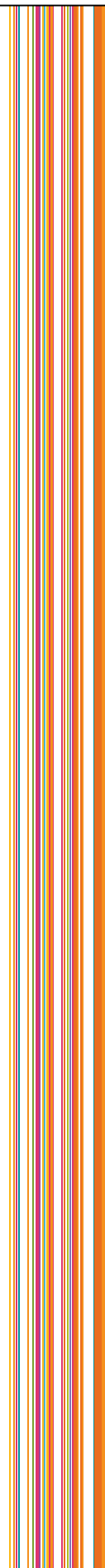


Science
LEARNING CENTRES



Practical Work Survey Report

March 2010



Survey on Practical Work:

The Science Learning Centres ran a survey online during February 2010, asking teachers and technicians for their views on practical work in science within their school or college. The background to the survey was a report published by SCORE (Science Community Representing Education) in 2008 that suggested some of the practical work being carried out is not as effective as it could be in aiding scientific learning¹. This report led to the 'Getting Practical: Improving Practical Work in Science' programme funded by the DCSF².

1339 teachers/technicians responded to our survey – a huge response given the short time-frame.

The attitude of teachers and technicians towards practical work in science was very positive overall with most arguing that it is an integral part of scientific learning. To quote one respondent:

“Science is a practical subject – to learn science without practical is unthinkable.”

The top 5 main purposes of doing practical work in science according to respondents were:

- Helping learners to understand scientific concepts (88%)
- Making phenomena more real i.e. linking theory to practice (84%)
- Helping learners to develop skills e.g. observation, using equipment (82%)
- Motivating learners (81%)
- Helping learners to develop understanding of scientific enquiry (80%)

A large proportion of respondents carried out practical work in science frequently with most KS3 teachers saying it comprised at least 40% of their teaching in a week. However the responses clearly showed a downward trend in the amount of practical work undertaken by students as they move from KS3 through KS4 to post-16 science.

Percentage of teachers undertaking practical work for more than 40% of their teaching time per week:

KS3: 63% KS4: 43% Post-16: 28%

When asked for the main factors that hindered teachers from undertaking practical work during a typical term, the most common threads were:

- Curriculum pressure i.e. curriculum too full (69%)
- Curriculum pressure i.e. assessment demands too frequent (41%)
- Poor learner behaviour (29%)
- Lack of funding for or availability of suitable equipment (25% and 20% respectively)
- Lack of time to research suitable ideas for practical work (21%)

¹ See http://www.score-education.org/downloads/practical_work/report.pdf

² See www.gettingpractical.org.uk for more information

To quote one respondent who said they carried out very little practical work:

“Pressure from timetabling and results precludes practicals unless they are directly related to coursework.”

A small number of respondents (around 4%) said that they did not feel hindered from undertaking practical work, and it was encouraging to see that only a small minority of respondents (less than 10%) felt that health & safety considerations were a hindering factor.

Similar examples were cited when respondents were asked to list up to 5 factors that contributed to their most effective lessons involving practical work. High on the list were:

- The availability of quality equipment and good laboratory layout (33%)
- Learner engagement and good behaviour (23%)
- Time to plan and prepare beforehand and time to carry out the work (21%)
- Support from technicians and teaching assistants (20%)
- Clear purpose for the practical, strong links to theory and relevance to the topic or curriculum (20%)

When asked what additional support they felt would help them make their use of practical work more effective over two thirds of respondents picked smaller class sizes³. The ideal class size for most KS3 and KS4 teachers (around 80%) was 11-20 students. The majority of teachers in post-16 education felt their ideal class size was 5-10 students. More time for planning (57%), a less content-heavy curriculum (43%), easy access to new ideas (43%) and support from technicians and teaching assistants (19%) were common responses, with one teacher asking:

“Can I make a plea for better pay and conditions for technicians so that we can recruit and keep them?”

A number of teachers (around 10%) felt that their own subject knowledge and confidence was a key factor in delivering effective practical work and around 45% wanted more professional development; with 30% specifying CPD relating to subject knowledge and new ideas for practical work and 15% wanting CPD relating to classroom management during practical work.

It is encouraging to see so many teachers emphasising the importance of having a clear purpose to the practical work, and making strong links between the ‘hands-on’ and ‘minds-on’ aspect of scientific learning. It seems however that many teachers find the curriculum and assessment requirements restrictive when it comes to carrying out engaging, purposeful and effective practical work in science.

³ Average class sizes in 2009 according to DCSF:
http://www.dcsf.gov.uk/rsgateway/DB/SFR/s000843/SFR08_2009_ClassSizeCommentary.pdf