

# Using ICT in the Early Years

Parents and Educators in Partnership



Alex Morgan and John Siraj-Blatchford

**Sample pages**

# Contents

## **Introduction 4**

The growth and effects of ICT use in the home 4

ICT in outdoor play 5

Maximising the learning potential of ICTs in early childhood 7

The home learning environment 7

Creativity, communication and collaboration 8

Dialogue and sustained shared thinking 9

Enriched language environments 11

Parents and educators in partnership 11

The specific contribution that can be made by preschools 12

## **Role play 15**

ICT in a wide range of contexts 15

Props to support the use of ICT in role play 16

Software to support role-play 16

Using metal detectors in a treasure hunt 18

Of particular relevance at home 19

Resources 20

## **Developing ICT capability in the early years 21**

ICT capability 21

Vicarious learning 21

Of particular relevance at home 23

Handy hints and tips 23

Resources 23

## **Adventure and simulation games 24**

Adventure games 24

Simulations 25

Of particular relevance at home 27

Handy hints and tips 27

Resources 27

## **Images, movies and graphics 28**

Digital cameras 28

Producing moving images 20

Recording and discussing a role play 30

Using the digital camera 29

Using a webcam without an internet connection 31

Paint programs 30

Sharing observations and assessment with parents: e-portfolios 31

Of particular relevance at home 32

Resources 32

Handy hints and tips 32

## **Programmable toys 33**

Role play with the programmable toy 34

Using a programmable toy for purposeful recording (Boogie Bee-Bots) 35

Of particular relevance at home 36

Human robots 36

Handy hints and tips 36

Resources 36

## **IWBs and touchscreens 37**

Using the features of IWB software to reflect on an activity 39

Of particular relevance at home 39

Handy hints and tips 40

Resources 40

## **Appendices 41**

A: ICT policies 41

B: Health and safety 41

C: Internet safety 42

D: The digital divide 43

## **Glossary 45**

## **Notes 46**

## **Further reading 47**

## **Index 48**

# Introduction

---

This book provides guidance and illustrations of good practice to support all those working with young children (teachers 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 book aims 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 the application of appropriate ICTs within early years settings, and through partnerships with parents and families.

## The growth and effects of ICT use in the home

The number and 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 2011.<sup>1</sup> 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 market.<sup>2</sup>

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 supported 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, 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, as well as poor concentration, social isolation, decreased motivation, and depression.<sup>3</sup> 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, early literacy, mathematical thinking, creativity, problem solving, self-esteem and self-confidence, cooperation, motivation, and positive attitudes towards learning.

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 on 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 we 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 can be applied for educational purposes. Laptop computers have rechargeable batteries and may have wireless internet connections. The use of satellite navigation and global positioning systems 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 worlds (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 one preschool, an enthusiastic environmental studies educator was extolling the benefits of the children learning in the outdoor environment. ICT was presented as a negative influence on the children, one which 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 she had found. The educator



admired the child's find, and suggested she look for some more so that she could take them back and 'make a mobile'. At 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' they had improvised using sticks and undergrowth. Several of the children referred to the ICT features they had incorporated into their play dens as 'the TV', 'doorbells', '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 exclude ICT in early childhood education. Children will learn all sorts of things about ICT without our influence. The only choice 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.

While 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 life.<sup>4</sup>

## Related research

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 children,<sup>5</sup> 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 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 on 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 preschoolers. 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 1278 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 three.<sup>6</sup> Another study of 8400 seven-year-olds, carried out by Glasgow University suggested that 3-year old children who watch television for more than

eight hours a week, are at greater risk of being obese by the age of seven and of remaining fat for the rest of their lives.<sup>7</sup>

There are also studies that show the negative effects on children of their parents' 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 programs together, children tend to watch less television, and they gain more from the experience. Specific television programs 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 programs 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 be (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 opportunities.<sup>8</sup> At times the software may also be unsuitable. As the recently completed Byron Review suggests, young children are particularly vulnerable in terms of content that is violent, frightening, sexual or highly emotional.<sup>9</sup> Where the use of ICTs is regarded as a social activity and exposure to unsuitable content (on or offline) 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 members.<sup>10</sup>

At the end of the day, the increased use of ICTs in the home may be considered a threat or a challenge. But whatever our thoughts on ICT are, we should recognise that ICTs aren't going to go away. ICT has significant potential to support learning, and it is essential that all of those concerned for young children's futures work together to make the most of its potential.

## Maximising the learning potential of ICTs in early childhood

The quality of software currently available for early childhood education is extremely varied, and much of it has been subjected to sustained criticism from those engaged in developing good practice. Most early years software has been developed with the built-in assumption that the child will individually interact with the technology on their own. Yet, as we will show throughout this book, there are also many examples of software that may be applied to encourage adult-child and child-child communication, collaboration and creativity.<sup>11</sup> There are adventure games and simulations that have been developed for

older children to use on their own that we have found both stimulating and highly motivating for younger children when used with adult support. There is also software available that has been developed for use by early years educators working with children that allows children to create and make changes in images and text, and in the sound effects of their media products and stories.

The approach we are taking throughout the book is also grounded in four firmly established and evidence-based principles of good practice in early childhood education, and in this general introduction we will consider each in turn:

1. Enriched home learning environments (HLEs) in early childhood have been found to significantly contribute towards long-term educational achievement. Research has shown this to be true even where children are otherwise disadvantaged due to poverty, limited parental education, lack of income or unemployment.
2. Developmentally appropriate software has been found to support creativity, communication and collaboration in the early years.
3. Enhanced interaction, dialogue and 'sustained shared thinking' in early childhood have been identified as strongly associated with children's learning and development in the home and in preschool settings.
4. Young children have been shown to benefit significantly from enriched language environments.

## The home learning environment

The Effective Provision of Pre-School Education (EPPE) study<sup>12</sup> has followed 3000 children since 1999 and it has shown that children with a positive home learning environment (HLE) do better in the early years and throughout their primary school. While the effect of background characteristics – such as family income and maternal