

## 4

### **Schools and further education colleges are vital to the education supply chain and should provide all learners with routes to higher education and vocational qualifications**

#### 4.0

#### **Vision**

Over the next 10 years:

- The UK improves its world class science and chemistry education at primary and secondary levels. This will be delivered by an appropriate evidence-based education policy framework and curriculum, a fit-for-purpose assessment system which promotes the development of independent learners, and well equipped schools with inspiring specialist teachers and technicians to provide steady flow of people into chemistry-reliant industries and HEI's.

**To achieve this, the following are needed:**

#### 4.1

#### **Chemistry at primary school level**

- a. The RSC works with the Department of Education to ensure that the primary school curriculum has an emphasis on understanding scientific method/science and experiential learning. The element of fun is maintained by allowing students to perform hands on activities.
- b. The RSC campaigns to ensure that the mathematics curriculum is appropriate to support the science curriculum at each stage.
- c. The RSC and education curriculum advisors develop the science curriculum as a whole to ensure a smooth transition between primary and secondary education. At present enthusiasm for science is evident at KS2 but there is an observed drop off during KS3.
- d. More primary science e-resources are available which are promoted by the RSC and other education bodies.
- e. The RSC supports outreach days for primary teachers to enable them to experience hands on chemistry through, for example, Initial Teacher Training providers.

#### 4.2

#### **Development of independent learners with the necessary practical skills**

- a. The RSC successfully campaigns for an increased focus on independent learning. There is a move away from a marks driven curriculum where students are trained to pass exams. The International Baccalaureate is a good example of providing depth and independent learning.
- b. All students have access to the separate sciences at GCSE level through well equipped facilities and resources within schools.
- c. Schools assess course and practical work to prepare students for university degrees or technical apprenticeships. Assessment is end-of-term and not modular.
- d. The RSC accredits GCSE level assessments.
- e. The RSC successfully campaigns for the abolition of text book endorsements from exam boards leading to raising of standards.
- f. The potential for the reintroduction of university entrance examinations is explored.
- g. The National Curriculum is slimmed down and the RSC provides guidance on how the curriculum can be contextualised in relation to the global challenges for the chemical sciences.
- h. The chemistry community, *via* the RSC, develops new A-levels and other 16-19 qualifications in chemistry.
- i. The mathematics curriculum is developed alongside the science national curriculum to ensure that the content is fit for purpose in terms of supporting the use of mathematics

within chemistry. Appropriate qualifications enable students to demonstrate their ability to apply mathematics within the sciences.

#### **4.3**

##### **Provision of inspirational, engaging and innovative chemistry teachers**

- a. The RSC promotes chemistry teaching as a career to chemistry undergraduates as well as encouraging individuals with real experience of industry or academia to enter teacher training. This results in double the number of chemistry teachers.
- b. PGCE course providers ensure that prospective chemistry teachers are able to demonstrate practical ability.
- c. University departments provide more update days for teachers to improve their confidence in doing practical demonstrations.
- d. The RSC provides practical support for teachers through its e-Learn web portal and with corporate partners provides affordable physical resources such as a “Lab in a suitcase” for teachers.
- e. The Department for Education along with other partners provides new processes of assessment in teaching which leads to the improved performance of teachers.

#### **4.4**

##### **A revised technician framework**

- a. A revised technician framework provides clear routes for career progression. Vocational courses and training are organised in partnership between HE, vocational education providers and industry.
- b. A technician qualification aligns with key competencies with a strong emphasis on practical skills.
- c. Government continues to provide subsidies for apprenticeships schemes.
- d. The RSC campaigns for the recognition of technicians and the “craftsmanship” of the career. Technicians are recognised for their valuable hands-on experience.

#### **4.5**

##### **Provision of careers advice at the appropriate time in all career pathways**

- a. Industry and universities better link with schools, especially for 14-19 year olds. More industry and university visits are promoted for school pupils, chemistry teachers and career advisers.
- b. Schools provide better careers advice in schools.
- c. The RSC and industry develop chemistry career resources for teachers to address what a career in the chemical industry is, what it gives to the UK economy and what it provides to society.
- d. Career advisors in schools give guidance at the point of making initial choices in a student’s education.