

Using ICT in the Early Years

Parents and Practitioners in Partnership



Alex Morgan and John Siraj-Blatchford

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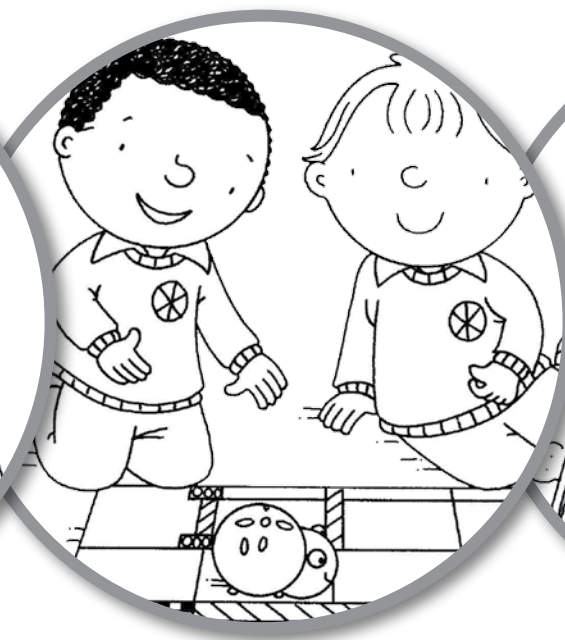
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Introduction

This book provides guidance and illustrations of good practice to support all those working with young children (teachers, nursery nurses, childminders and other early years educators), and their families, in applying a range of Information and Communications Technologies (ICTs) to support early learning. The text is organised in terms of the main technologies that have been found effective, and an index and technical glossary are provided to support its ongoing use as a source of reference. The aim of this publication is to support parents and professionals working together in the application of ICT in early childhood and this particular approach has been adopted for two reasons. Most importantly, the approach acknowledges the growing efforts being made by parents to provide for children's early learning with ICT in the home. It also recognises the major contribution that can be made to early childhood education by early years settings in their application of appropriate ICTs within their settings, and through their partnership with parents and families.

The growth and effects of ICT use in the home

The number and the range of ICTs that have been introduced into the home has massively increased in recent years and a significant proportion of this new technology has been purchased specifically for use by young children. Industry sources suggest that the total global market for educational toys was \$2.1 billion in 2006 and this is expected to grow to \$7.3 billion by 2011¹. In both the UK and the USA, computer software aimed at the youngest children also constitutes the fastest growing segment of the overall youth software market². These market growth statistics have run counter to many other industrial trends, with the growth being maintained despite a global economic recession. In part, this may be explained, and considered a reflection of the fact that parental aspirations for their children have been rising. This has been a trend identified in national surveys. Parents have higher educational expectations for their children, and one way in which they have been concerned to support their children's early learning has been through ICT. Young children are therefore gaining

access to more ICT. But not all observers have seen this as a positive development.

A case against ICT in early childhood has been made in terms of the perceived risks to children's physical, cognitive and emotional and social development. Critics refer to possible repetitive strain injuries, a lack of exercise and risk of obesity, decreased creativity, impaired language and literacy, and poor concentration, social isolation, decreased motivation, and depression³. Yet the market statistics suggest that these arguments have had little influence on many parents and a number of studies have also shown that ICT, when used responsibly, can actually support children's learning by offering children opportunities for more active learning of a wide range of skills, knowledge and competencies. Studies have



shown benefits in the areas of fine motor skills, language and communication, emergent literacy and reading readiness, mathematical thinking, creativity, problem solving, self-esteem and self-confidence, cooperation, motivation, and positive attitudes towards learning.

Throughout the UK greater emphasis has been placed on the importance of the outdoor learning environment for young children and this is sometimes presented as compensation for 'toxic' influences upon early childhood that include ICT. It is even suggested at times that ICT and outdoor play may in some fundamental sense be logically inconsistent. Yet such a case could only really be argued if one were to first assume that all ICTs were associated with desktop computers. This is demonstrably not the case. As adults we interact with a wide range of ICTs outdoors, and many of these may be applied for educational purposes. Laptop computers have rechargeable batteries and may even have wireless internet connections. The use of satellite navigation and global positioning systems (GPS) have become commonplace in recent years. Metal detectors, traffic lights and mobile telephones provide additional examples of ICTs that have been applied effectively in a range of preschool settings. There is a good deal of scope for the integration of ICT in young children's outdoor play environments. In fact, ICT is as much part of children's world (indoors and outdoors) as literacy and numeracy, or indeed any other feature of the complex worlds in which we live and struggle to make sense of.

ICT in Outdoor Play

On a visit to a Forest School in the South West of England, an enthusiastic environmental studies educator was extolling the benefits of the children learning in the outdoor environment. ICT was presented as a negative influence upon the children that had to be explicitly countered by involving them in more outdoor activities. At just that point a child came up to the educator to show them a particularly glossy dark green leaf that they had found. The educator admired the child's find, and suggested she look for some more so that she could take them back to the classroom and "make a mobile". To this the child's eyes lit up and she immediately put the leaf to her ear and said; "Hello Mum....". Later the children were showing off the 'dens' that they had improvised using sticks and undergrowth. Several children referred to the ICT features that they had incorporated into their play dens as 'doorbells', 'the TV' and 'video recorders' and so on. This case shows that, even when you deny children all access to ICT in the teaching and learning environment, they will still bring ICTs along with them in their fantasy play. Our choice as educators is not whether we are to



include or to exclude ICT in early childhood education. Children will learn all sorts of things about ICT without our influence. The only choice that we have is whether we are to provide a critical ICT education or not. It makes no sense to pretend it isn't an influence on children, we can either leave children to learn about ICT uncritically from other sources, or we can accept the challenge of ICT and make the most of the opportunities that it offers.

Whilst there is some evidence of a relationship between the excessive and sedentary computer use of some older children, and their health problems related to inactivity, parents are generally reporting that children are leading active, well-balanced lives in which physical activity is not displaced by the use of ICT. Indeed, recent research on the role of ICT in children's lives indicates that parents are generally supportive of children's use of technology and that there is little evidence to suggest that it is detrimental to interactions in educational settings or to family life⁴.

Yet special caution should be taken in early childhood when children are at their most vulnerable, and in the absence of any large-scale studies relating the use of desktop computers to specific health indicators in young children⁵, it makes sense to look at the evidence related to the use of any similar ICT in making any final judgements. Important lessons may be learnt from

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considering the research that has been conducted concerning television viewing. In the early days of television similar fears were expressed over its potentially harmful influence on children, and similar claims were also made for its powerful educational potential.

Research conducted in the past decade does provide evidence of television viewing impacting negatively upon many children's cognitive and academic achievement. The American Academy of Paediatrics recommends a maximum of one to two screen hours per child per day including television and video with less for pre-schoolers. Studies have found that children who watch television for less than one hour per day are more likely to obtain post-school qualifications including university degrees. A major study of 1,278 children at age one and three years found that 10% had attention problems at age seven. These children were watching an average of 2.2 hours of television per day at age one, and 3.6 hours at age three⁶. Another study of 8,400 seven-year-olds, carried out by Glasgow University suggested that three-year old children who watch television for more than eight hours a week, are at greater risk of being obese by the age of 7 and of remaining fat for the rest of their lives⁷. There are also studies that show the negative effects upon children

of their parent's excessive television viewing. However, research also shows that some television programs that have been specifically developed for young children have positive effects. It also shows that where parents take a special interest in children's television, and they watch programmes together, children tend to watch less television, and they gain more from the experience. Specific television programmes have also been found to be effective in providing family support.

The key lesson to be learnt from the case of television is that where there have been problems they have not been the result of the media or the technology itself, but the way in which it is sometimes misapplied. Young children sometimes view inappropriate programmes after the nine o'clock watershed, and/or have access to inappropriate video material. These are potential problems that parents (and children) should be aware of, and that professional educators and advocates for young children have a responsibility to address as well. In doing so we shouldn't forget that ICTs, including television, can (and often are) applied for positive ends, and that they provide significant support for children's early learning.

What the example of television highlights is the importance of all of those who work with young children being aware of the potential risks, and for them to learn how to make the most of the technology available to support children's early learning with and about ICT.

There are already studies that have investigated the use of computers by young children that suggest similar patterns of misuse in a minority of cases. Research shows that children from disadvantaged families are more likely to use computers at an early age, but that this use is often restricted to games software which provides minimal learning opportunities⁸. At times the software may also be unsuitable. As the recently completed Byron Review⁹ suggests, young children are particularly vulnerable in terms of content that is violent, frightening, sexual or highly emotional. Where the use of ICTs are regarded as a social activity and exposure to unsuitable content (on or off-line) can be monitored, avoided or discussed, then its learning potential may be maximised. A number of studies have found that the children of middle-class families tend to use home computers more often for educational purposes. However, the degree of ICT competence children acquire in the home clearly depends on a number of factors including: access to hardware, the support available for learning how to use the ICT, and the particular interests and aptitudes of older family members¹⁰.

At the end of the day, the increased use of ICTs in the home may be considered a threat or a challenge. But

Role play

ICT in a wide range of contexts

ICT may be considered relevant to early education for two quite different reasons:

1. For the purposes of technology education
2. Its application in supporting children's learning across the curriculum.

Policies often emphasise the importance of ICT being applied to support children's learning across the curriculum, yet references are also frequently made to ICT being applied in a wider range of contexts wherever its use may be employed to demonstrate a common application of technology in the adult world (i.e. providing technology education). In role play it is often, but never entirely, technology education that is being prioritised. To take the example of the 'At The Vets' activity cited below, the children are able to apply the ICT to learn about the use of ICT in medical diagnosis (e.g. in creating an X-Ray) and also in accounting (making up the customer's bill). But in the process they also learn about some of the science applied in veterinary practice, about the use of numbers in accounting and about mark-making in their record keeping.

Young children learn effectively not when they are merely told, but when they can shape their environment and construct knowledge for themselves through playful activity. Vygotsky highlighted this when he wrote that *'in play the child is always behaving beyond his age, above his usual everyday behaviour; in play he is, as it were, a head above himself.'*¹²⁹ But there are different kinds of play. Generally, children under the age of three engage in exploratory play. They observe, smell, taste, prod, taste, touch, push and pull whatever they encounter in order to learn about their world. We can enrich and extend this play through sustained shared thinking (see page 8). From the age of three to seven years of age children's play moves beyond exploration, and efforts to know and understand become much more than sensory experiences. As children acquire the ability to playfully represent their experiences in a variety of ways and to

symbolise the understandings that they have built through exploratory play they engage in role play, and begin to develop narratives for imaginary events. Through this pretend/fantasy play, children extend and develop their understandings of their world. Role play is an imitation of reality in which children create play "themes" and act them out by participating in various roles. By doing so, they are able to imitate the material world and relationships through symbolic representation. Children select physical objects (e.g. leaves, sticks, balls, baskets, blocks etc), which act as symbols for something else they have experienced directly or indirectly (e.g. babies, pushchairs, swords, boats). For example, children may pretend that a stick is a mobile phone, or that they are Spiderman fighting all the bad guys. Role play is a time of non-literal, symbolic behaviour that merges the child's imagination with the real world.



Props to support the use of ICT in role play

Programmable toys provide a particularly useful illustration of 'programming' with the added benefit in terms of gender equality that in many households the adult with the most sophisticated understanding of the complex programmes that are involved are women. In many settings children have created realistic washing machines, microwaves etc. out of junk materials with the support of their teacher and then used these in their classroom role play. We have seen a wide range of props being applied in early years role play contexts, sometimes recycled equipment such as old telephones, visual displays and computer keyboards are incorporated in these 'pretend' technological devices to make them look even more realistic.

Pre-school educators have long recognised that role play, just like any other dramatic improvisation, may be encouraged through the provision of props. Pre-schools therefore include a 'home corner' where scaled-down household furniture and appliances support the children's play at being Mummies, Daddies, as well as babies, pets and many other characters from the home environment. In a similar way ICT education may be supported through the inclusion of ICT props such as 'point of sale' cash registers and bar code scanners, pretend (or working) telephones and computer equipment. Often the props can be made in collaboration with the children developing a play area for a particular topic such as 'At the Vets', 'Going to the Dentist', 'A Travel Agency' or a 'Supermarket' etc. Role projects of this kind are often supported by visits to the appropriate veterinary surgery, travel agents or supermarket and from visits from the professionals working in these contexts visiting the pre-school to talk to the children about their work. DVD Video resources are now available from companies such as Early Vision (reference below) who specialise in supporting the development of role play in pre-schools. In their *Travel Agents Role Play Resource* video, customers are shown discussing countries to visit, dates and durations, distance and different forms of transport. The customers book holidays to the Caribbean and Eurodisney, they collect travel tickets and obtain foreign currency. The CD handbook includes role play guidance, writing frames, roles and resources, still photographs, signs, notices, key vocabulary and an EYFS planning sheet. In another example, the 'Going to the Dentist' sequence of their *Ourselves* role play resources, Early Vision provide a video that shows a reassuring visit by a child to the dentist for an examination. The 'handbook

Software to support role-play

In one reception class the *At The Vets Semerec* CD Package was used to support role play in the role play area. Most of the control involves the use of the mouse, but the child also uses the keyboard for typing his or her name and the name of the pet. The child chooses the type of animal, which could be wild or from a farm, and they select the medicine and equipment they need to treat the animal. This activity runs for eight to ten minutes, which is a short enough period of time to keep children focused and interested. The child can also print off an invoice for the treatment, gaining more skills and ICT knowledge as they use the printer.

It was found that the children kept their roles, and were willing to take turns. Each child enjoyed being the vet or veterinary nurse, being the person bringing their pet to the vets and also being the receptionist. The children learnt to put a bandage on, give an injection and give medication to the pet. They enjoyed trying to write their pet's name and also enjoyed copying their own name from their name card. There was a good deal of language being used and all of the children that enjoyed the application, they were all happy and often very excited.

The children were very engaged in the activity, for example, a typical response when clicking on the stethoscope was for a child to share their observation saying: 'The hearts going bom, bom', and when clicking on the key to open the medicine cupboard one child said, 'Mum has a key for her cupboard so we don't touch' ... 'the dog needs to take one tablet'. Then, clicking on the medicine: 'it needs to be taken with his dinner' ... 'yes he likes that, he has licked his lips'.

The teacher reported upon the children's learning associated with their knowledge and understanding of the world, their physical development as they improve their mouse control, their mathematical learning as they used language such as more or less, longer or shorter and also counted out equipment or medication required. The application also encouraged the children to be sympathetic and caring towards animals and to collaborate with each other in the activities.

disc' provides a planning support document that can be used to identify other areas of learning that are relevant to the Ourselves topic and also a folder which contains Dentist Photographs, Signs and Notices (to add realism to the play area) and a document providing images that illustrate the sort of role-play the children might be doing.