CEG SEMINAR REPORT
on
Primary Science

Thursday 17 October 1996

The report will give a brief outline of the topics covered by the main speakers. The second section will summarise the points raised in the discussion groups.

Sir Neil Cossons

- Society's perception of industry is ante-deluvian and it is important that the industrial culture in which we live today is understood.
- The Science Museum is interested to know what primary science teachers want.
- Science has no designated slot in the National Lottery, although there will be some funding from the Millennium Commission which will help to provide "Hands on" Science Centres. In future there must be pressure for Lottery money to be directed towards Science Education.

Mrs Barbara Pollard

- Children's natural curiosity can be harnessed in their science lessons.
- Science is for all children and not just the high fliers.
- She teaches her infant class to predict, hypothesise, use scientific vocabulary and express what they have learnt through drama, writing and drawing so that all the children have an understanding, including those with statements of special need.
- She uses a range of teaching styles from whole class teaching to small workshops and pair work.
- Practical investigations involve everyday items like shopping bags and then the class write to the supermarkets to pass on their findings.
- As a BP link teacher she has gained a weather station for the school.
- Links with Pfizer have also proved most rewarding.

Mrs Elizabeth Hoadley

- Mrs Hoadley who teaches in a building erected in 1867 uses this as an example of different materials.
- She had worked in the chemical and biological industry before her family were born and this had given her an intuitive feel for Attainment Target 1 and the process skills necessary to science learning.
- Children who watch too much television do not naturally learn to observe.
- Mrs Hoadley is adept at using questions to extend understanding.
- Their answers are not always conventional but they can be followed up and research skills developed.
- Primary teachers are good improvisers but good equipment is important and support from industry has proved rewarding.

Miss Rosemary Feasey

Miss Feasey is very concerned that many of her students, potential teachers, have a very limited understanding of industry. Her work has attempted to change these attitudes by providing opportunities for students to make site visits and to be linked with industry on school practice and in their first years of teaching. She is involved with a whole range of projects to foster such links between the School of Education, local schools and local industry.

She ended with a series of questions:

- What are the priorities for the next 10 to 20 years?
- Who is doing what? How can expertise be shared?
- What kind of partnerships can schools and industry develop?
- Is there a "fitness for purpose"?
- How profitable are different partnerships? Can outcomes be measured? Do the partners get value for money? How do we know?
- Should there be a national agenda?

Mr John Adams

Mr Adams put forward his work as an example of what a company can do.

- Pfizer has a company policy for collaboration with both secondary and primary schools in the local area.
- Their work includes visits to schools, schools visiting their site (including Year 2), curriculum development work, link scientists, an equipment loan scheme, support for INSET, teacher placements, organising quizzes for local schools and providing prizes for a wide range of activities and involvement in selecting the TES Primary Science Teacher of the Year.
- Although Mr Adams himself is very much involved in these schemes, many other employees, including the senior executive, are pleased to take part.

Dr David Moore

Dr Moore summarised the ideas discussed during the day.

- What sort of help do primary science teachers need.
- How can such help be provided.
- Teachers need to be encouraged to feel that there is a scientific culture.
- Teachers need to find ways of sharing their interests with industry.
- Teachers need to know how to make contacts with industry.
- It is essential that within such contacts there is a good understanding of the context in which they both work.
- **Networks must be established to foster and support primary science teaching.**

The Chemical Education Group meets on 29 October and will be considering a way forward which is cost effective. Is it useful to produce new documents? **The eventual outcome must be one that helps teachers.**

Summary of Reports from the Discussion Groups

Morning Session

There were plenty of suggestions as to how industry could offer support and what action could be taken, in particular with respect to making science relevant to real life. For convenience, these ideas are grouped under various topics.

The Nature of the Links
Visits of teacher to industry and of industrialists to schools fosters a better understanding of the needs of each. When links are being developed it is important to have known individuals involved and for these to take time to fully appreciate their respective needs and to clarify their aims as to what they hope to achieve. It should not be forgotten that this is a "People process". As much imagination is required of industry as of teachers; small beginnings can develop into something worthwhile. Planning should have a long term perspective and in ideal cases specific packages can be produced by a local company for an individual school.

Curriculum Resources
Teachers like to be involved in planning their own resources. They also appreciate those resources with instantly usable material.

However, the view was strongly expressed that packages should not just be given to schools but they should involve training and the opportunity to make the material "their own" with the support of an experienced user. Ideally the training should involve all the teachers who will use the material. If resources have a cost, whether it be money or time given to training, they are more likely to be appreciated and used.

Sponsorship of Special Events
The severe decrease in the number of science advisory teachers has meant that there are fewer opportunities for training. These can be particularly important for established teachers who lack confidence because of their limited science background. Industry could sponsor training days, particularly in more congenial surroundings than the local school and also where there is the possibility to train the whole staff together. Teachers have five training days each year without children in school.

Science Centres, which may simply be a place to hold resources (either curricular or equipment) for a cluster group of schools, or a centre for teacher workshops or science fairs or even a hands on centre which children could attend, could be supported by industry.

The lack of science advisory teachers has removed a vital network through which teachers could share ideas; science centres could help to restore that network. It is the sharing of good practice and ideas which is favoured and not the co-ordination of work.

Financial Help
Although it is a Government responsibility to finance science education as part of the National Curriculum there are ways in which industry can enhance science teaching. They may be able to make equipment grants, perhaps as a reward for a local competition, or they may have an equipment loan scheme. Although much modern equipment would not be appropriate in the primary classroom, one good microscope would bring immense rewards. Quality science teaching does need good tools.

Support for extra-curricular activities, such as sponsorship of science clubs or paying for the children's travel costs to a local science centre are valuable help to primary schools struggling with financial restrictions.

More money from the 'Education Business Partnerships' could be accessed on behalf of primary schools.

Expertise
The expertise and knowledge of a scientist can be most useful to a teacher who lacks confidence in their own understanding. The presence of a "real scientist" in the classroom is stimulating to young children, although it was stressed that some scientists would need to be guided as how best to

communicate with this age group. Young graduates could work in primary schools as part of their professional development.

The presence of young women or members of ethnic minorities produce good role models for children.

Site Visits
Site visits allow young children to gain a more realistic impression of industry and industry should be persuaded that there is good evidence that even Years 1 and 2 are safe visitors.

Industry as Champions of Primary Science
Industry has a more powerful voice than the teachers and they could lobby Government to provide adequate support for the networks so essential to generating quality teaching in this area. They could ensure that the profile of science in this essential sector of education remains high.

Afternoon Session

In the afternoon the discussion focused on the leaflet **"Science in Primary Schools"**. Many felt that the leaflet was valuable, but offered the following **suggestions** for its improvement:

- It could be emphasised that science is compulsory.
- Under 'Issues' the impression could be given that specialist teachers are favoured – this could lead to the abdication of responsibilities by some teachers and compartmentalised science in the primary sector.
- In the same section reference should be made to knowledge and understanding.
- The importance of science study should also be a requirement of PGCE courses. A fourth item should be high quality INSET involving all teachers in the school not using a cascade process.
- Under "Action Required" the lack of money designated for primary science INSET should be noted and Government be encouraged to review the situation.
- There could be more information about the advantages of links.
- Industrialists should be made aware of the lack of non-contact time for primary teachers which means they cannot come to the telephone during the school day.
- It could be enhanced with some pictures.
- The initials should be spelled out and contact addresses and fax numbers given for institutions.

Consideration for any New Documents to be Produced

- Industry need to appreciate what advantages school links hold for them. These include improving the image of the chemical industry in the community, improving community relations and providing a skills pool.
- Schools need to be reminded why they should link with industry.
- The document could list examples of good practice both by industry and schools.
- In a document for teachers the first page should be retained but with less detail.
- Teachers would appreciate practical details on how to establish links.
- Teachers need to understand the constraints on industry such as time, Health and Safety and their own budgets.
- Emphasis on the importance of a long term commitment as essential.
- The document should be accessible to Governors and LEAs.
- Three new documents ought to be produced, one for the Company Executives, one for industry link co-ordinators and one for teachers. Company Executives have the power to release staff to make links possible.

Any Other Issues Raised in Discussion

- It should be quite clear that children are not switching off science at Key Stages 1 and 2, although this does seem to happen at Key Stage 3.
- Any initiatives should be evaluated.
- Existing successes should be publicised.
- Successful work in this field involves people and it is important that there is enough time to fully understand each other's needs.
- Support could also be gained from local secondary schools.