

13 December 2013

Dear Headteacher

We represent a number of organisations from the science, education and business communities who wish to help schools and colleges to maintain high quality science provision in these changing times. In particular we offer a wide range of freely accessible materials supporting the use of practical work in science.

*“Encouraging young people to develop a serious interest in science depends above all on their having plenty of opportunity to get hands-on experience of conducting practical experiments.” CBI*

Teaching a practical science curriculum is critical to fostering students' engagement and a deep understanding of the subject, as well as developing the necessary practical skills required by universities and employers. Industry specialists estimate that science and engineering - a sector which turned over about £289 billion in 2008 - needs to boost the recruitment of skilled people into their professions. But teaching science as an exciting, cutting edge, hands-on subject requires technical support, dedicated labs, equipment and access to subject-specific professional development.

The UK is consistently one of the top countries for both academic performance and engagement in science, with many schools and colleges delivering excellent science practical work, as noted in Ofsted's recent science report, "Maintaining Curiosity". However, noting the many challenges science teachers face, Ofsted makes the following recommendation.

*“School leaders, including governing bodies, should provide sufficient weekly curriculum time and, in secondary schools, laboratory space so that individual pupils develop good scientific enquiry skills as well as the knowledge they need to pass examinations.” Ofsted, November 2013.*

We know that as a headteacher you are facing financial pressures and significant changes in curriculum, assessment and accountability. So we have sent a letter with details of our support and resources directly to your Head of Science and enclose a copy for you. We have also written to your Chair of Governors asking that you are supported wherever possible in safeguarding practical science.

We strongly encourage you to use this as an opportunity to discuss with your science department their readiness for the challenges ahead, particularly with regard to maintaining numbers of technical staff, and securing a budget for necessary equipment and consumables.

Yours sincerely



**Professor Athene Donald DBE FRS**

Chair of the Education Committee, The Royal Society  
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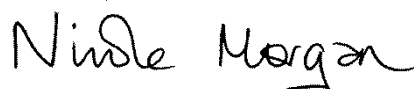
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## Strengthening science teaching and learning – practical resources for 2013/14

Dear Head of Science

UK science education has an excellent reputation across the world. In international comparisons, UK students are ranked highly for both academic achievement and for their attitudes towards science. As a group of organisations supporting science education, we are concerned that the significant changes ahead in curriculum, assessment and accountability may make it more difficult for you and your team to use practical work to its full potential.

Science is a practical subject and if students do not acquire the relevant practical skills, then they will struggle to succeed in science-based education and employment. This is why it has been proposed by Ofqual, and recommended by Ofsted in its latest science report (Maintaining Curiosity, November 2013), that these skills are directly assessed in science qualifications. As well as deepening understanding of core concepts in science, practical work can also be very engaging and motivating for students.

*“Good teaching practice is that which ensures there is sufficient time and resources to teach science through practical investigation and illustration to ensure pupils’ motivation for further study.”*

Ofsted

We would like to draw your attention to a number of practical resources that will help you to continue to provide a rich, hands-on practical curriculum supporting your students’ science performance.

### **Making the most of your budget**

Practicals can deliver real value to science teaching and learning but they can also be costly in time and resources. We want to help you create effective practical activities that are high impact but low budget. The Society of Biology, Institute of Physics, Royal Society, Association of Science Education and Royal Society of Chemistry have worked together through SCORE to produce a number of resourcing tools, including a spreadsheet of equipment and consumables to help you audit your equipment, predict annual spend and develop a plan for replacing equipment. The set of tools can also be used when preparing your budget for presentation to your senior leadership team, and can be downloaded here: [www.score-education.org/publications/publications-resourcing-benchmarks](http://www.score-education.org/publications/publications-resourcing-benchmarks)

Technicians are responsible for managing equipment and consumables budgets - identifying what to purchase and when. To support your technician make the most of your science budget the Gatsby Foundation have produced the **enclosed guide**.

### **Strengthening and recognising technical support**

Science technicians are critical for science departments to be able to provide good quality practical work, playing a huge role 'behind-the-scenes' in the prep-room and increasingly in the classroom. This role, and the level of professionalism it requires, has been acknowledged by the introduction of a nationally recognised accreditation: 'Registered Science Technician'. RSciTech is awarded by professional bodies such as the Association for Science Education, the Society of Biology and the Royal Society of Chemistry who all offer guidance on registration. Science Learning Centre courses can also help technicians develop and update their skills – these are run across the country with bursaries available to help cover the costs of attending.

[www.professionalregisters.org](http://www.professionalregisters.org)

[www.sciencelearningcentres.org.uk](http://www.sciencelearningcentres.org.uk)

### **Using high-quality resources for practical activities which work**

Each of our organisations is committed to improving the effectiveness of practical work in schools, and the Institute of Physics, Society of Biology and Royal Society of Chemistry, in partnership with the Nuffield Foundation, have created a series of websites where you can find a bank of tried-and-tested practical activities. Visit these websites for freely available, top quality teaching resources.

[www.practicalphysics.org](http://www.practicalphysics.org)

[www.practicalbiology.org](http://www.practicalbiology.org)

[www.practicalchemistry.org](http://www.practicalchemistry.org)

### **Finding time to be creative**

Both staff and students benefit from new ideas for teaching and learning but we know that time is short to hunt these down. The freely accessible National STEM Centre e-library contains a searchable archive of over 7,000 teaching resources from across the web. To help you find relevant and exciting practical resources, the website has a new area designed to get you where you want to be fast.

[www.nationalstemcentre.org.uk/sciencepracticals](http://www.nationalstemcentre.org.uk/sciencepracticals)

Looking ahead to National Science and Engineering week in March 2014, the British Science Association has launched free video guides to some great new science demonstrations. Find out more about 'Get set... demonstrate' on their website and encourage your team to take part in the first National Demo Day on the 20th March 2014.

[www.britishsienceassociation.org/get-set](http://www.britishsienceassociation.org/get-set)

### **Making the case to senior leadership**

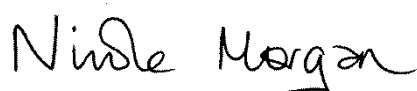
We know how important it is to ensure that your senior leadership team understands the value of practical work and why it needs adequate and sustained resourcing. We have therefore written to your headteacher and Chair of Governors to ask that they support you in providing the inspiring practical science curriculum every student deserves.

We hope these resources, and the many more you will find on our websites, will help you and your team strengthen your practical provision and help sustain our world-class science education through these challenging times.

Yours sincerely,



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