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ICT and Whole School Improvement

OVERVIEW OF THE STUDY IN ENGLISH SCHOOLS
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OVERVIEW OF THE STUDY IN ENGLISH SCHOOLS

1. SUMMARY

The English study was undertaken in three schools during the period November 2000 to January 2001. This overview of the English reports covers the following areas:

- the English context with regard to ICT
- the choice of schools

- the focuses of the case studies
- the outcomes from the English case studies
- future plans of the schools.

1. THE ENGLISH CONTEXT WITH REGARD TO ICT

In England, there was at the time of writing (April 2001), substantial government commitment to ICT for all^[1]. Nationally, the government made available £250^[2] million through the 'Capital Modernisation Fund', together with £75 million through the lottery funded 'New Opportunities Fund' (NOF) to develop the national ICT infrastructure in addition to £25 million for an ICT initiative for the long term unemployed. For school-based education the government funded ICT training for teachers (£250 million through NOF during 1999-2002) as well as funding hardware and, on a rolling programme, free or subsidised computers (including

laptops) for teachers who fulfilled certain criteria e.g. new headteachers, teachers of priority curriculum areas. There was, at the time of writing, considerable commitment to developing online resources for teachers through developments such as TeacherNet (<http://www.teachernet.gov.uk/>); the Virtual Teacher Centre (<http://www.vtc.org.uk/>) and, through collaboration with 22 other ministries of education in Europe, the European Schoolnet (<http://www.eun.org/>).

3. THE CHOICE OF SCHOOLS

Three schools were chosen to take part in the study. These were selected from a long list drawn up by the national expert committee overseeing the project. All schools had to demonstrate that the achievement of their students was above average for their school type and was improving, and that they were undertaking whole school development in which ICT had a key role. The three schools were in urban or suburban locations. One school took students from 7-11 years, one from 11-18 years and one from 14-18 years. One secondary school was a specialist technology college and so received additional government funding of approximately £100 per student per year. One school was in an area of high socio-economic deprivation whilst the intakes of the other two schools were more balanced.

4. THE FOCUSES OF THE ENGLISH CASE STUDIES

The three case studies illustrated major applications of ICT to the educational context which innovative schools in England were exploring. They focused on:

- the use of ICT in monitoring student progress and target setting

- changes in teaching and learning strategies for ICT rich environments
- the role of the school in using ICT to encourage and support lifelong learning in their local community.

The specific details of the studies are provided below.

Case Study 1: Highgrove School: development of a computer-based student tracking system in order to monitor student progress.

Highgrove school used data from a wide variety of sources to inform its student progress monitoring systems. Distinctive in the school's practice was the sharing of all information with parents, from the student's earliest days in the school, in order to promote home/school collaboration and thus maximise the student's individual achievement.

Case Study 2: Greenfield College: integrating ICT into teachers' practice.

The study focused in particular on the impact of the provision of personal computers to all teachers in a school context where multimedia projectors, intranet and internet connectivity, substantial technical support and banks of computers were available to most classrooms.

Case Study 3: Littlejohn Junior School: raising student achievement and supporting community regeneration: a role for primary school ICT provision.

Littlejohn Junior School used a home-school laptop scheme to create a positive learning environment for students, in a community with low levels of success in formal education.

5. SUMMARY OF OUTCOMES FROM ENGLAND

In this section, a summary of the English findings relating to the five hypotheses is presented together with a brief note of additional points of interest emerging from the studies.

5.1 Findings in response to the hypotheses

5.1.1 Hypothesis 1: Technology is a strong catalyst for educational innovation and improvement, especially when the World Wide Web is involved. The rival hypothesis is that where true school-wide improvement is found, technology served only as an additional resource and not as a catalyst, that the forces that drove the improvements also drove the application of technology to specific educational problems.

In the three case studies, the technology was used as an additional resource supporting change. The forces that drove the improvements came from the focus of the headteachers and senior staff on maximising individual student achievement using whatever resources were appropriate.

5.1.2 Hypothesis 2: The diffusion of the innovation/improvement (and therefore of ICT) followed the traditional diffusion pattern for innovations, as outlined by Rogers (1995). The

rival hypothesis is that technology functions differently from traditional innovations and that therefore different diffusion patterns occur.

From the schools under study, it appeared that the Rogers model of diffusion of innovation applied in the early stages of the introduction of ICT into the schools. However, as additional ICT based innovations were introduced, the patterns of diffusion appeared to be different. The innovations studied had been evolving over a number of years. Staff commented that they were expected to use ICT and participating in the ICT based innovations under study was not seen to be optional (although in some cases access to reliable technology available at the time of need, and a skills deficit prevented staff participating fully). The schools had been focusing on ICT development for a number of years and it may be that staff who were not prepared to use ICT, had left the schools before the current ICT based innovations were introduced. For this reason it may be that the staff working in technology-rich school environments are not typical of staff in the education system.

5.1.3 Hypothesis 3: Successful implementation of ICT depends mostly upon staff competence in the integration of ICT into instruction and learning. This hypothesis assumes that teachers mediate ICT applications when they are successful, and that ICT's academic value relates positively to teacher competence. The rival hypothesis is that the school technological infrastructure and student ICT competence rather than staff competence determine ICT implementation outcomes.

In all three cases, staff ICT competence was critical to the success of the whole school improvement initiative. The changes in practice being supported by ICT required changes in teachers professional roles, for example in dealing with student data and in relationships with parents as well as in adopting and developing new pedagogical approaches. In all three schools, ICT development happened in spite of the technical problems. Technical problems were major factors holding back development.

5.1.4 Hypothesis 4: Gaps in academic performance between high and low poverty students will not increase when all students have equal access to ICT. The rival hypothesis is that equal access to ICT will lead to more advantaged students increasing the performance gap with disadvantaged (high poverty) students.

The schools in the study all provided considerable out-of-school access to ICT. The data from the schools suggested that in these circumstances teachers did not feel that the gap between more and less advantaged students had increased. A number of teachers commented that students' non-use of ICT was not related to poverty but was related to attitudes to the technology. In the school which was providing portables for students to take home, a negative family attitude to risk inhibited the take-up of opportunities. Students from dysfunctional families were also less likely to be able to take full advantage of opportunities offered.

5.1.5 Hypothesis 5: With improved ICT academic standards will stay the same or increase, or decrease? Successful implementation of ICT will lead to the same or higher academic standards in spite of the low quality of many ICT materials. Academic standards are a function of teacher and school expectations and not of the standards of textbooks, ICT materials, and the like. The alternative hypothesis is that ICT use will lead to a lowering of academic standards as students spend more time on marginally beneficial searches and in browsing poor quality Web and courseware content.

In all three cases, the evidence suggested that with improved ICT, academic standards stayed the same or increased. Teachers suggested that the use of ICT by students for the production of their work motivated students to complete work and to redraft work to reach the required standard. These benefits were noted for children of all abilities and in one school, boys in particular, were mentioned as benefiting.

1. Additional points emerging from the case studies

2. At the time of the study, the majority of teachers were just beginning their nationally funded (NOF) ICT training. Critically, the school contexts provided supportive frameworks for ongoing, collaborative, just in time learning with ICT which earlier research (Leask and Younie, 2000^[3]) indicated was essential to whole school development in the use of ICT.

1. Innovative financing strategies have been adopted by the headteachers in order to make resources available to purchase hardware and to develop school networks.

1. Teachers in Case Study 2, spoke of the savings in their own time afforded by their access to various forms of technology and the ease with which they could prepare differentiated materials. Teachers from different subjects mentioned that they thought children were learning more quickly in the multi-sensory environment provided in the ICT-rich classroom.

6. FUTURE PLANS OF THE SCHOOLS

The vision the schools had about the way ICT could be used to support teaching and learning was considerably in advance of what they could actually deliver. The schools in the study had been very creative in finding and freeing up resources to develop ICT but there was some concern about their ability to fund the replacement of equipment. Priorities for development included the following:

- Ongoing training for staff.
- Reduction of paperwork.
- Development of effective systems for monitoring student achievement and assessment outcomes.
- Modernised assessment systems e.g. students could produce their portfolios on CD-Rom and send this to the exam board for assessment.
- Virtual departments with resources and materials accessible from home and school via the school intranet/extranet and including educational resources to support independent learning.
- Increased hardware e.g. multimedia projectors in every classroom, video cameras, scanners, laptops for students using wireless technology, more PCs. (Interactive white boards were not widely available in the schools in the study).
- Computers for all staff.
- Incorporation of new technology e.g. wireless technology.
- Adequate technical support.
- Redesign of spaces in schools to support the use of ICT.
- Development of home-school links.

The vision of the role of ICT in the school of the future, which came from the case studies, can be summed up in the words of this teacher:

[ICT is becoming] *an everyday tool with the teacher using the technology to provide: a diversity of resources; a variety of learning styles; high impact, fast pace learning; and edutainment .*

[1] Department for Education and Employment (2000) Skills for all Proposal for a National Skills Agenda: *Final Report of the National Skills Task Force*.

Department of Education and Employment (2000) Opportunity For All: Skills for the New Economy: *Initial Response to the National Skills Task Force Final Report from the Secretary of State for Education and Employment*.

Further Education Funding Council (July 2000) Working in Partnership FE Taking Forward the Skills Agenda: *A report of the Further Education Funding Councils Skills Working Group*.

[2] £1 = .63 euro £1 = \$US 1.6

[3] Leask, M. & Younie, S. (2000) Integration of the EUN into Classroom Practice: The dynamics of change. WP14 Final Report MM1010 Project. EU Funded. Brussels, European SchoolNet.