

## **1. Introduction**

In November 2018 the North of Tyne Combined Authority (NTCA) cabinet agreed that further development work should be undertaken on a STEM (Science, Technology Engineering and Maths) and Digital Skills Programme. The Cabinet considered the outline of the NTCA STEM and Digital Skills Programme in March 2019 and agreed a budget of £1.25m for 3 years.

This document is the STEM and Digital Skills Call Definition document which sets out the strategic context of the programme and the parameters of the call. The NTCA is inviting bids to deliver school-based interventions that will inspire more young people to pursue STEM subjects and develop their digital skills. The first stage of the NTCA STEM and Digital Skills call for projects will open on the 22<sup>nd</sup> March 2019 and close on the 17<sup>th</sup> April. A second stage will be opened in June 2019.

## **2. Strategic Context**

Leaders of Tomorrow is one of 6 pillars framing the NTCA vision. The focus is on supporting a high quality, inclusive education system, which ensures our young people have the skills and qualifications to take up good quality training, apprenticeships and jobs.

The NTCA recognises that providing an excellent education is crucial to producing good outcomes in later life. At present, educational outcomes for most of our young people are very good, particularly for children up to the age of 11. However, there is variation in performance and areas for improvement, particularly to raise outcomes for disadvantaged pupils. We also need to improve transitions from education into work, to make sure our young people have the right skills and qualifications needed to maximise their future opportunities and promote ongoing learning and development.

The North East Local Enterprise Partnership (LEP) has also emphasised through the area's Strategic Economic Plan, that a focus on skills is crucial, to meet current demand, future-proof changes to the labour market, support our residents to access opportunities and secure and retain higher skills in our economy.

As detailed in the North East Strategic Economic Plan (SEP), improving skills in the North East workforce is fundamental to our economic future, underpinning our aim of driving an uplift of 100,000 jobs by 2024, and ensuring that the majority are 'better' jobs. The SEP highlights that the changing structure of the economy requires an effective response from early years to Higher Education and sets out the challenges that collectively partners are trying to address and which include:

- Strengthening the response to current demand for skills in key areas of the labour market, including engineering, computing, transport and health
- Future of the labour market as the population and the structure of the economy changes by delivering and renewing transferable skills for young people and people in employment
- Supporting residents to access opportunities in the changing economy and securing skills we need from outside the region.

STEM subjects are recognised widely as critically important to the UK's economic success. The UK Commission for Employment and skills has highlighted that international benchmarking, suggests that the UK's science and innovation system is hampered by weaknesses in its STEM talent base and evidence. The UK's economic future lies in high value, innovative and knowledge-intensive activities therefore to pursue this course a highly skilled science, technology, engineering and mathematics workforce is essential.

Science, engineering and technology underpin the whole economy, including for example power generation and electricity distribution, utilities, the food chain, healthcare, and our physical, transportation and information and communications infrastructure. STEM skills are also pervasive across the wider economy and can be found in arts and entertainment sectors, sports, education and financial services.

The 2018 National Audit Office report on Delivering STEM Skills for the economy highlights that since the early 2000s there has been growing concern, including from Government, about how to achieve higher productivity and economic growth in an era of rapid technological change. Over time, this has generated the widely held belief that one of the UK's key economic problems is a shortage of STEM skills in the workforce.

The Industrial Strategy recognises that STEM skills are important for a range of industries from manufacturing to the arts. The number of STEM undergraduates has been increasing over the last few years, but there remains unmet demand from employers. Jobs in science, research, engineering and technology are expected to rise at double the rate of other occupations by 2023 and the majority of jobs on the Home Office Shortage Occupation List are in either STEM-related roles or industries. The Industrial Strategy also recognises that there are significant regional variations in the uptake of STEM subjects and that girls are less likely to choose STEM subjects than their male counterparts.

### **3. Case for Change**

Key parts of our economy include a fast-growing tech and digital sector; significant clusters and world class research and design in the energy and offshore sectors; a strong pharmaceuticals and life sciences sector; major employment in financial and professional business services; and a growing urban and rural tourism and leisure offer. NTCA has identified 4 areas of our Devolution Deal where we have national or internationally significant strengths or assets that will act as catalysts for economic growth in the area.

- **Ageing and life Science** - The North of Tyne area is at the UK & international forefront of innovation in healthy ageing, meeting the expanding requirements

of this new industry, and delivering benefit to the health, wealth and well being of our population.

- **Digital, tech and data** – North of Tyne has a strong USP in data analytics and open data innovation and is home to the world’s largest collection of real time data.
- **Energy, subsea and offshore** - The North of Tyne area hosts strong research and innovation assets with good skills and business infrastructure). The North of Tyne has potential to be a national exemplar in this area, with a significant contribution to Low Carbon Grand Challenge. As work progresses we would like to be able to have open door with Government.
- **Culture, tourism and creative industries** – The North of Tyne has a unique city, coast and country offer and boasts some key knowledge assets in the creative sectors.

The North of Tyne area faces a number of significant shared challenges – including relatively high worklessness and lower than national average skill levels, whilst at the same time exhibiting skill shortages in key growth sectors. As the Northern Powerhouse Independent Economic Review acknowledges, without bold action to address long-standing skills challenges, the residents and the economy of the North will not reach their potential.

There are 4 particular challenges facing the North of Tyne

- Overall North of Tyne school performance is close to the national average and primary level performance slightly exceeds the national average, there are variations however between primary and secondary schools and between geographical areas.
- Higher level skills in the North of Tyne area are below the national average. However, there are significant skill imbalances in the area, including a workforce which does not meet all the current and future needs of the business community who are demanding both different areas of skills and a higher level of skills. There are particular challenges in the digital sector, where the Dynamo network of influential IT companies conclude that employment could increase substantially if skill shortages were overcome, and there are parallel challenges in engineering disciplines.
- Overall, at 5%, the North of Tyne unemployment rate remains higher than the national average (4.3%), while there remains a high number of young people not in education, employment or training (NEET).
- Despite significant jobs growth, the NT also faces a number of economic and social inclusion challenges. The labour market continues to suffer from the legacy of industrial change, with significant pockets of worklessness across the NT region in both inner city and more outlying areas. Looking at the out of work benefits data May 2018 the age 16-64 claimant rate was 10.2% for NT, higher than the 8.7% for Great Britain.

As highlighted above the STEM skills gap is a national issue with the North of Tyne mirroring national trends. Specifically in regards to take up of STEM subjects, school data shows uptake of STEM subjects in the North of Tyne area is below the national average with significant variations within the North of Tyne area and across individual subjects.

It is important to note that pipeline of students studying STEM-related courses narrows as it reaches higher levels with a significant proportion of STEM graduates not proceeding into STEM occupations. Research by Kings College London in 2014 found that a high proportion of children and young people enjoy science, and believe that it is important for the future, but only a small proportion of students wanted to become a scientist. The Science and Select Committee in their report on Science communication and engagement in 2017, referencing research by Kings College London, highlighted that young people's 'science capital'—their exposure to science influences—correlates with the likelihood of them pursuing a career in STEM and is less prevalent in disadvantaged groups. Parents and teachers are the biggest influencers on children's study choices, but half of parents feel ill-informed about the benefits of STEM subjects and associated potential career paths.

Promotion of digital skills increasingly underpins growth across a range of different types of businesses. DCMS in their Digital Skills report (2016) found that a shortage in suitable digital skills for digital jobs persists in the UK labour market. This is a major risk to business growth, innovation and broader societal development. The contribution of digital skills to the performance of the economy is substantial and significant value can be added to the UK economy and society through better investment in digital skills. The shortage in digital skills represents a key bottleneck for industry and there is an increasing range of activities and occupations where digital skills are needed but supply is not adequate. Generally, there is a lack of awareness of career opportunities within the digital sector, sometimes reflecting skill and gender stereotypes around the types of roles that exist.

Digital and Tech, as one of the fastest growing and economically important sectors in the North of Tyne area, is a priority area for the NTCA. In addition digital and tech related roles exist currently in traditional sector companies but also underpin most other businesses in other priority sectors. There is an increasing skills shortage in these roles, not unique to North of Tyne area, but one that will inhibit growth in the future if there isn't a focus on digital skills in young people.

The NTCA has committed to introducing a pioneering North of Tyne Education Improvement Challenge aimed at improving the marked disparities in educational attainment that exist within the area. This will particularly focus on:

- increasing attainment in STEM subjects;
- deepening the approach to careers, information, advice and guidance through the adoption of the Good Career Guidance benchmarks; and
- achieving excellence in teaching, leadership and school governance.

The Challenge will build on the existing pilot programmes run by the NELEP's Employment and Skills Board including the wider North East Education challenge which encompasses a number of activities to reduce the gap between the region's best and lowest performing schools; working with the Department for Education to consider the allocation of the £24 million Opportunity North East funding; and expand delivery of the Next Generation Learning pilot.

The North East LEP are also running the North East ambition programme which is working with North East schools and the employers to embed the Gatsby benchmarks of Good Career Guidance in the area's schools. The North East

ambition programme is supporting North East schools and colleges to adopt, implement and achieve the Good Career Guidance benchmarks; eight clearly defined benchmarks for high quality careers education that improve students' transition from school to work by appropriately preparing them for their next stage.

#### 4. NTCA Approach

The NTCA is committed to bringing forward a programme of activity which supports the delivery of the North of Tyne Education Challenge and the North East Ambition programme. The STEM and Digital Skills programme aims to inspire the development of STEM and Digital skills in children and young people and will provide support for high-performing STEM and digital Skill programmes that are shown to

- add capacity and variety to existing provision;
- offer innovative and effective delivery models that are differentiated from existing provision;
- are clearly designed to inspire interest and increase take up in STEM subjects and digital skills; and
- link directly to the Good Careers Guidance.

The STEM and Digital Skills programme will

- support STEM and Digital skills enrichment activities which explain and demonstrate the benefits and enjoyment of studying science to children and their influencers;
- support activities that break down barriers in studying STEM and Digital subjects for children;
- support continuous Professional Development (CPD) for teachers, both specialists & non-specialist
- equip our young people with knowledge of the options available to them in STEM related careers, supporting the Good Career Guidance so that they are able to make better informed decisions on their futures.

The STEM and Digital Skills programme is framed around the following specific call components:

- STEM enrichment activities for young people and CPD opportunities for teachers using the North East's unique assets, opportunities and heritage;
- STEM enrichment activities for young people and their influencers and CPD opportunities for teachers which specifically link to the North of Tyne's key sectors (Ageing and Life Sciences, Digital, Tech and Data; Energy, Subsea and Offshore; Culture, Tourism and Creative Industries);
- Digital skills programmes which support young people to move onto higher level digital and technical skills pathways and raise awareness of digital career opportunities with young people and their influencers.

<b>Dates</b>	<p>The first stage of the NTCA STEM and Digital Skills call will open on the 22<sup>nd</sup> March 2019 and close on the 17<sup>th</sup> April. A second stage will open in June 2019.</p> <p><b>The NTCA</b> reserves the right to change the dates and numbers of stages subject to the volume and quality of proposals received.</p>
<b>Definitions</b>	In the context of this programme STEM is defined as Science,

	Technology, Engineering and Maths and includes Design.
<b>Indicative Fund Allocation:</b>	Indicatively, the NTCA has agreed a budget of up to £1,250,000 for this programme.  <b>The NTCA</b> reserves the right to decrease or increase the indicative allocation or support more or fewer projects subject to the volume and quality of proposals received.
<b>Applications</b>	Applications are expected to demonstrate appropriate scale, impact and additionality. The NTCA funding is not intended to replace existing funding but to provide support for new activity or support existing programmes which through the funding would expand scale or scope.  Applications can only contain activities which are aligned with the aims of the STEM and Digital Skills programme and directly link to one or more of the call components  The NTCA does not intend to allocate less than <b>£100,000 of NTCA funding to any single project</b> , but we would welcome applications from consortia offering a joined-up offer. The NTCA is also unlikely to make an allocation of more than £400k for any single project.
<b>Duration of project approvals</b>	Projects should be for a maximum of three years, however the NTCA reserves the right to vary the duration in exceptional circumstances.
<b>Geographical Scope</b>	All interventions should be focused on activity and beneficiaries within the North of Tyne area.
<b>Beneficiaries</b>	Primary and secondary aged pupils Teachers and support staff in primary and secondary schools Parents and carers of pupils
<b>Deadlines</b>	For this specific call, applications will be assessed following closure of the call. Applications received after the published call close date will not be considered.
<b>Application selection</b>	All applications will be scored in line with the NTCA scoring criteria.
<b>Eligible match funding</b>	No specific intervention rate is specified however proposals which are able to leverage match funding will be scored more favourably through the assessment process.
<b>Operational completion</b>	Operations must be completed no later than 3 years and 6 months after the proposed start date.
<b>Procurement</b>	All procurement must be undertaken in line with EU regulations.

## 5. Applicants

Applicants must be legally constituted at the point of signing a Funding Agreement, and be able to enter into a legally binding Funding Agreement. The Applicant will be the organisation that, if the application is successful, enters into a contract with the NTCA and therefore carries the liability for ensuring that the terms of the Funding

Agreement are met by them and to all delivery partners. If there is more than one organisation applying for the funds, a lead organisation must be selected to become the Applicant. It is this organisation that carries the responsibility and liability for carrying out a compliant project.

## **6. Impact**

The overall impact that the programme is seeking to contribute towards is more young people choosing a career in STEM post 18, more young people developing the digital skills to meet demand in key areas of the labour market and pursue a career in the digital sector and STEM embedded into a whole school approach.

Outcomes that the programme will seek to deliver include

- Students have increased knowledge of STEM and Digital Technology careers;
- Teachers know about routes into STEM and Digital Technology careers;
- Parents and Carers know about careers options in STEM and Digital Technology and have positive attitudes to STEM and Digital Technology careers;
- Parents and carers support and encourage STEM and Digital Technology career choices for their children;
- Increased confidence in ability to study STEM post-16;
- Increased numbers choose to study GCSE, A-level or vocation qualification STEM subjects;
- School environment mitigates effects of bias and stereotypes.

Outputs which the programme will seek to deliver over 3 years:

- No of school engagement interactions – 400 (At least 40% to be in schools with an above national average of Free School Meal eligibility)
- No of pupil engagement interactions – 35,000 total (21,000 girls, 14,000 boys)
- No of teacher engagement interactions – 600
- No of parent/carer engagement interactions - 150
- No of teacher CPD sessions – 100