

Report for: Cabinet 13th February 2018

Title: STEM Commission – Update on Progress

Report authorised by : **Tracie Evans, Deputy Chief Executive**
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Ward(s) affected: All

**Report for Key/
Non Key Decision:** Update / Non Key Decision

1. Describe the issue under consideration

- 1.1. This report provides an update on progress following the launch of the Haringey STEM Commission report in July 2016.

2. Cabinet Member Introduction

- 2.1. STEM (science, technology, engineering and maths) is increasingly at the heart of the London and UK economy. We are ambitious for Haringey’s children and young people and believe that it is absolutely vital to equip them with the very best skills and links to employers across these areas, so that they can access the job and career opportunities that STEM can provide. I am delighted that there has been real and tangible progress since the Haringey STEM Commission produced its recommendations 18 months ago.
- 2.2. We are now in a position to see STEM thriving in our borough with an expert panel in place; five STEM hubs across our secondary schools and post-16 settings; and STEM links to nearly all of our schools and networked learning communities. Not only do we have a real wealth of expertise to draw on in the borough, but there is a clear energy and intent to work together on behalf of all of our children and young people. This report demonstrates how much progress has already been made, and sets out our plans to deliver the step change envisaged by the STEM Commission.

3. Recommendations

- 3.1. Cabinet is asked to note the progress made against the Haringey STEM Commission recommendations.

4. Reasons for decision

4.1. Excellent progress has been made against the Haringey STEM Commission recommendations and the Council is now in a strong position to make a step change in STEM provision in the borough. This progress report fulfils the commitment to provide an update to Cabinet made in September 2016.

5. Alternative options considered

5.1. Not applicable.

6. Background information

6.1. STEM (science, technology, engineering and maths) subjects have taken on an increasingly high profile in education over the last decade and are now widely seen as essential to accessing the high quality jobs of the future. It is for this reason that the Council is committed to enhancing STEM provision and fostering the best possible opportunities for all our children and young people to access skills and gain experience in these areas.

6.2. In Autumn 2015, the Council established the STEM Commission to consider how to make a step change in raising attainment in STEM subjects for young people in Haringey. The Commission met as an independent group, chaired by Baroness Morgan of Huyton, and gathered evidence from businesses, experts and teachers including Andy Haldane, chief economist at the Bank of England, Sir Roger Carr, chairman of BAE Systems, Google, the NHS, the Royal Society, Siemens, BT and Members of Parliament.

6.3. The STEM Commission Report was published alongside new research by the House of Commons library which found the number of pupils in England achieving A to C grades in science, maths and technology GCSEs has fallen in recent years. The Commission found that despite some “inspiring examples of teaching and learning in the Borough, attainment and participation in relevant subjects is not high enough”. To remedy this, the Commission made the case for the local authority, schools, colleges, businesses, parents and young people in Haringey to work together to open up new opportunities for all, including particularly for groups (especially young women and students from a black and minority ethnic background) who are underrepresented in STEM.

6.4. In September 2016, Cabinet received a report in response to the Haringey STEM Commission and agreed to welcome the recommendations and to there being a report back to Cabinet on further progress. This report provides an update on the work that has taken place since with very significant and positive developments well underway. As set out below, we are now in a strong position to ensure the vision of the STEM Commission is put into effect.

6.5. It is important to emphasise that, as the STEM Commission Report recognises, schools, colleges and businesses are already doing a lot to support STEM in the borough and there are huge strengths to draw on. However, deeper and more systemic gains can be made by joining up across the borough. The role of the Council is not to ‘deliver’ the outcomes, but to work with key leaders and stakeholders to support and enable a more collaborative system working on behalf of all our children and young people.

6.6. A great deal of effort has gone into creating the groups, networks and leaders which will drive the agenda. As a result, the following is now in place:

- STEM expert panel: providing a strategic overview of progress on STEM, incorporating strategic leaders from education, business and STEM more widely. This group met in January 2018, chaired by the Lead Member for Children's Services and also included:
 - Jan Balon – Principal Designate, London Academy of Excellence
 - Jenny Holloway – Director of Fashion Enter
 - Calvin Howe – Workplace Manager, VolkerFitzpatrick
 - Tom Fogden – Chief Operating Officer and Dean of Ada College
 - Andy Forbes – Principal, College of Haringey, Enfield and North East London
 - David Hearn - Vice Principal, Teaching and Learning, Greig City Academy, Haringey
 - Professor Alan Houston - Pro-Vice-Chancellor (Education), Durham University
 - Angus Knowles-Cutler - UK Vice Chairman and London Office Managing Partner, Deloitte LLP
 - Russ Lawrence – Principal, Haringey Sixth Form College
 - Michael McKenzie – Headteacher, Alexandra Park School, Haringey
 - Sue Moss – Headteacher, Pembury Nursery School, Haringey
 - Neil Robinson – Corporate Affairs Director, Manchester Airport Group
 - Dr Ajay Sharman - Regional Network Lead – London and SE, National STEM Learning Centre and Network, STEM Learning
 - Tony Woodward – Headteacher, Tetherdown Primary School, Haringey

- Hubs / Centres of Excellence: five secondary and post-16 STEM hubs have been confirmed:
 - Alexandra Park School (overall expert hub, leading on CPD and teaching and learning)
 - London Academy of Excellence Tottenham (sixth form lead)
 - College of North East London (CONEL-careers lead)
 - Ada, The National College for Digital Skills (IT lead)
 - Greig City Academy (innovation lead)

- Overall STEM co-ordinator: this role is being played by the Director of Science and Mathematics at Alexandra Park School, who is also an Ogden Teacher Fellow

- Networked Learning Communities (NLC) STEM leads: each NLC has a STEM lead who works with the primary schools in their NLC and provide regular updates to the NLC meetings

- STEM steering group: representatives from each of the five STEM hubs, six NLCs and governors are taking forward the draft Action Plan (included in this report as Appendix 1)

- School STEM leads and governors: A strong majority of schools have a STEM lead in place and a STEM governor
 - School STEM audits: each school will complete an audit and the audits will be used to decide which NLC and expert hubs will work together.
- 6.7. Building on this strong foundation, there has been strong progress against the 12 recommendations set out by the STEM Commission. Four recommendations have been implemented, though they will continue to evolve as this work progresses:
- Hubs / Centres of Excellence (recommendation 3)
 - STEM Outstanding for All award (recommendation 4)
 - STEM co-ordinator (recommendation 5)
 - Annual Haringey education report (recommendation 8).
- 6.8. In addition, there has been significant progress in relation to:
- Developing the Haringey Diploma (recommendation 1) with consideration given by the Steering Group and Expert Panel on how best to design this and ensure primary as well as secondary STEM experience is incorporated
 - A first Haringey STEM showcase (recommendation 5) took place at Greig City Academy in January 2018 with pupils and schools from across the borough presenting
 - A particularly successful Careers Fair (recommendation 9) in November 2017 with strong representation from STEM employers, sixth form providers and higher education institutions. Over 1,300 young people from across Haringey attended.
- 6.9. There are three areas which still need further consideration in order to make more progress. Recommendation 2 - working with schools to promote science and maths. Whilst this takes place regularly in schools, there is more to do if we are to achieve some of the specifics underneath the recommendation, such as supporting all young people to study three sciences to at least 16. Recommendation 7: improving the post-16 offer is also underway with existing excellence and developing new provision through Ada and London Academy of Excellence Tottenham. Developing new vocational qualifications can support this further. Recommendation 6: building relationships with business and employers which is closely connected into education settings. The Commission and Expert Panel have helped to galvanise this, alongside existing links, though there is further to go here.
- 6.10. Table 1 below sets out progress in more detail against each of the 12 recommendations made in the STEM Commission Report.

Table 1 – Progress against the STEM Commission recommendations

Recommendation	Description	Progress
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<p>1. Haringey Diploma</p>	<ul style="list-style-type: none"> • Convene a panel of expert employers, business leaders and experts to develop and accredit a Haringey Diploma • To include a framework of skills that young people should have when leaving education • Supported with extracurricular activities and experiences 	<ul style="list-style-type: none"> • This was presented to Post 16 and Pathways meeting for school leaders on 27th June 2017 • Feedback was very positive: there is a strong appetite for a STEM diploma (or equivalent). Ideas outlined: multi-layered approach: experiences/ competitive elements/ group projects as well as individual/ pupils as leaders and teachers • Preference is for developing a STEM experience based award and to develop an in-house model rather than use existing accreditation opportunities, e.g. CREST • It was agreed that the award should include primary as well as secondary. • The Expert Panel has been convened in line with the Commission's recommended representation and is due to hold its first meeting in January where progress against each recommendation, including the diploma/award, will be discussed. The Expert Panel has representatives from the hubs, NLCs, Headteachers, Business and Industry and senior local authority officers.
<p>2. Science and mathematics promoted in schools</p>	<ul style="list-style-type: none"> • Schools to promote students studying some form of maths for as long as possible, including post-16 • Schools to consider new qualifications- i.e. core maths • Schools to develop addition provision, such as Saturday schools to supplement existing studies • All young people should study three sciences to at least 16 	<ul style="list-style-type: none"> • Alexandra Park School (a Teaching School) has established a network to support the increased challenge of additional science and triple science and revised maths specifications • STEM hubs are to take ownership of the recommendation for all pupils to study triple science at GCSE and maths post 16 but the national changes described in the final risk section mean that these will be longer term objectives to work towards. • School Improvement team is recommending (through school termly visits) that more able pupils do at least AS maths if they are considering Russell Group/ a STEM degree or PPE (Philosophy, Politics, Economics) • Extensive action planned (see appendix 1, Haringey's Draft STEM Operational Action Plan) to raise the profile of STEM with staff, parents and pupils, secure a shared understanding of STEM career opportunities and the value of ongoing maths study post 16 and to increase and improve the quality of enrichment, including with support from external providers • It is still too early in the initiative to see impact of this work.

<p>3. Two centres of STEM teaching excellence</p>	<ul style="list-style-type: none"> • Establishing two centres of STEM teaching excellence to act as hubs for improvement, support and development • A centre in the west of the borough - the New River Teaching School Alliance • A centre in the east of the borough at LAE in Tottenham • They should work with existing alliances, and broker new relationships with employers and universities 	<ul style="list-style-type: none"> • A STEM steering group has been established and has produced terms of reference and draft Action Plan (appendix 1) • Leadership, via the steering group, is being facilitated through five, rather than two, secondary and Post 16 centres of excellence: Alexandra Park School / Greig City Academy / CONEL/ London Academy of Excellence / Ada. Additionally, there are six Network Learning Community STEM Coordinators (primary) and two governor representatives involved in driving this agenda and represented on the steering group. • APS is the overall lead school due to The Ogden Trust already funding a Haringey STEM Coordinator to lead the STEM support for schools in Haringey and other North London schools • CONEL and Ada have been invited to be lead hubs specifically for business partnerships and apprenticeships.
<p>4. STEM Outstanding for All award</p>	<ul style="list-style-type: none"> • Outstanding for All Awards should specifically recognise innovation, best practice and high achievement through a specific STEM-related award 	<ul style="list-style-type: none"> • Implemented and an annual process with a primary and a secondary award for outstanding STEM achievement • St Paul's RC Primary School won the primary award in 2017 for its 'Ted in Space' project. The school launched a teddy bear, with attached camera, into space to take pictures of the earth. Key learning was to control the launch and landing, as well to gain perspective of earth from space • Girls Making a Global Difference at Woodside High won the secondary award for teaming up with Oxfam to develop an App to support refugees.
<p>5. STEM Coordinator</p>	<ul style="list-style-type: none"> • Haringey schools to jointly appoint a Haringey STEM coordinator, funded by Network Learning Communities • To open up access to and coordinate STEM extracurricular provision across the borough • Should support the diploma, teacher professional development and annual an STEM 	<ul style="list-style-type: none"> • The Ogden Trust are already sponsoring a leading STEM Coordinator (at Alexandra Park School) for 1.5 days per week to co-ordinate STEM in Haringey and North London across primary and secondary • STEM Coordinator is supporting NLC STEM leads with their role, coordinating training for primary and secondary schools and events for pupils. A current additional focus is working with a leading primary science practitioner (external to Haringey) on primary assessment and curriculum planning. • A three part programme of training has been established for STEM lead teachers in primary schools (60 CPD sessions are scheduled for 2018) • Haringey STEM Showcase taking place on 19th January 2018 at Greig City Academy

	festival	
6. Identify a partner organisation	<ul style="list-style-type: none"> • Identify a partner organisation who can help build sustainable relationships between businesses and the local education system to support extra-curricular activities, professional development and careers advice • STEM professionals to volunteer in schools 	<ul style="list-style-type: none"> • Schools and colleges sharing existing links with businesses and STEM professionals • Further work to be done on identifying a partner organisation and volunteering opportunities for STEM volunteers
7. Improved post-16 offer	<ul style="list-style-type: none"> • Council, schools & colleges to build a post-16 sector that provides strong academic and vocational offer in borough • All post-16 institutions to work with the teaching schools alliances, STEM coordinator and business brokerage partner to develop teaching, build relationships with employers & collaborate. 	<ul style="list-style-type: none"> • LAE is the hub taking the lead on developing the quality of post 16 provision • Detailed post 16 achievement and provision analysis has been carried out to inform an improved post 16 offer and to support a more collaborative approach to the Haringey offer • Eight STEM students from disadvantaged backgrounds were provided with bespoke academic support and guidance on Oxbridge interview process and exam technique. Three have been successful.
8. Annual Haringey Education Report	<ul style="list-style-type: none"> • Council to develop and publish its own Annual Haringey Education report to monitor/drive 	<ul style="list-style-type: none"> • Implemented: an end of key stage achievement report is produced annually (see appendix 2 for the 2016 report. 2017 report is in progress.) • Detailed post 16 analysis

	improvement	
9. Improved information and advice to parents	<ul style="list-style-type: none"> Develop a strategy for improving information and advice to parents about post-14 and post-16 choices 	<ul style="list-style-type: none"> In response to the Commission recommendations, a careers fair is now scheduled on an annual basis along with a Post 16 Pathways Document. Following a successful first event in 2016, the 2017 event was held on 8th Nov with over 1,300 attendees and very positive evaluations. All secondary schools with a Sixth Form setting and other post 16 providers were represented along with Higher Education and apprenticeship providers, local businesses and public services. The Draft Operational Action Plan includes action to further raise the profile of STEM/ pathways with parents.
10. Every school to have a link Governor for STEM	<ul style="list-style-type: none"> Every school in the borough should have a link governor for STEM, ideally drawn from industry Governors to be recruited through the business brokerage partner, who should identify local residents who work in STEM industries 	<ul style="list-style-type: none"> The large majority of schools have identified a STEM governor and briefings have been provided through the School Bulletin and at the Haringey Governors' Association. Link School Improvement Advisors are following up with those schools that haven't yet identified a STEM governor. Role description produced Two governors are members of the steering group to support the operational leadership and dissemination strategy
11. Expert Reference Panel	<ul style="list-style-type: none"> Expert Panel should be active at a senior level in STEM industries to provide continuing advice, guidance and contacts Haringey should recruit an 'Innovator in Residence' able to work with schools and colleges 	<ul style="list-style-type: none"> Expert panel formed with first meeting in January 2018 Steering group formed to lead on operational elements of STEM agenda. Has met several times, including post-16 pathways meeting Yet to identify an 'innovator in residence'

12. STEM Leaders Programme	<ul style="list-style-type: none"> • Pilot a local STEM leaders programme, using young people who were involved in the STEM Commission • They should champion STEM in schools and provide insights into future work 	<ul style="list-style-type: none"> • Existing good practice in Haringey (where post 16 pupils mentor/ support STEM enrichment in primary schools) is to be replicated as a model in other secondary settings. A target is for all post 16 settings to have this model in place by end of 2019.
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Summary of risks and mitigations

6.11. There are three principal risks in relation to future progress on the STEM agenda. We believe these are limited and can be significantly mitigated.

Table 2 – Risk and mitigation

Risk	Mitigation
Potential for perception of slow progress since the Commission was launched reduces engagement and momentum	<p>Wide stakeholder representation established to ensure ongoing momentum: secondary hubs/ NLCs/ New River Alliance/ Ogden Trust/ Governor representatives/ Expert Panel/ leading LA officers.</p> <p>Making progress requires working closely with all of these groups and supporting schools and colleges in particular to lead. Relationships are strong and the response to the STEM agenda is proactive and collaborative to drive improvements across the system in Haringey.</p>
Specifically, ensuring ongoing and proactive engagement with employers in shaping STEM in Haringey	<p>Schools already have many contacts with employers and a priority action is to collate and further extend a Haringey Directory of Business and Industry Partnerships.</p> <p>CONEL and Ada have been invited to be lead hubs specifically for business partnerships and apprenticeships.</p>
Challenge where the approach has evolved from the original recommendations made by the Commission or in appointing individuals or organisations to roles	<p>Expert Panel convened with a key role in challenging and supporting Haringey in its plans to implement the STEM Commission recommendations.</p> <p>All of the STEM Commission recommendations have been positively received by the steering group apart from post 16 maths study and triple science for all pupils. This is due to national changes or delays in the assessment framework. Additional national post 16 maths qualifications are still in development; schools are struggling with staffing compulsory GCSE retakes at Post 16 due to a shortage of specialist maths teachers and</p>

Risk	Mitigation
	recruitment and retention difficulties; there is now a requirement for all pupils to take double science at GCSE and the specs have significantly increased in challenging making triple science less desirable. However, these recommendations are in the Haringey action plan and will be addressed in the longer term.

Timeline and milestones

- 6.12. Key timelines and milestones are set out in appendix 1: Draft STEM Operational Action Plan 2017 – 2020. This is a living document, which will continue to be updated as the work progresses.

7. Contribution to strategic outcomes

- 7.1. With the launch of the Commission, the STEM agenda has been central to delivering improved outcomes and opportunities for children and young people in Haringey to take advantage of future employment opportunities. As such, the STEM agenda is integral to Priority 1 / Best Start in Life in the Corporate Plan.

8. Statutory Officers comments (Chief Finance Officer (including procurement), Assistant Director of Corporate Governance, Equalities)

Finance

- 8.1. The current proposals will be contained within the existing budgets and/or partnerships arrangements.
- 8.2. Funding for STEM is predominantly delegated to school governing bodies. There are proposals being considered by central government on how best to promote a greater emphasis on these topics, but as yet no formal funding statement has been made.
- 8.3. If additional funding is provided in future, this will most likely be passported directly to schools.
- 8.4. There are no financial implications for the General Fund.

Procurement

- 8.5. Not applicable.

Legal - Assistant Director of Corporate Governance

- 8.6. The steps that have been taken by the Council to implement its Action Plan in response to the recommendations in STEM Commission Report, which Action Plan was agreed by Cabinet on 13th September 2016, and the implementation of the Council's draft STEM Operational Action Plan 2017-2020, will help to meet the Council's statutory duty under Section 13A of the Education Act 1996

to promote high standards and the fulfilment of learning potential in the exercise of its relevant education and training functions. Also , they will promote educational excellence for children and young people as referred to in the statutory guidance , published by the Department for Education in April 2013, on the roles and responsibilities of the Director of Children’s Services and the Lead Member for Children’s Services “Working with headteachers, school governors and academy sponsors and principals, local authorities should promote educational excellence for all children and young people and be ambitious in tackling underperformance”.

Equality

8.7. The Council has a Public Sector Equality Duty under the Equality Act 2010 to have due regard , in the exercise of its functions, to the need to:

- Eliminate discrimination, harassment and victimisation and any other conduct prohibited under the Act
- Advance equality of opportunity between people who share a relevant protected characteristic and persons who do not share it
- Foster good relations between people who share a relevant protected characteristic and persons who do not share it.

8.8. The relevant protected characteristics for the purposes of the Duty are : age, disability, gender reassignment, pregnancy/maternity, race, religion or belief , sex and sexual orientation. Marriage and civil partnership status only applies to the first part of the duty.

8.9. Children make up a quarter of the population in Haringey and are concentrated in wards in the east of the borough where deprivation is highest - over 1 in 3 children in Haringey lives in poverty and more than 70% of the borough’s young people are from ethnic minority backgrounds. The Council’s work in implementing the STEM Commission’s recommendations aims to help all children and young people in Haringey, providing them with more and better opportunities to access skills and experience in Science, Technology, Engineering and Maths – subjects they will need to access high quality jobs in the future. Children and young people who fall within more than one protected group (for example disabled children, children from a BAME background, girls and young women) will benefit from this offer alongside other children. The STEM Commission will monitor its work to ensure that children and young people who fall within more than one protected group have an equal opportunity to benefit from the implementation of the STEM Commission’s recommendations as children and young people who do not share their protected characteristics.

9. Use of Appendices

- Appendix 1: Draft STEM Operational Action Plan 2017 – 2020
- Appendix 2: Annual Haringey Education Report 2016

10. Local Government (Access to Information) Act 1985

10.1. The following documents have been used in developing this report:

STEM Commission: The Report of the Haringey STEM Commission (2016)
<http://stemcommission.org.uk/wp-content/uploads/2016/07/HC-1177-STEM-Report-AWv2.pdf>