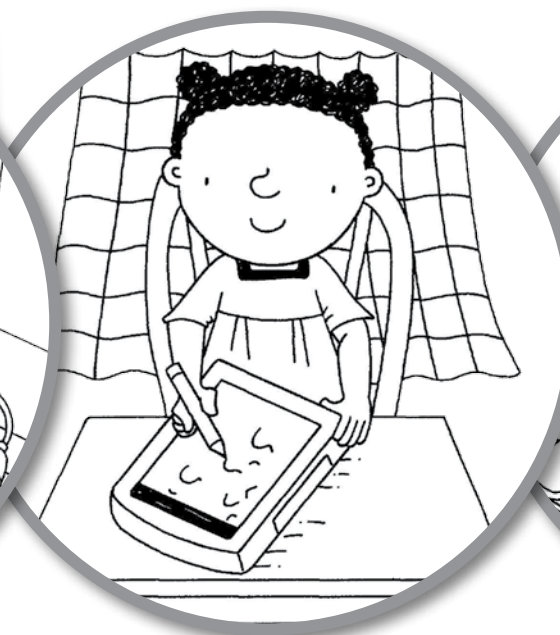


Using ICT in the Early Years

Parents and practitioners in partnership

Revised
and updated



by Alex Morgan and John Siraj-Blatchford

| | | | |
|--|-----------|---|-----------|
| Introduction | 4 | Simulations | 25 |
| The growth and effects of ICT use in the home | 4 | Exploring the Duck Builder software together | 26 |
| ICT in outdoor play | 4 | Of particular relevance at home | 27 |
| Maximising the learning potential of ICT in early childhood | 7 | Imaging movies and graphics | 28 |
| Creativity, communication and collaboration | 7 | Digital cameras | 28 |
| Dialogue and sustained shared thinking | 8 | Producing moving images | 28 |
| Role play | 12 | Recording and discussing a role play | 29 |
| Props to support the use of ICT in role play | 13 | Using the digital camera | 29 |
| Of particular relevance at home | 15 | Using a webcam without an Internet connection | 29 |
| Using ICT in the home environment | 17 | Paint programmes | 30 |
| ICT capability | 17 | Sharing observations and assessment with parents: e-portfolios | 31 |
| The home learning environment | 19 | Of particular relevance at home | 31 |
| Parents and practitioners in partnership | 20 | Resources | 32 |
| The curriculum contexts of England, Wales, Scotland and Northern Ireland | 22 | Programmable toys | 33 |
| Adventure and simulation games | 24 | Role play with the programmable toy | 34 |
| Adventure games | 24 | Using a programmable toy for purposeful recording (Boogie Bee-Bots) | 35 |

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 was originally written to support a Randomised Controlled Trial of a complex intervention – using ICT to support adult-child interactions in the home learning environment (HLE) with children aged 3-4 years over a one-year period which aimed to improve their cognitive and linguistic outcomes. Findings indicate the intervention had a significant effect on children's phonological awareness and early numerical concepts. This provides clear evidence to support the idea that when ICT tools are used specifically to support, develop and extend adult-child interactions there may be cognitive and linguistic benefits for young children.

This second edition has been improved by what has been learnt from the project through feedback from parents and practitioners and analysis of adult-child interactions with ICT. It has also been extended to include more examples of sustained shared thinking with ICT and also novel concepts and ideas. The concepts of dialogic reading and print referencing also have a robust research base and the potential to further enhance the learning experiences pre-school children have in the HLE with ICT.

The sections are organised in terms of rationale, including a programme of practical activities, an index and technical glossary that 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



Role play

Role play provides powerful contexts for sustained shared thinking with, or without, ICT. 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.'*²⁰

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 world²¹.



Using ICT in the home environment

ICT capability

A growing consensus has developed in recent years that it is the development of ICT capability, rather than ICT skills, that should be the central focus of ICT in education in the early years and beyond. ICT skills are routines, techniques and processes such as knowing how to use the mouse, clicking on the correct icon to save work, learning how to view a digital image on the screen. ICT capability is considered the ability to utilise ICT independently, appropriately and creatively and to understand ICT in its social context. The notion of ICT capability therefore implies an ability to act in future situations and involves learning about its potential for use. We know that confidence gained from playing with ICT will support the development of ICT capability in more formal contexts as the child gets older. Yet children's ability to develop ICT capability via playful activity has often ignored or suppressed in school classrooms rather than supported and respected²². One of the most useful summaries of ICT capability²³ identifies five key components:

- **Routines** – how to use a graphics tablet or a touchscreen can be learned. It is impossible to achieve a high level of ICT capability without this content knowledge and most young children master these skills very quickly. Such skills are however of no value at all unless the child has a purpose in mind.
- **Techniques** – inserting a photo into a document. The majority of interfaces and navigation techniques for different applications are similar, which aids transfer of learning.
- **Processes** – where techniques are combined e.g. to produce a greetings card or a poster
- **Key concepts** – including the basic terminology/ shared vocabulary that enables children to communicate effectively and understand what is required of them.
- **Higher order skills and knowledge** – where children clearly exhibit an understanding of what they are

doing. They select appropriate equipment, routines, techniques and processes to obtain a desired outcome. This is developed through exploratory play with ICT where children have the opportunity to reflect on past experiences. Higher order skills are demonstrated when young children:

- Decide when it is appropriate to use a particular ICT for a specific purpose
- Plan what routines, techniques and processes are to be used
- Work independently to solve problems
- Evaluate their use of ICT and the outcome of an activity
- Explain and justify their choices and approaches
- Reflect on their learning and how things could be approached differently next time.

The first three of these routines, techniques and processes can be learned indirectly, through trial-and-error, via interaction with an adult or through a combination of all of these. The successful development of the final two key components require that adults support children's learning with technology by engaging in episodes of sustained shared thinking.

There are additional evidence-based strategies that might usefully complement the use of SST with young children to support their emergent literacy development. Emergent literacy can be understood as the time prior to conventional reading and writing. It encompasses the range of knowledge, skills, experiences and attitudes which children need to be exposed to and develop as pre-cursors to conventional literacy²⁴. As an example, young children tend to understand functions of print (that print carries meaning) before later starting to recognise letters and words.

One well-tested strategy is print referencing²⁵ which is a technique shown to increase:

Interactive Whiteboards (IWBs) and touchscreens

Despite some controversy, Interactive Whiteboards (IWBs) or SMART Boards, are increasingly seen in early childhood educational settings. An IWB is a large display board onto which the computer image is projected, this image can be controlled by touching the surface of the board with a pen or finger. It is therefore possible to write or draw on the surface, and to print the image off or save it electronically. Any computer image can also be annotated, or drawn over with the annotations, additions or amendments saved.

IWB have been identified by some practitioners as a useful pedagogic tool as they exhibit features which promote:

1. Interactivity (they can be used to support active learning rather than any passive reception of information)
2. Collaborative whole class teaching (due to their size)
3. Accessibility (especially for young children and individuals with a visual or physical impairment)
4. Recordability (storing information for re-use and further analysis).

Advocates of IWB technology have suggested that IWBs open up whole new ways of using ICT to support teaching and learning. It is not clear, however, whether this means that there is a change in pedagogical approach as a result of using IWBs, or that tasks within established teaching approaches are technically better supported. The current popularity of IWB technology may in part be due to the well-documented success of whole class plenary sessions associated with the literacy and numeracy initiatives.

Critics of the IWBs question the usefulness of these in early years classrooms and highlight the health and safety problems of encouraging young children to stand in front of a potentially damaging beam. They also point out that similar facilities can be provided at a lower cost using



alternative hardware configurations such as a tablet PC and wireless projector, or by large touch screens.

While there is currently little hard research evidence available to confirm it, many practitioners suggest that touch screens and tablets encourage children's (and especially boys) mark making. Children's mark making is undoubtedly important and should be encouraged wherever possible. When children first realise that marks can be used symbolically to carry meaning, in a similar way to the spoken word, they begin to use marks as tools to make their thinking visible. As they develop their mark making capability, these marks will also support the