



Engaging Early Years Foundation Stage children in computer-based play

A guide for practitioners

Amy Stancer

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About the author

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Thanks are due to Stephanie Douglas, Head of Service, and Zoe Menday, Project Manager, Lincolnshire Birth to Five Service.

to the Lincolnshire Birth to Five Team

The **Birth to Five Service** Team monitors, challenges, supports and provides training to settings within Lincolnshire which cater for children from birth to age five. This includes support for schools, pre-schools, nurseries, children's centres, day care settings and registered childminders.

The main aim of the Birth to Five Service is to ensure that all Early Years settings have access to efficient and effective support in order to deliver the 'Every Child Matters' agenda and the 'Early Years Foundation Stage Framework', and make a real difference for young children throughout Lincolnshire. Since September 2007, the Birth to Five Service has been managed by **CfBT Education Trust**, working in partnership with **Lincolnshire County Council**.

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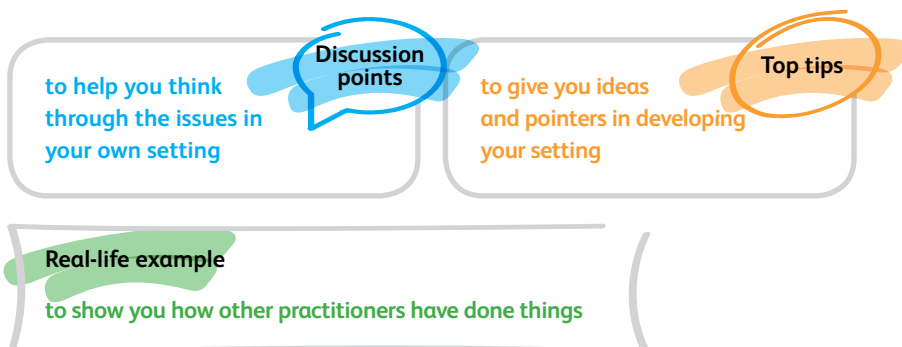
About this book

This book is based on research

This book is based on a research project funded by CfBT Education Trust's Evidence for Education research programme. The '**Integrating ICT within play-based curricula in the Early Years**' research project was conducted by Justine Howard from Swansea University and Gareth Miles from the University of Glamorgan in November 2010. The research aimed to establish if children's perceptions of playfulness affected their involvement in computer activities and therefore their potential for development. The project explored the different ways that computers are used in Early Years classrooms and the characteristics that children consider playful. The sample size was 12 classes (3–7 year olds) in South Wales. Teacher interviews established the provision set up and a day's observation of the provision considered how this engaged children's involvement. Altogether 103 children rated how 'play-like' the organisation of the provision was. This included access, equipment, adult involvement and whether the children worked alone, in pairs, small groups or large groups. The classes observed used computers and whiteboards for continuous, enhanced and focused learning. The classes ranged from using single computers, mini-suites (several computers arranged together) and larger computer suites.

You can use this book as a guide

The findings of the research have been translated by the Lincolnshire Birth to Five Team into a resource that practitioners can use in their everyday work. As well as references to research evidence, the resource contains:



At the back of the book there is a set of appendices, which give precise guidance on how to set up the desktop screen and create customised web shortcuts. The appendices also contain a list of useful software and websites.

Children see the majority of computer and whiteboard use as **playful**

The Statutory Framework for the Early Years Foundation Stage (EYFS) outlines that, by the end of the Foundation Stage, most children should be able to:

Find out about and identify the uses of everyday technology and use information and communication technology and programmable toys to support their learning.

(EYFS, 2008)

The research found: The use of games and websites was considered to be a lot like play, as were drawing, painting, colouring and musical activities. Less like play were writing and typing.

To ensure children are enabled to enjoy the highest quality provision, practitioners should: understand children's early experiences with computers; ensure ICT is developmentally appropriate; involve children in writing and typing activities when developmentally appropriate and support purposeful communication.

Understand children's early experiences with computers

Play and exploration within the EYFS is supported through a sound understanding of child development, recognising each child as an individual and building positive relationships with parents. The provision for playful use of computers sits comfortably within these themes of the EYFS.

Understand development through early experiences

Morgan and Siraj-Blatchford recommend that '*ICT capability rather than ICT skills should be the central focus of education in the early years and beyond.*' (*Using ICT in the Early Years*, 2010) This is moving beyond developing the skills such as mouse control, into independently understanding how to apply ICT appropriately and creatively. This is mirrored by the Early Years Foundation Stage Guidance, which defines children's goals through their ability to:

- **Complete a simple program on a computer**
- **Use a mouse and keyboard to interact with age-appropriate software**
- **Use ICT and programmable toys to support their learning.**

As technology develops rapidly, the need to 'use a mouse and keyboard' may develop, and practitioners may already be considering the inclusion of touch-screen technologies, such as whiteboards, graphics tablets and touch-screen monitors.

Discussion points

- Does your setting investigate the ICT children have access to in the home and use this to support transition into the setting?
- Is information about the applications used in your setting shared with parents?
- Does effective transition between your setting and reception classes include discussion about ICT?

The developmental thread within the EYFS highlights:

- Children begin to recognise the techniques, processes and key concepts to complete a program.
- Children are using various ICT media (keyboards, mice, touch-screens) to interact with a range of applications (software and web-based activities), applying the techniques in a broader range of contexts, embedding processes and key concepts which may be transferable from one application to another.
- Children need to have embedded the routines, techniques, key concepts and processes to demonstrate higher-order skills and knowledge. (EYFS, 2008)

Practitioners who recognise the importance of developing this capability through playful activity encourage children to be able to understand the potential use of computers in future situations and enable children to approach more formal learning through computers with more confidence.

Kennewell, Parkinson and Tanner (2000) highlight five key components which enable ICT capability, as illustrated in the boxes on the right.

Understand children’s early experiences outside the setting

Settings which **develop close links with parents and previous settings** can establish both the availability of computer technology and the individual child’s enjoyment of computers and whiteboards.

‘The proportion of households owning a home computer rose from 72 per cent to 75 per cent between 2008 and 2009. The percentage of households with an internet connection rose from 66 per cent in 2008 to 71 per cent in 2009.... Households with children were more likely to have internet access at home than those without.’

(Living Costs and Food Survey, Office for National Statistics, Nov 2010)

Schools and settings which have close links of this kind positively discuss provision, **mirror software and positioning of equipment to support transition** and enable children to confidently continue to be challenged in their new environments, sometimes sharing resources to enable all children to have continued access during the EYFS.

Discussions with parents as children join the setting enable a starting point from which to begin and can be further supported through **parents being encouraged to play with their children on computers in the setting**. In the US, studies by McCarrick et al (2007) and Bhavnagri et al (2009) found that young children involved in the Head Start programme (a programme established to help pre-schoolers develop the early reading and maths skills they need to be successful in school) perform better on measures of cognitive competence (verbal, quantitative, general cognitive, and memory) and school readiness when their parents are actively involved in their computer use at home.

Routines

This is knowledge of how to use the equipment.

Higher-level capability cannot be achieved without this.

Techniques

The recognition of navigational techniques which can be applied to different applications.

Key concepts

Shared vocabulary which enables children to communicate about ICT effectively.

Children can achieve the skills quickly and can often develop them at once. These can be learnt indirectly or through interaction with an adult.

Processes

Building on the understanding of routines, combining techniques to produce a purposeful outcome.

Higher-order skills and knowledge

- Decide on the application for a purpose.
- Plan the routines, techniques and processes to use.
- Work independently or collaboratively with peers to solve problems.
- Explain and reflect on their use of ICT.
- Evaluate the outcome, based on previous experience.

These components require adults to engage in ‘sustained shared thinking’.



Ensure ICT is developmentally appropriate

Offer a balance of quality computer applications which are transparent to children

'Children need a variety of applications that encourage a range of development including creativity, self-expression and language.' (DATEC)

Practitioners should ensure that children have access to a balance of pre-defined software games and more open-ended software. Pre-defined software games are those which have limited options, such as number games where children select responses to problems posed by the software. Open-ended software includes tools where children can select options to create their own outcomes, for example simple composing software where children can select instrument, pitch, beat etc. As with any classroom resource, **software and web-based resources should be accessed and evaluated by all adults** within the setting.

'The best early years educational software encourages interaction, and it also encourages off-screen "head and hands-on" activity by the child.' (Siraj-Blatchford, 2010)

Recognise the educational purpose of applications

All computer use can support learning towards the six areas of the EYFS.

Children learn best when they have many related experiences. Computers can offer a gateway into learning which supports and extends children's previous experiences. The use of images, videos and music enables children to research independently from a young age; appropriate representational applications allow young children to share their learning with their peers and others within and beyond the community. Careful consideration of open-ended applications can support and enhance children's natural interests. Children's interests in specific areas of the EYFS, learning space within the setting or particular themes may all be mirrored using ICT to support pleasurable learning. Equally, children's enthusiasm and interest in computer use can provoke learning in other areas of the learning environment. Many computer resources now contain teacher's elements. These may be adaptable or make exciting suggestions about how to engage children beyond the computer.

Discussion points

- Is the setting of the application appealing to children?
- Is the aim/purpose of the activity explicit?
- How easy is the application to navigate? Can children enter and exit the activity easily?
- If the application has different scenes, can children navigate through these without becoming disorientated?
- How is reading and/or speaking used within the application? Is this appropriate? Do visual images ensure meaning is accessible to children?
- What level of mouse control or keyboard skill is required to enjoy the application?
- Are children supported positively, through congratulations, prompts, modelling and opportunities to repeat activities?
- Does the application time children during their engagement? Is this appropriate for the ages and stages of the children? Would it reduce their confidence and focus?

Increasingly, **applications can be controlled by the teacher** to support groups of children. Practitioners can select activities which children can access, matching the appropriate knowledge level of the child and the appropriate amount of computer competence. This enables children to play within the familiar setting of the game which they enjoy with increasing challenge and interest. For example, some role-play applications allow the teacher to limit the scenarios children can access. This is most effective when children are learning about particular places or vocations through focused teaching away from the computer. The application is set up to enable children with competent or emerging mouse control to create open-ended images which, through discussion, can encourage their understanding and knowledge. Children can access games which link to the scenario, and the level of audible questioning can also be adapted to meet the language and knowledge base of the children.

Many computer applications have built-in assessment opportunities, which may support practitioners to effectively differentiate software to provide appropriate challenge. However, this is only effective when combined with quality observation. Some software and web-based games can be completed by trial and error, some children are supported by their peers to complete activities and some children closely observe other children and learn systems to enable them to complete sequences regardless of their understanding of the concept or knowledge. Practitioners need to have a full understanding of the software to establish whether children are using the applications as they were intended and fully understand the purpose of the activity. This should be secured through playful interaction and quality observation.

Discussion points

- Does the application have different levels of play?
- Is there a secure way of altering the skill/difficulty level?
- Does the activity provide increased feedback when the child requires support?
- Does the assessment tool record the number of times an element of an application is accessed?
- Can the assessment tool be used to complement effective observation of children playing with computers?
- Does the assessment direct practitioners to alter the application rather than automatically increasing the challenge without knowledge of the child's skill, language understanding, conceptual understanding etc?
- Are more advanced skills required at a higher level or are there options to select from?



Allow the child to be in control of the application

Children's perception of play is increased when they feel confident and capable with computers. In the early years, children who can choose applications themselves from a selection provided and explore the applications independently will gain greater satisfaction than those who rely on adults to select and support their play. This then enables children to *'...use information and communication technology and programmable toys to support their learning'* (EYFS, 2008).

Children's development of fine motor control can be supported by both the use of whiteboards and the purposeful use of computers in the early years.

Children should also be able to **engage positively with technology which complements computer play.** Printers and scanners should be accessible to and accessed by children. Less advanced models of these items can be purchased inexpensively; consideration of ink prices for different models also enables children to have consistent access to these resources. Teachers can often limit the availability of printing when using effective software. Other ICT items such as simple microscopes, digital cameras and video cameras, sound recorders, simple control equipment etc both enhance learning opportunities and support children's learning through themes that interest them. These resources require teaching of how to use them and then can be placed in spaces where the children know they can be accessed for certain purposes. Children who use magnifying glasses to explore nature in the outdoor area will easily recognise the enjoyment and purpose of using digital microscopes if the technology is arranged in a similar resource area.

Practitioners support children's enjoyment by enabling them to **access web-based learning.** Many interactive learning tools are familiar to children and also offer the opportunity for children to access them outside the setting. Teachers need to ensure internet access is managed safely to allow children controlled choice, whilst remaining secure. Settings need to have a full awareness of security settings and policies which support this.

Creating **web shortcuts on the main desktop screen** encourages children to access websites reviewed by staff as being developmentally appropriate and interesting for the children within the setting. Refer to Appendix 2 (page 25) for instructions for customised web shortcuts.

The study found that children were discouraged by adult intervention to engage playfully in computer use. **It is important for adults to evaluate their engagement with children around the computer.** Children respond positively to adults who engage playfully, modelling alongside children in small group and paired activity as well as whole group situations. Caution over children's perception of adults 'supervising' and 'taking over' children's play should be paramount. Allowing children control over the choice of application, use of the technology and outcome whilst engaging in purposeful play will ensure learning on computers remains enjoyable for children.

Top tips

Set up the desktop screen with an uncomplicated screen background, large icons and shortcuts to the software which children are encouraged to access. Removing other shortcuts which can be present on installation of the computer and shortcuts to adult programs reduces complication and enables children to concentrate for extended periods without entering applications which are not developmentally appropriate.

See Appendix 1 (page 24) for further advice.

Top tips

Changing the computer settings can enable the mouse cursor to be made larger. This provides support for children as they are developing their mouse control. Investigate the 'Control Panel' and open the 'Mouse' option, select the 'Pointers' tab and change the setting to 'Windows standard', apply and close window by clicking 'OK'.

Ensure computer-based play is playful for everyone

Children need to access technology without hindrance to gain the most enjoyment. Making small changes may be crucial in ensuring all children's engagement. This may be as simple as lowering a whiteboard, adjusting a computer chair and desk height to an appropriate level, or using a child-sized mouse rather than an adult one.

Through observation, adults may **identify children who may require additional resources to enable their full enjoyment**. Tracker balls and switch access enable easier physical access. Some children may be challenged by programs which require them to make too many choices, or may require support with understanding the computer's language or style of communication. Children with English as an additional language may not be familiar with all the idioms used in some applications.

Class, race, ethnicity, gender and family structure are all variables that can affect children's access and enjoyment of computers. Practitioners need to evaluate the enjoyment of all children within the setting. Children from more affluent homes are more likely to have computers at home.

'In the highest income group, 98 per cent of households owned a home computer and 97 per cent had an Internet connection in 2009. Thirty-eight per cent of households who owned a home computer and 30 per cent who had an internet connection were in the lowest income group.' (Living Costs and Food Survey, Office for National Statistics, Nov 2010)

Affluent children are exposed to a greater variety of computer applications and interact more with adults around the computer. It may make sense, therefore, to **create equal opportunity for those children whose only access to computers is in the setting**. It also increases children's confidence if those with only limited home access have opportunities to teach something new to children who are generally more familiar with computers, so they are not always in the position of learning from their more affluent peers.

Discussion points

- Can children simply turn on the computer and access enjoyable applications?
- Can children's ICT skills, language understanding and previous knowledge enable enjoyable use of the technology?
- Do all adults have a depth of understanding of the computer applications and peripherals which enables them to play fluidly and competently with the children?
- Is web-based learning securely accessible to children? Do adults keep updated with developments to websites?
- Are computers and peripheral resources organised to 'make sense' to children? Can they make choices about how to communicate, explore and investigate using computers and whiteboards?

Girls and boys may typically prefer different activities and learn through different styles. However it is important to make sure that both girls and boys feel comfortable with the computer and have equal access to the learning that is available through engaging applications. Equal access means having full opportunity to explore and to discover one's own preferences and talents. Computers allow children to express themselves, to learn important skills and to solve problems. Different children prefer different ways of using the computer, but this is the medium in which much of the communication and information exchange takes place in the world. All children need to make this technology their own in ways that suit their needs and interests. Well considered computer play is supported by guidance in *Confident, capable and creative: supporting boys' achievements* (Ofsted, 2007) which refers to a recommendation in the Ofsted March 2007 survey that 'staff in settings should... help boys to achieve more rapidly by providing opportunities for learning that engage them'.

Real-life example

In one setting, practitioners had observed that boys were not engaging with the interactive story software. They were engaging in the beginning of the retelling, but rarely maintained their concentration until the end. Adults discussed whether stories with characters that the boys replicated in role-play or with animated aspects might engage their concentration for longer. The practitioners browsed commercial children's network websites and discovered stories about the 'wild west' and 'the lost treasure'. Making a hyperlink to this web page which also included two other texts gave children a choice of stories which interested them. Adults discussed children's choices and evaluations to inspire further planning.

Discussion points

- Is the computer situated on a desk with a chair at an appropriate height for children in the early years?
- Is the mouse comfortable for children to manoeuvre? Can children easily distinguish which mouse button to click to facilitate play?
- Does glare affect the screen or children's vision when observing the computer screen or whiteboard?
- Is the sound comfortably audible for all children? Are headphones restricted to comfortable noise levels?
- Do children sit comfortably on the bench or chairs when working collaboratively?
- Are groups of children monitored through regular, planned observations to ensure children are included equally in accessing the technology?
- Does the setting use digital images in setting-made books and displays to include families and enable children to develop their own unique qualities?
- Do all children have an equal opportunity to share their successes on the computer or whiteboard?
- Do practitioners recognise individual and gender interests and support these equally using computers and whiteboards?
- Do practitioners ensure applications do not inadvertently bring stereotypes into the setting? Are all staff involved in browsing new activities and software for shared perspective and understanding?

Involve children in writing and typing activities when developmentally appropriate and support purposeful communication

Computers offer opportunities for children to engage in creative play

which establishes early communicative mark-making skills towards writing and typing. Effective computer programs, modelled by adults, allow children to explore different ways of making marks which can easily be changed and adapted. This can build the confidence of reluctant mark-makers who may be concerned about making a mistake. Mouse control and keyboard familiarity can prove a barrier to children's engagement and confidence for writing at this early stage and therefore practitioners may wish to consider investing in a 'drawing tablet' or use of the interactive whiteboard for children's early attempts at writing.



Top tips

Consider whether the upper-case lettering on the keyboard hinders children's familiarity with the phoneme/lower-case grapheme correspondence. Using simple lower-case stickers, to adapt the keyboard, can overcome this problem.

When children are developmentally secure in communication, language and literacy, physical development and creative development, adults can provide the **opportunities for writing through computers and whiteboards**. Adults who understand children's motivations can use the technology to continue this enjoyment and encourage learning and development. Iram and John Siraj-Blatchford, in *More than Computers*, refer to a child who used the internet to find out about owls. He navigated himself to a site that which showed a live link to an owl's nest and then concentrated for an extended period of time on images of owl babies being fed and cared for by parent owls. In this example, the child *'had made sense of the symbols he encountered because he was engaged in a purposeful activity using a medium he enjoyed working with.'*

Imitating adults is highly enjoyable to children in the early years and beyond. **Adults who playfully model writing on computers and whiteboards encourage children to explore computer-based writing with enthusiasm.**

Real-life example

Children were keen to participate in creating their own newsletter following the practitioner's 'struggle' to explain digital images of the children playing effectively. The teacher used simple publishing software, imported the images and encouraged the children to add simple labels and captions. The children were familiar with the monthly adult-created newsletter and regularly looked at and discussed it on the whiteboard. The children quickly took ownership over photography and captions. This personal and professional communication became a regular favourite with the children and their families.

Children should be able to determine how they use the ICT resources to investigate and explore applications and represent information for others. This can be achieved through adults playfully modelling alongside small groups of children. As with any other resources, computers should be part of children's mark-making experience. Practitioners who offer effective practice ensure:

'children feel secure enough to 'have a go', learn new things and be adventurous. Give opportunities for children to work alongside... creative adults so that they can see first-hand different ways of expressing and communicating ideas and different responses to media and materials.' (Mark-Making Matters, DCSF, 2008)

Real-life example

Another setting enjoyed communicating with a 'nocturnal monster', through making signs, letters, video diaries and sound records, combining technologies and cross-curricular learning. Adults playfully suspended their disbelief and worked as a team, with the children, to problem solve and creatively communicate with the visitor using ICT. Role-play played a major part in this activity and was a key experience which enabled the children to develop structure for writing through discussion, role-taking, simple reading and eventually writing for purpose. All the elements can be enhanced and supported by careful use of the computer and lead into all kinds of other learning.

Top tips

Simple practical ideas for engaging children in mark-making and typing include:

- Creating name cards for children. Allow children to take pictures of each other using a digital camera. Open the image in a simple drawing or publishing program. Encourage children to either type their name or use the whiteboard to write their name. These can then be used for self-registration, as peg labels, on children's learning records etc.
- Create recipe presentations by photographing ingredients and labelling them, and using sound recorders or microphones to describe images of children preparing food. Printed items can then become part of role-play or malleable areas.
- Play emotive music close to the computer or whiteboard with a simple graphic program visible. Listen to describing words the children may use and, if appropriate, type or write these on sticky notes to add to the printed images. Discuss with children if they wish to type or write these words to put around the images on the display. Encourage children to display their work so that other children can listen to music, discuss and create.
- Support those children who love to explore dressing-up through computer clothes design. Explore high-street fashion, carnival, superhero or occupational websites; discuss clothes the children enjoy. Upload photographs of children in their ordinary clothes and use drawing packages to design hats, glasses, outfits, uniforms or costumes. Enhance creative areas with materials and clothes to support the making of these hot fashions!

The amount of time, opportunity to concentrate and degree of active involvement are important in **engaging children's interest**

The research found: The children alluded to particular factors associated with the dynamics... that influenced their judgements about levels of play... how much control they had over manipulating the mouse or keyboard or whether there was turn-taking or co-operation.

High levels of involvement could be seen... where groups of children spontaneously gathered around the computer, some standing and some sitting but all talking about the activity and offering suggestions about how the child might proceed. These children were free to come and go as they pleased.

Whiteboards have become an increasingly popular resource in early years settings. The opportunity to combine interactive elements with highly visual and audio images can contextualise learning and excite children. However, whilst recognising children's enjoyment of actively engaging in ICT for extended periods of time, whiteboard use has to be carefully structured to ensure enjoyment for all. Whiteboards offer opportunity for play which involves gross motor involvement, large screen presentations and larger representations of applications the children may engage with on computers. Children enjoy all aspects of whiteboard use, but are less positive about time spent in large groups sitting inactively watching others use the whiteboard.

Practitioners need to **consider the use of the whiteboard and computers with large groups**. Effective whiteboard use in the early years should be short and engage all children actively.

Children also enjoy **working both independently and in pairs or small groups**. Teachers should consider this when establishing effective learning through computers. Encouraging children to access new skills or learning in small groups can encourage discussion and peer support rather than inanimate observation of teacher modelling.

The **location and positioning of computers and whiteboards** can affect the opportunities for children to engage for appropriate lengths of time and with adequate physical activity. Electrical outlets and wet provision always provide challenge for the siting of computers and whiteboards.

The research found: Computers are used in a variety of ways throughout the school day, but the flexibility and embedded use of the medium is less recognised by the children. Some children are sensitive to features of classroom routine and indicated that activities are more like play because of when they occur (for example after they had finished their work or after snack-time).

Top tips

- Video clips which engage children in movement, mark-making and discussion enable everyone to share their involvement.
- Brief presentations or elements of software which allow children to discuss, suggest and make choices rather than waiting for a turn to interact are preferable to whole group static situations.
- Using a variety of whiteboard learning techniques for short periods and then enabling children to secure and extend their learning at other times is more beneficial.
- Small group sessions give the children more control and opportunity to engage in interactive elements.
- Early years whiteboard provision is most enjoyable for children when they can access the resource during independent play as well as in adult-led focused activities.

Top tips

- Position equipment in the learning environment away from distraction, with space around to allow active involvement of small groups.
- Creating an area for the computer or whiteboard that is not in a corridor or in close proximity to quiet areas will ensure children feel empowered to talk and move around freely, whilst reducing interruption from passing peers.
- Headphones are valuable to individuals working in noisy spaces. These can, however, impede interaction between children and challenge effective observation by practitioners. Ensure headphone splitters are used to encourage shared experience.
- Children can quickly be drawn to large visual displays on computers and whiteboards and congregate around the technology observing others. Practitioners may wish to consider strategies for enabling small groups to access computers without the number of surrounding children becoming too large, as this can become distracting to those using the resource and make it difficult to establish quality early interactions.
- Computer units and tables should have space to house – or be positioned in the region of – other peripheral devices, wherever possible. Printers and scanners can support children’s learning. They provide an engaging opportunity for children to represent their thinking. Providing mark-making equipment and basic stationery (sticky notes, notepads, paper clips etc) can also enable children to discuss, evaluate and adapt their ideas. Remote locations can cause children to lose the flow of their play, or not value their recordings if representations are not returned to the classroom during the session. It can also be seen to establish the belief that the printed document concludes the play, rather than being part of the play, limiting further thinking and opportunity for computer ‘writing’ to be used in context.
- Adults need to be able to oversee the use of the technology, not only for health and safety reasons, but also to observe how children engage in different activities.

Adults who perceive computers as a tool for learning and expression also recognise *‘the best outcomes for children’s learning occur where most of the activity within a child’s day is a mixture of child initiated play, actively supported by adults, and focused learning, with adults guiding the learning through playful, rich experiences.’* (Learning, Playing and Interacting, 2009)

Uninterrupted focus time using ICT is regarded by children as a component towards their enjoyment. Many settings apply strategies for ensuring that the limited resource of the computer(s) or whiteboard can be accessed by all children over a period of time. This may be the use of sand-timers, pictorial schedules, waiting spaces etc. The need for these approaches clearly portrays children’s enthusiasm for the technology. Like many resources, computers can provide interesting opportunities to support children’s learning, thinking and socialising. Considering them as permanent provision, such as writing or construction equipment, enables practitioners to plan for continuous use.

Practitioners who effectively deploy the technology as part of continuous organised provision during daily routines can often reduce the novelty element of computers and whiteboards. **Children begin to view them as tools for play alongside the other learning resources.** This then encourages children to immerse themselves in learning and use the technology for purpose. Opportunity for children to enjoy the computer or whiteboard should be structured between ten and twenty minutes to enable active choice, engagement, opportunity for problem-solving and conclusion.

Discussion points

- Has careful consideration organised computers, laptops, whiteboards and peripheral resources in accessible engaging spaces?
- Do adults use whiteboards and computers in engaging ways with appropriate pace and variety? Are small group sessions valued and planned for using both computers and whiteboards?
- Does the set-up and availability of computer provision encourage and support collaborative play?
- Are children supported to focus on computer play for extended periods of time (including supportive daily routines and strategies for managing turn-taking)?

Social involvement is seen as playful by children

The research found: Whole group activity led to the lowest levels of involvement. Paired computer use (children put into pairs by the adult) led to higher involvement than... with the whole group, but interestingly, lower levels than when the computer was being used alone or in a small group. There were no significant differences in involvement levels according to modality type although the highest involvement levels were those associated with the mini-suite.

Most children enjoy and benefit from conversations that occur when several children play together or when skilful adults play alongside children. **Talking with adults and other peers can help children understand their own ideas better** (sustained shared thinking). Celebrating children's achievements can also open new avenues for peer or individual investigation. However, the over-use of questioning and adults who dictate approaches rather than modelling or supporting children's strategies can hinder children's enjoyment.

Adults supporting children with computer-based learning should plan opportunities for small group problem-solving, enable children to choose the pairs or small groups they wish to play with, make effective use of multiple computers and consider the effective usability and playfulness of large computer suites.

Plan opportunities for small group problem solving

The Researching Effective Pedagogy in the Early Years (REPEY) Project defined '**sustained shared thinking**' as 'an effective pedagogic interaction, where two or more individuals 'work together' in an intellectual way to solve a problem, clarify a concept, evaluate activities or extend a narrative' (REPEY, 2002). Allowing children and practitioners to explore options or opportunities for using the computer can produce a wide range of topics for discussion: discussing directions in adventure games, selecting stamps or clip-art to add to publishing, selecting photographs to include in presentations, or rehearsing action and dialogue to include in video messaging.

Opportunities for children to share their knowledge and the discoveries they have made reinforces their learning. Encouraging children to share their learning process, rather than reporting what game they played, helps children verbalise their understanding, consider the listener's perspective and build respectful relationships with their peers. 'Joint attention' and 'engaging jointly' (Light and Butterworth, 1992) provide a better cognitive challenge for young children.

Real-life example

Children who had a keen interest in lettuces growing in the setting's allotment repeatedly explored software related to a garden centre. Skilful practitioners engaged the children in creating a picture list, with emergent writing of items to be found in a garden centre. This was shared with another small group who were inspired to collect the resources and begin to make a garden centre. Children then printed images of flowers, explored web-based garden centres and made an advertisement using the digital video camera and simple editing software.

Enable children to choose the pairs or small groups they wish to play with

Adults who introduce new skills or ideas to small groups of children can beneficially **enable children to share and support each other when using the computer or whiteboard**. Practitioners may consider differentiating the application, skill or idea to encourage children to share their understanding in adult-initiated or child-led learning. Collaboration is important in providing opportunity for cognitive conflict as efforts are made to reach a consensus (Doise and Mugny, 1984).

Facilitate positive peer interaction by observing children's interactions. Highlight areas of conflict. This often occurs when establishing turn-taking in accessing the computer or whiteboard and managing partnerships where a more experienced child may overpower his/her peer and take control of the application and resource.

Enable children to manage turn-taking by encouraging a strategy such as sand-timer, name-list or 'waiting chair'. When children are developmentally ready to manage one or another strategy, encourage them to choose which they prefer. Many children move away from sand-timers and towards the 'waiting chair' as they can work more collaboratively or observe their peers. Some children, supported by effective practitioners, embed the strategy and understand why it is used and this can then enable them to implement it without support. This is a positive means of developing personal and social skills.

Recognise children who overwhelm their less-confident peers. Encourage adults to playfully engage and model supporting. Initially, the adult can suggest ideas and explain where to direct the mouse pointer or how to complete a challenge. The teacher can then include the competent child by asking, 'Could you explain what to do?' or 'What could... do next?' The teacher can then withdraw to observe effective peer coaching or establish further modelling.

Make effective use of multiple computers

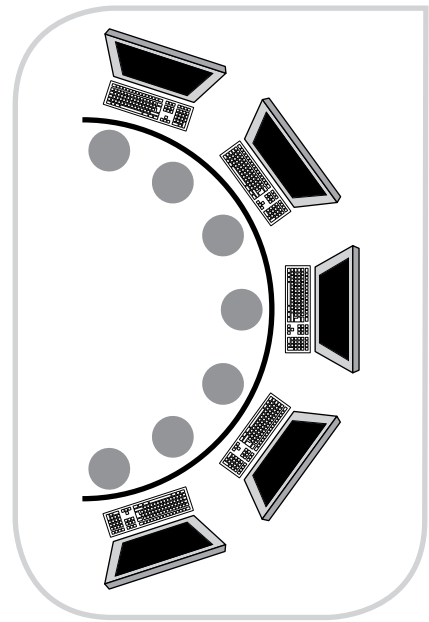
The research found: Some of the most playful and interactive computer use that we observed took place when three or four children engaged with a single computer... children take an interest and help one another in these 'mini-suite' situations.

Practitioners who are fortunate enough to have multiple computers may wish to **position computers to enable playful interaction**. The study does not specify the manner in which mini-suites were physically created and so practitioners may wish to consider the benefits and challenges of possible arrangements.



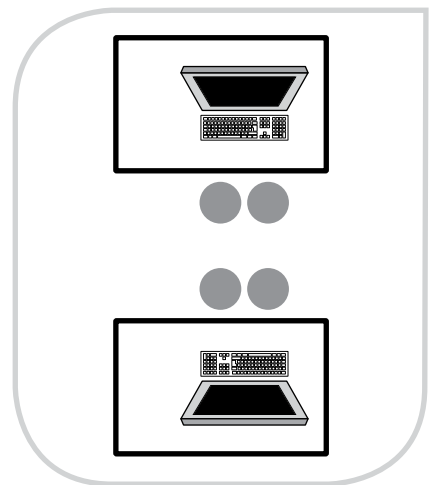
Concave arc

- + Children can discuss and interact without having to turn away from their computer.
- + Children have the opportunity to read facial expressions easily, which supports early communication.
- + Screens are angled and so may reduce distraction as they are not in a clear line of sight.
- + Adults can playfully engage through sitting in the area rather than next to a child. This may reduce the child's perception of the adult supervising and taking over.
- + Stimulating resources and apparatus which would extend the learning, based on children's interests, can be placed in the area in front of the computers to engage the children as they travel towards the computers.
- + Children can arrange chairs as they wish, and space behind the chairs offers further opportunity for shared problem-solving.
- This arrangement requires careful consideration as it may take up more space in rectangular classrooms.
- Careful consideration of power and networking cabling is required if the arc is established in a central location.



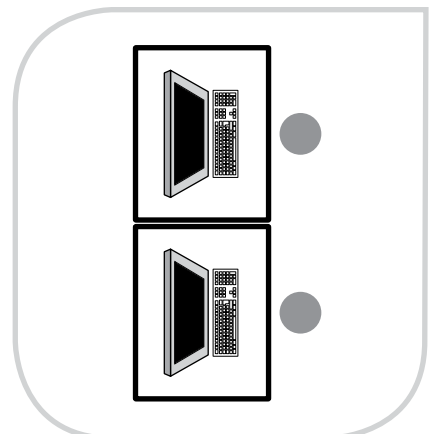
Mirrored computers

- + Children can play without distraction by a visible screen, but have awareness of other peers behind them.
- + Could be developed to use four computers to combine pairing with mirroring.
- + May be simply organised using existing computer desks.
- +/- Children can turn to talk. This may hinder early communicators, as facial recognition about possible interaction would be more difficult to gauge.
- Careful consideration of power and networking cabling is required if the computers are established in a central location.
- This arrangement needs to be situated away from any area which may encourage children to walk between computers to enter other learning spaces.



Paired computers

- + Children can interact and engage when software is replicated on both computers.
- + Can be easily created using existing storage.
- + Could be developed to use four computers to combine pairing with mirroring.
- Adjacent screens could be distracting if positioned close together. Children may be drawn to continually observe or copy rather than confidently explore and engage.



Consider the effective usability and playfulness of the large computer suite

Many Foundation Stage classes have access to large computer suites, usually within primary schools. As referred to previously, **children may find using ICT in large group situations less playful**. In the computer suites, children may have individual access to the computer or may have to share. Therefore, this may be more playful than a large group observing one computer or whiteboard. Children may perceive it to be more playful if they have control over their partner and if they can sustain sharing to enable equal access to the mouse and keyboard.

The effective use of the larger computer suite must be considered carefully.

Children require extended time on computers to explore, revisit and adapt their play. The daily routine must support the transition from the classroom to the suite. The use of whole-class migration may be most effective in the initial or final parts of a session.

Adults need to have a clear **understanding of the children's developmental stage when using large suites**. Children's computer skill, confidence and previous knowledge and understanding in other areas all affect the way they may approach an activity. Practitioners must ensure that support and challenge are enabled by open-ended applications. Children in the Foundation Stage may enjoy learning as a large group in the larger suite as their knowledge, skill and understanding develops over time.

The practitioner must ensure children can access the computers independently.

Without prepared strategies, this may lead to children exiting applications which practitioners have spent valuable time opening, turning off computers or visiting developmentally inappropriate activities designed for other classes in the school. This can be managed with additional adults available to support the children. Separating the large group into smaller numbers of children (6–10) can overcome many of the challenges of the whole-class scenario.

Children can begin to transfer between the suite and classroom when confident to do so.

Adults can support the natural flexibility of session length to enable children to engage with the activity. Children can have a choice over groupings as there may be increased space. Practitioners can establish a smaller number of computers which are accessible to children and can adapt applications or challenge according to the developmental stage of the children. Discussion and interaction can be supported without the rigidity of time, and distraction can be limited as noise and need for additional technical support should be reduced. Practitioners may then feel empowered to make links with other areas of learning. Reduced preparation time in setting up applications should allow for practitioners to plan other starting points or collate supporting resources to inspire thinking or problem-solving, extend learning and make connections.

Discussion points

- Is disruption caused by migration and organisation minimal?
- Can practitioners ensure the computers meet the needs and interests of the children when in a large group?
- How can the adult be perceived as being a playful facilitator?
- How can children work socially?
- What element of choice and independence is available in the activity chosen?
- Does more independence require more adult involvement and is this manageable when trying to sustain pace, involvement and activity?
- Is there opportunity for adults to encourage children to make links to learning and bring interests to the computer and from the computer during this session?

Enjoyment is crucial in engaging children with computers

The research found: Computer activity was described as more like play when activities were self chosen, enjoyable, participated in for longer or unrestricted periods of time, [or] involved purposeful activity and positive social interaction.

Adults should use computers to support and enhance creativity and critical thinking through purposeful play, ensure that children's interests are listened to and computer use supports this, and communicate effectively with parents about children's interests and enjoyment.

Use computers to support and enhance creativity and critical thinking through purposeful play

Computers should enrich existing learning opportunities. The computer should be an integral, relevant part of children's experiences rather than a separate activity. Computer applications should enable access to a wider range of learning experiences within the context of children's interests. ICT remains a tool for learning rather than becoming purely the practice of a skill. Children should learn to use ICT within meaningful learning experiences, rather than requiring any formal skills training. Computer play opens up new opportunities for children rather than presenting barriers to learning.



Real-life example

The practitioner created a provocation space, using a shallow tray, variety of seeds, garden flowers, magnifying glasses and microscope. Children were encouraged to explore and pose their own problems. They were then supported to record their ideas and learning independently, with the support of ICT. The children captured a broad spectrum of sharing ideas, investigation, discussion, collaboration and conclusion with the support of digital images, computer applications which enabled labelling, related websites, time-capture video clips and sound recorders.

Ensure children's interests are listened to and computer use supports this, wherever possible

Valuing and understanding children as individuals enables practitioners to make learning personally meaningful to each child. Practitioners who observe children both indoors and outdoors understand children's developing motivations and preferred styles of learning, and the places they enjoy playing. These practitioners can enable children to learn through integrating computer play. Computers can provide a background, become a research resource or a tool for communication, and extend knowledge and skills through engaging games, but only if they capture children's interest.

Real-life example

In one school, a group of boys had become very interested in physical role-play in the outdoor area. The majority of the play focused around superheroes. The children understood the physical movement of the characters they portrayed but did not re-enact stories or use the language of the characters. The teacher wanted to support the children's language development and encourage them to explore mark-making.

The practitioners downloaded cartoon images from Spiderman and Ben 10. Together the children explored the dynamic images on the whiteboard and discussed what was happening. The practitioners had carefully included images of the superheroes' secret hideouts. They then watched short extracts from the cartoons and talked about what they noticed. The practitioners had printed the images and displayed them in the outdoor creative area on a washing line. The children discussed costumes. Some children used paint and 3D modelling to explore their ideas. The children then came together and decided to use the playhouse as their hideout. The adult supported this play and showed the children how to use the computer to make signs and secret tokens to pass under the door. The role-play remained physical and outdoors, but now included increased imagination and the boys maintained their interest for an extended period of time.

Other examples of engaging children in ICT can be found on the National Strategies website (e.g. Brent – accelerating achievement of Black African and Caribbean boys in CLLD using ICT and outdoor area).

The role of the adult

Communicate effectively with parents about children's interests and enjoyment of computers and games consoles at home and in the setting

Children who enjoy using computers and games consoles at home may be enthusiastic about continuing this in the setting. Tuning into this interest, through positive relationships with parents, will enable practitioners to explore and plan for the use of similar applications or extend this interest into other areas of learning.

Parents are often keen to use computers in the home and welcome the support and direction of knowledgeable practitioners. Many settings employ strategies such as sections in the newsletter; an ICT leaflet which includes up-to-date websites the children have explored and software they have access to in the setting; enabling the key person to discuss with parents the computer provision the children have access to and their individual interests and learning. Some practitioners have developed web pages on the setting's site to outline computer learning and offer links to other sites. Getting to know parents well will help practitioners to understand how to use computers to stimulate and sustain children's involvement and effort in learning.

The role of the adult can be detrimental to playful involvement with computers

The research found: Children were sensitive to what the teacher was doing... how much help was being given and whether the help was requested. The children were also sensitive to teachers adopting a monitoring role.

As with any area of learning or learning space within the environment, children have the right to be supported by dedicated adults when playing with computers and whiteboards. ICT can enhance children's learning when it is embedded in existing sound teaching practices. The role of the practitioner is central in providing appropriate and stimulating activities and resources using ICT.

Discussion points

- How are computers made an inclusive part of all playful learning?
- Do adults recognise opportunities for using computers purposefully? For example: investigating, problem-solving, communicating, creating, recording and performing?
- How do adults observe and plan for children's play to include computer-based learning, following their interests?
- Do children feel valued to express their opinion about computer activities and confident to share their interests?
- Are strategies for involving parents and the wider community in computer-based play supported and utilised effectively?

Extender of learning

- Offers an adult's own experience of using ICT for a purpose, "At home I use the internet to do the weekly shopping and send messages to my friend Sarah."
- Clarifies children's thinking: recapping, suggesting and reminding.
- Encourages children to expand their thinking through sharing their successes and encouraging further application of their ICT understanding.
- Is supported by other members of staff and ICT subject leaders to sustain quality play-based learning for children.
- Offers an alternative viewpoint to encourage children to explore other avenues of thinking. This might be to explore other opportunities to use computer applications to solve problems.
- Asks open and positive questions, e.g. 'I don't know, what do you think?'
- Models thinking.

Observer

- Has confidence in children's ability to explore computer-based learning and ask for help when required.
- Listens attentively to children's comments, opinions and thoughts. Tunes in to language, body language and actions.
- Observes carefully, both independently from children and whilst engaged in play.
- Shares observing children with other practitioners and incorporates observations from parents as an important part of planning for computer-based play.

Extender
of learning

Observer

Co-player

Provider

Co-player

- Has an approachable manner, encouraging children to feel comfortable with adults during play and confident to ask for help.
- Shows a genuine interest in children's ICT play, giving their whole attention to the child.
- Respects children's decisions and choices. Encourages children to share their opinions and ideas.
- Models and imitates, sharing new learning and responding to children's successes.

Provider

- Is enthusiastic about researching enjoyable software and web-based applications for children's use.
- Shares expertise about computer-based applications and peripheral resources.
- Learns and practises new ICT skills.
- Evaluates computer and peripheral arrangement and adapts the organisation to meet the needs and interests of the children.
- Is considerate of children's individual interests, selecting space, resources and use of adults.

Top tips

The role of the adult is vital. Practitioners should ensure that:

- Children are supported by enthusiastic adults who read children’s cues and provide support.
- Adults engage in playful modelling, playing alongside children in small group situations, not only modelling in whole-class situations. This requires access to computers during child-initiated play, rather than whole-class re-situating in remote computer suites.

Unstructured	Child-initiated play	Focused learning	Highly structured
Plays without adult support	Adult support for an enabling environment, and sensitive interaction	Adult-guided, playful experiential activities	Adult-directed, little or no play

- Adults facilitate and encourage the use of computers and whiteboards as purposeful tools.
- Adults play and facilitate rather than question and interfere. Balance modelling of key skills alongside shared exploration and investigation. Support children rising to new challenges... ‘I don’t know how to do that, shall we go and find out?’ (*Finding and exploring young children’s fascinations*, 2010)
- Computers are set up to enable independence and opportunity. Then adults should be able to engage sensitively with children rather than feeling the need to survey and take over computer-based play.
- Children’s use of computers and whiteboards is monitored to ensure children’s involvement is based upon their needs and interests.
- Adults use effective observation of individual children, groups of children and particular applications to gain a broad perspective of children’s engagement with the resources. Using ICT such as digital photographs and video clips allows teachers to observe without supervision and look in detail at children’s play and interaction.
- Children are involved in documenting their use of computer applications and resources in order to enable them to have ownership of their play and learning. Providing simple charts with images of the web links or software and children’s photographs/names allows children to record what they access and later can be developed to include symbols to show their level of enjoyment.

Adults should monitor children’s use of computers and whiteboards to ensure children’s involvement is based upon their needs and interests.

Engaging children in active learning depends upon understanding and building on what a child is familiar with, knows and can do. Using the Early Years developmental curriculum can scaffold an understanding of how to plan for children’s next steps in learning and promote their passions.

Adults can use effective observation of individual children, groups of children and particular applications to gain a broad perspective of children’s engagement with the resources. Using ICT such as digital photographs and video clips allows teachers to observe without supervision and look in detail at children’s play and interaction.

Involving children in documenting their use of computer applications and resources enables them to have ownership of their play and learning. Engaging children in monitoring their own use of ICT encourages them to think critically about using ICT for purpose. This can be done simply through discussion of children’s use, prompted by video clips or posters created to allow children to record their use and their response in a simple visual manner.

Real-life example

A small group of girls had been observed regularly selecting the dressing-up clothes during independent play, particularly the fairy costumes. The adults were keen to develop the children's interest in sending messages through computers and wanted to use emails to support purposeful writing.

The adult modelled writing an email to a local school and included a photograph of the girls in their fairy costumes. The children were quick to describe what they liked to do when dressed as fairies and encouraged the practitioner to make sure the school children knew their names, typing them in themselves. The children received a reply the following day, suggesting that the girls might like to build fairy houses outdoors and including a photograph as an example and a picture of the children who had built it. The group of girls were buzzing with excitement. Some of the children in the photograph were familiar to them and they set off excitedly to make their own houses. They used the digital camera independently to record their attempts and sent their own emails with support from the adult.

This model of communication was continued in a variety of contexts. Children's interests, community events and family involvement were supported through email, video messaging and later the development of simple presentations. The practitioners evaluated children's responses and agreed that the younger children (and some boys) preferred the video messaging as it had an instant response, although all children were keen to engage in emails when established in a forum which valued their strengths and encouraged their interests. The development of simple presentations was most effective when built on photographs and a secure trail of learning where children were fully engaged and could therefore recall and evaluate the information they wanted to present with confidence.

Discussion points

- Are adults interested in computers? Do they use them to enhance play with children and support their own professional development?
- How are practitioners supported to have equal access to recognising the potential of applications/resources for children? Can adults confidently recognise purposeful opportunities for computer play?
- How do adults facilitate children's use of computers and resources? Is a balance of small group and child initiated play planned for? Do practitioners plan to develop children's capacity for computers through play which stems from the children's interests?
- Is time planned for adults to playfully engage with children using computers or peripheral resources?
- Does the setting engage in monitoring both children and staff's involvement with computers to ensure best practice?
- Do practitioners have the opportunity to focus on their role in supporting computer play? Can they develop this with support from a more senior practitioner?

Appendix 1

Setting up the desktop screen with an uncomplicated screen background, large icons and shortcuts to the software

1. On desktop, right-click on 'Start' button in Windows toolbar (lower left corner).
2. Right-click 'Control panel' icon.
3. Right-click 'Display' icon (image of monitor with a paintbrush).

Changing background colour:

4. Using the tabs across the top of the pop-up window, right-click 'Desktop'.
5. Select the colour from the right-hand drop-down box.
6. Choose a soothing colour, e.g. pale green, sky blue etc.
7. Click 'Apply' in bottom right-hand corner.

Changing font size:

8. If not continuing from (7) above, complete steps 1–3.
9. Using the tabs across the top of the pop-up window, right-click 'Appearance' (4th tab from the left).
10. Select drop-down arrow under 'Font size'.
11. Right-click 'Extra large fonts'.
12. Click 'Apply' in bottom right-hand corner.

Increasing icon size:

13. If not continuing from above (7) or (12), complete steps 1–3.
14. Using the tabs across the top of the pop-up window, right click 'Appearance' (4th tab from the left).
15. Right-click 'Effects' button in lower left corner.
16. Select check box to left 'Use large icons'.
17. Right-click 'OK'.
18. Click 'Apply' in bottom right-hand corner.

Creating shortcuts:

19. On desktop, right-click on 'Start' button in Windows toolbar (lower left corner).
20. Select 'All Programs'.
21. Right-click program you wish to create shortcut for.
22. Hover over 'Send to' and click on 'Desktop' (create shortcut).

Deleting a shortcut:

Shortcuts on the desktop are marked by an arrow in the corner. Deleting the shortcuts does not delete the program, it just removes the icon.

23. Move mouse over the shortcut you wish to delete.
24. Right-click mouse and select 'Delete'.
25. Pop-up box will appear. Select box 'Yes' or 'Delete shortcut'.

Appendix 2

Creating customised web shortcuts on the desktop

In order to create icons that children are familiar with, and can also distinguish between different pages on the same website, you will require an icon editor. These are available free, and following the simple installation instructions, can be achieved in moments.

1. Download free icon editor. This example uses <http://icofx.ro/>
2. Open the chosen website, e.g. www.bbc.co.uk/cbeebies/games/shows/
Select image to be used as icon.
3. Right-click on the image, and select 'Save picture as' on the pop-up menu.
4. Another window will appear.
5. The image will be saved into 'My Pictures' when the 'Save' button is selected.
6. Open icofx.
7. Select the 'File' tab and 'Open' on the drop-down menu.
8. Select the chosen image.
9. Select the colours – 256 colours (8 bits) and the size – 48 x 48
10. Adjust the image as necessary, view in the preview box to ensure correct.
11. Save the image by selecting the 'File' tab and 'Save as' and again it will save in the 'My pictures' folder unless another folder is created and selected.
12. Close icofx.
13. On the desktop, find a space and right-click the mouse.
14. Select 'New' and 'Shortcut'.
15. In the box 'Type in the location of the item' type in the webpage address. (This can be a site, or page depending on how you wish the children to access the resource.) Click the 'Next' button.
16. Type in a name to distinguish the shortcut, consider simple titles which may be decoded or remembered by early readers. Click 'Finish'. A new shortcut will appear with an Internet Explorer symbol.
17. Right-click over the shortcut and select 'Properties' on the menu.
18. Select the 'Change icon' button.
19. Select the 'Browse' button and select 'My documents', 'My pictures'.
20. In the 'My pictures' folder highlight by clicking the chosen icon.
21. Select the 'Open' button. The icon will now appear in the 'Change icon' pop-up window.
22. Select 'OK' and 'Apply' and 'OK'.
23. The image should now appear on the shortcut.

Appendix 3

Software and websites

As web pages and software develop, please ensure practitioners evaluate usability prior to use with children.

<http://ictearlyyears.e2bn.org/index.php>

<http://www.kidsmart.org.uk>

<http://www.E2bn.org>

<http://nationalstrategies.standards.dcsf.gov.uk/>

<http://www.birthtofive.org.uk>

<http://www.earlyvision.co.uk/home>

<http://www.thegrid.org.uk/learning/ict/foundation/>

<http://www.itass.newham.gov.uk/curriculum/fssow/>

<http://www.bbc.co.uk/schools/>

<http://www.teachertrainingvideos.com/>

<http://publications.teachernet.gov.uk/>

Websites for children

<http://storybird.com/> Read and create short stories. Artwork which is engaging for children and supports open-ended outcomes

<http://www.E2bn.org/> Many resources for ICT learning. Particularly open ended were: 'CLIPS' – a digital storytelling site and 'PICTURETELLER' where sound and images can be made into presentations

<http://www.bbc.co.uk/cbeebies> Many games, often recognised by children from their homes

<http://www.bbc.co.uk/schools/websites/eyfs/> Links to particular cbeebies games from areas of learning

<http://www.bbc.co.uk/cbeebies/drilldown/stories/2/4/1/> Cbeebies stories and rhymes

<http://www.uptoten.com> Many games and songs including those relating to festivals

<http://www.naturegrid.org.uk> Exploring nature – a lot of writing to read but good for shared research and excellent drawings, often animated

<http://www.asiabigtime.com/storybooks> Tiger Aki stories

<http://www.priorywoods.middlesbrough.sch.uk> Videos, stories and games including switch access

<http://www.topmarks.co.uk/Interactive.aspx> Games that can be played on an IWB, supporting areas of learning

<http://www.bbc.co.uk/schools/laac/> The Little Animals activity centre

<http://www.lcclubs.com/englishzone/> Many stories and rhymes

<http://www.abc.net.au/children/play> ABC Playschool. Videos and games

<http://www.britishcouncil.org/kids-songs-little-kids.htm> British Council 'Learn English' – songs and stories

<http://pbskids.org/> An American television channel website: includes games, music and videos

<http://www.bbc.co.uk/schools/numbertime/index.shtml> Problem-solving, reasoning and numeracy

<http://ngfl.northumberland.gov.uk/english/> Many interactive stories and rhymes with games to develop language and literacy

<http://ngfl.northumberland.gov.uk/ict/> ICT games for an IWB

<http://ngfl.northumberland.gov.uk/music/orchestra> A virtual orchestra

<http://ngfl.northumberland.gov.uk/music/> Download a 'Music House' for trying out instruments

<http://www.sebastianswan.org.uk> Books for reading together with links to K&U and in particular, natural science

<http://www.kented.org.uk/ngfl/games/> Literacy and maths games, computer or IWB

<http://www.funwithspot.com/>

<http://www.crickweb.co.uk/Early-Years.html> Particularly accessible on the IWB: open-ended activities

<http://www.tibosoftware.com/download.htm> Free jigsaws, suitable for both computer and IWB

<http://www.smart-central.com/> Nursery rhymes with sound files for musical accompaniment

<http://www.permadi.com/java/spaint/> Kaleidoscope painter, suitable for use on an IWB

Software

2Simple Infant Video Toolkit 2, 2Paint a Picture,
2Create a Story, 2Simple City and 2Simple Maths City

<http://www.2simplesoftware.com>

2Simple Tel: 0208 203 1781

Revelation Natural Art

<http://www.logo.com>

Logotron Tel: 01223 425558

At the Café, At the Doctors, At the Vets,
At the Post Office and more.

Leaps and Bounds 3 and Musical Leaps
and Bounds

<http://www.granada-learning.com>

Granada Learning Tel: 0161 827 2927

Fizzy's First Numbers, Tizzy's Toybox V2,
Think, make and play with the Jellybods

<http://www.sherston.com/>

Sherston Tel: 01666 843200

Jigworks

<http://www.cricksoft.com/>

Crick Tel: 0845 121 1691

Millie's Maths House:

<http://www.taglearning.com>

TAG Tel: 01474 357350

The Café (or many other role-play titles)

<http://www.earlyvision.co.uk>

Order line: 0845 330 3186

Number Run, Letters and Sounds, Noisy Things, Beep and Beep Beep

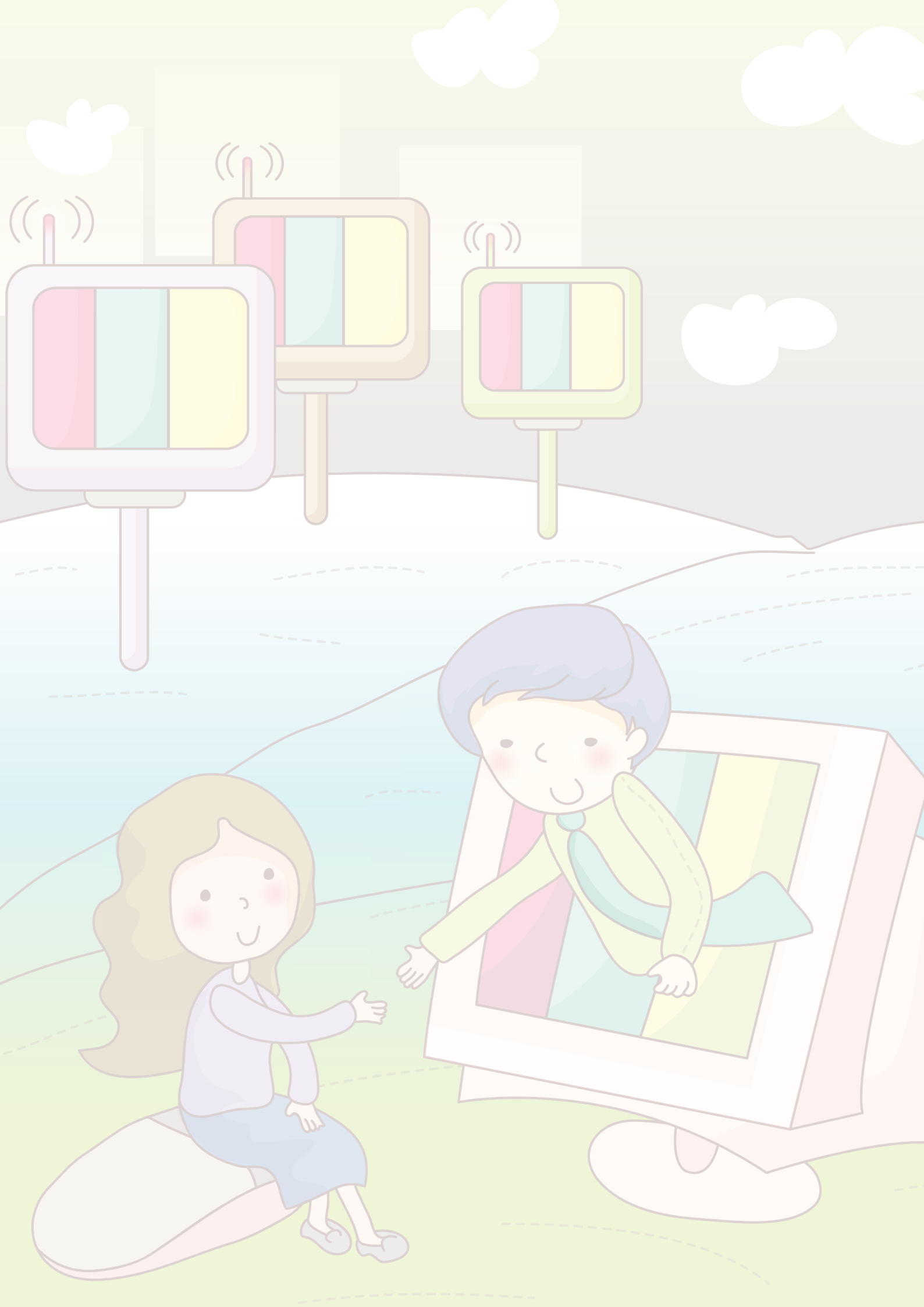
<http://www.q-and-d.co.uk>

Tel: 01332 364963

Appendix 4

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