Primary Schools - ICT and Standards

An analysis of national data from Ofsted and QCA by Becta

January 2003

Key Findings

For the past three years Becta has conducted a range of analysis aimed at exploring the relationship between schools' use of ICT and pupils' achievement in national tests and examinations. This leaflet presents key findings from the report, ***Primary Schools – ICT and Standards***.

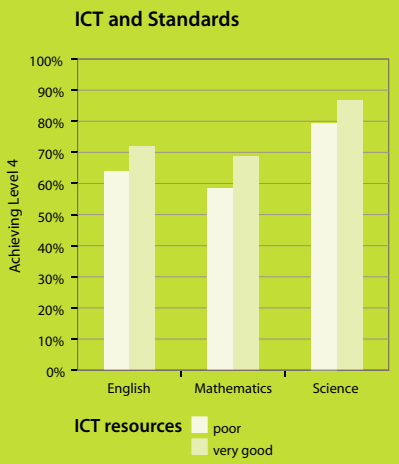
Becta
ICT Research

Key Findings

Introduction

The report's findings are based on data obtained from Ofsted inspections for the academic year 2000-01. This is further supplemented by test and examinations data from QCA for the same period. Where relevant, the report makes comparisons with data from datasets covering September 1998 to July 1999, and January to July 2000 in order to verify the findings of earlier analyses. The findings from these earlier analyses have been verified by analysis of a new sample of 2,582 schools receiving a full inspection in the academic year 2000-01.

The differences in pupils' achievements between schools with high and low ICT discovered in earlier analyses are also found in the analysis of the results for 2000-01. There is, therefore, evidence that the results in previous years were not due to chance.

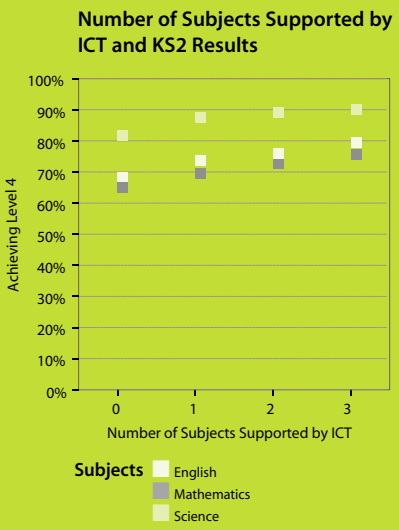


The relationship between ICT and standards

High ICT schools outperformed low ICT schools in the same socio-economic group. This indicates that the relationship between ICT resources and standards is not simply a result of more privileged schools acquiring better ICT resources. It also suggests that good socio-economic circumstances are not a pre-requisite for effective use of ICT.

When schools with a similar quality of leadership are compared, those with good ICT resources tend to achieve better results than those with unsatisfactory ICT resources, whatever the quality of leadership.

Schools where ICT is used well within a subject tend to achieve better results in that subject than other schools. Likewise, schools that combine good ICT resources with very good ICT teaching gain better results than those with good ICT resources but poor ICT teaching. These results show that the presence of ICT resources alone is less important than the combination of good resources and effective use.



ICT and subjects

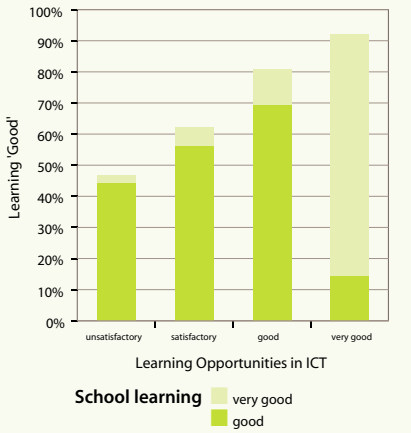
The presence of ICT learning opportunities is strongly related to good use of ICT in English, mathematics and science. This supports the view that in primary schools where the same teacher in the same classroom generally teaches ICT, English, mathematics and science, ICT capability is closely related to ICT use in subjects.

Where ICT is used well within the subject this is generally an indicator of good subject teaching, although there are obviously many schools where subject teaching is judged to be good, but ICT is not used. Good subject teaching seems to be essential for good use of ICT in that subject. Although the reverse is not essential, it makes it more likely.

There is a strong relationship between the use of ICT and subject results. 61% of schools in the sample with good use of ICT in mathematics are at or above national standards in mathematics, against 38% of schools with unsatisfactory use of ICT. English and science show a similar trend.

The use of ICT in any curriculum subject is associated with improvements in all core subjects. The more subjects ICT is used for, the better the results across all subjects.

ICT Learning Opportunities and KS2 Learning



Other positive outcomes

Pupils in schools with very good ICT resources are generally judged to have better attitudes and behaviour than those with poor or unsatisfactory ICT resources. The relationship is stronger if ICT learning opportunities are also considered.

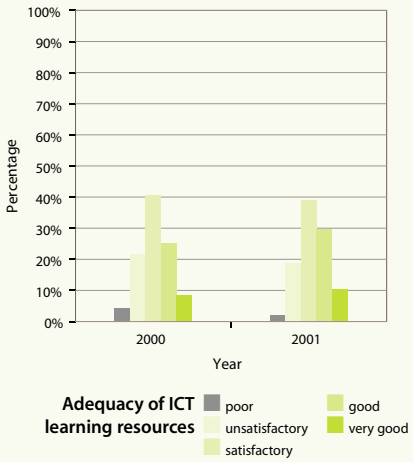
In schools with good ICT resources, the attitude of parents towards the school is generally judged to be better than those in schools with poor or unsatisfactory ICT resources. This relationship is again stronger if ICT learning opportunities are also considered.

While these findings suggest an association between good use of ICT in schools and the motivation of pupils and parents, they should be treated cautiously, as many other factors such as good leadership and good teaching can have an impact. Further research is needed to demonstrate that good ICT can help to develop good school ethos and home links, and vice versa.

Instances of good learning increase as ICT resources improve and likewise where the quality and range of learning opportunities increases.

There is a strong relationship between pupils' attainment, effort and independence in ICT and the quality of ICT resources, their strategic use and teachers' understanding of ICT. However, whereas achievement and effort improves year on year, the same trend is not seen for pupils' interest. This suggests that there is more work to be done in engaging those pupils who currently feel disenfranchised from ICT use. This work can further help to bridge the digital divide.

ICT Resource Grades



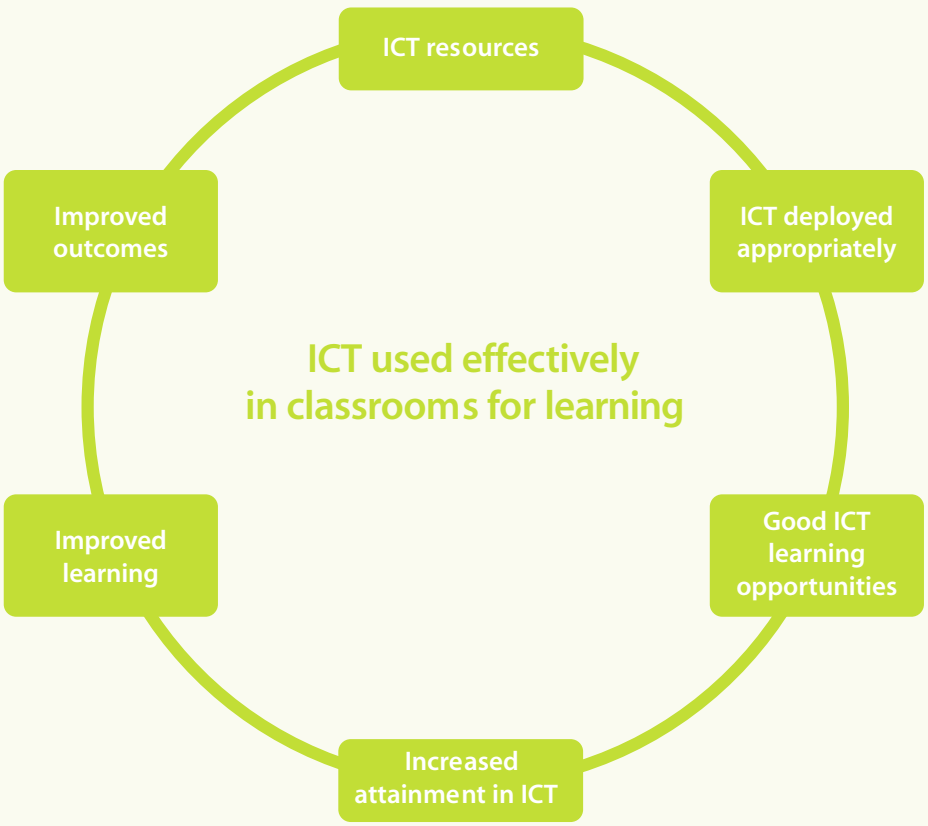
The variation between schools

The variation seen between schools in relation to ICT variables is large, and greater than for many general school factors. ICT resources continue to vary between schools, with more schools having good or very good resources than in previous years.

There is considerable variation in key stage attainment between individual schools in each band, and although this is least when ICT learning opportunities are very good, this is less noticeable than last year. This suggests that the combination of ICT resources, their strategic use, and ICT learning opportunities are equally important.

Grades for ICT leadership vary more than general school leadership, with fewer schools achieving high grades for ICT leadership. However there is a distinct improvement upon the previous report, with more schools scoring good or very good, and fewer schools scoring unsatisfactory or worse for their ICT leadership. A similar trend is shown when ICT teaching is compared to general teaching.

The differences between schools are large, which may reflect the variation in the quality of use of ICT as well as other factors. Although there are undoubtedly improvements in 2001, there is a continued need to improve the quality of ICT leadership, ICT teaching and ICT use in the classroom in order to reduce further these differences.



A developing model

Previous statistical analysis has outlined an exploratory model linking schools' ICT resources and educational standards. Using new Ofsted judgements, in particular the grade given for 'ICT learning opportunities', the analysis suggested that ICT resources best supported improvements in standards where they were used effectively in the classroom to support learning.

The report looks again at this exploratory model, and presents further analysis to demonstrate improved learning. As with previous reports, the analysis is based on statistical association and cannot prove causality, but it does give further credibility to the conclusion that the impact of ICT is crucially dependent on how it is used in the classroom.

Schools' readiness for ICT

Five factors are identified that are present in the development of good ICT learning opportunities in schools:

- ICT resourcing
- ICT leadership
- ICT teaching
- school leadership
- general teaching.

The analysis shows that each of these five 'ICT enablers' is necessary, but each is not sufficient by itself to provide good ICT learning opportunities. The presence of all five factors increases the possibility of good ICT learning opportunities. Pupils' access to good ICT learning opportunities is particularly dependent on the overall quality of a school's general teaching and general leadership.

The presence of good or very good ICT resources makes good learning opportunities more likely. Last year only 3% of primary schools that had unsatisfactory ICT resources provided good learning opportunities in ICT. This figure has risen to 23% in 2001. This suggests that some schools are working to provide good ICT learning opportunities for their pupils, despite low levels of ICT resources.

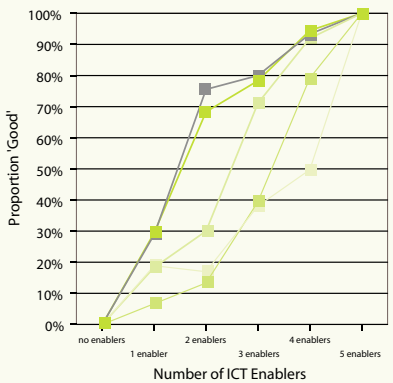
Schools with good or very good leadership are nearly twice as likely to have good ICT resources than those with poor or unsatisfactory leadership, and those with good leadership are almost three times as likely to provide good ICT learning opportunities than those with satisfactory leadership. Schools with good leadership and good ICT have better results than schools with good leadership and poor ICT.

Schools with good or better general teaching provide far more ICT learning opportunities than those schools where general teaching is satisfactory or worse. Schools judged by Ofsted to have good general teaching have teachers with a good understanding of ICT, but those judged to be satisfactory or worse do not. Schools with good teaching and good ICT resources generally achieve better results than schools with good teaching and unsatisfactory ICT. This suggests that most of the improvements in standards related to ICT resources are found in schools with good leadership and good teaching, although ICT leadership and ICT teaching also follow these trends.

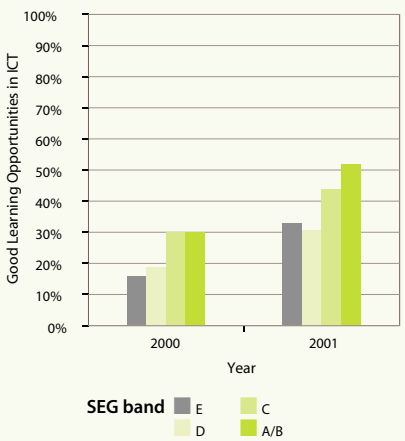
Analysis of the schools and the five ICT enablers shows that 17% of primary schools have all five in place. Schools with a high number of ICT enablers usually have good general leadership and good general teaching. Schools with good ICT teaching usually have good ICT leadership and schools with good ICT resources usually have all other factors in place. This confirms earlier findings, and supports the conclusion that ICT implementation follows a relatively logical progression.

There continues to be concern, however, for those schools that do not have the base levels of good leadership and teaching on which to build.

ICT Enablers



SEG and ICT Learning Opportunities



Socio-economic factors

There is no notable difference in ICT resources between schools in different socio-economic circumstances. In fact, in comparison to last year, less advantaged schools now appear to have slightly better resources than those more privileged, perhaps demonstrating the success of recent initiatives to bridge the 'digital divide'.

While schools in higher social grades continue to offer slightly better ICT learning opportunities than others, analysis for 2001 shows a marked improvement in ICT learning opportunities for all socio-economic circumstances, with opportunities more than doubling in those schools in low social grades.

Pupils' ICT attainment is generally independent of socio-economic circumstances, and likewise ICT attainment is generally independent of pupils' prior attainment.

Generally, there is a positive relationship between good ICT attainment and improved standards in English, mathematics, and science, with those schools in less favourable circumstances showing a slightly more pronounced trend.

www.becta.org.uk/research

Further information

A PDF of this summary, and PDFs of the report on which it is based, can be downloaded from the Becta research web site - as can supporting data in the form of tables of correlation between Ofsted grades and QCA attainment data.

The complete findings about the relationship between ICT resources and school standards, published as part of the DfES/Becta research and evaluation series, are also available from the research web site.

http://www.becta.org.uk/research/reports/ictresources.cfm

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