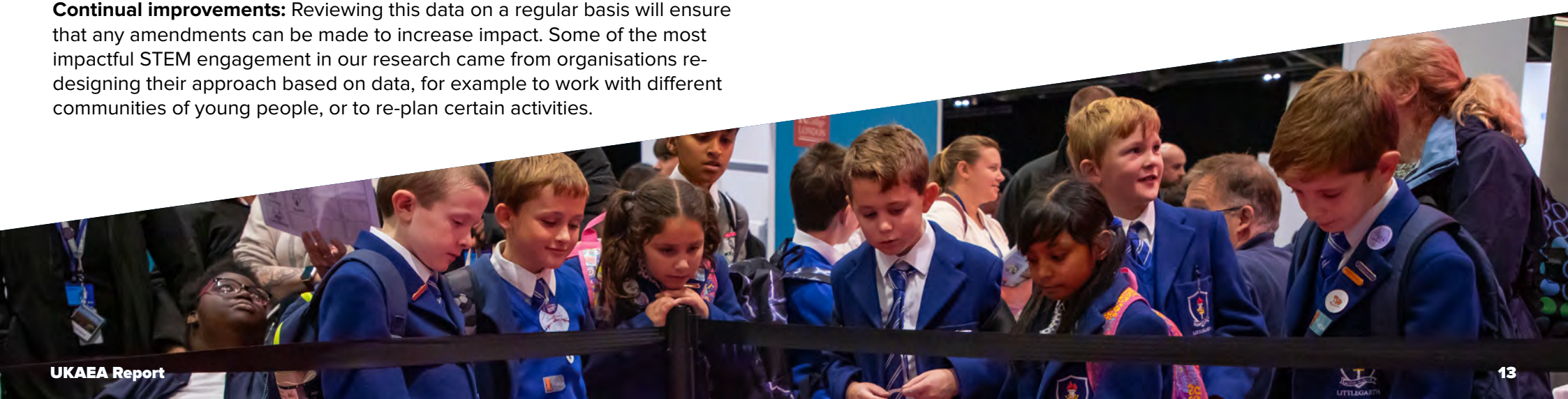
Targeted interventions: Some organisations are effectively using data to target schools or communities of students for their provision. One specific way of doing this is using a schools' free school meal eligibility to target those where a higher proportion of the student population are from lower socioeconomic backgrounds. Organisations can also collect data on the individual students that they work with, such as their gender, ethnic background, or disability status, in order to ensure that STEM engagement is benefiting those students who will benefit the most.

Feedback linked to ideal outcomes: Planning and creating opportunities to collect feedback enables organisations to understand whether the ideal outcomes of STEM engagement are creating those impacts in reality. Ideal outcomes should be planned by an organisation's business needs (whether that be a STEM outreach organisation looking to build STEM capital, or an employer hoping to build their early careers outcomes), and then questions written which will collect tangible data on these points. Embed this feedback process into all aspects of STEM engagement.

Continual improvements: Reviewing this data on a regular basis will ensure that any amendments can be made to increase impact. Some of the most impactful STEM engagement in our research came from organisations re-designing their approach based on data, for example to work with different communities of young people, or to re-plan certain activities.

Case study: Science Technology Facilities Council's Rutherford Appleton Laboratory Campus

Through its Public Engagement team the UK's Science Technology Facilities Council (STFC) Rutherford Appleton Laboratory runs a broad range of STEM engagement programmes with various partners. Their programme includes workshops for primary school students, a science school prize, teacher CPD, and three different types of work experience. STFC has a clear framework for impact, which it uses to measure the effectiveness of all aspects of STEM engagement. Through consistently identifying key outcomes for their STEM engagement work, and then clearly measuring progress towards these in student feedback, STFC's Public Engagement team has demonstrated what works well within its STEM engagement, which has been used to build their long-term, impactful programme.



Conclusion

This STEM mapping research highlighted some of the fantastic STEM engagement that is happening across Oxfordshire, which young people are already benefitting from. In order to grow the impact of this work, and ensure that all young people across the county are able to make the most of these opportunities, these practical recommendations can be embedded into a range of organisations.

We hope that the themes in this report offer a clear framework for impact, which can be adopted across the county regardless of the type or size of organisation that is participating in STEM engagement.

In the long-term, this report marks the beginning of a new approach to STEM engagement across the county. In the following years and months, the aspiration is for this research to:

- Strengthen opportunities to collaborate with a range of stakeholders to create more impactful STEM engagement
- Introduce a more cohesive understanding of what best practice means for a range of organisations
- Contribute to a growing community of young people in Oxfordshire who have participated in a range of STEM engagement opportunities
- Provide a benchmark of findings which further research is built upon to inform and share updates on STEM engagement across Oxfordshire

Thank you to our contributors

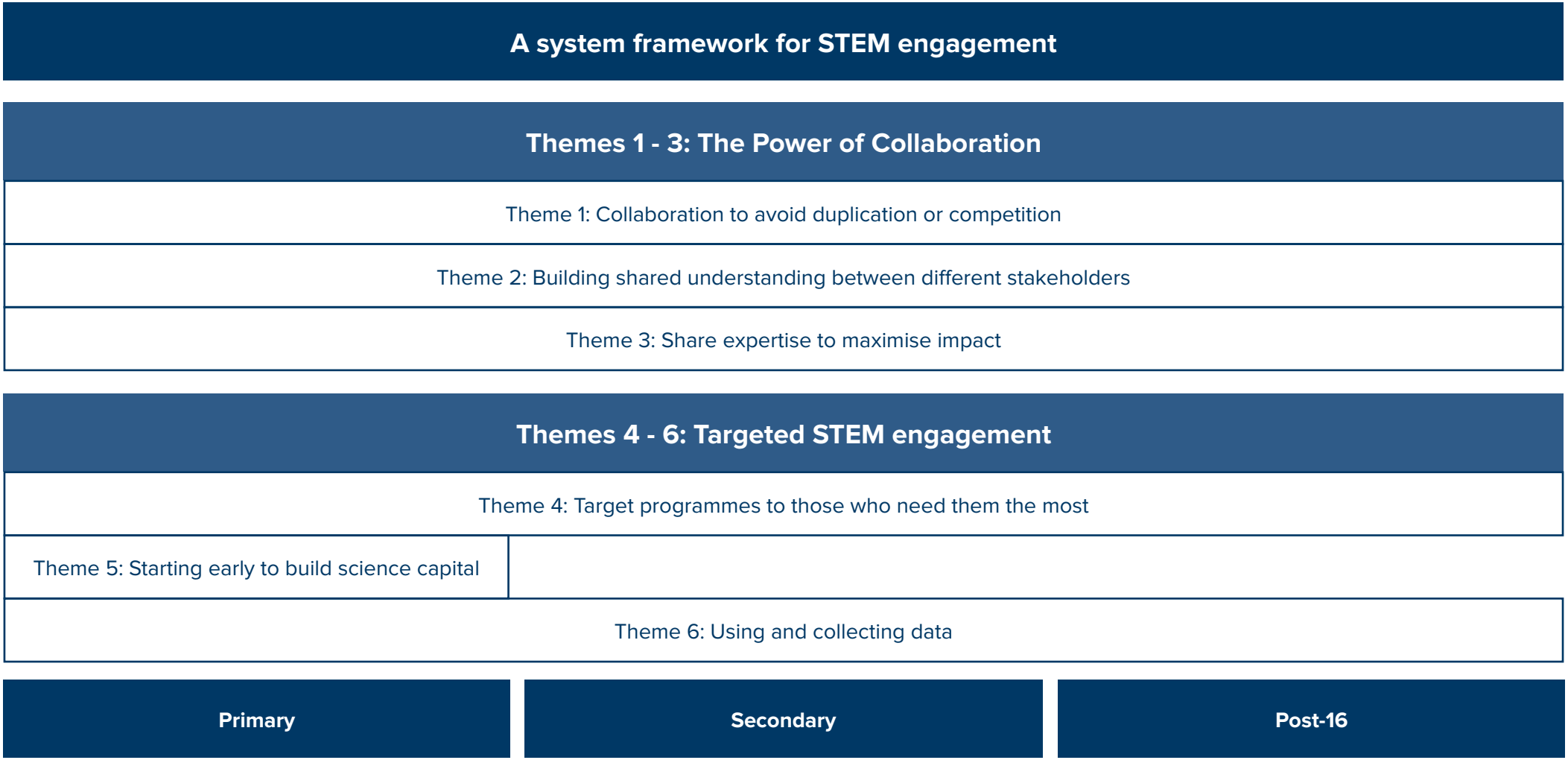
Thank you to all of our contributors, who took time to share their knowledge, experience, and suggestions for this research. Without these contributions, this research and report would not be possible.

Milton Park	Science and Technology Facilities Council	The Oxford Trust	Activate Learning Education Trust	Enterprise Oxfordshire
Amentum	AtkinsRealis	Atlassian Williams Racing: Williams Education	ATOM Festival of Science & Technology	Bayer
Dashwood Banbury Academy	Department for Work and Pensions	Developing Experts	Diamond Light Source	Didcot Girls School
First Light Fusion	Fortescue Zero	Futures Institute Banbury	House of Fun LtD	Huduma Limited
IF Oxford	Matthew Arnold School	Orano	Orbital Astronautics	Oxford Spires Academy
Oxfordshire Advanced Skills	STEMazing	The Ahead Partnership	UK Health Security Agency	

Alongside a number of others who contributed, including schools and colleges, employers, STEM engagement providers, and not-for-profit organisations.

Appendix 1: A system framework

Rather than viewing each theme as a stand-alone suggestion, we recommend that these six themes are adopted together as a system framework. In this approach, themes one, two, and three address collaboration and should be viewed as the basis upon which all STEM engagement is built upon. Themes four, five, and six demonstrate how best to work effectively with young people, and are best adopted within the collaborative approach outlined in previous themes. Please find image below to demonstrate this.



Appendix 2: Successful STEM engagement

The long-term vision for successful STEM engagement is that all children aged between 4-18 in Oxfordshire will have increased access to best practice STEM engagement, resulting in greater interest in STEM careers. In order to create this, STEM engagement should build equitable and early-stage science capital. This will contribute to a diverse and well-matched STEM talent pipeline.

Please find below some suggested measures of success STEM engagement in both the medium- and long-term:

Measure	Medium-term	Long-term
Improved collaboration between different stakeholders regarding STEM engagement.	Stakeholders across different organisation type and industry increase collaboration regarding STEM engagement.	Collaboration between different types of organisation is embedded as key to STEM engagement across Oxfordshire.
STEM engagement programmes are more streamlined and impactful.	Organisations are increasingly using best-practice measures, including collaboration and the use of data, to create streamlined and impactful STEM engagement programmes.	A system framework has been adopted for organisations across Oxfordshire in order to ensure that STEM engagement programmes are consistently impactful and effective.
Young people in Oxfordshire have better access to impactful STEM engagement.	Young people, especially from backgrounds who are currently under-represented in STEM, have improved access to STEM engagement.	All young people across Oxfordshire have access to impactful and meaningful STEM engagement activities, which focus on communities who need them the most to build equitable science capital.
Young people have an increased understanding of different STEM employers and careers in Oxfordshire.	STEM engagement is increasingly utilised as a way of improving young people's understanding of STEM education and career options.	All young people in Oxfordshire have an increased understanding of STEM education and career routes, and can make informed decisions based on this.
Young people are more likely to study STEM subjects at post-16 or post-18 level.	More young people are opting for STEM education and career routes, including those from currently under-represented backgrounds.	Young people from diverse backgrounds across the county make informed decisions about STEM opportunities available to them, and don't experience barriers to access these.
There is an improved STEM talent pipeline in Oxfordshire.	Employers and STEM organisations start to see an increase in the number and quality of applications to STEM roles, including from communities who are currently under-represented in STEM.	There is a thriving, diverse, and well-matched STEM talent pipeline across Oxfordshire.

Appendix 3: Starting points

In this appendix, you can see a brief suggestion of a tangible activity that readers can take to action each one of the themes included in this report. This is by no means an exhaustive list, but will provide a starting point for each theme, from which further actions can be taken.

Theme One: Collaboration rather than competition or duplication

Physical collaboration: Consider bringing firms together to run activity together to showcase STEM careers and skills to target demographics, with a focus on the key growth sectors identified within the Oxfordshire LSIP. This could either be a specific multi-company activity, commissioned and managed centrally through an external organisation, or it could be lighter touch where organisers invite external employers into a part of their existing activity for a 1-hour networking session.

Shared resources: Where appropriate, employers, educators and STEM providers should consider sharing resources used to engage young people around STEM careers. Having ready to go content can support organisations who have less resource to invest in STEM engagement. These shared approaches will in particular enable SMEs to engage more effectively with local schools and colleges. Large employers should consider where they might be able to support a smaller local employer (for example where the large employer's activity is CSR/SI, not pipeline activity).

Theme Two: Building understanding and relationships between different stakeholders

There are many events in Oxfordshire where different types of stakeholders meet to share suggestions, ideas, and priorities. These include the LSIP WDP meetings, or specialist events according to sector. Attending one of these will enable you to learn about different types of organisations, and start to build connections. Before attending the events, make a note of at least one other type of organisation that you'd like to speak to a representative from, and record two or three questions which will help you understand their goals and ambitions.

Theme Three: Sharing expertise to maximise impact

Early careers professionals: Work with early careers professionals to create some specific resources which spotlight your early careers opportunities, regardless of whether these are currently open or closed. In these, include specific details such as: types of opportunities available, time-frames, and top-tips for applications. Use these resources in your STEM engagement activities, and share information about how young people can find out more (for example, by sharing a link to an early careers website).

Specialist organisations: Following attending an event in Oxfordshire for different types of organisations, reflect on what you learned from the other attendees. If there is one organisation who is running STEM engagement activities that are different from yours, investigate more about the work that they do, why they do this particular type of work, and how they create success. Based on this, speak to someone from the organisation to discuss mutually beneficial opportunities for collaboration.

Theme Four: Target programmes to those who need them the most

Reflect on which communities continue to be under-represented in your organisation, or those who experience barriers to doing well. Workforce data, engagement participant information, or exam results can be used to identify at least one of these communities – if unclear, it's worth considering targeting intervention at girls or non-binary young people, those from lower socio-economic backgrounds, Black-heritage young people, or those in rural areas in Oxfordshire. Identify one of these communities (target at an institutional and individual level where appropriate), and commit to planning one research-backed STEM engagement activity which will specifically benefit this group. Once this STEM engagement activity is complete, review the feedback and plan to run it again based on any learnings from this.

Ensure that you are delivering the right content to engage this group effectively and match the demographic representation where possible with your event facilitators or volunteers. Where you are able to, we'd recommend working with specialist providers who are used to working with young people to create impactful content and co-deliver sessions.

Appendix 3: Starting points continued

Theme Five: Starting early to build Science Capital

Build on your existing STEM engagement to extend into earlier years. Reflect on your STEM engagement activities, and pick one that you think is particularly successful for students aged 11 or above. Use research and best-practice suggestions to convert this into an in-school event which could be delivered in primary schools. As a starting point, keep in mind that all age groups benefit from jargon-free and hands-on activity, and this is even more true the younger you go. If you are unsure of how to successfully run STEM engagement for primary-school students, build relationships with specialist organisations who are more experienced in this area.

Theme Six: Using and collecting data

Create 3 outcomes that you hope your STEM engagement activity will achieve (for example, “this activity will increase young people’s interest in careers in engineering”). Then, plan feedback questions which measure how far students agree this goal has been achieved, and ask all students who participate to answer these questions. A concerted effort should be made to collate and analyse impact data, to help articulate a business case for continued investment, and to improve outcomes. Where possible, share data to contribute to wider learning.

If you are a network or operate at a county-level: Consider identifying 3 metrics at a county-level to see the impact that collaboration is having, then work with local employers to commit to collecting and (anonymously) submitting the data. This approach of a consistency of data collection across programmes is impactful in other sector-wide initiatives such as PRIME or Access Accountancy.

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Thank you