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The Role of Pupils in Constructing Networked Learning Communities

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INTRODUCTION

The Department for Education and Skills, through LEAs and the National College for School Leadership, has promoted the idea of schools working together as networks to share learnings about school improvement. A large number of Networked Learning Communities (NLCs) has been formed: over 100 networks consisting of more than 1,000 schools have been funded. NLCs are expected to research the improvement strategies they adopt, as well as to document the ways in which the network functions and develops.

This action research project¹ added to an existing funded NLC a pupil-led ICT component. By supporting pupils to experiment with a range of ICT based communication strategies, this project aimed to help the NLC to develop their commitment to 'pupil voice' and to trial systematically an effective intra-communication and learning platform.

PUPIL VOICE

Until recently in the UK, the term pupil voice² has had two strands of meaning and activity. The first is related to the improvement of learning and teaching. It is argued that teachers should consult pupils about teaching and learning, since their perspectives will allow teachers to better see how to improve and meet needs, thus leading to greater success (Macbeath, Demetriou, Rudduck, & Myers, 2003; Rudduck & Flutter, 2000, 2004). The second component is related to citizenship and the educative possibilities arising from pupil participation in aspects of classroom and school governance³. It is suggested that pupil forums and councils can assist the school to become more effective at the same time as pupils are learning 'real life' lessons in consultation, representation and decision making (Devine, 2002; DfES, 2003; Hall, Williamson, & Coffey, 2000; Lyons, 2003).

These two strands have now been joined by a third: that of students-as-researchers⁴ (Fielding, 2001). Here, students are encouraged to work with their teachers to investigate ways in which schooling and reform can be improved and to take actions that will lead to positive changes in teaching and learning and the general school environment (Fielding & Bragg, 2003)⁵.

This project did not sit easily within any of the three strands of UK pupil voice activity. It aimed to engage in pupils as a 'work team' making an 'authentic product' that was of use to their schools. As such it had connections with citizenship. The emphasis on pupils as technician and documenter-researchers could position it within the third strand of UK pupil voice research. However, the lack of pupil involvement in the original design of the project, and in the choice of focus for the website (that is, the project was about an NLC) indicate that the extent to which pupils could initiate

¹ The project was initially funded through a BECTA bursary

² It is important to note that there is a vibrant debate about pupil voice and critiques of each of the above approaches. See <http://www.pupil-voice.org.uk>

³ See also the following websites: www.carnegie-youth.gov.uk; www.ukyouthparliament.org.uk; www.byc.org.uk; www.schoolcouncils.org; www.ncsl.org.uk; <http://www.cewc-cymru.org.uk/>; <http://www.youngnbc.org.uk/schools/index.htm>; <http://www.rightsbase.org.uk/schoolcouncil/>

⁴ See *Forum 43* (2). (Summer 2001) Special issue on student voice. Edited M Fielding.

⁵ The UK tradition differs from the Australian in that there is little emphasis on pupils as community activists (1988). The three strands prominent in the UK do not necessarily extend to pupils deciding on the issue to be investigated, nor guarantee that they have a large part in deciding what action is to be taken, nor does it often extend to their involvement in putting recommendations into action (Alderson, 1999; Fielding, 2004, in press; Warren, 2000). Indeed, it is possible that some pupils are reluctant to join in specific pupil voice activities because they do not see it as leading to the kinds of changes they think are important (Chamberlin, 2003; Gordon, 2001).

activity was limited. However, the project was framed not only to provide the network with an ICT infrastructure, but also in the hope that it might lead to further and more autonomous pupil voice activity. The project also had connections with the kinds of activities that are connected with Creative Partnerships (arts funding in which pupils work with artists on projects such as making films and plays), that is it was about an artefact in which there was an apprenticeship learning approach.

Primary school creativity and ICT

Those who study ICTs as a new medium for making meaning are interested in what transformative potential is it might have for pedagogy. Researchers stress the unique ways in which images and words come together in very specific ways on screens. Researchers and teachers alike need to consider:

- audience/users and the particular forms in which audience/users can become engaged via screens and networks, and
- the ways in which general communication issues of transmission and interactivity can be simply reproduced or changed through the ways in which ICT applications are constructed (Snyder, 1996).

The notion of 'multiliteracies' (Cope & Kalantzis, 2000) highlights the question of the design of on-line texts, suggesting that the practice of designing restores human agency and dynamism to the process of making meaning.

These 'transformative' potentials of ICT come together with current interests in creativity. ICTs can contribute to what has been described as 'teaching for creativity' and 'creative teaching' (National Advisory Committee on Creative and Cultural Education (NACCCE), 1999). In a review of the literatures on both creativity and ICT, Loveless (2002 p. 12) argues that ICTs can make specific and unique contributions to the framework for creativity devised in the 1999 NACCCE Report (see table below).

Features of ICT	NACCCE framework for creativity
Provisionality	Using imagination
Interactivity	A fashioning process
Capacity	Pursuing purpose
Range	Being original
Speed	Judging value
Automatic functions	

Loveless stresses that in attempting to utilise the creative potential of ICT, a learning environment conducive to risk taking and exploration is a key factor (p.15).

In a very small way, this project did have an opportunity to address some of these issues. Building the NLC website was an attempt to utilise ICT as a mode of construction, rather than simply as a means of presentations of materials. The pedagogy was thus one which required children to engage in creative thinking and make decisions about how to produce an on-line resource, considering its interactive potential from the point of view of a producer, as well as a consumer (Sefton Green, 1998). The product was one which was to be delivered for a client, the NLC (c.f. Lankshear & Knobel, 2003 Ch. 8). This was an activity which, as Bigum (2002) argues, was regarded as valuable by outside groups: learning and communicating was for a real-life purpose, not simply for a mark.

The project thus had the potential to work differently from what some see as the current situation in English schools in which the focus on basic skills has led to insufficient regard being paid to the enjoyment of children (OfSTED, 2002). A key 'problem' that has been identified by researchers critical of dominant modes of primary education is the use of highly teacher-oriented modes of pedagogy (Alexander, 1997). It was this trend against which the NLC project struggled.

RESEARCH DESIGN AND METHODOLOGY

This was an action research project, that is, it aimed to both change practice through, in and as research (Kemmis & McTaggart, 1988). Action research does not follow the same conventions as most research. It builds in cycles of reconnaissance, research/action and reflection rather than a

set of predetermined procedures that lead to predetermined outcomes. Action research continues to work on the research problematisation throughout, rather than at the outset and in the post research conclusion (McTaggart, 1993). It also focuses strongly on the process of research/change and produces reflexive accounts of the conduct of the research and of learnings that were accrued.

This methodology was chosen because the tradition of **action research**⁶ entails:

- joint ownership and responsibility for the project
- a process which recognises and uses the specific resources each partner brings to the research relationship
- a cyclical pattern of planning, action, monitoring, review, dialogue, critical reflection and further planning leading to action and thus
- a structured process of inquiry informing the learning/change process
- a tangible commitment to inclusion (Walker, 1996)

These are practices which are congruent with the NLC modus operandi.

Action research has a strong ethical dimensions and action researchers are committed to working with rather than on participants (Zeni, 1998). Despite external pressures, action research works with processes aimed to generate collective learning. One of the consequences is that the pacing of action research projects is co-constructed. This often leads, and did in this case, to a considerable dissonance between the requirements of the funding body for tight timelines, and the need for the project to be inclusive of all participants rather than bulldoze them in directions that they did not understand or to which they formally consented.

There are additional ethical issues involved in working with children. However, because this project was envisaged as part of normal school activities, questions of child protection and pupil behaviour management were covered by existing school policy and practice. A more significant issue was the willing participation of children. Children involved were selected by the schools, and children were asked if they wished to take part. Both the technical and content provider groups were of mixed socio-economic backgrounds, academic attainment, and ethnic and racial heritage and consisted of both boys and girls. Parental permission was sought through class teachers. We did ensure that each child was explicitly involved in making an individual decision about whether to be involved.

At the outset we made a risk assessment of the project and suggested the following dangers:

- disruption to the project through illness or absence of any of the participants. The formation of pupil teams militated against this being problematic. The University researchers were to provide back up support to the project
- technical difficulties in building the website and developing the ICT tools. The project was to provide access to a technical consultant and several of the schools said that they had paraprofessional staff who would be involved in the project. The web pages were to be housed on the LEA website.

But this project was to generate an almost entirely new set of problems, as we now explain.

THE RESEARCH IN AND AS ACTION

Our original research proposal had a clear question and delineated set of strategies. During the lifetime of the funding, our project did not follow the pathways we had initially envisaged. This is not uncommon for action research. While in other kinds of research such deviation could be deemed a project which failed, in action research analysis of the differences becomes the learnings generated.

We thus present the findings from this project as an analytic narrative (Boje, 2001) which attempts to represent the cumulative processes of learning that the researchers experienced.

Getting the project started

⁶ See for example Kemmis and McTaggart (1993) and work on teacher research (e.g. Comber & Green, 2000; Lankshear et al., 1997)

This network is supported, as are all other Networked Learning Communities, by both LEA and University partners. The University of Nottingham and LEA involvement pre-dates funding from the NCSL. The first two years of the NLC were largely organised by a steering group made up heads of schools from the network, the LEA and the university. However, this project was designed by staff at the University of Nottingham in conjunction with members of the NLC steering group, and as a response to their network development plan which (a) focused on pupil voice, and (b) aimed to develop a dynamic NLC website, rather than the static display established by the LEA as part of its own website. The NLC website was intended to address communication issues among the networked schools. This had already been noted as an issue in formal evaluation of the first two years of operation. The external impetus for the project was to become an important issue.

The project was very slow in getting going. There was an initial meeting in October with the University researchers, a head from the school where the technical team were to be based, an IT Co-ordinator from another school and the LEA technical support officer. As a result of that meeting, each of the parties undertook to do certain tasks. The University drafted a letter explaining the ways in which the project was intended to work and sent this to the host school for circulation to the other NLC school members. All parties agreed to look for a person with high-order web design skills to augment those already in the schools and in the research team. The LEA and one of the schools were to pursue the issue of a home server for the website.

As time went on and as University staff visited NLC schools for a variety of network meetings, it became apparent that none of the schools had received this original letter: indeed many could not find the original submission they had been sent. There was also no progress on finding a web designer or on locating a home server. Anxiety about the lack of progress grew in both the schools and in the university. Eventually, the university researchers decided that the waiting had gone on too long, and that the project must get underway.

Our initial idea was to kick start the project with a large workshop with pupils from all of the schools. This proved impossible to organise. We therefore switched tactics and decided to begin in the one school where the technical team was to be located and to try to get a skeletal website built. Our idea was to use this as the basis for consultation with the network management group and to organise wider network pupil involvement from there.

The head of the host school (where the technical team was based) was contacted and the Director of the project located an ex-teacher undertaking a combined Education-Computing Science PhD, contacted the key school and organised a series of pupil workshops to begin to build the website.

Pedagogical choices

Working with pupils to construct a website is a pedagogical challenge about which surprisingly little is as yet written. There are descriptions of projects in which websites are built, but these provide little detail about the actual processes used (for an exception see Lankshear & Knobel, 2003 Ch. 8).

We were mindful that the group we were working with were not only young but also likely to require tangible, observable 'work in progress'. We saw this as the equivalent of 'working drafts' in writing composition, or 'sketch pad' designs and continual (re)working in painting. Because we did not know the children we also had little idea about who would work together as a team. We held in mind the obvious choices: (1) working whole group to design the site, (2) working in functional teams as professional web designers do with a division between content producers, image/design manufacturers and technical constructors (3) small group work and (4) individual work.

Based on previous experience in website construction (e.g. Thomson, 2001) we understood that it is easy for primary school children to get frustrated with website design. It is relatively complex work and it is possible to work on paper for considerable lengths of time before getting to a mouse. We had seen children get dispirited when it seemed that publication was to be a distant event⁷. This delay contrasts with the experiences of children working in other media – in video production for example, children routinely produce visual text as part of the training process, there is a tangible accumulation of 'product' which they can examine to see improvements in their

⁷ In the particular previous project referred to here this was in part due to the technical difficulties of rural connectivity.

technical expertise, and a recognition that the task is both achievable and needs to be worked at⁸. We knew it was possible to obtain at least some of this immediate 'product and feedback' in making websites (Thomson, 2003) and it was this sense of challenge and possibility that we sought to (re)produce.

Our aim for the first whole day session therefore was to get the basic structure of the site sorted out and for each child to have produced a draft of something which could be published. We thought that this would provide the sense of 'real product' we were after, and an understanding that the website was not something completed for 'marks' or teacher assessment, but was a real life artefact with a potential, public audience. We decided that the first day session would consist of some whole group work and then some individual work.

Day One

This session was held in a support room: the IT suite was booked for the whole day. We did not have access to the web and we only had two stand alone machines. We brought in our own laptops and 'hijacked' three more stand-alone machines in a nearby room. We found on the web a set of 'good website criteria' developed by the US Library Association and used these as something to work from. We put onto CD-ROM a series of static home pages: school websites and some commercial websites of high interest to children. Because the school had no data projector, we clustered around a computer on a trolley to see these in turn.

The team were not unanimous in their views about the sites, but they did arrive at some basic 'rules':

- (1) The site should identify the NLC as English
- (2) The front page should say something about the NLC
- (3) It should be easy to load with not too many pictures
- (4) It should be easy to read with not too much on it.

After hearing from the head about the NLC, we developed via group work a basic site structure and we ensured there were just enough pages for each person to be able to work on one of them. The children then worked individually for the remainder of the session.

Despite our work on 'good websites' the children began by wanting to experiment with animations found on the web, variegated fonts and lurid background colours. Some paid some attention to the content of the pages they were working on, but in general this first session was mostly tinkering and getting the feel of the software. One particular problem was the development of a pupil page which was intended to have links to chat sites: an issue the teacher pointed out to us as highly problematic.

We published the pages as they were and emailed the URL to the school.

Day Two

Our second full day workshop with the technical team was based in the IT suite which the school had freed up for the project. The LEA technical support officer had installed Netscape on all of the machines and each pupil was able to have their own station. The pupils already knew how to log onto the network and were quite comfortable with the Composer programme.

All of them had visited the pages on line and one of the children had made sure that his whole class had seen them while they were in the computer room for their regular lesson. They had done no further work on the project in between our visits.

We began by re-looking at the initial pages and stated clearly that they were not coherent. They needed to be more of one style. We also promised that at the end of year, we would allow each of the technical team to have their own small home page which would hang off their Christian names in the webmasters list at the bottom of the front page of the site. This appeared to satisfy the enthusiasm that the children had for making each page reflect their interests and personalities: this could clearly have been an obstacle to a more cohesive website and it was not certain that this

⁸ Thomson is currently researching with a colleague Chris Hall a creative arts programme in a primary school which has the same set of characteristics in a more sophisticated form. Hall and Thomson aim to produce an articulation of this pedagogical model.

intervention would be sufficient to get past the fascination with animated fairies and pictures of sharks.

The head was asked to talk with the children about pupil voice. He explained that in the previous year the children had been asked about teaching and learning in the school and as a result staff had made a number of change to their classroom teaching. The children remembered the consultation but were less clear about the changes that had resulted. The children also named 'Eco club' a school based environment group and the Pupil Council as further examples of pupil voice.

The group then divided into pairs and one pair continued to work on the front page, another on the teacher page, and a group of three worked on a page about their school. The team thus began to develop some content. Each of the pages was revised and there was discussion between each pair about the style and scope of the page they were working on. Some of the pupils interviewed other pupils and teachers about programmes in the school and in the network. This was necessary for them to understand enough about the contents of each page to design the categories and levels of headings. There was clearly a tension here in our designation of content and technical teams and it is our experience so far that the technical team not only have to have content to work with but also have to generate a sense of ownership of the pages through developing content as well as the outline/design. Given the poor literacy of some of the pupils who were selected and their poor keyboarding skills, as much time was spent acquiring this content as in the actual design of the pages.

A disposable camera was purchased and some of the pupils took pictures of the school. Our idea was that a section of each school site could be a tour of the school made using PowerPoint, an application with which all pupils were familiar.

At the end of this session we had some improved pages and some additional ones. These were also published.

Moving to include more schools

The website construction was discussed at a network convenors meeting, and it was suggested that space be made in the upcoming NLC conference programme, which was about pupil voice, for discussion about how to progress it beyond the key school. Accordingly the Project Director showed the web pages produced by the technical team to the pre-conference meeting of convenors and time was allocated on the second day of the conference for further conversation about ways to involve more pupils across the network. During the discussions the following emerged:

(1) one school seemed able to take responsibility for a whole section of the website.

One of the school NLC convenors was also an IT key teacher and saw that the website would be an ideal addition to his existing school activities (these already included the school newsletter). He wanted to use the web software in the school – this was the first time we had heard this term or of the existence of such software. It was possible that this teacher could take on the section of the website that included the NLC newsletter. He was technically able to undertake such work relatively autonomously, which is precisely what was envisaged at the outset of the project.

(2) one junior school was keen to have immediate involvement with older pupils acting as mentors to the younger ones

(3) some schools did not want to be involved at this stage

(4) several teachers felt unable to initiate work in their schools and had some confusion around the difference between content provision and the technical tasks involved in web page production. They asked that the University conduct workshops in their schools like those happening in the key school. We had no funding for this level of activity but decided to continue beyond the project funding date for the remainder of the calendar year.

Most importantly,

(5) the entire group said that they were committed to the idea of the website and wanted it to go ahead.

The issue of sustainability was discussed and there was a decision taken to continue to support the project in 2004-2005 in order to ensure it developed and did indeed become a viable pupil-led mode of communication around the network.

As an immediate next step it was decided that the project director would survey all of the schools to get detailed feedback about the website, the ICT capacity of each school and the ways in which each school wanted to be involved.

In retrospect it may seem that this is how we should have started the project, but at the same time it is probably the case that many of the schools would not have known what a website might do if we had not had a draft, and a very imperfect one at that. The lack of technical confidence amongst the schools produced a reliance on the University researchers and also slowed down the progress of the overall project, since the researchers did not envisage that they would have to allocate so many days to the project. The teacher release time that we initially budgeted for was partly redirected to continue to pay one of us (Liz) who had the technical expertise not available within the schools.

Content team in the key school

As a result of seeing the content that the technical team produced, the home school decided that it was necessary to choose another team of pupils who would focus solely on producing material which the technical team could then put into the pages. A group of six pupils were selected – five girls and one boy – who worked with one of us (Pat) for a half day to map out the information that should go onto their school home page. The intention was that this would serve as one model for other schools and that the technical team will be able to develop a template into which other schools could insert their own copy.

The pupils took more pictures using the same disposable camera and organised a list of tasks they had to do in order to complete their individual reports. Only two drafts of the reports were emailed to her while she was away in Australia. On her return a further day with the content team was organised and the copy finalised.

Workshop three: technical team

When the copy was completed, we again visited the host school to work with the technical team. Our aim was to make the transition to across website teams in order to generate a more coherent approach to the site, and to introduce more specialised software. Our intention was to have pairs of pupils working on:

- Animations (using Animation shop and Presto)
- Page templates (using Dreamweaver)
- Lettering and design features (using Dreamweaver and Adobe PhotoShop)
- Model school web pages, using the content from the content team

As in other workshops we tried to combine whole group and then paired discussions, planning time, some time to experiment with the new software, and work time to produce a product. As was the case in the other workshops, our focus on product worked against allowing adequate time for experimentation with the new software. This resulted in more adult direction in practice than we feel is desirable and an increased adult influence over the final product. However, at the end of this session, we had a website which had greatly improved appearance and coherence, together with a relatively well rounded set of host school pages, and an interim set of animations.

Growing the website

We were now at a point where we could move to another school. We had anticipated that this would be facilitated by the survey that we had sent out to all of the schools in which we had asked how and when they wished to be involved, and what expertise, software and hardware was available in the school. However, and tellingly, only two surveys were returned to us. From conversations in the management group, we understood that this was not because the website project was not supported but rather because it was another task which kept slipping to the bottom of the 'to do' pile.

We decided that our choice of where to work next had been decided for us. We would go to the two schools that had returned their surveys. We considered whether we could take members of the technical team with us so that we could initiate some peer tutoring. However, with one car and limited travel time, we decided against this for the first forays out of the host school.

The school we chose to go to first was the school whose IT Co-ordinator had attended the initial planning meeting. It was also the school with its own website and where there seemed to us to be both a commitment to the project and to IT in general.

School number two, as we will call it, was located in a village. Unlike our host school, which served a very socio-economically mixed estate, this school had a relatively homogeneous intake. One indicator that we noted was that out of the 300 or so children at the school, only one was eligible for free school meals. It was a 'first' school, that is, it catered for the first four grades in primary. The school selected sixteen year 3 children who had volunteered to take part. We had two full day workshops in the school, working with eight children on each day. On the first of these days we were located in a very small utility room and only had access to our own laptops.

We asked the children what they wanted to write about. We told them the ideas that their teachers had suggested, and then had a brainstorm of possibilities. From their ideas we co-constructed the format as a virtual school tour. Each child took on aspect of the school and, using Kidpix and digital images taken with one of our digital cameras, constructed a slide for the slide show. They hand wrote their captions, which they then typed, using the familiar 'hunt and peck' method, onto the slide. In the second workshop we continued with a second group of children and completed the virtual school tour.

Once again, and this time with a much younger group of children, we saw how adept the children were at basic computer operations. While they were slow at typing, and frustrated with their mistakes in entering data, they were highly skilled at manipulating images and learned about new software in a very short space of time. This was evidence that their immersion in multimedia environments had produced an intuitive understanding of the basic logics of screen work. They seemed to 'feel' which way the programme will work and were quite happy to tinker in order to find out the particular features. These children, unlike the older children, did not stop to ask any questions about how to use the programme, but just 'went for it'. They were able to each construct a creditable slide in a day.

The resulting QuickTime movie now provided another model of school pages available to the NLC network. We now discuss in more detail some of the issues we have to resolve in order to get this far.

SLOW MOTION ACTION RESEARCH

It's the software ...

In November-December we ran two web design workshops, with seven Year 6 pupils and one of their teachers, in the school designated as the base for the 'pupil technical team'. There were an initial series of software and hardware problems we had to address.

These arose largely from the lack of web page construction software in the 'home' school. This surprised us because at the initial meeting we had asked about the availability of Front Page and had been told that could be made available to the LEA schools as part of the Microsoft Office package already in use. This turned out not to be the case. We considered whether to buy a copy of Front Page for the key school in which the technical team were based. We rejected this on the grounds that it was too expensive, and instead, as a first solution, decided to work with Netscape Composer which is freely available. This would mean, we thought, that all schools could make pages very simply using a very basic format and the free Netscape programme.

A further complicating factor in the 'home school' was the lack of stand-alone machines with Internet access in the school. The school had one computer suite with enough machines for a class, and a number of stand alone machines around the school. However, none of the stand alone machines had Internet access and the computer suite had only one CD drive for the network. This meant that the Netscape programme could only be installed in the computer suite and only then by 'ghosting' the programme across all of the machines.

However, the LEA technical adviser was far from happy with this, since Netscape has many chat plug ins. He suggested that installing Netscape in a computer suite might open up a range of difficulties with pupils able to access unsuitable Internet sites. He proposed using the HTML capacity of Word as a better alternative. We refused this suggestion because one of us had already experienced some difficulty in trying to put a pupil-developed Word based website on-line. The LEA technical adviser managed to remove all of the Netscape plug-ins in the one school computer suite in which we were working. However we could see that Netscape was not going to be the easy solution we had thought for all of the fifteen NIC schools. In addition, the ghosting solution in the IT suite meant that every time the pupils closed the programme down it disappeared from their screen menu and only reappeared when they shut down and restarted their computer. We only had a short-term solution to our software problem.

We then decided that we had no option but to purchase a copy of a more sophisticated web construction programme for the sole use of the technical team. We selected Dreamweaver. This took several weeks to arrive from the supplier and in the meantime we had to use a trial version downloaded from the web. Unfortunately, we could only afford to buy one copy and not a site license for the IT suite. This meant that during the development stages of the project we had to install the new programme on one of our personal laptops. This also meant that at most a pair of children could be working with the software at any one time and that children could only use the software when we were physically present in the school. This slowed down the project even further.

We decided to install the software on one specific school stand-alone computer, designated a project research computer in the technical team host school to conform to licensing agreements. However this machine was not on-line. In the first instance we used floppy discs to transfer work from the IT suite machines to the Dreamweaver machine, but as the size of files increased this became much more difficult. It was clear that an external solution (e.g. CD burner, USB external memory device) would eventually be required in this school in order that the children could work between the computer suite and the research machine. However the school had not budgeted for this eventually and a temporary solution was for us to provide such add-ons.

However, the problems did not stop there. The school email system to which pupils had access operated from the IT suite. We were told that late last year (2003) the Outlook programme became corrupted and the LEA technician was unable to 'get it to work'. This meant that we were unable to use email to contact the pupils individually. Our hope - that the technical team would work on website design and content at home or in school and email it to us for discussion - was unable to be fulfilled. The IT suite also had ongoing printer problems. Access to other peripherals was just as difficult as the school scanner had broken and was not immediately replaced.

While the technical team host school readily made the IT suite available for the pupils working on the project, what could be accomplished on the machines was limited. The net result of all of this was that the researchers had to provide a portable kit for the project. We arrived at the school with two (eventually three) laptops equipped with a range of software purchased specifically for the project: Dreamweaver, FrontPage, Adobe PhotoShop, Animation shop, Presto and Kidpix. They also brought their own digital cameras, floppy discs, USB storage devices and CDs with files from the previous session transferred from their laptops.

We temporarily resolved the server problem by situating the successive drafts of the website on one of the University of Nottingham Computing Studies servers. This was neither an ideal nor a long term solution. One of the LEA schools does have its own website maintained by an administrative office staff member. However their site resides on another university server and took months to move there from a commercial provider. This was not likely to be the server solution for a research project run from the University of Nottingham. An interim solution is likely to be that the research project pays for a commercial server for the NLC site.

In hindsight we were naïve to think that there would not be technical problems of this kind. In part this was caused by the assumption of the project Director, recently arrived from Australia, that IT provision in UK primary schools would be largely the same as in Australia. This is not the case. While the number of computers in UK schools appears to be roughly the same, together with the configuration (IT suite, and some standalone machines in classrooms and specialist rooms), the lack of - CDs integral to individual machines, broadband access, and routine use of school intranets - was a surprise. Further, and more germane to this project, these UK primary schools had a narrower range of software. The software programmes that we used in this project

are widely available in Australian primary schools. But by contrast, Australian schools struggle with technical support. The half-day per week supplied to each primary school in this NLC by the LEA would be welcomed in Australia where each individual site is left to find and pay for its own technicians. One solution that many (primary and secondary) schools have found is to use a team of savvy and enthusiastic pupils as IT troubleshooters/leaders.

These differences reflect different national ICT plans: in Australia there has been significant investment in infrastructure at the school level and far less at the national level (there is no Australian equivalent to the National Grid for learning)(Thomson, Nixon, & Comber, forthcoming).

The pupils and staff

As noted, we left the selection of the pupils for the initial technical team to the key school. We asked the head for six to ten older children who were reasonably confident with ICTs and who would enjoy being part of a pupil voice project. He passed this request on to the Year 6 teacher and she chose a group of seven. They were, as the Head noted, an 'interesting' group. All but one of the children had a computer at home and regular access to the web (c.f.Harrison et al., 2003). They went on-line primarily for games and chat. Two of them used email regularly. One did not have Internet access at home but did have a laptop for use at school since she had multiple physical disabilities

We began the first workshop by looking at series of school and commercial websites in order to develop some criteria for the NLC site. Among the websites we showed was the Harry Potter home page which none of the group had seen. This reinforced our view that these particular children had very restricted patterns of computer usage at home. This is congruent with the findings of Facer, Furlong, Furlong and Sutherland (2001; 2003) who noted strong patterns of narrow computer usage among many children.

During the workshops we noticed that the pupils were all very confident with the basic word processing, PowerPoint and web searching operations⁹. There would be no need for them to have any introductory IT lessons when they go to secondary school. They all moved fairly seamlessly into the Netscape environment and only some of them asked for help with some functions. However, all pupils had difficulty with keyboarding and were using very slow 'hunt and peck' two finger typing. This caused them considerable frustration and we speculated that it also caused them to write less than perhaps they could have with more proficient typing skills. One of the pupils working on one of our laptops opened up PhotoShop and, without any instruction, and working entirely intuitively, constructed a creditable Union Jack in a very short space of time.

It was clear that school staff knew particular things about IT. The pupils' level of confidence contrasted markedly with the support teacher: she was clearly extremely competent in the use of the network and its programmes, but described herself as a 'novice' who wanted to learn about website construction. The head spoke about school involvement in projects initiated by the Open University: a global classroom event and a parent local history project. We got the impression that these were 'islands of innovation' (Tubin, Mioduser, Nachwais, & Forkosh-Barush, 2003) in which the major beneficiaries appeared to be the specific children or parents involved, rather than these events producing any long lasting change in educational practice.

It was obvious that the host school, as was the case with other schools in the NLC, had made IT part of the school curriculum. Children had been taught systematically how to use specific programmes and perform basic word processing, publishing and display operations, regularly used educational software and the IT suites were heavily used. The host school, like most others in the NLC, held a computing club at lunchtimes, and there were always more children than machines. During these sessions at least one teacher was present to monitor what the children were doing via the networked software which allowed the teacher to view individual children's screens from the control machine. Using the categories of IT implementation suggested by Mioduser et al (2003)¹⁰, we suggested that our technical team were based in a school where IT was being assimilated/integrated.

⁹ This is congruent with international studies which highlight the limited range of ICT applications taught by schools

¹⁰ Mioduser and colleagues suggest a linear school developmental trajectory from islands of innovation, assimilation, integration to transformation. We wonder if it is possible to skip stages or to have more than one stage in operation in the same school at once as appears to be the case in some of our network sites.

SOME REFLECTIONS

Our project intended to quickly develop a website that would then allow children to co-research their teachers' activities in a networked learning community. This did not happen. Instead we found ourselves through the life of the funding working to establish the initial website.

The schools in the network are committed to IT. Most have a limited and standard set of software, organised and maintained by the LEA, with which teachers and pupils are familiar. Pupils know about word processing, PowerPoint displays and email using Outlook. Cost factors limited the number of machines and their capabilities. None of the schools makes use of internal ICT communication among staff, and email between the NLC schools is erratic. Only one school has begun to consider the ways in which a website can enhance communication with parents (Branzberg, 2001; Streibel, 1998; Troy-Corley, 1998).

Our project home school adopted strong supervision of Internet access and the LEA technical support officer suggested that this was the case in all schools. Evidence readily obtained from the children suggested that the vast majority had access at home to a range of sites including chat rooms. However, they appeared to use only a narrow band of sites, mainly games. An avenue for further exploration here is how teachers might assist pupils to explore more of what is available on the web through judicious choice of homework tasks and a greater focus on interactive activities both in and out of school. This would perhaps represent a move from IT to ICT. It may be that as the project continues, we can assist in making this shift. The schools in which we have worked have been interested in the software we have provided and the IT Co-ordinators in particular were keen to move into multimedia production. We suspect that we could be a resource to support this development, although this is hardly our brief.

Some teachers' confidence with IT was generally not at a high level despite them clearly demonstrating their competence in use of the IT suites and the installed programmes. Other teachers were more positioned as risk takers, describing themselves as keen to move on to new applications and projects. All of the teachers we met through the project were interested and wanted to learn more. The head teachers were quite familiar with the administrative computing requirements but they too did not seem confident about what constitutes IT leadership (c.f. Flanagan & Jacobsen, 2003; Hayes, 2003; Mulkeen, 2003; Schiller, 2003). This is a systems level issue and perhaps relates to the spread, nature and take up of programmes offered by the National College for School Leadership (see Lieberman & Grolnick, 1996).

Another important issue was that, despite children's confidence and for many, their intuitive grasp of the ways in which software works, their lack of keyboarding proficiency was a major frustration. They got irritated with how long it took to do something quite small, and with the amount of time they had to spend correcting mistakes. We wondered about the timing of the teaching of typing. If the use of computers is to become integral to schooling, then keyboard proficiency is desirable in order to avoid physical damage to growing bodies (we also noted the lack of ergonomic furniture in IT suites). The vast majority of Australian and American secondary school children now learn to touch type in the first two years at high school. Some primary schools are now moving to introduce touch typing in the middle years. We suspect this is something that deserves some professional discussion and debate in the UK.

We have begun to think about multimedia pedagogies and, at the end of this project, conclude that the following seem to be important:

- (1) an explicit teacher stance that there is no wrong answer. Rather, the website is a project that can be continually improved – this an arts based philosophy
- (2) there are clear benefits from working with successive published drafts. This is particularly the case with less literate pupils: immediacy combined with hands-on activity promotes engagement and commitment to the project. Having a real audience for the website product helped to sustain effort over time
- (3) it is important to scaffold through sequential activities website stages for pupils who are not include to work co-operatively– we moved from individual page to pairs on a page to

- pairs working on cross web tasks. We initiated whole group critical readings of the whole site at the beginning of each session. We moved from simple software to more complex.
- (4) multimedia activities have significant potential for inclusion through catering for difference within pupil groups. Pupils can work in complementary pairs: we ensured that we put those who had difficulties in writing with a peer who was more confident and accomplished. We also ensured that those with design skills were distributed across pairs.

Despite all our good intentions, our project was a very long way from the literatures on creativity and on pupil voice and much more tied into questions of individual school capacity and policy.

Ongoing work

At the end of the funded project and the 2004 school year, the website was far from complete. A brief return visit to the host school was fitted in so that each of the technical team could construct one page about themselves and their interests: since they have now left primary school these will stand as a permanent record of their contribution to the website.

The network management group have made a decision to appoint a coordinator to address the issue of network communication and initially wrote into the job description responsibility for the pupil constructed website. However this was problematic and it seems that nobody within the network feels confident enough to take this on.

We plan to continue to work school by school through the network to build individual school web pages and the management group have agreed to continue to fund Liz

CONCLUSION

As we reflect on the project we can see that, at the beginning, the NLC was poised to move from dependency on the University and LEA to become a self-managing group. Our project was caught in the middle of the shift: at the outset the schools expected the University to take a much larger leadership and organisation role than we had intended. This is not a unique situation: such issues are endemic to networks and to school-university partnership activities. It takes time to work out how to establish new ways of working together. As a NLC senior staffer said when listening to our tale of halting beginnings, 'We must remember that nets have more holes than connections!' However by the end of the project the network had made plans to ensure that the project would continue and could be sustained. Some ongoing problems of a largely technical nature (software and server) still require resolution.

The Catch 22 in which we were caught – we wanted to build an IT network to facilitate a learning network, but we need to learning network in order to build the IT network – remains a challenge. We recognised early on in the project that we were not going to get anywhere near the plans we had made at the outset. It became obvious that what we were doing was not working with an established network, but rather we were going to be a part of network building, web page by web page. Our project was just one of a series of change strategies working towards the NLC goals. While the website could not solve the communication problems it was initially designed to address, and indeed it was slow to start and hard to 'rev up' because of them, it nevertheless show potential to make a contribution to networking, albeit in a different way to that intended.

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