



Response to draft science National Curriculum programme of study for Key Stage 1 and 2

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1. RoSPA is pleased to have the opportunity to contribute to the debate about the draft programme of study for science as part of the National Curriculum review. The draft programmes of study for science for Key Stages 1 and 2 have much to commend them, particularly the emphasis on methods and uses of science, the importance placed on explanation, prediction and analysis of causes and the gradual development of a specialist vocabulary with which to talk about scientific knowledge and processes. However, we have some concerns which we would like to bring to the attention of the Secretary of State and others responsible for developing the final draft.
2. Unintended injury is the most common cause of trauma and death among young people of school age in Englandⁱ. In England and Wales in 2010, 172 children aged 0-14 years died as a result of “accidents”.ⁱⁱ Furthermore, injuries represent a growing proportion of deaths among children and young people. While absolute rates have fallen by 25% over the last 40 years, death rates from other causes fell by nearly 75%.ⁱⁱⁱ

Each year, home and leisure accidents lead to around two million A&E visits in the UK involving children and young people below the age of 15.^{iv} This equates to around 1.7 million visits involving children and young people in England^v or approximately one fifth of England's population of 9 million under 15 year olds.

Accidents also lead to more admissions to hospital than any other external cause. Each year, around 97,000 children and young people below the age of 15 are admitted to hospital in England because of an accident.^{vi}

3. RoSPA is concerned to prevent the health, social and economic consequences of unintended injury through a range of interventions usually summarised as the three E's: Education, Engineering and Enforcement. Children and young people can and do contribute to keeping themselves and others safe if given the opportunity to learn about risk in structured environments. As part of our charitable mission RoSPA hosts the LASER Alliance (Learning About Safety by Experiencing Risk) – a membership organisation for practitioners delivering practical safety education across the UK. Members of the LA include fire and rescue services, police and local authorities as well as individuals whose work is intended to help children to keep themselves safe.

RoSPA does not believe children should be wrapped in cotton wool and should be as safe as necessary, not always as safe as possible, in order to develop and enjoy challenging, active, healthy – and safe – lifestyles.

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4. RoSPA is constantly seeking opportunities to enable teachers to help children learn about risk and to keep themselves safe, as part of an education fit for the 21st century. The recent Ofsted framework, with its focus on behaviour and safety presents one such opportunity, as does the current non-statutory framework for PSHE education. The science programme of study offers another, more structured chance for teachers to encourage a proactive approach to safety and risk education, which has been overlooked in the current draft.
5. In the current draft programme of study, safety is mentioned on only three occasions, each time in relation to specific topics within the curriculum: Light: P6 [24] ; Electricity: P26 [193]; P36 [278-9].

In addition to these aspects of the curriculum there are numerous other places in the draft Programme of Study where we would expect teachers to 'teach safely' by doing a risk assessment and giving clear instruction to pupils to help manage the risk. We suggest that teachers can also take these, and other opportunities, to 'teach safety' by adopting a developmental approach to risk education (See Point 9 below). Examples of missed opportunities in the draft orders include:

- Habitats P9 [53] where pupils will be exploring the school grounds or visiting a nearby park or garden, encountering many potential hazards including plants, fungi, brambles, slippery surfaces, water etc;
- Everyday Materials P10 [64] where children may be using hot fats for cooking;
- Rocks P17 [106] making biscuits using molten chocolate;
- States of Matter P23 [160] observing changes of state when e.g. water is heated and P24 [164];
- Properties of everyday materials and reversible change P30 [216]: i.e. salt retrievable from water by evaporation.

There are further examples where 'safety' occurs as a natural part of the draft curriculum including;

- Animals including humans P8 [44]: 'basic needs of animals including humans for survival', which would normally include a safe environment or home;
- Uses of everyday materials P11 [69] 'building a doll's house' could also involve the consideration of safety in the choice and handling of the materials as well as a requirement for a safe home.

It can be seen from the examples above that 'teaching safely' and 'teaching safety' pervade the entire science curriculum.

6. Working safely is a crucial aspect of working scientifically. Scientists have a responsibility to keep themselves safe, as well as helping to keep their colleagues and the public safe during scientific enquiry. Scientists also have a responsibility to assess and inform the public of the risks

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associated with the outcomes of their research. In keeping with this responsibility, one of the aims of the draft National Curriculum for Science is to: *'ensure that all pupils are equipped with the scientific knowledge required to understand its uses and implications today and for the future'*.

7. However, the language of risk is poorly understood and applied by the lay public (including teachers) and the progressive development of this specialist vocabulary in science would help teachers to contribute to the broader aims of the curriculum to prepare pupils for adult life. It is clear that this language and process are transferable to other curriculum subject areas such as Design and Technology, PE and Art and to real life, including the workplace. It will also be relevant to pupils' personal lives as they gain more independence e.g. when faced with decisions about wearing seatbelts or drinking alcohol.
 8. For all the reasons given above, the science curriculum is an ideal context in which to teach the concept of risk, the language of risk and the process of risk assessment. Rather than add further detail to what is already a very detailed programme of study, RoSPA recommends this draft be improved by the inclusion of 'working safely' to the section on 'working scientifically',. In the next section of our response we make some suggestions for the additional wording for 'working scientifically' for your consideration. With the Secretary of State's concern for progression in mind, and to show how the correct language of risk could continue to be developed, we have included wording which might be incorporated into a future draft of the curriculum for Key Stages 3 and 4. Our recommendations are very much in keeping with the 'Purpose of study' expressed on P1 as 'methods and uses of science', 'explanation' and 'prediction' and 'analysis of causes' which are fundamental to risk assessment and risk management, and to injury prevention. The wording has been carefully considered in the light of our research into children and young people's developing understanding of risk.
 9. We consider the following points should be considered in the requirements:
 - Working scientifically, working safely:
 - Pupils should be using scientific knowledge and understanding and, within their developing competence, learn to:
 - KS1: work safely by following instructions; help to identify hazards to themselves;
 - Lower KS2: work safely by following instructions, help to identify hazards to themselves and understand what can go wrong;
 - Upper KS2: work safely by helping to identify hazards to themselves and others, understand what can cause harm and make suggestions to prevent harm;
- For older pupils we propose:
- KS3: work safely by identifying hazards; assess risk to themselves and others; make suggestions to manage risk;



- KS4: work safely by identifying hazards; assess risk to themselves and others; with others, manage risk to themselves and others.

Notes and guidance. Pupils should be learning to take actions to keep themselves and others safe by taking an increasing share of responsibility for recognising hazards, assessing and managing risk in increasingly unfamiliar and novel situations. Teachers retain overall responsibility for pupils' safety in the classroom and while pupils are learning outside the classroom.

10. This response is supported by the members of the LASER Alliance and by the PSHE Association, the Association for Physical Education (AfPE), the Adventurous Activity Licensing Authority (AALA).

ⁱ European Child Safety Alliance, *Child Safety Country Profile 2012: England*, <http://www.childsafetyeurope.org/reportcards/info/england-country-profile.pdf>.

ⁱⁱ Office for National Statistics, *Mortality Statistics: Deaths registered in England and Wales (Series DR)*, 2010, <http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-230730>, table 5.19.

ⁱⁱⁱ Mitch Blair, Sarah Stewart-Brown, Tony Waterston, Rachel Crowther, *Child Public Health*, 2003.

^{iv} Department of Trade and Industry, *HASS and LASS databases*, 2002.

^v National Institute for Health and Clinical Excellence, *Preventing unintentional injuries among under-15s – Costing report: Implementing NICE guidance*, www.nice.org.uk/nicemedia/live/13274/51694/51694.pdf.

^{vi} The NHS Information Centre, *Hospital Episode Statistics, External Cause, recent years*, www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937&categoryID=211.