



Efficiency in the school system

A SCORE response to the Department for Education consultation

10 May 2013

SCORE response to the Department for Education's consultation on efficiency in the school system

Introduction

1. SCORE is a partnership of organisations that aims to improve science education in UK schools and colleges by supporting the development and implementation of effective education policy. The partnership is chaired by Professor Julia Buckingham and comprises the Association for Science Education, Institute of Physics, Royal Society, Royal Society of Chemistry and Society of Biology.
2. In summary:
 - a. SCORE is responding to the consultation on efficiency in the school system based on evidence gained through the Resourcing of Practical Work in Primary and Secondary Science project¹.
 - b. Having recently launched two in-depth reports into the resourcing of practical work in science subjects in primary and secondary schools² SCORE is well-placed to comment on inefficiencies that have led to poor practical science resourcing in the school system in England. The reports revealed that school provisioning varies considerably and that many schools and teachers do not have enough equipment to teach the sciences in a properly practical way.³
3. **Financial decision-making:**
 - a. The need for budgets to be spent within a single year limits the opportunities for Heads of Department in schools and sixth form colleges to plan for, and invest in, more costly equipment or for the replacement of class sets of smaller items, resulting in a 'make do and mend' attitude towards essential items.
 - b. The findings demonstrate that the problem is not necessarily about the total funding to a school but the way that schools allocate their funds. The variation in per capita spending on practical science (between £0.04 and £19.08 per year in primary schools and between £0.75 and £31.25 in state-funded secondary schools) highlights that some schools do give the requisite attention to spending on practical science.
 - c. Over 80% of respondent state-funded schools do not formally allocate funding specifically to science practical work. This is an indication that some school budgeting processes are not based on the need for science equipment and resources – rather on what is left over in the budget.
 - d. The survey also found that a number of teachers (37% of primary respondents, and 70% of secondary respondents) address this shortfall by contributing to normal curricular spending from their own pockets, again highlighting a negative consequence of inefficient budgeting.

¹ SCORE's research on practical work can be found at <http://score-education.org/policy/curriculum/practical-work-in-science>

² Both reports and SCORE practical science benchmarks are available on the SCORE website <http://score-education.org/policy/curriculum/practical-work-in-science>

³ The full research reports from Pye Tait Consulting, *Under the Microscope*, can be found on the SCORE website at <http://score-education.org/policy/curriculum/practical-work-in-science>

- e. There are indications that devolved budgets (to academies) are leading to a reduction in centrally provided services – for example, in the purchase of Radiation Protection Advisers. Without centrally provided services, schools are being required to negotiate price on an individual basis, leading to an increase in total cost.

4. Tools and techniques found effective in achieving greater efficiency:

- a. Evidence suggested that teachers in primary schools lack a sufficiently clear sense of appropriate expenditure and do not have the confidence to choose appropriate and good value apparatus and consumables. They were therefore unable to make confident judgements on the resourcing of practical science, leading to an inadequate supply of resources despite, in some cases, adequate funding levels. With initial teacher training to include support for managing the resources of practical work, inefficiency caused by lack of knowledge could be avoided.
- b. In primary schools a lack of storage space for science equipment and consumables is a problem for nearly a fifth of respondents, and can mean that items are not purchased even when money is available, as there is nowhere to store them – another example of inefficiency.

5. Whether the right incentives are in place for schools to use their resources efficiently:

- a. It was found that a large amount is spent on photocopying – on average, around 28% of the science budget in state-funded secondary schools and sixth form colleges, compared with around 7% in independent schools. Purchasing textbooks also accounts for around 14% of schools' expenditure on science.
- b. This stark example of school inefficiency was attributed primarily to curriculum changes, where ongoing change to the curriculum (cited by 65% of respondents), causes wasted expenditure on textbooks that needed replacing frequently. In addition, given that currently there is a direct link between textbook content and qualification content, the changing nature of qualifications is driving teachers' reliance on photocopying as a means to keep up to date with content changes.⁴ If there were general texts in each of the sciences, teachers would have less need to rely on photocopying in this way.
- c. It has also been highlighted to SCORE that a disproportionate amount is spent on reprographics for assessments, because awarding organisations frequently provide only one set of paper sheets or a PDF for examinations and coursework which teachers must then print or copy in sufficient amount for their classes and lessons. This inefficiency in photocopying for assessments would be reduced if awarding organisations included a headline figure for reprographics in their overall costs to schools – in order for teachers to be able to accurately cost this expenditure in their budgets.

⁴ SCORE has given further detail about this issue in its response to Ofqual's Call for Evidence on qualification support material and services, which can be found here: <http://score-education.org/media/9973/ofqual%20materials.pdf>

- d. Respondents to the research identified the amount spent on photocopying to be a major barrier to the resourcing of practical science, preventing them from being able to fund large capital pieces of equipment; to increase the quantity of or upgrade existing equipment; or invest in different types of equipment and consumables.
- e. Science technicians are an important factor in the efficient provision of equipment and resources to laboratories for practical lessons. SCORE found that just over a quarter of respondents within state-funded secondary schools stated that they need at least one additional technician. Many schools recognised the value that effective technician support can add to their science departments in terms of facilitating practical work by ensuring that equipment is used and stored correctly, preparing experiments and developing bespoke apparatus.
- f. As a whole, introducing a career structure for science laboratory staff would lead to greater efficiency in the teaching of science lessons by:
 - o providing science teachers with more time to concentrate on teaching duties and to focus on engaging students in learning – leading to a more efficient use of teacher time;
 - o ensuring that a member of the science staff, beyond the teaching staff, has expertise in practical science and risk management;
 - o providing assistance in teacher training – in order to give new cohorts of teachers a better basis from which to teach practical science and efficiently prepare practical lessons; and
 - o improving the retention of technician staffing, thereby reducing the inefficiencies (such as expenditure on induction and training) caused by fluctuations in staffing.

SCORE therefore recommends that in order for schools to achieve greater efficiency in resourcing practical science, investment in, and professional recognition of, science technicians is highly worthwhile.