

Haringey STEM Commission
Haringey Council Civic Centre
High Road
Wood Green
N22 8LE

25 November 2015

Dear Baroness Morgan,

Thank you for inviting the Royal Society to contribute to the Haringey STEM Commission's call for evidence. I am pleased to respond in my capacity as Chair of the Royal Society's Education Committee. The Royal Society is committed to excellence in STEM education, and has identified many similar challenges to those highlighted by your Commission. We would be interested to know more about the Commission's plans to improve STEM education and would be happy to meet to discuss these further.

The Royal Society is the national academy of science in the UK. It is a self-governing fellowship of many of the world's most distinguished scientists working across a broad range of disciplines. The Society recognises that meeting the demand for talented STEM professionals is challenging and that the skills emphasised by STEM subjects are valuable in a broad range of careers. To help meet this demand, we work to promote education that allows students to fully engage with STEM subjects in an engaging and creative way.

A number of the issues the Haringey STEM Commission wishes to address are discussed in the Royal Society's recent report, [Vision for science and mathematics education](#). The report takes a long term view, outlining at a high level how the excellent practice that already exists in schools and colleges can be built upon. Based on the findings from Vision, the Commission may wish to focus on these areas:

- **Improving STEM careers awareness and guidance for students.** Students that have access to informative, high quality career guidance may be more motivated to study STEM subjects. Awareness of STEM careers may be built by exposing students to role models and by making careers information, advice and guidance an essential part of the school/college week. Parents should also be made aware of the ability of STEM subjects to offer many and varied employment opportunities for all students, regardless of their social or economic status.
- **Increasing the strength of teaching in STEM.** A strong, confident and empowered teaching workforce is necessary to successfully inspire students to pursue STEM careers. The strength of STEM teaching may be improved by recognising the high professional status of teachers, requiring all school and college teachers to work towards a suitable teaching qualification, linking career progression with subject specific professional development and training teachers to engage fully with digital technologies. All schools should also ensure that their pupils have access to at least one subject specialist teacher in STEM, since this is likely to drive greater engagement.
- **Using broad based assessment measures to judge the success of students and teachers.** Problem solving skills are essential to most careers, but are difficult to assess through written examination alone. Practical work and problem-solving are at the heart of STEM subjects, and must be placed at the heart of their assessment by trusting teachers to assess students' achievements.



President Sir Paul Nurse
Executive Director Dr Julie Maxton

Founded in 1660, the Royal Society is the independent scientific academy of the UK, dedicated to promoting excellence in science.

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- School governing bodies are also vital in ensuring a school successfully adopts positive STEM practices and should therefore have at least one member with STEM subject expertise.

The Royal Society's [Vision for science and mathematics education](#) also recommends that:

- All young people study mathematics and science up to the age of 18.
- Curricula and their assessment should be stabilised and excellent teaching and learning should be supported.
- Education policy and practice are informed by evidence.

The Royal Society runs a number of outreach programmes that enable young people to meet scientists, engineers, mathematicians, and computer scientists, and support the understanding of experimental science and problem-solving in mathematics. Our programmes, which largely focus on supporting teachers, include:

- [Partnership Grants](#) that give schools funding of up to £3,000 to carry out an investigative STEM project, in partnership with a practising STEM professional.
- [The Associate Schools and Colleges](#) scheme that works with a network of enthusiastic teachers in primary and secondary schools to improve scientific and mathematical expertise.
- Our [teacher resources](#) enable teachers to portray real-life scientists in the classroom and help students understand the processes involved in doing science and communicating it.
- Over 100 secondary schools visit our [Summer Science Exhibition](#) every year to meet cutting-edge scientists and learn about the latest research.

The Society, in collaboration with the Confederation of British Industry, will also be publishing a toolkit in the New Year that offers businesses practical guidance for pursuing education engagement activities which support the professional development needs of teachers.

I have also attached a list of other STEM engagement programmes and activities that complement the Royal Society's Vision, which the Commission may like to consider. We hope you find this information useful, and that you will be successful in raising interest, attainment and access to STEM opportunities in Haringey.

The Royal Society would be interested to hear more about the Commission's plans as they develop. If you would like to arrange a meeting, please contact Becky Purvis, Head of Public Affairs (becky.purvis@royalsociety.org). For more information on our education outreach programmes, please contact Clare Harvey, Education Outreach Manager (clare.harvey@royalsociety.org).

Yours faithfully,



Professor Tom McLeish FRS
Chair, Royal Society Education Committee

Additional STEM engagement programmes and activities

- Learned scientific societies offer resources and programmes at an individual and regional level to support the continued professional development (CPD) of STEM teachers, such as The Institute of Physics and Science Learning Centres' [Stimulating Physics Network](#) that provides in-school coaching.
- The Association for Science Education (ASE), Royal Society of Chemistry and Royal Society of Biology offer their members the opportunity to engage fully with CPD to attain [Chartered Science Teacher](#) (CSciTeach) status. The ASE also runs national and regional conferences to support teachers in their professional and personal development.
- The National [Science Learning Network](#) provides exciting and effective science CPD for those working with pupils aged 5 to 19 through Science Learning Partnerships and the National Science Learning Centre. [Enthuse awards](#) help fund teachers and technicians to participate in CPD courses delivered by the National Science Learning Centre.
- The Wellcome Trust has a programme of activity focused on improving school governance. It has produced the [Framework for Governance](#) with the help of the National Governors' Association, to assist governing bodies in carrying out their role effectively.
- The [Primary Science Quality Mark](#) (PSQM) enables primary schools to strengthen their science provision, and the Commission may wish to consider the possibility of Haringey becoming a PSQM hub. The Haringey STEM Commission may also wish to consider the Secondary Science Mark scheme that is currently under development by MyScience.
- [Maths Hubs](#) was launched recently to bring together mathematics education professionals in a national network and spread excellent practice for the benefit of all. The hubs are each locally led by an outstanding school or college, and work in partnership with neighbouring schools, colleges, universities, CPD providers, maths experts and employers. Maths Hubs participate in a series of national projects and run local projects that meet the needs of their area. Haringey is covered by the [London Thames Maths Hub](#).
- The [College of Teaching](#) is a new independent chartered professional body for teachers and trainers, which aims to support the teaching profession through networks of membership and qualifications.
- The [Careers and Enterprise Company](#) is a new organisation that has been tasked by government with improving business-schools linkages and careers advice via Local Enterprise Panels. The Haringey STEM Commission may be interested in the [London Enterprise Panel](#).
- [Tomorrows Engineers](#), led by [EngineeringUK](#) and the Royal Academy of Engineering, links local businesses to local schools by supporting partnerships. Tomorrows Engineers have been successful at engaging with businesses as part of the [Barrow Engineering Project](#) that supports the [Furness Education and Skills Partnership](#), and the Haringey STEM Commission may wish to look at establishing similar schemes in Haringey.
- The [STEMNET](#) scheme has been very successful in inspiring young people in STEM through its use of role model STEM Ambassadors. STEMNET has also created the STEM clubs programme, which allows students to focus on enjoyment of STEM outside the classroom, and its Schools STEM Advisory Network, which provides advice and support to use business links and partnerships to enhance STEM curricula in schools.
- The [National STEM Centre's eLibrary](#) is the largest UK open collection of online resources for teachers of science, design and technology, engineering and mathematics.

- The Royal Academy of Engineering runs regional projects such as '[Connecting STEM teachers](#)' in order to promote engineering in schools and allow STEM teachers to develop their knowledge and confidence.
- The British Science Association runs [CREST awards](#) for pupils aged 11-19, that give them opportunities to explore real-world science, technology, engineering and maths projects.
- The [Big Bang Fair](#) aims to show young people the exciting and rewarding opportunities available in science through a combination of exciting theatre shows, interactive workshops, exhibits and careers information from STEM professionals.