

House of Commons Education and Skills Committee Inquiry into Testing and Assessment – a response from SCORE

This response has been prepared for the House of Commons Education and Skills Committee by the SCORE partnership and therefore represents the combined views of the following organisations: Association for Science Education, Biosciences Federation, Institute of Biology, Institute of Physics, Royal Society, Royal Society of Chemistry, Science Council.

About SCORE

The SCORE partnership aims to bring collective action and a strategic approach to strengthening science education, and believes that the key to maximising the impact of its efforts, especially their influence on government, lies in a greater degree of collaboration and in having a sense of common purpose. Through this collective action, the partnership aims to increase its influence over the direction of science education in the years to come, in particular over teacher supply and retention, curriculum development, assessment, delivery of support to teachers and students, and strategies for reaching all young people regardless of age, background, level of ability, gender, ethnic origin and geographical location.

Association for Science Education	www.ase.org.uk
Biosciences Federation	www.bsf.ac.uk
Institute of Biology	www.iob.org
Institute of Physics	www.iop.org
Royal Society	www.royalsoc.ac.uk
Royal Society of Chemistry	www.rsc.org
Science Council	www.sciencecouncil.org

1 The importance of testing and assessment for science

Testing and assessment clearly have impacts on the teaching and learning of all subjects in the curriculum. However, we feel that the current system has had a particularly detrimental impact on science, and may thwart recent attempts to reflect the fact that science is as much about process as content. These positive changes to the science curriculum, associated with increased support for enquiry-based pedagogy, are undermined by a system which values factual recall and superficial conceptualisation over deeper understanding and engagement.

We believe the purpose of science education is to enhance the role of science in the education of students as present and future citizens, stimulate interest in the further study of science and careers resulting from science, and educate the next generation of science-based professionals. England's system of high-stakes external testing, combined with under-developed assessment tools, is failing to support these learning outcomes and contributing to a decline in the popularity of subjects of strategic importance.

In particular, we are concerned that the assessment system has played a major role in the current perception among many young people that the sciences, along with some other subjects including mathematics and foreign languages, are more difficult than other subjects at A level.

SCORE has itself recently commissioned a report from Durham University to assemble and analyse the most recent evidence as to whether or not some GCSE and A level subjects are more difficult than others.

2 The current impact of testing and assessment on science teaching and learning

There are some advantages to a centrally-run system of external testing, as it enables a single, national agency to monitor and regulate tests and assessment. That agency can take the responsibility of ensuring that the system is consistent year-on-year and across all schools and colleges, coherent throughout all qualifications, and communicated with clarity to schools, parents, Ministers and other stakeholders. The outputs of such a system can also encourage improvement in underachieving schools, and recognise high-performing schools.

However, we find that not only does the current system in England fail to capitalise on these advantages but also that the advantages are outweighed by disadvantages when considering science teaching and learning.

Although the current system claims to be reliable, valid and having a positive impact on standards, we find little evidence to support these claims. Indeed, there is in fact plenty to suggest that it reduces pupil motivation and enjoyment in science, greatly undervalues the professional judgement of science teachers, involves significant costs and acts as a barrier to innovation.

The resource-intensive assessment system adopted in England yields very little information of value in relation to improving achievement and explaining differences, for example on the basis of gender or socioeconomic status.

The pressure on teachers in both Primary and Secondary phases to 'teach to the test' and focus on increasing the number of pupils getting Level 5, 6 or 7 in Key Stage tests and gaining 5 A*- C at GCSE is immense. This has led to a severe imbalance between assessment for learning (formative assessment) and assessment for accountability (summative assessment), which represents an impoverishment in the quality of science teaching and learning.

Time which could otherwise be spent on long-term scientific investigations, enrichment and enhancement activities, debates about the wider significance of science and discussions about career prospects with science qualifications are taken up with class revision, test administration and data management. We note that the private sector is protected from statutory testing and

therefore has much greater freedom to provide more tailored learning, especially regarding stretch and challenge for more able students.

Despite a significant amount of independent research, assessment has remained essentially an afterthought in the history of curriculum reform. We welcome moves to make greater use of formative assessment and staged assessments. However, we note that statutory assessment material for the new Key Stage 3 Programme of Study (PoS) may not be ready until 2011. It is not clear how schools that currently teach KS3 in two years (to allow more time for Key Stage 4) will manage the assessment of their students.

3 Comments and recommendations for the Committee's consideration

There are considerable advantages in allowing schools to decide whether to pilot the Key Stage 3 science changes from 2008 but not in insisting that all schools change to the new KS3 PoS before adequate specimen assessment material is available.

The system of testing and assessment should be reviewed in order to increase the role of assessment for learning. Assessment for learning has been shown to raise achievement levels and can narrow the gap between high and low achievers by raising the level of low attainers, not least because it requires teachers to engage more purposefully with the curriculum (rather than with assessment materials), and to reflect on their own practice in relation to assessment.

Greater investment is needed to develop a wider variety of assessment styles and associated pedagogies to meet the intended learning outcomes of the science curriculum. In particular, the role of coursework and the assessment of practical work need revisiting.

School and college staff must be given more continuing professional development (CPD) on assessment for learning, and adequate time to develop and implement better practices.

The experiences of Wales and Northern Ireland in reducing external Key Stage tests should be closely monitored and weighed against recent proposals from the DfES in the *Making Good Progress* consultation, which we believe may substantially increase the burden and pressures of testing in England.

We question the value of blanket testing at Key Stages 2 and 3 and suggest sampling a statistically significant proportion of the cohort allied with a national requirement for teacher assessment, noting the efforts Scotland is making in this area through their 'Assessment is for Learning' programme.

We find there is a fundamental lack of clarity regarding which agency is responsible for improving the system of testing and assessment. We are

concerned that the role of the Qualifications and Curriculum Authority as a regulatory body is unclear, particularly in relation to the National Assessment Agency. We very much welcome QCA's willingness to engage with stakeholders on the science curriculum and, as professional bodies and learned societies, we will continue to dedicate resources to working with QCA and the awarding bodies to improve science education. However, we are concerned about the lack of well-developed, consistent and transparent mechanisms for this process, and the impact of the advice that we give to QCA and the awarding bodies. We would therefore be delighted to discuss the role that QCA and the awarding bodies envisage for the SCORE partners and other organisations in the future.

We are concerned about the market forces operating in national qualifications whereby awarding bodies attempt to 'sell' their qualifications to schools keen to optimise their league table positions, particularly when those awarding bodies increasingly also operate as, or in close association with, commercial publishers. However, we are not confident that QCA is committed to significant and ongoing attempts to moderate standards between awarding bodies and ensure equality across subjects and qualifications. At the very least, we hope the QCA, NAA and awarding bodies have taken the opportunity to ensure that there are monitoring procedures for comparing assessment and grading across subjects when the new A-levels are introduced in 2008.

While the competitive market in qualifications would be dissolved by creating one awarding body, we do feel that the current situation has advantages in maintaining a diversity of offer and ensuring a continued investment in curriculum development and innovation. We feel that this ongoing question about the optimal number of awarding bodies can only be resolved when the roles of QCA, NAA and DfES have been better defined.