

On Friday 7<sup>th</sup> September, the Royal Society hosted a round table discussion at the Centre for Life in Newcastle. The aim was to catalyse discussions on how the collective impact of different types of employer and HEI support for schools and colleges could be harnessed in the North East.

Exam question:

**‘Could the support employers provide to schools be increased, *and* be more effective than at present?’**

We know that employers support schools in a wide range of ways, including, but not limited to, work experience for students and teachers, teacher training, resources produced for schools, mentoring programmes and apprenticeships. However, we have been asked if there are ways this could be more joined up and enable more employers to be part of the community engaging with schools and colleges.

The discussion was part of the *Creating Connections* event that took place on the closing weekend of the Great Exhibition of the North. *Creating Connections* was created to build links with scientists from a range of regional industries and universities, by learning about how science and innovation are progressing across the UK. Scientists from various backgrounds attended, as well as representatives from local businesses and government to discuss emerging challenges and opportunities in regional science.

In the NE there is a coherent business community and thriving connections between schools and employers. This work aims to explore how these connections are built, their current impact and how that impact could be amplified.

The wider discussion was intended to move beyond the standard activities employers engage in into the strategic space around schools and between different employers. Notwithstanding the value of ‘standard activities’, we were particularly interested in novel approaches that can gold plate connections to enable impactful work that changes young lives. We explored the reasons behind some of the trends we see in outcomes for the North East’s young people, specifically at KS4, KS5 and higher education and employment destinations.

Outcomes of particular concern; the North East had the lowest proportion of pupils in good or outstanding secondary schools, 67% versus a national average of 81%. The North East was the lowest performing region for Ebacc entry and achievement for all pupils. It was the lowest performing region for A-level students achieving at least 2 A-levels and we had the highest proportion of young people not in a sustained destination after KS4 and the lowest percentage of young people going to a top third HEI after KS5.

There is a positive landscape around the North East, and this could be exploited to inspire local young people. There are some excellent success stories in STEM in the North East, including the highest count of Nobel prizes per head of population and the greatest number of published papers around STEM.

National current issues naturally became part of the discussion, including the knowledge rich curriculum, and a perception amongst stakeholders of a false dichotomy between skills and knowledge.

The Society also launched its 'braided career' case studies at the Creating Connections event. Teacher supply, including the recruitment, retention and development of teachers, is an area of growing concern, with the Department for Education, subject associations and the learned societies anxious about the lack of teachers in subject areas such as science, mathematics and computing.

While initiatives are currently addressing each element of teacher supply, these are not expected to resolve the current and expected deficit of teachers. Alternatives to full time employment of teachers may offer additional resources to schools. Flexible and/or part time working may enable more people to teach as well as schools to employ the exact support needed.

The Society is interested in whether 'braided careers' may offer one such alternative model, engaging individuals in teaching and other employment simultaneously. The Royal Society commissioned four case studies to explore this alternative approach to adding teaching capacity in schools.

Dr Kristy Turner, who features as one of the case studies spoke about her experiences; she is a Chemistry Teacher and Lecturer at Bolton School and University of Manchester and Mr Philip Britton MBE, Headmaster of Bolton School (Kristy's employer) reflected the employer's experience. Both reflected their experiences and the advantages and challenges of such approaches.

### **Key Actors in the North East**

Stakeholders discussed their experiences of existing practice. This allowed us to celebrate good practice and learn about the importance of this from both a school and employer perspective. Schools reported the majority of their contact with employers is around work experience. Employers reported that this direct contact acts as a great recruitment mechanism. The discussion allowed the identification of some 'easy win' strategies around work experience that will bring about a high impact with little cost. Stakeholders expressed that young people and the local community is at the centre of their values. All want to transmit that STEM careers are exciting and achievable, and you don't have to be a Nobel laureate to succeed.

### **Leading relationships between schools and employers**

There are a number of organisations that facilitate connections between schools. Many of these hold impact data and have grown their influence considerably in recent years.

**Founders for Schools:** A free online platform service which connects educators with leaders of successful growing businesses in their community. Founders4Schools has now brokered nearly 215,000 young people to meet on average 3 business leaders from their local communities, helping them to better understand the world they will enter when they are older, and the jobs they might hold or create in the future. This is up from 80,000 in the 2016-2017 review.

**STEM Ambassadors Hub:** STEM Ambassadors are volunteers, from 17 to 70 years old, representing a vast range of STEM-related jobs and disciplines across the UK. Over 30,000 STEM Ambassadors, from more than 2,500 employers, offer their enthusiasm and

experiences free of charge to encourage young people to achieve more and progress further in science, technology, engineering and mathematics (STEM).

STEM Learnings' independent evaluation shows that STEM Ambassadors can inspire young people to get more involved in STEM subjects. As a result of working with STEM Ambassadors, more than eight in ten teachers reported that: their students' awareness of the importance of STEM had increased (89%), as had their knowledge and understanding of STEM, and the students were now more engaged in STEM subjects (83%)<sup>1</sup>.

**STEM Learning Directory:** A searchable database of resources for teachers that supports learning in STEM subjects.

**The Learning Partnership:** Secures funding from employers to support whole cohort STEM projects and match schools to employers using the Dendrite platform. Dendrite creates connections between all schools and local employers by securing buy in from both independently then matching according to identified needs.

**The Teacher Development Trust:** A teacher learning directory of approved training providers.

**Engineering UK:** Aims to inspire, engage and inform the next generation of engineers via programmes designed to excite young people about the variety and opportunity presented by a career in modern engineering and give them the chance to meet people already working as engineers. Engineering UK run Tomorrow's Engineers and Big Bang, and are showing young people from all backgrounds how their studies could lead to a rewarding career as a STEM professional.

**TeenTech:** TeenTech are a Community Interest Company (CIC) who have run award winning initiatives since 2008 to help young people understand the opportunities in contemporary industry, no matter what their gender or social background. 90% of their work is targeted into areas of social disadvantage. TeenTech work face to face with over 10,000 young people every year across the UK and indirectly with tens of thousands more through their resources. Their initiatives are particularly powerful in encouraging girls and students from disadvantaged backgrounds to consider careers in technology, engineering, construction and the applied sciences. They provide students and schools with a framework of activity and a network of useful contacts and opportunities helping them develop 'STEM capital'.

### **Employers with a commitment to working with schools**

In general, employers reported several connection creating activities, including working with intermediaries, providing resources, providing work experience placements, funding projects and resources, and providing input into careers activities in schools. Interactions between employers and schools provide diverse role models and give young people visibility of local SMEs.

**Proctor & Gamble:** Work with schools is embedded into company culture and has a history working with local schools. Recently introduced work placements.

**Johnson Matthey:** Runs the future scientists programme and work experience.

**National Cyber Security Centre:** Provides learning experiences for young people around cyber security. Developed programmes in the HE space with University of Oxford and UCL, and work in partnership with Northumbria University at the Research Institute in Science of Cyber Security (RISCS).

**UKIE:** Runs the Digital Schoolhouse programme extensively in the North East, and are developing a role for a teacher in a braided career.

**BASF:** Currently run a lab space for schools in Bradford, and are in the process of moving to Derby. The learning for local school students is designed by Dr Leigh Hoath and pays careful attention to evaluation of the learning. The learning used the skills and resources from BASF and presents a collaboration model between employers and a HEI.

**UBISOFT:** Have collaborated with other employers to design and launch a UTC in the North East. This way of working collaboratively as employers is an excellent model. Internal relationships and relationships between employers and the community are crucial to the success of innovative school learning leading to improved talent pipeline.

**AWS (Amazon Web Services):** Are developing their AWS educate programme to meet the needs of school age children and are growing their model for working with schools.

### **Examples of engagement with employers**

**Park View Learning:** Piloted the careers advice aspect of the recent Gatsby work and ran year 8 speed networking with local employers.

**Cramlington Learning Village:** Is home to a Teacher Development Trust CPD Centre of Excellence, and leads a network of 9 schools as they develop their practice.

**Shotton Hall Research School:** Works closely with Cramlington to ensure teacher development is driven by research and evidence.

### **Examples of engagement by HEIs**

Northumbria University has a network of 30 schools and they encourage young people into STEM within the network.

University of Sunderland puts students in their final year into schools, developing their confidence and bringing expertise into schools.

### **Initiatives from other regions**

Dr Kristy Turner's description of her braided career in the North West could serve as a model for an alternative career pathway for teachers that allow them to work across a school and an industry organisation. Colleagues working in this way would be well placed to provide high quality careers advice to students wishing to pursue a career in that industry.

UKFast work in this way across a trust, they have employed a teacher who works in schools across the trust and leads on the development of the digital strategy in schools. Also hot desks

at the UKFast office and advises colleagues across the organisation on the educational aspects of their business, incurring benefits for both the schools and the business.

The Teacher Development Trust CPD Excellence Hub in Blackpool is run at the same site as a Research School. This has allowed the team to develop trust in the local community and strong relationships to grow across schools.

The schools are supported to navigate around a potentially overwhelming number of initiatives and set a development course that meets their identified needs. This way of working would allow schools to work strategically to identify their collective needs around STEM employers and careers, and work together to build relationships with the local employer network. The Northumberland CPD excellence hub runs from Cramlington has a similar model in collaboration with the Shotton Hall Research School. Cramlington also works closely with the University of Northumberland.

The University of Manchester builds relationships with teachers via their widening participation scheme, and then leverages those relationships to explore the challenges schools face and implement practical solutions. For example, exploring how employers can support with resource issues around practical science.

### **Stakeholder Drivers**

Discussions explored the drivers behind current involvement in connecting activities for both schools and employers. There is a push from schools for their students to be locally successful, and a pull from employers to attract and develop local talent. Teachers are the key to making the difference to students.

Improving the life chances of local children was central to the values expressed by all stakeholders

#### **Drivers for employers:**

- Talent pipeline
- Reducing costs of recruitment and training required to get new recruits 'industry ready'
- Rooting the business in the local community and thereby 'giving back'

#### **Drivers for schools:**

- The new Department for Education careers advice is forcing schools to think about the leadership of careers strategy in schools, and developing curriculum to encompass career perspectives.
- Gatsby careers guidance
- Outcomes for students
- Destinations of students to high skill, high pay careers
- Serving the local community

### **Challenges**

Colleagues described a number of challenges around working with schools, and the desire to work collaboratively to not only solve problems but to achieve bigger aims.

The overall aim is to improve the likelihood of local children entering high-skill, high-pay careers in local, national and international STEM workplaces. To achieve this, there needs to

be coherent communication channels between schools and employers so that there is a shared understanding of the needs of all stakeholders in the community, and systems in place that use collaboration to amplify the impact of all stakeholder input.

Experience of STEM workplaces needs to be meaningful for both students and teachers to enable student visibility of potential careers, and teachers to gain an understanding of the industry that enables them to give accurate careers advice to students.

Schools are experiencing many simultaneous challenges. Any initiative needs to be embedded within current strategies to avoid 'initiative overload', and involve schools in the process so that schools are working with other stakeholders to achieve a shared goal, rather than having additional initiatives added to already packed development plans.

Colleagues in industry have limited time around their substantive roles to spend on building relationships with schools, and this is particularly marked in SMEs and start-ups, which would benefit most from an improved local talent pipeline. Once relationships are built between individual people, there needs to be a process for developing institutional memory to keep the relationship alive beyond personnel changes.

There is a series of strategies that could improve relationships between schools and employers, in order to amplify the impact of interactions. The 'easy-win' strategies are low resource and build on existing strategies. The 'profound impact' strategies will require more intensive input and some new systems.

### **Examples of 'Easy-win' Strategies**

- Co-ordinate work experience; employers often struggle to accommodate students over the 'peak time' for work experience. It would be helpful to stagger it throughout the year. SMEs struggle to support a week or two, so having one or two days of work experience at different employers rather than two weeks at a single employer would make this support more viable for SMEs. If co-ordination includes strategic working between employers in addition to between schools and employers then large employers could send/deflect requests for work experience to SME's, and improve the capacity of industry stakeholders to meet schools' needs. Employers could secure further value if the co-ordination system enabled employers to have feedback. Schools could also provide guidance or projects for work experience.
- All schools could list the named careers lead on their website. This renewed focus on the role could be an opportunity for employers to work with schools in the development of the role. A key skill for the careers lead is the ability to build relationships with employers; employers could be consulted in the construction of the job description of the careers lead, could support throughout the recruitment process and develop the careers lead by providing training and experience to help them build their network in the locality.
- All teachers are teachers of careers. Industry experience should be commonplace and teachers should be supported to routinely make and maintain contact with their local industries. This could be facilitated by linking this into teacher standards for ITT and leadership qualifications.

## Examples of 'Profound Impact' Strategies

- Teacher work placements; braided careers provide a model for this and many teachers already experience alternative workplaces alongside their schools. For example, they may work as examiners or external assessors on vocational courses. Braided careers present a career progression challenge for those working in this way. Many of the colleagues had negotiated their way of working. We need to consider the needs of subject specialist teachers and how these needs could be met via alternative career routes in schools/industry. How do we make the special case commonplace? The solution could include communicating the benefits to stakeholders, developing a supportive cohort of colleagues working in this way, and developing a commonly accepted career progression framework for this way of working would negate these potential barriers. For non-braided careers colleagues career routes for subject specialists could be laid out for STEM teachers, personalising learning to specialism and ambitions so that provision is improved.
- A toolkit or training programme for school leaders could pave the way for continuous strategic interactions between schools and employers.
- Teachers respond well to support that comes from other practicing teachers so the model used at St Mary's in Blackpool, where local schools are supported by a combination of a research school and a Teacher Development Trust CPD hub, allows strong relationships to be built and schools to prioritise their development needs. This network could then interact more effectively with employers. A similar model exists at Cramlington and the links between Cramlington and Shotton Hall could be further developed in the same way as Blackpool.
- Employers could co-create pupil learning experiences with teachers to get greater buy in from schools and influence curriculum delivery more strongly. This would make best use of employer time and resources and have a direct effect on learning. This will build on existing 'add-on' approaches; Siemens, BP and others all produce resources including lesson plans, but these resources are seen by teachers as an 'add-on' to the curriculum. Involving teachers in the creation of bespoke learning resources that take account of the needs of both the children taught and the local STEM employers would create greater impact on outcomes and destinations. BAE are designing a way of working with Blackpool schools in this way, and the NMiTE project in Herefordshire is a model of employer/education collaboration for HE.