Information and Communications Technology in UK Schools

AN INDEPENDENT INQUIRY

CONTENTS

A NOTE TO THE READER

For those who would rather not plough their way through the whole document, we advise reading the purple pages at the back and the front. These contain a summary of the main arguments and conclusions and an action plan. The reader is also advised to read all parts of this report in conjunction with the companion McKinsey volume. This should help to illuminate the factual and analytical basis for the myriad of what may seem like sweeping generalisations! We have, throughout the text, identified the particular passages and exhibits in the McKinsey document that underlie the report, thus avoiding the inevitable overlap of subject matter between the two.

I OUR VISION

All those involved in education - primarily teachers but also parents and those administering it - have been beleaguered by changes and initiatives for initiatives' sake as they have never been beleaguered before. We have very great sympathy with the constant plea for stability, for consistency, and for support to enable teachers to do their jobs.

Why then another report containing a clarion call for changes and initiatives?

We have concluded that if the next government does not take steps to intensify the use of information and communications technology (ICT) in our schools, **a generation of children - and a generation of adults as teachers - will have been put at enormous disadvantage with consequences for the UK that will be difficult to reverse.**

What precisely do we seek?

- All young people - whether they have access to ICT at home or not - should be able to apply a basic confidence and competence in the use of ICT to all aspects of their learning experience.

- Teachers in turn should be so confident and competent in the use of ICT that they are able to use it in all aspects of their daily work.

And in the longer term

- We wish to see a society within ten years where ICT has permeated the entirety of education (as it will the rest of society) so that it is no longer a talking point but taken for granted - rather as electricity has come to be.

These are substantial objectives. To achieve them will require single minded vision, commitment and stamina from government. Benign neglect, one-off short-term initiatives and over-reliance on the market are likely to fail.

Which brings us to **how** these objectives can best be achieved:

- First, **they will happen only if government firmly commits towards ICT in education as one of a very small number of strategic initiatives.**

- Second, **we do not see any "quick fix" big idea or programme that will achieve these objectives.** It is emphatically not that simple. We envisage a coherently managed set of initiatives that if progressed in parallel will achieve the desired long term objectives.

1   We were established (see Appendix A) at the behest of Tony Blair and David Blunkett to examine the role that ICT should be playing in primary and secondary education. This was, in part, due to their recognition that the networking issues raised over the last two years (cabling and the National Grid for Learning), were only two of many issues that needed to be understood in the wider context of technology in education. Tony Blair and David Blunkett established us (see Appendix B for the relevant text) **independently** of the Labour Party, making it plain that the members of our group should be chosen for their skills and not for their political background.

Thus it has been! While we were established at the initiative of the leader of Her Majesty's Opposition our work concerns an issue which should be seen as non partisan. Although we hope that the recommendations in our report will be adopted by the Labour Party, the report is not a statement of Labour Party policy. **We hope that it will be of use to politicians of all persuasions and to all those with an interest in the education of young people.**

2   **The main aim** of our work has been to produce an objective analysis of the current usage of ICT in schools; and to suggest on the basis of this analysis a desirable set of priorities for Government after the next election.

Our objective has **not** been to produce a detailed blueprint. That would be pretentiously unrealistic in a field which is as technically complex as it is fast changing.

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3   **Our work** has been informed by two main inputs ....

-   We conducted an **evidence gathering exercise** having realised how many disparate views exist in this field many of which are in conflict. Appendix C sets out the **form** of our request for evidence. Appendix D lists **the main contributors**. Subject to any confidentiality request we are happy to share the evidence given to us.

    We wish to thank everyone who gave evidence. A huge amount of trouble was taken reflecting the degree of commitment there is to the development of ICT in schools.

-   The second input has been a comprehensive **analysis of ICT in schools carried out by a team from McKinsey & Co.**

    At the start of our work we discovered that the consulting company, McKinsey & Co, have a serious interest in the subject of ICT in schools following their work carried out by their American practice on behalf of President Clinton's NII Commission. In parallel with our work, they have carried out, at their own expense, an independent review of ICT in UK schools. We have been fortunate to have had continuous access to the McKinsey team carrying out this work as well as to debate the key issues with them.

    McKinsey, we must emphasise, bear no responsibility for the conclusions and recommendations in our report. We have, however, in our report, cross referenced our conclusions to the analysis in the McKinsey report and we recommend that the two volumes are read in parallel.

1   Two key conclusions dominate our recommendations.

- First, is that whether or not we are ahead of the world in our ICT in schools (likened in the main report to being in the lead after 500m of a marathon!), **the state of ICT in our schools is primitive and not improving**. Much of the hardware in schools is technologically behind the times. This is illustrated in the McKinsey analysis which identifies, for example, that nearly 50% of desktop computers in primary schools are over 5 years old[1]. Penetration across schools is also extremely variable. Whilst over 50% of secondary schools have a pupil to computer ratio of around 1:10, there are still a number of secondary schools and over 30% of primary schools where the ratio is more like 1:30[2]. The experience, skills and even attitudes of teachers vary widely[3]; very little software is directly related to the curriculum[4]; and the way ICT is used varies considerably[5].

- Second, therefore, we believe it to be a **national priority to increase the use of ICT in our schools**. Complacency could cause both Government, and the schools themselves, to fail to set in hand the necessary strategic planning.

This view is based partly on results emerging on both sides of the Atlantic showing the improvement brought about by ICT on post school careers, on school learning and, indeed, on school administration as well as the evidence of the sometimes startling help that it can bring to children with severe disabilities. It is also partly based, however, on our collective best judgment and on a common-sense act of faith - analogous, the report suggests, to realising in the aftermath of its invention that electricity would be applied across all aspects of society.

Our recommendation to **Central Government is that they must make the act of faith and encourage the education sector to start using technology rather than talking about it!**

More specifically ...

2 First and foremost, **Government must take the lead and proclaim it a priority to increase the use of ICT in schools. A Government that believes ICT is important should say so loud and clear.**

- This is less a matter of finding substantial extra resources (see below) and more a matter of ...

- Making it plain to the main national agencies and organisations in the education service (including the School Curriculum and Assessment Authority [SCAA], the Teacher Training Agency [TTA], the Office for Standards in Education [OFSTED], examination bodies, the National Council for Educational Technology [NCET], the Scottish Council for Educational Technology [SCET], etc and also the teacher associations, governors' organisations and the local authorities) that they need to co-operate in realising a strategy which is spelt out to all interested parties in a coherent way; and ...

Footnotes:
....

[1] *Exhibit 8* [2] *Exhibit 7* [3] *Exhibit 30* [4] *Exhibit 33* [5] *Exhibit 10*

- Encouraging every school to formulate, implement and report back on its own policies on ICT across the whole school, with support from local education authorities [LEAs] and the local community in general.

3 The nature of a Government strategy

There is no "instant fix" (ie. one large scale centrally driven initiative) - and in particular hardware proposals of the sort beloved by commentators and politicians alike are not the answer for reasons described below (which is just as well because in reality they are not instantly affordable by Government!).

A realistic Government strategy for ICT will consist of mainly small and low key initiatives which, if consistently sustained, will over a 5-10 year period lead to comprehensive progress all over the UK.

Thus ...

4 The main elements of a Government strategy should be:

First, announce that **addressing the issue of ICT is one their top priorities,** that a Government strategy exists and a departmental minister is appointed to drive it, that the national agencies in the education service are complying with it and that every school will be encouraged to formulate, implement and report back on its own ICT policy across the whole school.

Second, **formulate and launch a set of initiatives that will ensure that teachers in training and in schools have the support they need to use ICT effectively in schools.**

Several measures (all within the current system) could go some way to helping teachers achieve the necessary competencies, eg:

- **Both initial and in-service training** need to take fully into account the need for confidence and competence in the application of ICT in schools. For example, the 20 to 30 hours typically spent on ICT during initial teacher training courses at the moment is less than half the amount of time that teachers actually need to become truly proficient[1].

- Ways should be found of **making computers available to teachers to facilitate the learning process.** Teachers rapidly become enthusiastic once they have regular hands-on access to computers. It could also potentially reduce some of the costly training hours required[2].

- **An external network should be set up** so that teachers can learn from each other. It would, for example, allow teachers to exchange their views and experiences relating to different teaching approaches[3].

Footnotes:

[1] *"The Need to Train and Support Teachers"*   [2] *"Engaging Teachers"*   [3] *"New Opportunities - Computer Networks"*

-   **Advisors and inspectors should receive special training,** both so as to enable them to support teachers at a local and national level, and to secure a better national evaluation of schools' use of ICT. There is, as yet, no recognition in the OFSTED system for ICT proficiency[1].

A third priority for Government is to provide a **major stimulus to the development of educationally relevant software.** This is a lot easier said than done but is likely to involve:

-   Urgent attention given to ways in which **Government can "seed"/stimulate greater development of software by the UK software industry.** Some failures are inevitable but such an initiative is crucial to the development of packaged curriculum related software; this will in turn raise questions about the longevity of curricula, the levels of demand for packaged software from schools, etc.

-   **The teachers' network,** advocated above, should itself be a powerful stimulus to developing software. An educational Website on the Internet would not only allow teachers and others to swap ideas, but also create a "virtual marketplace" for software; a place where software could be freely available, advice could be found and the opportunity provided for teachers to adapt and contribute collectively to the development of software packages[2].

-   Setting up **a national award scheme and/or rating system**[3] to encourage the production of software in all educationally relevant categories, as well as examining other ways in which schools can be advised about software.

-   Finally, we suggest that bodies in receipt of Government or Lottery monies above a certain threshold that are capable of providing useful content on the Internet should be required to do so.

A fourth priority for Government is to find a way of **making the cost of usage of external networks by schools easily affordable and predictable;** this is a matter of negotiation between the Government and the telecommunications industry and may involve changes to the current regulatory framework. (The recent announcement from the cable industry that it will be offering special low tariffs to schools shows that there are good intentions in this vital area for ICT in schools, and it is to be hoped that the rest of the telecommunications industry will follow suit).

To give both symbolic and substantive meaning to the use of external networks...

Government should aim to give every teacher and every child over, say, nine his or her own e-mail identity.

Footnotes:

[1] *"Engaging Teachers"* [2] *"Improving Software Supply"* [3] *"Improving Software Supply"*

- This will be a straightforward and low cost initiative; it will, for the most part, consist of a small number of people centrally allocating, indexing and coordinating e-mail identities for every child on an ongoing basis.

- It will enrich the learning process considerably by motivating children to communicate with counterparts and experts all over the world and, from a purely practical point of view, make it easier for them to do so

  • giving them their own identity will make the communication process direct (ie. a one to one, rather than a "school" to one, relationship) and, therefore, much more appealing

  • individual identity will make it much easier for children to gain access to the e-mail facilities within the Internet wherever and whenever they are in proximity to the right hardware

Finally, we do not advocate Central Government ordering large amounts of hardware for schools.

- A sudden explosion of hardware at the moment would be counter-productive in view of the current state of skills and confidence among many teachers and the lack of relevant software available.

Much better ...

- To allow the growth in demand for hardware, both within the education system and within private homes, to go at its own momentum at a local level as Government establishes initiatives to solve the key bottle neck problems, ie. software and teacher support.

The fact that Central Government should not be putting its hand into its pocket to make massive equipment purchases should not divert its attention from a number of other ...

Hardware-related problems which it has a responsibility to solve.

- First and foremost Central Government needs to evolve a **strategy that takes account of the huge growth of computers in the home.** McKinsey analysis of industry estimates of manufacturers' shipments to the domestic markets, suggests that 22% of UK households have a home computer (excluding those bought before 1989) and their extrapolations show that this figure could well rise to 44% by the year 2000/1[1].

  • On the **plus** side Government needs to encourage the development of imaginative policies which use external networking to ensure that the growing population of home computers complements those in the schools.

Footnotes:

[1] *Exhibit 20*

- On the **minus** side Government - as its predecessors did before it on books - must address the hugely important topic of lack of access to ICT for the "have nots" (see the final paragraph under this point).

- Second, notwithstanding our view that it is wrong for Government to make major funds available for purchases of computers, it has the responsibility for ensuring that schools, that by their nature may be relatively ICT starved, are kept up to speed (in particular smaller schools and, more widely, primary schools which have a substantially lower per capita funding compared to secondary schools [1]).

On the issue of access raised above ...

Access for the substantial minority of children who, by the year 2000, will not have home computers is crucial. McKinsey analysis suggests that availability of computers in homes already exceeds availability in schools [2].Government, we recommend, must encourage local authorities to use their available resources to tackle this (we set out in chapter 4 a number of suggestions) as in times past society tackled lack of access to reading through public libraries.

5   On funding we have been told that an incoming Labour Government would look for **no** net increases in funding. It is not our job to make political judgments on trade offs between ICT and other budget heads whether within education or not. However, we do believe that **this is such an important issue, both educationally and for the long term prosperity of the UK, that the level of funding allocated must be whatever it takes to get it right. Our judgment is that developing students' competence in ICT is now an essential part of the nation's infrastructure and, in the national interest, Central Government cannot afford not to do it.**

In the current circumstances, the good news for Government is that we do not see the need for major changes in expenditure ....

- As explained above **we do not see it as desirable for Central Government to hypothecate significant expenditure on equipment.**

- **The initiatives we are suggesting in teacher support, software development and access are clearly capable of being implemented with budgets that are available** to a Government that has a serious intent to implement an ICT strategy in UK schools eg: via funding mechanisms such as GEST. This will be supported by an already increasing willingness at local level to spend more of the total budget allocated on ICT [3]. The theoretical models worked up by McKinsey demonstrate that there are realistic solutions [4].

- In addition there are other sources of funding and involvement that are consistent with the decentralised initiatives - including industry sponsorship, local fund raising initiatives, community activities ... not to mention the Lottery!

Footnotes:

[1] *Exhibit 4* [2] *Exhibit 36* [3] *Exhibit 4* [4] *Exhibits 47-54*

IV   OUR FULL REPORT

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1 On a point of **definition** we talk in this report of **ICT**, adding "communications" to the more familiar "information technology". This seems to us accurately to reflect **the increasing role of both information and communication technologies in all aspects of society**.

2 Few of us go about our lives in places which have not been profoundly changed by the ability of technology to use information more swiftly and more subtly; as well as by the ability to communicate that information in ways that would not have been thought possible five to ten years ago. Who could have predicted, for example, that:

- at the press of four digits on a machine in a wall, you would be able to find out the balance in your bank account, order a cheque book or take out cash from your account ... and be able to do this in most countries across the world

or

- that sitting at home in front of your computer you could not only re-design the layout of your garden but cut and paste every plant available, however exotic, into your new design and ask friends all over the world with similar interests what they think of it via the Internet.

There is also in society at large some feeling that "the machines are taking over." We do not share this view; but we strongly believe that students at school, and their teachers, need to be able to use and control ICT, and to have the sense that they can do so.

3 Given the pervasive influence of ICT on the rest of society it is hardly surprising that so much attention should have been given in recent times to the use of ICT in schools. While a great deal is happening:

- **ICT has yet to have as dramatic an effect on schools** as on most organisations[1].

- There is **huge variation** between schools in the application of ICT; many schools have yet to reach first base[2].

- There is already beginning to emerge a **gap between the haves and the have nots**[3].

- There is **great variety in experience, knowledge, skills and even attitudes among teachers**[4].

Footnotes:
....

[1] *"The Challenges and Opportunities"* [2] *Exhibit 7* [3] *Exhibit 36* [4] *Exhibit 30*

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4 ICT in schools works in different ways[1]. We suggest that in addressing its effects it is important to recognise that ICT may be used for a wide range of purposes:

- to **administer schools**

- to **train students in skills** which they will need in further education and ongoing learning throughout the rest of their lives and for their future jobs, eg. word processing, computer programming, etc

- to provide **access to information and communication outside the classroom walls,** eg. video conferencing with students in other countries, using the Internet, etc

- to support **teacher development**, eg. through external networks

- to support and potentially transform **the learning/teaching process** in many and diverse ways.

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Footnotes:

[1] *Exhibit 11*

We have paraded some of our prejudices, if not principles, in the statement of vision at the start! We should perhaps be a little more precise as to the basis of them.

1   Why do we believe in the benefits of ICT to education?

There is a legitimate question as to whether the cost/benefit case for investing money in ICT has yet been proved. On both sides of the Atlantic people are asking whether ICT in education is "another skate boarding fad?"

The somewhat "Luddite" argument is sometimes advanced that ICT is making available so much more information that it is "polluting" and confusing the world. Such arguments ignore the powerful ability of modern software to search and distinguish between different forms of information. Indeed one objective of increasing the use of ICT in our schools is to give students the ability to control information and the sense that they have this ability.

The perhaps more legitimate question is **how and to what extent ICT presently helps learning.** Evidence is now emerging on how ICT can improve learning. This evidence points to the conclusion that **ICT brings considerable benefits to bear on the learning process, albeit benefits with different weight in different situations.** It will be a very long time, however, before there is conclusive evidence to justify the substantial investment by the community at large that we believe to be necessary; and by the time this justification is achieved, almost certainly a generation or two will have lost out not to mention that the investment then required will be different!

In our view there is **no substitute for Government taking what we describe as a "common sense act of faith" view of the need to ensure a co-ordinated approach to the application of ICT in schools.** It would, after all, be remarkable if school education turned out to be the one area in society where effectiveness and productivity were not dramatically increased by the application of ICT! And there are a number of features of ICT that "a priori" make it particularly suitable for education:

- It combines and **integrates the full range of media through which successful learning takes place:** sound, vision, text and numeric data.

- It **provides teachers with opportunities and options** that they have never had before eg. combining class or part-class teaching with individual computer based teaching[1], distance learning, etc.

- **The one to one relationship between computer and student can retain student interest and involvement** to a degree much harder to sustain in whole class teaching! In addition, any failure in comprehension becomes a private matter between the student and the computer.

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Footnotes:
....

[1] *Exhibit 38*

It seems to us a matter of common sense that the educational process in our country will gain massively as a result of using ICT wisely. **If this proposition cannot be entirely proved, it has to be an act of faith. It is important that Government makes this act of faith and that we use technology rather than study it over the next decade.**

At the risk of sounding a little theological it is worth also addressing the question as to ...

2   What is the role of ICT?

We want to emphasise that ICT is in no sense a substitute for "traditional" learning and teaching. Nor is it a substitute for students using their minds and imaginations. The role of ICT is to **serve** education: in particular by helping students to learn more effectively and by helping **teachers** to do their professional job.

Attempts are sometimes made to suggest that ICT is in some way the property of a particular educational philosophy. We do not see it that way. The best analogue we have heard for ICT is the analogue with the invention of electricity. Electricity - once regarded as a strange, almost frightening wonder of the age - has come to serve almost every aspect of society. So also with ICT. **It should be used in the service of the curriculum, and made available to help teachers to manage the learning process, however that is defined by them.**

3   THE ROLE OF GOVERNMENT

1   Government has some limitations on its ability to take direct action in promoting ICT in schools:

- Decision taking on funding and equipment in schools within the UK education system is highly de-centralised[1] and ...

- Even if Central Government were minded to hypothecate dedicated resources to ICT, the reality is that the scope for any government of any political persuasion to do this is limited.

2   Does this mean that Government has little or no role? No! In a field which is fragmented and muddled, **Government has a key role in:**

- **Proclaiming and championing an ICT strategy, two crucial parts** of which are ...

- Making it a requirement for the **national agencies in the education service (e.g. OFSTED, SCAA, TTA, etc.) to help Government to achieve its strategy.**

- **Encouraging every school to formulate, implement and report back on its own policies on ICT across the whole school.**

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While ICT in schools has, in the last 24 months, begun to attract increasing political attention, the hard reality is that that has not translated into a serious policy, still less into spending commitments. We doubt, incidentally, whether this would have been much different whoever had been the Government of the day. It is essential, however, that after the next Election the then Government:

- Decides that it is of the utmost importance **that a major effort is made to improve the use of ICT** in schools and therefore ...

- Proclaims an **outline strategy** within which ...

- **The main national agencies are key players**

and

- That also inspires and enables **every school, every LEA, every organisation and individual involved in the profession to participate** in a coherent and productive way.

We also recommend that a **dedicated departmental minister** is appointed for at least the first two or three years to make sure that it happens.

Footnotes:

....

[1] *Exhibit 6*

3 The main components of such a Government strategy should be:

- Recognition that despite the many problems posed by the **hardware** issues (not least the funding of it, and the problem of access for the less well off both of which will be addressed later in this report), **they are less important** than ...

- The need for an **urgent re-evaluation of various means of supporting teachers** as well as ...

- The **urgent development of relevant software** and ...

- A concerted effort to make **usage of external networks** affordable and predictable for all schools.

The remainder of our report deals with each of these key issues in order before going on to cover:

- **Financing.**

4 Although we have suggested that it is inappropriate (and in practical terms unlikely) for Central Government to make major spending commitments to ICT in schools, there will, nonetheless be financial consequences for a Government that is seriously committed to promoting ICT in schools whether in a number of the measures that will be needed on teacher training, software development, networking or indeed on some of the interim funding required for equipment (see chapter 4, point 5).

1   First let us get one old misconception out of the way. **It is sometimes said that the UK is ahead** in the penetration of computers in schools internationally. Taking into account the long "tail" of obsolete or almost obsolete computers, and that figures are no reflection of how effectively a computer is used[1], **it is doubtful whether this is true.** However, the key point is that even if it were true, this is analogous to suggesting that a runner is ahead after 500m of a marathon!

It is an irrelevant and misleading claim. **We recommend that no hardware equipment over 5 years at the most be included in the count.** If nothing else, this will help remove any false sense of complacency.

2   To get the point where ICT becomes like electricity - "invisible" - will require substantial investment. For example, McKinsey's costing of a 5 year replacement programme based on a laboratory model (ie: 3 rooms of 22 PCs in each school) would equate in the steady state to approximately £65,000 per secondary school per annum ie. £80 per child[2].

3   Happily for Government, although as we discuss in point 5, there is likely to be a need for some increase in Government expenditure on hardware, this does not imply that there is an enormous up-front bill for the Government to foot:

- Most of these **costs will be - rightly - absorbed by spending decisions taken at the local level of the schools, the LEAs and indeed the home.**

- **Even if the money were available from Central Government to finance hardware at this scale, it would be an unwise investment** taking into account both the inconsistent nature of teacher experience and skills in relation to ICT and the lack of relevant software.

4   In addition, there are **some encouraging signs** on the funding of hardware.

- **Expenditure on ICT as a whole is increasing as a percentage of education expenditure**[3] as a result of mainly local decisions by schools and LEAs. Common sense suggests that this will continue. Looking at the year 1993/94 (the last year for which we have been able to discover figures), it would take an increase of only 25% over a 5 year period to reach 3.1% of educational expenditure in the primary/ secondary sector and so to get somewhere near the steady state expenditure required (on the basis of the less costly laboratory or "demi-classroom" model as set out in McKinsey's theoretical models in the final section of their document). These figures are comparable with the rate of increase that occurred in the years prior to 93/94.

Footnotes:
....

[1] *Exhibit 8*   [2] *Exhibits 47- 54*   [3] *Exhibit 4*

- If recent trends are anything to go by, **the relative cost of hardware components is likely to drop** significantly over the next few years or so. For example, memory prices have dropped by a factor of four over the last 12 months.

- However, the major new and encouraging factor that has emerged in recent years is the **huge private expenditure on ICT being made at home.**

The McKinsey analysis suggests that the current penetration of computers in the home is approximately 22% (excluding those bought before 1989, and devices such as games consoles). On this basis, the McKinsey extrapolations from expected shipments[1] suggest that by the year 2000/1, penetration of computers into homes could have risen to 44%. Alternatively, if growth followed the same patterns as for VCRs, the figures could be higher still at around 55%.

5 We have said that a mass Government purchase of hardware, even if it could be afforded, is not the "solution" to accelerating the use of ICT in schools over the next few years. This should not be taken as letting Government off the hook entirely for the provision of hardware!

- There will continue to be **small schools**, in particular, including many primary schools, which find it difficult to find the necessary funds for even one-off investments in ICT (be it hardware, software, technical support, etc.)

- And, of course, **as the software and teacher support log jams diminish, so the need for hardware will increase,** albeit we anticipate that it will be increasingly possible to finance this from the funds available to schools for non-teaching costs.

- There will always continue to be a **need for Central Government to stimulate and in some cases part-fund or match-fund ground breaking innovations.** One example of which we received evidence from a number of people is the idea of **specialist computer rooms kitted out with the latest and best equipment for children with particular interests and aptitudes.** These create a magnet around which:

  • Excellent - even extraordinary - attainment can be achieved;

  • Senior students can help to develop younger students;

  • There can be wider community access which extends well beyond the normal school day as well as making more creative use of existing school and community facilities; and

  • Increased levels of access can be created for children in households without computers (see third dash point under point 6 opposite).

Another example of a relatively small scale but worthwhile initiative would be the provision of **liquid crystal projectors** in classrooms which at a relatively low cost would enable every student in the classroom to see a computer screen.

We are not suggesting that Government takes on the full burden of funding of such experiments; in this example there is a clear role for other sources of funds; LEAs using earmarked funding mechanisms such as the Grant for Education Support and Training [GEST], industry or the Lottery. There may be a case for Government to give responsibility to an agency for stimulating and funding small scale initiatives for promoting ICT in schools (this may well be an area in which NCET/SCET are appropriate).

6 The challenges to Government on the hardware side, therefore, are:

- **To sort out the blockages that currently exist to the hardware being effectively used.** This will take a period of years by which time the increase in the percentage of educational budgets being spent on ICT taken together with the increase in private acquisition of computers will have gone some way to meeting the necessary costs.

- **To ensure that there is sufficient funding to make sure that schools, and small schools and primary schools in particular, can keep pace with developing technology.**

This leaves what in our view is a **key current and future problem:**

- **Access for children in disadvantaged households.**

  Government must address this key hardware problem. The same problem existed for many years over access to books; public libraries were the response. Over the next decade we hope to see local authorities - with appropriate Government stimulus and experimentation - initially experimenting and then developing ways of giving access to computers to those who do not have them at home. There is unlikely to be one exclusive way of doing it. The types of approach already being thought of include:

  • Investing more heavily in **computers in schools on the basis that they can remain open to the community after school hours and at weekends.**

  • **Loaning equipment to students** outside schools hours

  • Making **community access to computers available in public libraries** ...[1]

  • Setting up **dedicated cyber centres** ...[2]

Footnotes:

[1] *Exhibit 27* [2] *Exhibit 45*

- **Private/public liaisons with operators of what have become to be known as "cyber cafés"** with special access for schools

- **Mobile buses containing state of the art equipment**

None of this, however, will help very much unless we support the teaching profession more effectively in their endeavours to acquire and use the relevant skills (see Chapter 5).

7 **Two miscellaneous** issues have emerged in the evidence given to us on which we should give our views:

- The issue of standardisation.

- The issue of second hand computers.

8 **We are not persuaded of the need to impose standardisation** on schools[1].

In most instances, history suggests that standardisation is likely to impede rather than facilitate progress. New and possibly better technological solutions will continue to be developed - eg. smart TVs, networked PCs, intelligent phones, work stations, laptops, palmtops - and enforcing standard hardware in the education sector will prevent schools from taking advantage of these developments and, therefore, discourage manufacturers from developing them.

Furthermore, students need to be trained on equipment that exists in the world beyond education. In other words, hardware in schools should reflect what is used in the workplace and be similarly diverse.

Finally, standardisation will prevent the UK benefiting from being part of a global industry. With our own domestic standard, the education sector would be unable to take advantage of new developments elsewhere in the world as well as being unable to export our own developments outside the UK.

9 Providing schools with **second hand computers** is a siren concept, occasionally promoted by politicians, about which we are cautiously sceptical! We note that teachers tend to be wary of it. The general conclusion from our evidence is that **the age of the current stock of computers is already a difficult issue.** The operating principle should be that schools have the most up to date computers offering gains in reliability, ease of use, power, capability, capacity and overall credibility.

Footnotes:

[1] *"The Need to Modernise Computer Hardware"*

5   TEACHER SUPPORT

1   Only the brave trespass on the subject of the teaching profession without acknowledging:

- First - and most fundamental **- the crucial importance of teachers in ICT.** It is a sad contemporary reality that teachers are under respected and under revered. We do not make that mistake. **If we wish to ensure that our children and our country reap the benefits of ICT we must cherish our teachers and do everything we can to help them to take it on board.**

- Second, if ever there is an example of the risk of "death by a thousand initiatives" it is teacher training! It is difficult to blame and easy to sympathise with the consistently critical - and exhausted! - feedback we have received about the number of knee jerk changes made to teacher training. **Changes should be made to the training of teachers to encourage the use of ICT only if Government has a genuine and clearly stated belief about the huge importance of ICT.**

2   The objective should be for all teachers to have competence in ICT and to be confident in its use. To bring this about, action is needed on teacher training, both initial and in service, along with other supporting measures.

3   One general theme that dominated virtually all feedback on this subject was **the need for teachers to have regular access to ICT in a hands-on way.** We state this **before** listing what perhaps will be a rather obvious menu of actions that a Government can take. We do this to underline the crucial point that improving formal training courses, while important, is only part of the answer.

4   This important caveat aside, the key areas in which Government should produce detailed plans premised on precise targets are:

- Nothing more and nothing less is needed than for the Government of the day to put this at such a priority that **all teachers have a basic ICT grounding as part of their initial teacher training and that among the criteria for successful completion of an initial training course should be appropriate levels of competence in the use of ICT.** Until and unless Government insists on this it is difficult to see how the TTA - beleaguered by requests on all sides - can sensibly respond.

  Assuming some automatic ICT training for all teachers, this will ensure that after 10 years, approximately 55% of teachers have a basic training in ICT on the basis that the current size of the profession and the average turnover rate of 8% remains steady. This, however, does not achieve a sufficiently far reaching transformation. To it will need to be added ...

- **In service training**

  In service training is the key to improving skills and confidence in the use of ICT within the teacher force. To repeat, **training on the job in a way that will enable teachers to become competent in and receptive to ICT is critical.** An incoming Government must cause the TTA to devise a programme which will ensure that this is done for all teachers as a matter of urgency.

  In addition, there are other initiatives which can support teachers to train "on the job", namely ...

- **Getting computers into the hands of teachers.**

  Where teachers have access to a computer of their own, they rapidly become competent and above all confident at using it.[1] Any time spent at home with a computer is invaluable in staff development terms. We suggest that Government should contemplate some form of income tax allowance regulation to allow full tax breaks for teacher ownership.

  Ensuring that an increasing number of teachers have access to a computer at home will also help mitigate the problem of how teachers can find the non contact time to prepare for contact teaching.

- **Setting up an external network**

  A network using dedicated Web sites on the Internet where teachers can exchange, improve and swap ideas about software will contribute dramatically, at minimal cost, to increasing teachers' confidence, as well as skills, in using ICT to teach.[2]

  In our view a network of this kind will be an essential element in teachers' continuous professional development. We therefore endorse the proposal recently flagged up by Tony Blair for what he called a National Grid for Learning. This has many applications. As more teachers become ICT literate and enthusiastic, the effect of a relatively modest investment on the part of Central Government in providing the means for them to exchange their own software, improve it and exchange it again will be enormous.

We put as a "footnote" to this section a suggestion made to us by several people, namely

23

Footnotes:

[1] *"Engaging Teachers"*   [2] *"Improving Software Supply"*

- **Training of school advisors and inspectors**

In order for bodies, such as OFSTED, to carry out their functions effectively, they too need to be properly trained in ICT. All advisors to and inspectors of the education service need to be equipped to recognise and appreciate effective use of ICT in schools. It will cost little to ensure that a far greater critical and potentially creative facility is built into the inspection system. This will not only benefit the schools: in addition, well-informed reporting by OFSTED will be essential information to Government about the progress of its strategy.

5 Finally, we should draw attention to a constant underlying theme of much of the evidence and feedback we have received; namely that **the time is right for an independent review of the examination system in the light of the changes in ICT.** Such an independent review should examine inter alia how word processing skills, so valued by employers, can be used in examinations and tests; and how the possibilities of ICT can be harnessed for more effective assessment. It should also tackle head on some of the very tricky problems of veracity and originality posed by students being able to reproduce and change their own and others' work.

1   It has been widely documented that the software base in the UK is very fragmented[1]. Suffice to observe that it is difficult to find any dedicated software back-up for our main examinations in the UK or indeed for most of the curriculum[2].

There are no easy answers to this - or at least none that have come to us!   There are two responses which over time will help solve the problem.

2   First and foremost is **the need to set up a way for teachers to swap software/know-how/experiences.** We have suggested in chapter 5, point 4, above how this might be done. Enabling teachers to exchange, build and improve their own software is probably the single most potent tool available to Government, and the most effective stimulus to the development of educationally satisfactory software.

3   The second route is by **stimulating the supply side of the industry to produce more packaged software.**

The UK has a long history of software development for learning and a long, albeit fragmented, history of central and local support for that development[3].   Our domestic learning software industry is less significant in global market share than it once was although, as is clear from our successful games industry[4] (with its equally long history), we are not short of talent.

Increasingly the National Curriculum has steered our use of software in schools away from curriculum-specific customer-developed applications towards the "office" applications: word processing, databases, spreadsheets etc.   This is generally accepted as progress in a useful direction. The pragmatic adoption of "office" software, however, is not enough. For example, all teachers wish to give formative advice and need the opportunity for examining students' drafts of creative work to do this. Generic "office" software offers poor opportunities for such drafting and thus for formative advice and assessments.

However, the history of software development suggests that exploring new possibilities is commercially risky and unattractive to the market although new ideas once proven can be readily adopted.   There is a role for Government in supporting innovative software research and development which reflects and supports recognisable models of learning.

This is less easy than it sounds. It is beyond the scope of this inquiry to look at it in detail but we suggest the Government should. In principle there is an argument for Government finding seed money to motivate individual software developers to produce curriculum related software. However to do this of course raises the question of:

Footnotes:

[1] *Exhibit 32* [2] *Exhibit 33* [3] *"History of IT in UK Schools"* [4] *"Fragmented Software Supply"*

- The **stability** of the National Curriculum. It also raises the questions of....

- Whether Government should take initiatives (eg. software vouchers - government subsidised vouchers, redeemable only against the purchase of recognised educationally effective software products) to **stimulate demand from schools**

- How the issue of **protecting intellectual property** can best be resolved.

Assuming Government success in stimulating a greater supply of software, we see a need for some "guide" to help schools identify good, bad and indifferent. This will not be straightforward; but one way in which this could be done would be by setting up some form of...

4   National Award Scheme.

There is considerable doubt in the minds of parents and teachers alike when purchasing software. There is lack of vocabulary to describe it, few trustworthy measures of excellence and uncertainty about of the different ways that software can support learning.

Although it seems a small contribution **we propose an independent and high profile awards ceremony, building on already developing practice in this area but with a rich variety of categories.** In this way we hope both to flag excellence (while persuading developers to strive for it) and to introduce a vocabulary to everyone concerned. In the way that film awards currently nominate "best supporting actress" or "best screenplay", we suggest that awards might be made for "best primary age reference CD", "best use of sound" or "best support for group activity" and in this way cement categories and a vocabulary that teachers and parents will find useful. The Government would need to consider in detail how such an award scheme might best be established and staffed. We would hope that it would become the tradition that a senior Minister should present the awards.

In addition, educationally relevant software packages could receive an endorsement that they meet particular educational standards ie. similar to the "kite marking" system employed for safety standards. The standards could be set to include the criteria laid down in the National Curriculum.

5   Provision of Content

We believe it important that as the contribution that Internet content can make to education increases, so it is important that the content on Internet reflects our own culture. In the US, NASA makes its base research resources widely available; its remit and funding require it. **Many UK organisations are in receipt of public funding: we recommend that in the future receipt of public funds above a certain level would carry a requirement to publish material and make it freely available for UK education purposes on the Internet.** This might be started as soon as practicable, for example, with all lottery allocations in excess of £250,000, and progress to encompass the galleries, museums, research institutes, theatres and all other recipients of public or lottery funding.

1   We start from the presumption that **a strategy for ICT in education must include access for teachers and students to the Internet. It will allow them to access information and to communicate in a way that has never before been possible.**

Access to the World Wide Web and the e-mail facility via the Internet will, for example, enable students to

- access the range of software and educational content becoming available on dedicated web sites[1].

- communicate with their counterparts in other countries and with outside experts, eg. academics in further education, people in business and industry, etc[2].

- make contributions to the content on the Internet themselves and have an audience, both worldwide and within the local community, for their work.

and with the rising numbers of computers in the home

- **enable students** to access the same set of educational resources, whether from school, home or a library[3] and, thereby, be able to continue a project at home, rather than just to play computer games

- **enable teachers** to communicate with one another using a dedicated Web site on the Internet which in addition to allowing them to exchange teaching ideas and continuously to learn and obtain support from one another outside the classroom will, at the same time,

  • improve teachers' skills and confidence

and in the longer term

  • help develop software/education content.

2   This initiative will work most effectively if each teacher and child, say from age 9, in the UK is given their own e-mail identity

- this will make the process of communication (eg. a request for information from an expert) much more direct and, therefore, appealing

- it will give each person the ability to access the Internet wherever and whenever

Footnotes:
....

[1] *Exhibit 13*   [2] *Exhibit 24*   [3] *Exhibit 27*

We recommend that, as a first step, **no school student should pass into secondary education without being allocated a unique e-mail identity.** Work will be needed on naming conventions; and as the initial (inevitable) problems are resolved, it will be urgent that this extends into the junior school sector too.

Nothing could more clearly illustrate that each and every child in our school system has a role to play and a contribution to make to the information age. The cost of establishing or buying the equipment and financing the relatively small number of people to make this possible will be de minimis when set against the huge benefit of doing it.

3 The problem with external Internet access at the moment is that **the costs of use, even for the least highly specified option, are prohibitive** [1].

A lot has been written and said about the need for the telecommunications industry to find a way of reducing the costs of usage. We have talked to most of the industry and we understand well the position of Government and the regulators. Our view is simply stated:

- **It should be a high priority for any Government to make usage of the Internet affordable and predictable for schools**

- **It is clearly possible to negotiate an agreement with the telecommunications industry to achieve this** albeit it may be necessary to make some changes in the regulatory regime, as has happened in the US [2].

The recent announcements by the cable industry to launch deals which offer schools low fixed charges for unlimited access to the Internet are a major step in the right direction.

4 The concern that students might be able to access **unsuitable material on the Internet,** such as pornography, is worth further consideration at central Government level. However, in practice, teachers and/or parents have been able to identify and implement their own solutions.

Footnotes:

[1] *Exhibit 36* [2] *"Tackling Network Costs"*

1 We were briefed by Tony Blair that we should work on the assumption that any expenditure had to be funded out of existing expenditure votes.

2 To repeat what was said in the introduction to this report, we have not produced a blueprint; and so we have not costed this report as a blueprint.

3 However, alongside our previously stated opinion that whatever funding is necessary should be allocated, some general observations are worth making.

- Assuming that Government solve the problem of making the cost of usage affordable and predictable ...

- The main "repeater" cost will be the replacement of old equipment.

- As we have explained in chapter 4, however this is unlikely to pose a major problem for Government.

  - In the short run it is doubtful whether the kind of major step jump in purchase of equipment speculated about by both parties would be of benefit since **there is unlikely to be sufficient levels of teaching expertise or software backup to justify it:** much better that there should be an aggregation of small cumulative steps.

  - In the longer term, as Government initiatives start resolving the current log jams imposed mainly by lack of software and teachers with the appropriate skills and confidence, **so we anticipate a greater willingness to spend the funds at the school and LEA level both by increasing the percentage of total expenditure on ICT as is already happening** [1] **and also by using dedicated funding mechanisms such as GEST.**

This should not obscure the reality that ...

4 A number of the other measures we have discussed (e.g. increased teacher training, the establishment of an external network for teachers, stimulus to software development etc.) will have costs. We have not produced a detailed budget because that is not our purpose, but we are clear that a Government with a clear commitment to this area could finance them without major reallocation of funds.

Footnotes:

....

[1] *Exhibit 4*

V ACTION PLAN

1 THE ROLE OF GOVERNMENT

The Government must launch a long term strategy to increase effective usage of ICT in schools.

Specifically:

- **make a firm commitment to ICT**, publicly champion it and proclaim it to be a priority

- **construct a strategy**

- appoint a **dedicated departmental minister**

- **make national agencies key players** in this strategy: they need to sign up to the Government strategy and report to Government on what steps they take to implement it

- encourage every school to formulate, implement and report back on its own **policies on ICT** across the whole school

- **inspire and enable every organisation** and individual involved in the profession **to participate** in a coherent and productive way

- **sustain and give coherence** to the many initiatives required to achieve the long term objective

2 TEACHER SUPPORT

The overall aim should be radically to improve and accelerate the skills, experience and confidence of teachers so that they can use ICT to facilitate learning.

Specifically:

- set up a **dedicated external network using Web sites on the Internet** (the National Grid for Learning) and **give all teachers their own e-mail identity**

- find ways **to make available computers to teachers to facilitate the learning process**, eg. some form of income tax allowance regulation to allow full tax breaks for teacher ownership

- ensure that certain levels of ICT competence **in initial teacher training are a requirement**

- devise a programme to ensure that **training in ICT is continued in service as a matter of routine**

- ensure that **advisors and inspectors in the education service are trained to appropriate levels** of competency in ICT

- conduct **an independent review of the examination system** in the light of the educational benefits which will be brought about by ICT

3   SOFTWARE

The overall aim should be to stimulate the development of software to ensure that there is a sufficient level of educationally effective material for use in schools.

Specifically:

- **establish a network using a Web site on the Internet** on which teachers can exchange, improve and swap software ideas (ie. the National Grid for Learning)

- develop ways in which Government can **"seed"/stimulate greater development of software by the UK software industry,** (taking the stability of the National Curriculum into account), **eg. by the establishment of a software voucher system**

- set up **a national award scheme** and a kite marking system to encourage the production of software in all educationally relevant categories and provide means of developing an objective "guide" to help schools identify good, bad and indifferent software

- Government and Lottery bodies should set a grant threshold over which it will be **mandatory for organisations capable of providing useful content on the Internet to do so**

4   EXTERNAL NETWORKS

The overall aim should be to ensure that all children, over a certain age, and all teachers have access to the World Wide Web and the e-mail facility via the Internet.

Specifically:

- **make the cost of usage of the Internet by schools easily affordable and predictable** by negotiating with the telecommunications industry with a view to re-constructing the current regulatory framework

- **give every child from, say, the age of nine and every teacher their own e-mail identity**

5 HARDWARE

Although hardware comes lower on the list of priorities, the overall aim should be to ensure that an appropriate level of hardware, and therefore access, is available to all children, as the more pressing issues of software and teacher training are resolved:

Specifically:

- **sort out the blockages** that currently exist to the hardware being effectively used

- **make sure that no hardware equipment over 5 years old is included in any official counts** to avoid a false sense of complacency

- **support small schools in particular and many primary schools,** which will find it difficult to find the necessary funds for even one-off investments in ICT (be it hardware, software, technical support etc.)

- **set up a small initiatives funding agency** to encourage small scale but worthwhile interim initiatives such as liquid crystal projectors in classrooms

- **stimulate and in some cases part-fund or match-fund ground breaking experiments,** eg specialist computer rooms kitted out with the latest and best equipment for students with particular interests and aptitudes

- ensure that external networking is devised in such a way that the **growing number of computers in the home complement those in schools.**

- address the problem of **access for children from disadvantaged families.** Over the next decade we hope to see local authorities - with appropriate Government stimulus and experimentation - initially experimenting and then developing ways of giving access to computers to those who do not have them, eg.

    • **investing more heavily in computers in schools** on the basis that they can remain open to the community after school hours and at weekends.

    • **loaning equipment to students outside school hours** eg. low cost portable equipment such as palmtops

    • making **community access available via computers in public libraries**

    • **private/public liaisons with operators of what have become to be known as "cyber cafés"** with perhaps special access for schools

    • **mobile buses** containing state of the art equipment

6 FUNDING

The overall aim on funding should be to allocate the necessary funds to enable this initiative to succeed.

Specifically:

- **to allocate whatever it takes to get it right**

  although, in fact, it should not be a problem to meet the budgetary requirements of the initiatives we are suggesting related to

  - **teacher training**

  - **software development**

  - **external networks**

- **take the necessary steps to encourage other sources of funding** and involvement that are consistent with the decentralised initiatives, eg.

  - including industry sponsorship

  - local fund-raising initiatives

  - community activities

... not to mention

  - the Lottery!

- to decide how and on what basis **supplementary central funding** should be made available to support certain initiatives, eg. earmarked funding mechanisms such as GEST.

APPENDIX A: The Commission and its work

1   Our brief has been to advise Tony Blair and David Blunkett on the key priorities and directions the next Government should take in developing the use of ICT in primary and secondary schools. Please note:

- They did not ask us to produce a blue print and we have not done so; that should be done by the Government in power.

- They asked us to work **independently** of the Labour Party and that the members of the commission should be chosen for their relevant skills and not their political affiliations.

2   The Commission's membership has been:

- **Dennis Stevenson**, Chairman GPA plc & Chairman Elect Pearson Group

- **Dr Iain Anderson**, Director, Unilever

- **Nicholas Berwin**, Director, Deutsche Morgan Grenfell

- **Professor Stephen Heppell**, Head of Ultralab, Anglia Polytechnic University

- **Nicholas Summers**, recently retired from the DFEE

- **Christine Whatford**, Director of Education, London Borough of Hammersmith & Fulham.

- **Dr David Winkley**, Headteacher, Grove Primary School, Birmingham

3   Advisors aside from the invaluable work done by the **McKinsey team** (see below) the team has had as a key adviser, **Josh Hillman**, of the IPPR; we are immensely grateful both to him and the IPPR for releasing him. Although he has not been a formal adviser, we would like to acknowledge the assistance given to us by **Bill Freyenfeld**, Immediate Past Chairman of the Real Time Club, who has been particularly helpful in giving us the benefit of his own parallel work in this area. Our work has been managed very ably by **Clare Crean** of SRU Ltd.

4   Our work has had two main sources of knowledge and stimulation.

- A six month study by a **McKinsey** team working "pro bono" carrying out an independent analysis of the state of ICT in schools.

- The results from an extensive **evidence gathering exercise** with evidence received from over a hundred interested parties.

APPENDIX B: Extract from a speech given by Tony Blair announcing the establishment of the Independent Inquiry on the 1st May 1996.

EXPERT PANEL ON NEW TECHNOLOGY

I am determined that in government we do not make false and costly moves. But I am also determined that we do not suffer such delays that our vision turns out to be a mirage. That is why I can announce today that in Opposition, we are making plans to ensure that we are able to proceed in government with efficient speed.

Last year, I approached Dennis Stevenson, a leading businessman and Chairman of the Trustees of the Tate Gallery, to ask his advice about how we could realise the vision I set out at Labour Party conference. He has made a thorough analysis of the issue and has suggested that the subject needs to be addressed via a thorough appraisal by independent experts in related fields, brought together to establish a strategy for action. I am therefore pleased to announce therefore that David Blunkett and I are establishing, under Dennis Stevenson's chairmanship, an expert panel of teachers, business people, financiers and educationalists to report to us on the options for development of our vision. The job of the panel will not be to second guess what will in the end be work of civil servants. It would be foolish to ask them to produce a blueprint - not least because of the rate of change of this technology.

Instead, I have asked them to summarise the current situation (both good and bad); to look objectively at the benefits; to identify what they see as the main technological choices and how we should approach them; to look at the consequences for the curriculum, teacher training and school organisation; and finally to look at how this can be funded using public-private partnership.

The panel will work independent of the party, and its members have been chosen for the particular expertise and experience they bring to the task, not for party affiliation: what counts is their potential to make a major contribution to the lives and education of many millions of young children in the future.

Dennis Stevenson is currently assembling the group to work with him. He brings a sharp and independent mind to all problems and he will provide excellent leadership for this important project. The Panel will include key thinkers and practitioners from education, industry and finance. They will be working through the summer to produce their report. Their work will put us in a position to get straight to work if we are elected to form a Government.

Any initiative of this kind must of course be rooted in the wealth of good practice that already exists. Every school I go into has a good idea, a different way of doing things, an innovative approach, and I am determined that a Labour government builds on the good that exists, and ensures that it is widely spread. We need to set a vision, and then see it through over time.

Education in Britain needs a new partnership based on high expectations and support for success. This conference is part of that process. So is the new expert panel on the new technology in the classroom. What government can bring to this process is vision, commitment, leadership, as well as resources. I look forward to working with you closely in the future to ensure that all our children get an education which prepares them for the next century and not the last.

APPENDIX C: Request for evidence

INDEPENDENT INQUIRY IN TO THE USE OF IT IN SCHOOLS

From: Dennis Stevenson, CBE

22 July 1996

78-80 St John Street, London EC1M 4HR
Telephone: 0171 250 1131 Fax: 0171 250 1952
E-Mail: dennis@sru.co.uk

I am writing to ask you to submit written evidence to the independent inquiry that I am chairing into the use of IT in schools.

The inquiry was set up at the suggestion of Tony Blair earlier this year. You will see from the enclosed extract from his speech that it has been set up independently of the Labour Party with the objective of ensuring that IT is introduced in to schools in the UK in the best possible way irrespective of the politics of the day.

We are writing to a number of key individuals and organisations in the hope that they will provide us with their views. We will also have the benefit of an independent report being carried out for us by the management consulting firm, McKinsey & Co.

We are anxious to make the process of submitting evidence as easy as possible. I enclose a suggested structure for your reply. However, please respond as best suits you and; do leave gaps, use bullet points, note form or any other style, send back as hard copy or on the internet (E-mail clare@sru.co.uk).

Please call us with any queries (initially to Clare Crawshay-Williams who is co-ordinating the work on 0171 250 1131). If humanly possible, we hope to receive all evidence by the end of August. However, please let us know if you face problems with the deadline.

I do hope you will be able to contribute your views. This is an area of huge long term significance and your contribution will be very much appreciated.

With best wishes

Yours sincerely

Dennis Stevenson

KEY ISSUES

Note: Please treat the following headings as indicative. You may well have other formats you want to follow or other issues you want to add.

1 What is your experience/understanding of the current state of play of IT in schools and the role played by computers in the home? What is your perception of the key impediments and facilitators to further developments?

Here we are looking for **general** perceptions. We are also looking for:

- As much **factual** feedback as you are able to supply on any subject (be it numbers per pupil, costs, usage, training etc.).

- We are also looking for **hard examples** of best practice, typical problems, etc.

2 Why is IT, in terms of all its potential purposes, a good thing in schools? What are the real benefits at different stages of school education? What are the illusions about it? And, if relevant, what are the dangers or downsides?

Again we are looking for **general** observations. We are also looking for the differences between different applications of IT. And we are particularly interested in:

- Hard **examples of successful application**.

- General views as to how to **measure success**.

3 What are the best ways of achieving IT in schools in terms of the systems, software and hardware? If that question is too simpliste (which it almost certainly is!), what are the real choices?

As well as general observations, we are also particularly interested in:

- Computer infrastructure.

  (a) Platform choices.

  (b) Home vs classroom.

- Network infrastructure.

- Software.

   (a) Role of software.

   (b) On going support for applications.

And if and how any these should be standardised in some way and by whom?

4 What are the implications for teaching staff?

Here again we are looking for perceptions of **current reality**; as well as suggestions/ prescriptions for:

- What should be done to accelerate (what sort of) **training** of teachers and encourage implementation and development over the longer term.

- What should the relationship be between teacher, children and software?

- Over what sort of **timescale?** etc.

5 What are the funding implications?

We need to come to views as to the **costs** (over defined periods of time) of different options. Any help towards this will be gratefully received!

Separately from that we are open to all thoughts as to **how the funding could be arranged.** Is it just a matter of increasing or reallocating existing schools' budgets? Are there effective "partnerships" between private and public? Do you know of/have any partnership of this kind?

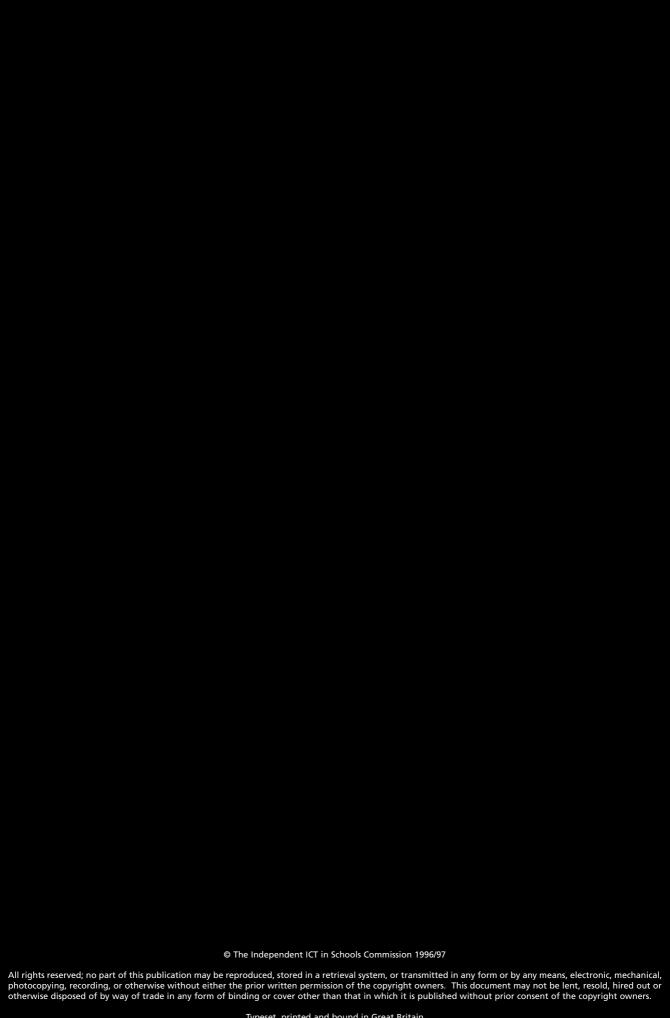## 6 What should be the role of Government, national and local?

Reading some commentators/politicians one gets the impression that, if Central Government gathers up its courage, decides what to do and increases its budgets, it will "solve" the problem. In practice what is/should the decision making process be? What is going to be the balance between central/local? Should standards and systems be uniform across the country or to what degree should they be flexible?

APPENDIX D: List of contributors

Author	Capacity	Organisation on which behalf the response has been made
Gerard Macdonald	Independent Consultant	
Jon Bates	Lecturer/Journalist/Author in Music Technology	
Keith Yeomans	Independent Consultant	
Andrew Sutherland	Assistant Headteacher	Aboyne Academy
Neville A Brown	Member & Chairman	Association of Grant Maintained and Aided Schools Governing Body of The Hedley Walter High School
Dominic Savage	Chief Executive	BESA (British Educational Suppliers Association)
Frank Flynn	Head of Commissioning, Schools & Colleges	British Broadcasting Corporation
Ian West	Director - Digital & Business Development	British Sky Broadcasting Ltd
Roger Broadie	Director	Broadie Associates Ltd
Phil Moore	Manager	BT Campusworld
Bob Frost	Chief Executive	Cable Communications Association
Simon Fuller	Education Director	Channel Four Learning
Sailesh P Mehta	Governor	Chiswick Community School & Grove Park Primary School
Professor John Self		Computer Based Learning Unit, University of Leeds
David Parry	Chief Executive	Computers for Learning Ltd
Neil Morley	Computer Development Manager	Corporation of London
Carol Goulden	Director, Development Programmes	CRAC (The Career Research and Advisory Centre Limited)
Geoff Mulgan Rod Paley Tom Bentley	Director Research Associate Researcher	Demos
Dr Phil Wild	Head of Department	Department of Education, Loughborough University
Professor Richard A Pring Mike Summers	Director Tutor for IT	Department of Educational Studies, University of Oxford
Don Passey	Senior Research Fellow	Department of Psychology, Lancaster University
John Kell	UK Engineering Manager	Digital Equipment Co. Ltd
George Marsh	Headmaster	Dulwich College Preparatory School
Matthew McDonnell		Edexcel Foundation (Incorporates BTEC and London Examinations)
Irene Critchley		Edge Hill University College
Tim Brighouse	Chief Education Officer	Education Department, Birmingham City Council
Mike Collett		Education Online
John Davies	Director	Educational Publishers Council, The Publishers Association
Donald Smith	Senior Account Manager	El Camino Resources Ltd
Sir David Puttnam	Chairman	Enigma Productions Limited
J Rice	IT Co-ordinator	Epworth County Primary School
Jonathan Chapple	Chairman	Equanet Limited
Professor D J Wood	Director	ESRC Centre for Research in Development, Instruction and Training, University of Nottingham
Eluned Morgan	MEP Mid & West Wales	European Parliament
Tony Attwood	Director	First and Best in Education Ltd
Stephen Brice	Scheme Co-ordinator	Free Computers for Education
Roger Witts	Head of Communications	Funding Agency for Schools (FAS)
Andy Smyth		Gloucester Grove Primary School
Adrian Pritchard	Managing Director	The Grant Maintained Schools Centre

Author	Capacity	Organisation on which behalf the response has been made
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Information and Communications Technology in UK Schools

AN INDEPENDENT INQUIRY

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