Scottish schools struggling to teach science due to lack of equipment and resources

Pupils in state schools in Scotland are not being provided with the science equipment and resources they need to meet the requirements of the curriculum, new research suggests.

The survey of teachers from 39 primary and 46 secondary schools was commissioned by the Learned Societies' Group on Scottish Science Education (LSG), a collaboration of learned scientific societies and professional bodies.

The findings indicate that the amount of money spent per pupil on science education for the Curriculum for Excellence in primary and secondary schools in Scotland is less than in England for their more traditional courses.

The average annual spend on science in 2013/14 in Scottish primary schools was £1.62 per pupil. This compares with £2.89 in England in 2011/12, according to figures obtained by SCORE (Science Community Representing Education). The situation is similar for the Scottish secondary schools surveyed, with an average reported annual spend on science of £7.33 per pupil, compared to £10.12 as detailed in the same SCORE findings.

The LSG intends to use the findings as it engages with local and national government, schools, parents and industry bodies in efforts to ensure that school science is sufficiently resourced and supported. The group believes that, given national policy ambitions for enhancing and maintaining the vitality of Scotland's strong science base, it is important that priority is afforded to STEM (science, technology, engineering and mathematics) education in primary and secondary schools.

Chair of the LSG, Professor Sally Brown said, “Taking part in science practical work at school is an essential part of the learning process. It demonstrates the essence of science and the scientific method as it underpins the skills that young people need and the country is seeking. Pupils report increased motivation as a result of engaging in their own investigative work and greater interest in considering science-related careers. We have to ensure that their experiences at school are the very best and we know that much work has still to be done before this will be achieved.”

The LSG is publishing the findings in its report, entitled The Resourcing of Science in Scottish Schools, at the annual Science and the Parliament event in Edinburgh today (12 November 2014). It is the first time in more than ten years that evidence has been gathered about the funding of practical science in Scottish schools.

Insufficient resources were identified as a major problem, with 98% of secondary and primary schools reporting that they have to draw on external funding sources to support practical science work. In the secondary sector, teachers commonly contribute towards normal curricular activities from their own pocket. Results from secondary science departments further indicate that spending on reprographics accounts for more than double the amount allocated for equipment.
More than 80% of secondary schools indicated that they are not confident in having enough equipment to deliver practical science work effectively over the next two years. In primary schools, 45% of teachers reported having no access to safety equipment or to an appropriate science resources area.

The survey indicates that teachers are insufficiently supported to teach science. In secondary schools, 44% reported feeling unhappy with levels of technician support, while confidence in teaching practical science is reported to be an issue in some primary schools. These findings come as the Royal Society of Chemistry launches a campaign to increase the supply of primary school teachers with a science background at the annual Science and the Parliament event in Edinburgh today (12 November 2014).

Bristow Muldoon, the Royal Society of Chemistry’s Public Affairs Adviser in Scotland, said: “We strongly suspect that there is a serious shortage of teachers with a science background in Scottish primary schools. A good science education at primary school is crucial to make sure we have a steady supply of skilled scientists for the Scottish economy, so the Royal Society of Chemistry is calling on the Scottish Government to commit to every primary school having access to a science subject leader – a teacher with a science background or appropriate level of training to support their colleagues in teaching science.”

The full LSG report The Resourcing of Science in Scottish Schools is available on the Royal Society of Edinburgh website.

For more information, contact Jordan Ogg, Royal Society of Edinburgh, 0131 240 2792.

ENDS

Notes for Editors

The main areas of concern picked up from the survey:

1. **Equipment and consumable provision is not sufficient**

   **Primary schools**
   
   - 58% feel they do not have sufficient equipment and consumables.
   
   - Less than half feel they have enough of specific listed equipment in working order.

   **Secondary schools**
   
   - 57% feel they do not have sufficient equipment and consumables.
   
   - 82% are not confident in sufficient resourcing for practical work over the next two years.
   
   - Schools have problems providing sufficient equipment to support the new Curriculum for Excellence courses that require more up-to-date equipment (e.g. only 22% reported having sufficient data loggers).

2. **Funding allocated to science resourcing in budgets is not sufficient**
The reported average annual spend per pupil on science in primary (£1.62) and secondary (£7.33) schools is lower than funding levels reported in comparative research conducted in England.

**Primary schools**

- 44% are dissatisfied with funding for science practical work.
- 98% draw on additional funding sources for practical activities with parental sources being most common for extra-curricular activities.

**Secondary schools**

- 80% are dissatisfied with funding for science practical work.
- 38% of total science spend is on reprographics, with only 17% on equipment.
- 98% draw on additional funding sources for practical activities, with teachers themselves being the most frequent contributors of the additional funds required for normal curricular activities.

3. Teacher confidence is low in primary schools and teacher support is low at all levels

**Primary schools**

- 52% are not satisfied with the access to training on equipment and consumables.
- 45% reported no access to safety equipment or an appropriate resources area.

**Secondary schools**

- 44% are not satisfied with the levels of technician support.
- 46% are not satisfied with preparation time in laboratories to carry out practical work.

**The Learned Societies Group**

The Learned Societies’ Group on Scottish Science Education (LSG) was established in 2012. It has purposes arising from concerns about, and a need to contribute to, the major reforms in the delivery of science education in Scottish schools. It is recognised that, while its member organisations are individually active in this area, it is likely that more can be achieved by a formal collaborative grouping which identifies, discusses and takes action on common issues. The LSG remit includes identifying and promoting priorities for school science education in Scotland; monitoring and responding to school science education initiatives and developments; and stimulating debate relating to these issues.

The group comprises representatives from the:
- Association for Science Education
- British Computer Society
- Engineering Policy Group Scotland
- Institute of Physics
- Royal Society of Chemistry
- Royal Society of Edinburgh
- Society of Biology