SCORE
SCIENCE COMMUNITY REPRESENTING EDUCATION

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Sir James Rose
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26 February 2009

Dear Sir Jim,

A response to the Interim Report of the Independent Review of the Primary Curriculum

The SCORE* partnership welcomes the opportunity to respond to your Interim Report of the Independent Review of the Primary Curriculum. The attached paper gives SCORE's response to the Interim Report. The SCORE partnership is encouraged by the forward thinking thrust of the Interim Report. SCORE welcomes moves to develop a strong, coherent curriculum with reduced prescription and greater flexibility. Such a curriculum has the potential to provide all pupils with a broad and balanced entitlement to learning through personalised teaching and learning to meet pupils' individual needs and strengths.

With respect to science, the primary curriculum should be to engender enthusiasm for the sciences and excite interest in finding out about the natural world. We would like to see a curriculum with much less rigidity that allows teachers flexibility to provide learners with authentic experiences of the natural and physical world thereby sparking their curiosity and nurturing their interest in finding rational explanations of what they observe.

However, to support the delivery of a new primary science curriculum, SCORE believes that a new professional development programme is required. This should develop teachers' confidence and experience, enabling them to deliver a science curriculum that is in the spirit of the developments to date. The role of assessment, and how it impacts on teaching and learning also need to be considered as the assessment regime will have an impact on the success or otherwise of a new primary curriculum.

The SCORE partners would welcome the opportunity to talk to you informally about your findings prior to the launch of your final report and Rosalind Mist (SCORE Manager) will be in touch with you to discuss suitable arrangements.

Yours faithfully

Sir Alan Wilson FRS

Chair, SCORE

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A SCORE response to the Interim Report of the Independent Review of the Primary Curriculum
February 2009

Background

This response has been prepared 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, and the Science Council.

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.

Overview

The SCORE partnership is encouraged by the forward thinking thrust of the Interim Report. SCORE welcomes moves to develop a strong, coherent curriculum with reduced prescription and greater flexibility. Such a curriculum has the potential to provide all pupils with a broad and balanced entitlement to learning through personalised teaching and learning to meet pupils' individual needs and strengths. The partnership is likewise encouraged by the moves towards a curriculum which has the development of the whole child at its heart; and which provides opportunities for creativity through child initiated and play-based activity, so inspiring pupils with a commitment to learning throughout their lives.

With respect to science, the primary curriculum should:

- provide children with opportunities to satisfy their natural curiosity in the world around them;
- nurture children's interest in finding rational explanations of what they observe;
- stimulate and develop children's enthusiasm for the sciences;
- have much less rigidity thus allowing teachers greater flexibility to provide learners with a wide range of authentic experiences of the natural and physical world.

Sources of evidence

The SCORE partnership has referred to three additional sources of information when preparing their response to the Interim Report of the Independent Review of the Primary Curriculum.

1. A thought-piece, prepared for SCORE by Professor Wynne Harlen. This brings together the current thinking about the place of science in primary education, its content and the form in which it might be expressed in the curriculum in order to address some of the problems encountered in the current practice at KS1 and KS2. The paper discusses a rationale for an inquiry-based approach to science education in the primary school, the obstacles to inquiry-based teaching, what can be done to address the obstacles, and putting principles into practice.

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2. Peter Tymm's article in the first issue of Perspectives in Primary Education (Wellcome Trust, September 2008). This article looked at the trends in children's attainment levels over the past 60 years. It also examines both primary teachers' and children's attitudes towards science. The article discusses changes in children's conceptual understanding over time, and teachers' perception of their own capacity to teach science.

3. The Cambridge Primary Review, and in particular the February 2009 Report 'Towards a New Curriculum – The Future'. This review considers what the primary curriculum should look like, based on a detailed study of evidence gathered during the review. For science, the review reports evidence that science is currently being 'squeezed out' by the attention given to numeracy and literacy and notes that the educational case for primary science 'needs to be reasserted.

Science in the primary curriculum

1. In relation to **goals**, science education has an important place in the primary curriculum because it provides learners with opportunities to satisfy their natural curiosity in the world around them. It can allow children to develop an enthusiasm for the sciences and see that it can provide satisfactory and rational explanations for phenomena that they observe and experience.

   In addition, there are sound research-based reasons for beginning science education in the primary school; children develop ideas at the primary stage which may conflict with scientific understanding unless they are involved in scientific activity and reasoning about evidence.

   Science in primary school can provide a strong basis on which to develop their knowledge and understanding in secondary school.

2. In relation to **teaching**, research highlights problems that primary teachers encounter in practice and indicates changes that are needed for the goals of primary science education to be achieved. Some of these issues have implications for support through teacher education and classroom materials and the creation of sources of information such as can be provided through the Internet.

   SCORE believes that pertinent and sustained professional development opportunities are required for teachers to develop their confidence and experience in delivering a science curriculum that is in the spirit of the developments to date. For example, professional development opportunities and classroom materials should support teachers deliver a curriculum that focuses on answering open questions and providing authentic experiences of the natural and physical world – rather than delivering a curriculum of knowledge and skills.

3. In relation to **assessment**, it should be noted that a great deal of the pressure on curriculum time is the result of anxiety caused by the national tests. This time pressure militates against pupils experiencing the creative teaching and learning opportunities that should characterise primary science. Teachers should be free from high stakes use of test or assessment results that focuses teaching narrowly on assessed outcomes.

4. In relation to the **written curriculum for science**, this should strike a careful balance between giving teachers the flexibility to develop children's curiosity and enthusiasm in the subject while providing a supportive structure for teachers of primary science.

   In summary:

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i. The focus should be on development of curiosity and interest through the use of authentic experiences and inquiry.

ii. It should engender an appreciation that the sciences can explain the way that the world works.

iii. It should provide guidance on the overall aims of science education.

iv. The nature of progression in inquiry and other skills and in the development of ideas should be made explicit.

v. What is expected to be attained at certain points in this progression should be identified at the end of KS1 and KS2 and possibly at the end of Y4.

vi. There are benefits for including technology within the scientific and technological understanding segment. A move towards including design as part of the creative, applied skills resulting from the scientific process may also be worth exploring within that segment.

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