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## The Newton Abbot Project: using video conferencing to support cross-phase liaison in science

### Schools involved:

**Knowles Hill School, Newton Abbot**  
**Decoy Primary School, Newton Abbot**  
**Wolborough Primary School, Newton Abbot**

**Curriculum context:** Key Stage 2 and 3 science

### Background

Liaison between secondary schools and their primary feeder schools is a key element in ensuring progression in learning and in reducing the impact that changing schools can have on pupil progress. The 'Progress in Key Stage 3 science' report published by Ofsted in 2000 set the challenge for Key Stage 3 teachers that, 'they must find ways of improving the transition from Key Stage 2 to ensure that pupils are able to build on the six years of primary school science'.

Primary pupils usually have the opportunity to visit their secondary school, meet staff and familiarise themselves with the campus but this can be confined to two days in their last term of primary education and often has a pastoral rather than curriculum focus.

Liaison throughout the year between individual departments in secondary schools and primary colleagues can often be difficult to achieve because of the wide range of responsibilities that can be held by individual primary teachers in small schools.

Pupils and non-specialist teachers in primary schools sometimes require access to advice and information on aspects of the curriculum. Equally, secondary teachers can derive significant benefits from understanding how primary teachers approach their teaching and the expectations they have of their pupils. Developing an understanding of how subjects are taught in the primary phase is a key element in the National Key Stage 3 Strategy.

The transfer of information between primary and secondary phases can be limited to national assessment data, and secondary departments rarely access the wide range of information that primary teachers have about their pupils.

The aim of the Newton Abbot Project was to explore, using science as a trial curriculum area, how video conferencing might be used to support liaison between primary and secondary schools, including support for learning.

The project set out to evaluate the potential impact of video conferencing in the following areas:

1. Improving the support for primary science teaching
2. Enhancing cross-phase liaison between staff
3. Evaluation of procedures for video conferencing between local schools
4. Professional development of participating staff

The trial schools were Decoy Primary School with 470 pupils, Knowles Hill School, an 11-18 comprehensive school with 977 pupils on role, and Wolborough C of E Primary School with 263 pupils. The trial ran over the Autumn and Spring terms 2001/2.

## THE PROJECT

### Improving the support for primary science teaching

There is considerable potential in using video conferencing to support and extend the primary curriculum. The schools were able to trial the use of video conferencing to directly support the science curriculum.

Using the 'changing materials' (SC3) context from the National Curriculum at Key Stage 2, enrichment lessons were developed for primary pupils, demonstrating a range of chemical changes that would not be available for pupils to observe in the primary classroom. The aims were to give pupils a better understanding of physical and chemical changes, and an opportunity to discuss their work in science with pupils from another primary school and to talk to Year 7 pupils about science. Pupils were able to observe demonstrations and to ask and answer questions of the secondary science teacher.

*"Pupils were enthralled by the burning and dramatic chemical changes that were happening before their eyes." "The pupils had a taste of science at Key Stage 3 and it was a way of stimulating their interest in chemical change. They could observe the more advanced apparatus that was set up. They also had the opportunity to discuss the work and question the science teacher. It was clear to see that they had an opportunity to develop their knowledge and understanding to a more advanced level."*

The activities carried out in this conference involved a range of chemical reactions. These very visual activities were effective for video conferencing but care needs to be taken to ensure that pupils are able to see clearly the details of what is happening.

*"It was quite difficult to see the fine details of some of the investigations."*

Primary pupils involved in this type of conference can only watch and ask questions. Primary teachers wanted to run parallel investigations in order to provide a better background for the work and some examples that could be used to stimulate pupil questions.

*"The children had a rather passive role, i.e. being there as observers and not participating." "It was decided that there was a tremendous amount of potential in this type of conferencing but the next time we could set up some investigations related to physical and chemical change in the classroom." "I think that the follow-up work enriched the whole process."*

Video conferencing can only support learning in a practically-based subject; it cannot take the place of the practical experience of the pupil.

There is a need for considerable liaison between primary and secondary staff to ensure that the objectives of the work are clear to pupils and that the conference complements the work they are doing in their own lessons.

Video conferencing is excellent for raising the profile of science, extending pupils' understanding and giving pupils appropriate expectations of secondary science.

Pupils enjoy video conferencing.

*"The children were very excited about using the equipment. The video conference lasted for about 20 minutes and at the end I asked for their opinions. The children liked it because you could see who you were speaking to; they thought it was a new and interesting way of talking to someone else. They were able to see what a science laboratory looked like."*

## Recommendations

1. Planning is essential to provide a coherent learning experience for the pupils. Planning could include starter, parallel and extension activities for primary pupils. In practical activities such as science it is beneficial to have opportunities for pupils to carry out practical activities either before or after the video conference.
2. Secondary teachers working via video conferencing links to primary groups need to have an appropriate knowledge of the programme of study for the group they will be working with. They must be aware of the learning objectives that the primary teachers have for their groups.
3. When demonstrating investigations or showing results via the video conferencing link particular attention needs to be paid to how clearly pupils can see detail. This is affected by factors such as monitor size, lighting, background, etc. If pupils are required to observe detail such as reactions and colour changes, an area should be set up so that the objects to be observed can be placed against a suitably coloured background in good lighting. A pre-set close-up shot is the quickest way to focus on this detail.
4. It is important to try to enliven pupil video conferences with visual props. Discussions can be enlivened by pupils showing each other their work, display, artefacts, etc. This approach exploits the full potential of video conferencing for engaging pupils.
5. When pupils are conferencing each other it is helpful to have shared some questions before the conference. This ensures that the conference does not 'dry up' before pupils become relaxed and familiar with the technology.

## Enhancing cross-phase liaison between staff

Video conferencing removes the need for travel, enables staff to access specific agenda items at meetings in other venues and helps primary staff to liaise with a wider range of specialist secondary science staff.

When the video conferences took place they were seen as a valuable and time-efficient way of arranging effective liaison between groups of staff.

*"The meeting gave us the opportunity to discuss a number of ideas for possible links between Knowles Hill School and Wolborough. We were happy with the results, although a good deal of time was taken to organise the video conference."*

As with all meetings, arranging multi-link meetings is easier if a schedule of meetings, times and agendas can be circulated in advance.

*"We discussed how links could be made between the schools, focusing on the topics of 'Ourselves' and 'Electricity'. We arranged for Mark to visit Wolborough with a skeleton and we were able to sort out specific times and dates for this to take place. A number of other ideas were discussed and activities were arranged." "We all felt that the meeting was successful and several ideas were discussed, the only problem being the telephone calls to set up the conference."*

## Recommendations

1. Multipoint video conference liaison links should be arranged according to an agreed schedule of meetings specifying date and time for the conference. This could be facilitated by a simple, on-line system for local schools providing details of the agendas and the facility to book into a meeting.
2. Conferences between any staff are best arranged by named contacts at each school.

## Evaluation of procedures for video conferencing between local schools

Video conferencing requires planning and procedures to make it effective and efficient. Administration tasks are best carried out well before the conference or after the conference. Pupil engagement, particularly of older pupils, is enhanced if they feel that they have more control of the direction of the conference. The first few minutes of the link are important in establishing pupil engagement and interest.

Considerable additional time was taken up in co-ordinating the multipoint conferences and this will increase with the number of schools involved.

*"It took several calls to sort out a time to link up. Having sorted a date and time, we had to call just before the link to make sure they were ready to receive our call."*

It is very important for pupils taking part in video conference sessions that they are familiar with an outline of how the equipment works and the implications of this for how they take part in the

conference. For example, when using the voice-activated camera facility, pupils must understand that they need to talk in turn and avoid too much movement. This disciplined approach to conferencing can have important benefits for pupils' interpersonal skills.

*"They had to keep reminding themselves not to speak when somebody else was talking and to take turns all the time." "I always make sure that the children are aware of when it is their time to speak. If they speak at the wrong time, the camera will switch towards them and this affects the flow of the conference."*

Body language and cues are important elements of the conferences to encourage speakers. It helps to make these explicit as it is sometimes difficult to pick up the normal cues of conversation such as smiling and nodding on the video conferencing links.

It was found in all of the participating schools that moving the video conferencing systems around the school significantly increased the organisational time needed to set up a conference, and the possibility of technical problems with the equipment.

*"After 30 minutes of trying to sort out the problems we decided to cancel the video conference. This highlights the problems with not having the unit set up at all times." "A unit that is set up at all times would be quicker and easier to use."*

## Recommendations

1. Telephone links between video conferencing centres are essential for coordination and fault tracking. The telephone handsets need to be located in the same room as the video conferencing units.
2. Providing a fixed base for video conferencing reduces the problems associated with moving equipment around the school. While many secondary schools may be able to allocate space or consider the development of a dedicated video conferencing studio, this will rarely be an option for primary schools. Siting the equipment in one classroom may be the best solution. ICT suites are not usually a suitable option due to limitations in the layout of the room.
3. Introductions are useful but time consuming. There is a need to develop alternative strategies for warm-up activities to avoid a stereotype beginning to the sessions. Where possible, establish pupils as chairman for sessions.
4. It is helpful if pupils waiting to take part in a conference have a starter activity that they can be involved in so that if there are technical problems with establishing the link pupils do not become uninterested or disengaged.

## Professional development of participating staff

Teachers quickly became familiar with the use of the video conferencing units and the requirements of carrying out a successful conference. Although training was provided, it was only through taking part in the conferences that teachers became confident in using the equipment and learned what worked in their schools and with their pupils.

The range of different conferences provided opportunities for teachers to liaise over the curriculum, observe each other teaching and better understand the particular demands of teaching in different phases.

## Further developments and potential

*During this project teachers and pupils trialled the use of video conferencing equipment for:*

- meetings between science co-ordinators
- primary pupils conferencing with secondary science staff
- primary pupils conferencing with secondary pupils
- demonstration for primary pupils of practical science requiring specialist equipment and facilities

*Further areas for the development of video conferencing in support of cross-phase liaison in science include:*

- primary staff contributing to secondary science department meetings
- secondary staff contributing to primary staff meetings
- co-ordination and sharing of bridging projects
- conferencing between teachers on individual pupil progress and attainment
- moderation meetings
- co-ordination of science week activities
- sharing science investigation outcomes between pupils from different primary schools
- science debates
- professional development for staff

Considerable development has already taken place in the use of video conferencing to support the science curriculum in schools. A number of national and international science-based organisations now offer video conferencing links to schools. These links have the potential for many pupils to experience aspects of science in our world that are impossible without the use of this technology.

Video conferencing offers links with real people and environments that cannot be paralleled by the use of text or images alone. Links have the potential to provide accurate role models of scientists and to open pupils' minds to the diverse nature of the scientific world and the people who work in it.

The increasing number of links between pupils from different schools, both nationally and internationally, enables pupils to share ideas and develop an appreciation of the global nature of science and scientific enquiry.

The main barriers to further development are the availability of the hardware and suitable accommodation in which to carry out video conferencing; the possibilities for the constructive use of the technology are limitless.

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