

Children and Technology:

a tool for child development

by Angela Canavan Corr



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Introduction and Background

In the year 2000 Barnardos' team in Dun Laoghaire decided to introduce ICT (information and communications technology) technology into its direct work with children, following research into such developments in services in Europe. A successful application for funding to Ericssons allowed a project to be piloted in family support services in this area. The project was subsequently evaluated and the many lessons learned during the implementation of the project are shared in the publication *Paint, Sand and Computers* which outlines the history and implementation of the project from its inception. It demonstrates how ICT was successfully integrated into the learning environment. It shows how technology can be used in a variety of ways (in pre-school and after school settings, in individual and group therapeutic work and by parent and toddler groups). The review clearly demonstrates the many positive benefits to children including improved emotional development, increased language and literacy development, improved cognitive skills and general knowledge and increased self esteem. ICT is now an integral and seamless part of Barnardos' family support work in this area of Dublin.

In 2003 another ICT project was piloted by Barnardos, this time in Galway City. Funded by the Children's Hour Fund, *Computer Characters* aimed to increase and improve access to and usage of information technology as a tool for learning by disadvantaged children and families. Participation of the children and their families in the design, operation and evaluation of the project was an integral part of the project. This participatory IT project for children which involved the provision of a 10-week training course to six specially targeted groups of children was highly successful. The evaluation of *Computer Characters* shows that positive outcomes were achieved for participants in terms of skills development and enjoyment.

The aims of the toolkit

Building on the experience of running these two projects funding was received from Hewlett Packard Ireland to develop this toolkit. It aims to provide assistance to those who wish to introduce ICT into their services. The toolkit provides information on a range of topics from choosing hardware and software to ergonomics and Internet safety. It also, through many case studies and examples, provides ideas and practical advice on the implementation of ICT into the learning environment.

The term ICT (information and communications technology), for the purpose of this document, is used to describe a range of technological media. It is defined not just as computers but programmable toys, telephones, talking books, cameras, printers, scanners and much more.



Section 1

What is ICT?



WHAT IS ICT?

ICT means “information and communications technology”. This term is now widely used and has replaced the older term, “IT”, or information technology, which was most often used in reference to computers and the Internet. In the past, the “information” dimension tended to predominate in the literature, and in people’s thinking, about ICT. In recent years, the “communication” dimension of ICT has assumed an equal prominence. The term “ICT” encompasses much more than just computers. ICT can be defined as “anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment”.

In childcare services the term ICT could include the following types of hardware and software:

- Computers (including desktop, laptop, and handheld computers)
- Audio equipment
- Digital cameras and digital video cameras
- Creativity and communication software and tools
- The Internet
- Printers
- Scanner
- Telephones, fax machines, mobile telephones, tape recorder
- Interactive stories, simulated environments, and computer games
- Programmable toys and “control” technologies

Why does ICT matter in childcare services?

The literature suggests at least three reasons why ICT matters in childcare services. First, ICT already has an effect on the people and environments that surround young children’s learning. Second, these technologies offer new opportunities to strengthen many aspects of childcare practice. Third, there is support and interest across the whole education sector for the development and integration of ICT into education policy, curriculum, and practice.

Guiding Principles

Based on the experience and knowledge gained through the projects Paint, Sand and Computers and Computer Characters this toolkit has been developed using the following guiding principles.

Practitioners must understand the different ways in which children learn and how information and communications technology is only one range of learning tools that can support this learning.

Participation, where children are actively involved in the design of their own learning, leads to a greater sense of ownership and belonging and enhances self esteem.

Relationships and interactions lie at the heart of all learning experiences including those involving information and communications technology.

Inclusion is promoted through a rich and varied information and communications technology environment.

All children can access a range of appropriate information and communications technology within their childcare setting.



Section 2

ICT as a child development tool



ICT as a Child Development Tool

Four year old Jason used the Internet to find out about owls. He navigated himself to a site that showed a live link to an owl's nest and then spent an hour watching owl babies being fed and cared for by parent owls. He astounded nursery staff by managing the whole process himself, not least because he was not yet able to read conventional print. 'Jason had made sense of the symbols he encountered because he was engaged in a purposeful activity using a medium he enjoyed working with'. This example of owl watching shows some uses of ICT can encourage independence in learning and can develop an awareness of how to solve problems and begin to manage tasks with less adult support, but such applications need to be chosen with care.

ICT use in childcare services does not simply mean "children using computers". Developmental impact appears to be greater when the computer is used as a support to active learning, not as an end goal in and of itself. ICT represents another resource that practitioners can draw on to support their practice and to empower children to learn and grow. Research indicates that when appropriately used, ICT can enhance children's learning and encourage purposeful and exploratory play, collaboration, co-operation, discussion, creativity, problem solving, risk taking and flexible thinking. ICT can be used with a wide range of age groups and settings. It can be used in groups in an integrated pre-school or after school environment. It can be used with children in a one-to-one context where children are being counselled and supported by a practitioner. It can also be used in a specifically designed training course such as "Computer Characters" – the computer training programme for children designed and delivered by Barnardos.

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Creative Development

The use of ICT in the childcare environment provides great opportunities for creative development in children. Creativity is essential for successful learning and it can lead to children having the most fun and enjoyment. Creativity can be spontaneous. It encourages children to explore and discover for themselves, and helps them make links across all areas of learning and development. The creative area of learning includes arts & crafts, music, dance, imaginative play and role play. It is about giving children opportunities to develop their own ideas and express themselves in many forms. ICT resources can enable this development.

Imaginative Play

The video recorder is an invaluable tool. It can record all kinds of imaginative play, such as dressing up and puppetry. Playing back what was previously recorded gives children an audience and appreciation for their creativity. Pictures on the overhead projector can make a backdrop scene for drama, a show or a puppet theatre.

Musical Development

The Minidisk or voice recorder/player is a very flexible learning resource. Children can compose and perform their own musical compositions using percussion instruments that they made themselves. These compositions can be recorded. The Minidisk can also be used to listen quietly to music or children might enjoy moving and dancing to the music. Music and movement software programmes are also very popular with all ages. Using such software children can listen, imitate and experiment with sounds and movement. ICT can also help children to explore sounds and rhythm through the use of musical keyboards, dance mats and software. Tape recorders with karaoke devices encourage children in singing simple songs from memory and can also facilitate role play sessions. Music software and music used from the Internet can encourage children to enjoy music from different cultures.

Construction

Digital cameras can record children's imaginative constructions (e.g. making a house in the block area). These works would otherwise disappear when they need to be disassembled. Children can use the digital cameras themselves to collect patterns from objects in the world around them and add the printouts to their 2D or 3D creations.

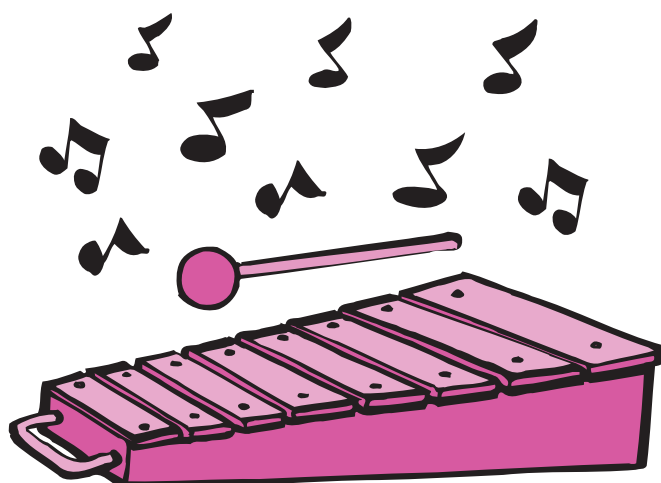
Painting and Drawing

Overhead projectors can be used for discovering and creating pattern and shape. Objects can be placed and moved around in different positions as children explore colour, shape, form and space. An overhead projector can provide a tool to recreate the children's pictures on a larger scale and display for their friends and parents to admire. Scanners can be used to import pictures into a paint programme for children to use as a backdrop, or to scan objects or collage materials and make patterns. There are many software programmes that can be used to paint and draw. These programmes are another way for children to experience painting with colour and different tools. They allow children to experiment and find out "what would happen if..." as they easily undo, redo and erase parts of their pictures. Some painting programmes have tools that are unique to ICT, for example to make a perfect circle or use a rainbow of colour. They can help children play with shape and pattern, easily copying and repeating what the children select. The computer has the added benefit of being able to save work and to return to it, or to print out more than one copy. For some children, particularly those with a disability, painting on the computer can be the first time they feel really excited by what they are able to produce. This can be an excellent self esteem booster for these children. ICT has a valuable place in role play environments as well as across the setting, allowing children to express and communicate their ideas, thoughts and feelings using a widening range of materials and suitable tools. As these reflect children's own lives they will help create a stimulating environment in which creativity, originality and expressiveness are valued.

Enhancing Creativity

Sarah spends twenty minutes using a software package 'Dinosaur Adventure'. She enjoys the egg collecting game and learning about dinosaurs and their environment. When she is finished she chooses to go to the art area where she paints a dinosaur. She proudly shows her work to her peers and excitedly describes the dinosaur as she recalls what she learnt when using the computer.

Sarah is four years old and attends a Barnardos Family Centre



Physical Development

Physical development is important in young children. They are growing rapidly and learn new skills and competencies all the time. They develop confidence in themselves and their ability to gain control over their movements and the way they handle tools and equipment. Children need to be active and have space to develop these fundamental skills. Indoor and outdoor environments are equally important spaces for children to play and learn in, and ICT tools can encompass both.

Gross Motor Skills

Children experience tremendous physical challenges in their early years. Digital cameras are a great way to record their achievements and celebrate them with the children and their families. Balancing on a plank, skipping, hopping and other gross movements can be recorded in single frames or, if your camera has the feature, recorded as a sequence over short intervals. This fascinates children as they see all the movements they need to make in order just to jump, for example.

Fine Motor Skills

ICT equipment like digital cameras, recorders, and computers all require some dexterity to use them effectively. Learning to use small and large equipment builds children's confidence and gives children a sense of control, autonomy and achievement. Using the keyboard, mouse or the buttons, levers and knobs on a piece of equipment such as a digital camera is an excellent way of developing finer motor skills. Workers involved in Barnardos' projects observed improved eye/hand co-ordination in children using ICT.

Keeping Healthy

The Internet has a vast range of health-related websites aimed specifically at children. These can support children's learning about themselves and their bodies. They can find out about diet, exercises and sport. Tape recorders, CD players and websites can play music that encourages children to move and dance. Children can hold a tape recorder and listen to recorded instructions guiding them through a series of obstacles outside (put a sticker on the pause button so that they can put the recorder down between listening to each of the instructions and carrying them out). ICT equipment can support children's physical development, enabling them to see that what they do has a positive effect on their well-being.

Communication, Language and Literacy

Conversations with caring adults, storytelling, drawing and painting and pretend play are among the experiences that promote language development and early literacy. Everyday experiences in print-rich environments expose children to the processes of reading and writing for real purposes. Technology has a place in this environment. Computer play can encourage speech and the development of fluency. Children tend to narrate what they are doing as they draw pictures or move items and characters around the screen. Young children interacting at computers engage in high levels of spoken communication and co-operation.

Encouraging Storytelling

An interest in superhero play at the kindergarten became evident. This was extended by a group of children walking to the shop to purchase a blow-up Spiderman. The digital camera was used along the way to share with others on their return and a phone call was made back to the Kindergarten to assure others that they had arrived safely. Spiderman now goes home with children who show an interest and when he returns to the Kindergarten the child shares with the group what he/she did with him and photos are taken of this. A story is written to support this and all these images have been inserted into a PowerPoint show that is growing in size rapidly.

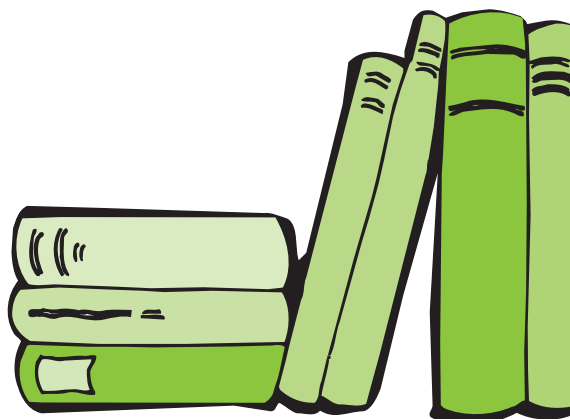
Roskill South Kindergarten, New Zealand

Encouraging Conversation

Technology can support communication during pretend play activities. These activities encourage children to express and communicate their ideas, thoughts and feelings. By reflecting the children's real worlds we allow them opportunities to share, solve problems, and talk about daily events. A visit to a local supermarket, health clinic, bakery or coffee shop can encourage children to look at how technology is used to price items, scan barcodes, swipe bank cards and print receipts. Back in their learning environment these everyday situations can be recreated with the children. They can use digital photographs of their visits to remind them of what they saw. They can help make cardboard cash registers or barcode scanners. Through these activities the children will be interacting with others, negotiating plans and activities and taking turns in conversation. Adults could provide pretend telephones to talk into and record messages on, computers to play with and write and print signs for the new environment. Children will be using language to imagine and create roles and re-live experiences as they participate in the role play area. The use of a tape recorder with a microphone and story props is an excellent way to encourage young children to retell stories in their own words, especially when the story props include digital photographs of the children themselves so they can put themselves into the stories. They will begin to use the language of books, enhancing their verbal communication skills.

Developing Reading Skills

Using computers in the childcare setting can help children with literacy in a meaningful context. Software programmes which create a virtual environment will encourage children to 'read' the screens and ask their friends questions about what is happening. Children get enormous pleasure from stories and rhymes. A tape recorder can allow children independent access to listening, as well as sharing comments and actions with an adult or friend as the story or rhyme is being read. Books and rhymes on CD-ROM or on the Internet are other ways for children to immerse themselves in textual information, share the pleasure of literature with friends or develop an interest in characters and events. The use of ICT enriches the children's experience of the written word, allowing them to repeat over and over again patterns of language they enjoy, giving them opportunities for rehearsal and seeing their favourite characters come to life.



Developing Writing Skills

Technology adds to the meaningful use of print in the environment and is a model of present day communications. Word processing packages help children to “write” and print out their story or a letter to a friend. Children can construct and send email messages to their friends. These activities may contribute significantly to children’s emerging literacy. Children can experience other ways into writing as they use keyboards and word processing software, both in role play and for specific purposes such as making name labels, writing captions under photographs to describe a trip or to give instructions, writing their name under a picture before printing it out and saving work with their name. Just as children will pick up a pencil and make marks that emerge as letters and words, so they will tap keys on the keyboard to communicate with a purpose in mind.

Digital cameras and video recorders allow practitioners to make many of their own resources to support children’s developing communication, language and literacy. These are probably some of the best resources as they can be completely personalised to the children. They can include familiar people, environments and events and they can help bridge the experience of home and the setting for a young child. Children can be right at the centre of the action, which does appeal to the egocentric nature of childhood. Through a shared and meaningful context children can be supported in using language to recreate experiences, retell stories, extend their vocabulary, clarify their thinking, sequence events and interact with others. Software programmes and Internet resources can provide a wealth of material that supports language development. These include word, phonic, matching games, and sorting games. This use of ICT resources allows children to practise skills over and over and be proud of their hard work.

ICT, appropriately used, can extend children’s experiences of communication, language and literacy as well as reflecting real world experiences and providing motivation and encouragement to learn.

Promoting Language Development

At A’oga Fa’a Samoa we are using digital photos to create resources for children. The images often focus around a trip or special event that the children have experienced. These images are used to create a book with the text recorded in Samoan. These books are then used for reading and reflecting on prior experiences while supporting children’s language development.

A’oga Fa’a Samoa Early Education Service, New Zealand



Personal, Social and Emotional Development

Building Self Esteem

Personal, social and emotional development gives children the best opportunity for success in all areas of learning. Children need to develop a positive self-image of themselves in order to flourish. Children need experiences that will build their self esteem and self-confidence. Self confident children who feel good about themselves learn and nurture their imagination. They build a sense of autonomy and become self directed learners. The role of the practitioner is to take account of each child and their emotional and social interests and needs by helping them to gain a sense of belonging, take account of the needs of others and build their confidence. Creative software programmes allow children to make a polished product which can raise their self esteem and feeling of self-worth. The experience of the Barnardos Paint, Sand and Computers project shows how ICT can be a hugely beneficial resource for helping children through emotional trauma. The computer and digital camera combined has been used with very vulnerable children who need support with a variety of issues such as parental addiction, separation, bereavement and loss. The technology has been used to create life stories that help them deal with their emotions in a positive and meaningful way.

Promoting Confidence

Children using appropriate ICT are interested, excited and motivated. Unlike some adults, they are unafraid of technology and confident to try out new activities. Because children find ICT interesting, most of them have longer attention spans when using the technology. It is this element that makes ICT the medium that many young children like to learn with. By providing appropriate experiences through ICT for children we are often capturing their imaginations, motivating them, encouraging their autonomy and collaboration, building their confidence and putting activities into their control. Digital cameras allow practitioners to develop resources that reflect children's own lives. The use of photographs in the childcare environment has, for a long time, been recognised as a valuable resource. Now the immediacy and cost effectiveness of digital photography has boosted this area considerably. Children can capture images and see them through the display in the camera. They can take photographs of things they like and don't like. They can photograph their friends and be photographed. Often quiet and withdrawn children can smile spontaneously as they see themselves and be encouraged to speak in a familiar group. Digital photography can be used in many ways: It can help link home and the setting, boost a child's self-image, and celebrate children's interests, cultures and beliefs.

Not School – Engaging Disadvantaged Teenagers through ICT

Notschool.net is a virtual community that gives young people the opportunity to develop their self esteem and be re-introduced to learning. This online research project looked at ways of re-engaging 92 young people between the ages 14 - 16 into an environment in which they were able to develop new ways of learning. This group of young people had dropped out of traditional educational systems. An evaluation of this project shows improved literacy and social skills. It increased self confidence and ambition in the young people, thereby enhancing self esteem. The young people also demonstrated a higher level of problem solving skills.

www.notschool.net/what/pubs/pdf/finalreport.pdf

Developing Social Skills

ICT tools can be very powerful facilitators of group work. Children will be more willing to learn about sharing, turn taking, co-operating and collaborating when they are joining in an activity that they all very much want to be a part of. ICT extends the benefits of collaboration beyond the immediate learning environment. With the potential of access to the Internet, young children can collaborate with children in other locations, cities, counties and countries. Through appropriate use of ICT children can continue to be interested, excited and motivated to learn. Children will develop strong interpersonal skills when they have mastered using a piece of equipment and they then help their peers to develop these skills.

Promoting Equal Opportunity

ICT can be used to promote equity and to give all children equal opportunity to learn and reach their full potential. Many children, because they are economically disadvantaged or because they have an additional need, may not experience equal access to technology. Historically there has also been a trend of girls using computers less often than boys. Practitioners can bridge this gap by finding ways to enhance equity of access in the learning environment. The Computer Characters project run by Barnardos in Galway city specifically targeted children who do not have good access to ICT by linking with such organisations as the refugee support group, a Neighbourhood Youth Group, and a Traveller's halting site and facilitating ICT training courses specifically to meet the needs and interests of these groups. For children with additional needs ICT has many potential benefits.

Affirming Diversity

Technology can be used effectively to affirm children's diversity. Carefully chosen software can affirm children's diverse cultures, languages and ethnic heritages and develop within children positive responses to cultural and racial diversity. Like all educational materials, software should reflect the world we live in. Software that reflects gender equity, contains people of different ethnic backgrounds, shows people of different ages and abilities and portrays diverse families and experiences can have a positive impact on children's development and promote positive social actions. Software has the potential, if properly chosen to develop sensitivities to children from other cultures or to children with disabilities. For more information on children with additional needs refer to Section 8.

Promoting Inclusion

Cookie Bytes was the name chosen by one group of 3 - 4 year olds who participated in the Computer Characters project run by Barnardos in Galway. The project was run in association with the link group Galway Refugee Support Group. The group was chosen on the basis that children living with their families in asylum seekers' accommodation are effectively cut off from normal life in the city which results in low energy and lack of participation in social activity. It was felt that the project could offer some stimulation and social skills development to the children. The children who participated in this project had neither experience nor access to computers. They were from different ethnic backgrounds including Nigeria, Croatia, Congo and Russia. The group was trained in the basics of using a computer. They undertook a group Project called the 'Greeting Project'. The children took photos of themselves and their families. Their families translated a series of greetings from English into their native languages. They were compiled onto a display with information and maps from their home country. The children gained many positive outcomes during this project. They developed skills in using hardware and software. It gave participants an opportunity to socialize, play with others and develop many social skills including sharing and taking turns. The participatory approach where children selected their own games and and software helped them develop confidence. Parents were very positive about the project and they indicated that their children enjoyed the project.

Computer Characters: Barnardos Participatory IT Project for Children, Galway

Problem Solving and Mathematical Development

Children's mathematical development depends on their becoming confident and competent with a wide range of mathematical concepts and ideas. Mathematical experiences and processes are part of everyday life and include counting, sorting, matching, sequencing, seeking patterns, making connections, understanding number values, recognising shape and measure and building spatial awareness. The ways in which young children are taught these processes and engage in mathematical activities will affect their attitude, motivation and confidence with mathematics throughout their lives. ICT has an important part to play in developing children's mathematical concepts. It is highly motivating and can help make learning exciting, enjoyable and purposeful.

Role Play

Role play supported by the use of ICT can encourage mathematical thinking, experience and language. Creating environments such as shops, libraries and doctors' surgeries can engage children in counting, adding, scanning, records, lists, using phones and computers. By providing resources that would be found in real environments – calculators, phones, mobile phones, keyboards, tills, remote controls for TV or video, digital scales, cash machines, microwave ovens or washing machines – children will immerse themselves in real-world applications of mathematics. Word processors could support children in writing receipts, adding up their stock or typing bills. Generating such opportunities for the applications of mathematics will encourage children to talk about their experiences and ideas. There will be opportunities for them to observe numbers and patterns in the environment and daily routines and apply their understanding to their later learning and play activity.

Paul's Story

Paul is four years old. He attends the Barnardos pre-school in Loughlinstown Family Centre. He has been using the computer as part of his pre-school routine for over a year. His first introduction was in a small group setting under close supervision of the pre-school worker. Paul quickly moved from observing an adult to independently using the computer and only seeking help should a difficulty arise. With the High/Scope approach Paul plans his activities, carries out his chosen tasks and reviews what he has done. Paul chooses from a wide range of activities from sand play to building blocks. At least twice a week Paul will choose to "do the computer". His favourite CD-ROM is "Reader Rabbit Toddler". This programme has introduced Paul to the alphabet, counting to five, recognising shapes, colours and matching objects. It also introduces Paul to memory games, songs, rhymes, and music. While playing this game Paul can choose to use the mouse and the pre-school worker comments, "Paul has improved his eye/hand communication over the past year. He often has difficulty focusing on one task and carrying it out to completion. He can spend up to twenty minutes using the computer which has helped improve his attention levels". Paul enjoys the graphics and fun-filled characters and will describe the game and its characters with enthusiasm. Paul likes to use the computer on his own or with a friend. There is often a gathering of up to five children at the computer at one time. Paul has learned to be patient, wait his turn and share with his friends. Staff have noticed very positive benefits to Paul. The computer activities have played a significant role in developing vocabulary, listening skills and hand/eye co-ordination. It has also reinforced his knowledge of colours, numbers and letters. Paul's use of the computer has laid the foundation for further development in this area and has helped him prepare for school.

From "Paint, Sand and Computers: A Review of Barnardos' Children and Technology Programme"

Problem Solving

Adults who work with the children can promote discussion about the ICT resources that are available to them for problem solving. Observing what happens on a calculator when the +, | and = keys are pressed will link the symbols and operations to the number system. Looking for ways to capitalise on these resources is an essential part of the adult's role in supporting children's learning. The interactions adults have with children, asking questions to direct their attention and the sharing of observations, will help children to enrich their own problem solving and enquiry skills. Well-designed computer software and websites are designed to enhance problem solving skills. Problem solving can also naturally emerge when a child is trying to use computer tools to accomplish a task. There is a wide range of computer software available that provides on-screen mathematical games, problems and experiences that offer a superb stimulus for talking, working out and thinking about numbers, shape and measure. It allows children to practise and consolidate mathematical ideas and concepts in a safe and motivating environment and can help bridge the concrete to the more representational mathematics. Practitioners should use programmes that will encourage children to solve problems, create, plan, apply mathematical thinking, and talk.

Linking Mathematics to Other Learning Experiences

Children working at a computer can talk to each other about what they are doing and an adult sitting with the children can focus their thinking on their developing mathematical concepts and encourage the use of language to underpin the learning process. They can also link mathematical experiences on the computer with activities to be carried out away from the computer. An example might be to use the design facility in a programme, to print out the design and to use this for making a 3-D model out of modelling clay. Another example might involve the compiling of a group collection of objects in a pictogram to find out who has the most, the fewest, and how many they have in total. The pictogram could be printed out so that children could match their objects to the pictures. Here children will be able to see the use of ICT as a real tool to help them solve problems. Digital cameras can be an excellent resource for adults to create activities and games to support children's mathematical development. Photographs showing sequences of events, e.g. patterns of events during a day, getting dressed to go outside, preparing for lunch and so on can help build children's understanding of time. Photographs of all the children in the setting can be used to see how many have attended that day and how many are absent and they can also be used to create number lines.

The rich variety of ICT resources available can be used to support children's mathematical development through many different activities and support them as they become confident and enthusiastic mathematicians and problem solvers.

A Powerful Motivational Tool for Older Children

There is evidence from a wide range of educational research that the use of ICT by older children can increase motivation and make learning more interactive and enjoyable. This in turn can lead to improved attitudes and interest in learning. A study of primary and secondary school children and their use of technology and attitudes towards ICT show that the regular use of this media across different curriculum subjects can have a beneficial motivational influence on children learning. Responses from students include an increased commitment to the learning task, their enhanced enjoyment, interest and sense of achievement in learning when using ICT and their enhanced self esteem. The study conducted in Coventry also showed that 75% of the children agreed or strongly agreed that using computers made their subject more interesting.

Cox, M.J. (1997) The Effects of Information Technology on Students' Motivation: Final Report. Coventry: NCET

Knowledge and Understanding of the World

Everyday Life

Children live in technologically advanced environments, at home and all around them. There are remote controls for television, DVD players and sound systems. Washing machines and microwaves are controlled by computer technology. Personal computers, photocopiers, answering machines, security keypads for entry, automatic doors, ticket machines, cash machines, bar code scanners, digital tills are all commonplace. Practitioners can find opportunities to teach children about ICT. A simple street walk with children can be used to identify ICT and its uses in their environment, such as street lights, signals, automatic doors, and ticket machines. It can be an eye-opener and can lead to the children setting up outdoor role play areas back at the childcare setting. The practitioner can deepen children's understanding of the uses of ICT in everyday life. The setting can both support their understanding of technology and help them learn through technology.

Practical Skill Building

Practical activities and first-hand experience will support children's understanding and skills with using ICT tools and software. There is a vast range of resources that will help reflect the real world children live in and give them opportunities to experiment, practise and build competence in using ICT tools for themselves. Not all of these need cost large amounts of money. Old equipment such as computers and defunct mobile phones are excellent tools for role play. Children can also be encouraged to make their own ICT resources, for example cardboard bar code scanners and photocopiers.

Understanding of the World

Technology can also support other early learning goals such as developing a greater knowledge and understanding of the world. ICT resources can help children in 'developing crucial knowledge, skills and understanding that will enable them to make sense of their own immediate environment as well as environments of others. Digital cameras, voice / video recorders and webcams can allow children to investigate living things, objects and materials, some of which might not be accessible otherwise, for example with a webcam placed in a wildlife area. The Internet can be used to find out information on a vast range of topics about the environment. Children can build up their knowledge of different countries, cultures and beliefs and this can be an ideal means of recognising and celebrating diversity in the childcare setting. Children can explore the past and learn about the present by accessing child-friendly websites.

ICT equipment can help children to focus on specific features of objects and help them observe closely similarities, differences, patterns and change. Digital cameras, tape recorders, camcorders and webcams can all be used to record living things, objects and materials and give children an opportunity to investigate and make sense of their environment and record their thoughts and ideas. Children can, for example, follow the growth of a sunflower or can observe the changing environment from season to season using a digital camera or video recorder. These resources can be a way to open up discussion about the local environment.

Preparation for the Future

Technology prepares children for the future. School and work environments will be infused with technology in the future. The Childcare service will give young children the confidence and skills in using such technology throughout their school and working lives.



The following websites are ideal for use in a childcare setting:

www.thedigitalhub.com/storytelling/

Liberties Learning Initiative

www.abc.net.au/children

Australian Broadcasting Corp. – Playground

www.popcaps.com

Games Links

www.snaithprimary.eril.net

Animated history, geography, games, etc.

www.musican.com/index.shtml

Early Learning Interactive Tools

www.seashoresearches.co.uk

Marine life information and photos

www.playtrn.demon.co.uk

Playtrain – Creative Playwork

www.yahooligans.com

Web guide for children

www.bbc.co.uk/cbbc/

Children's BBC Website

www.mcps.k12.md.us/curriculum/littlekids

Early Childhood Technology Literacy Project

www.barbie.com/

Barbie Website

www.ericir.syr.edu/virtual/lessons

Educational Resources Information Centre

www.games2learn.com/default.asp

Games Links

www.learningspace.org/teach_learn

The Learning Space

www.funology.com

Fun, jokes and riddles for children



Section 3

The Learning Environment



The Learning Environment

A group of 10 pre-schoolers are excited. It is Jamie's fourth birthday and there is a lot of work to be done. Mary, Zoë and John are making cakes. Mary tells the other two children what ingredients to use by pressing the appropriate pictures and words on her augmentative communication device (a speech synthesiser). Over at the computer Ratika and Bill are making a banner that says "Happy Birthday Jamie". Now they are making it beautiful by painting it in the art corner. Fran and Juan are making a birthday card on the computer. They have just started to learn English so are helped along by the software that speaks the words they type. The other children are busy looking through boxes of audio tapes trying to decide what music to play for the party. Two of this group decide to tape their own rendition of "happy birthday" to play for Jamie later on. Finally Sophia grabs the digital camera to ensure all the excitement is captured forever!

The above scene in a pre-school for 3 - 4 year olds demonstrates the integration of ICT into the learning environment.

Most experts agree that the use of ICT in the childcare setting must not be a goal unto itself. The purpose of technology should be to expand, enrich, individualise and extend the overall curriculum. *Paint, Sand and Computers: A Review of Barnardos' Children and Technology Programme* clearly showed the benefits of introducing computers into the family support environment using some key principles that reflected the High/Scope approach to early childhood care and education. The technology was seamlessly integrated into the physical learning environment similar to other activities, for example, the water area, home area, computer area. Computers were treated with the same emphasis as any other material available in the learning space and children were offered choice during work time. Children could choose to use the computer as a tool similar to how they would use paint, sand or another material.

The *Computer Characters* project differed to *Paint Sand Computers* in that it was a 10 week ICT training course for children but it shared the same approach which emphasised that children are motivated to acquire computer skills by non-technological objectives such as personal communication with their peer group or the desire for information on a topic of interest to them. *Computer Characters* was based on the belief that the computer training must be based on its relevance to children at the present time.

The purpose of using ICT in childcare services is not merely to teach children how to use computers (although this is often a secondary benefit). It is to support the overall curriculum goals and to meet the individual needs of children whether these children are attending a pre-school or after school group, a one-to-one therapeutic session in a family support service or participating in an ICT training course.

ICT in Barnehagen

In 2000 Nina Bolgan wanted to find out more about the use of technology in the Barnehagen in Norway. The Norwegian word Barnehagen is used to describe the range of different types of provision for children from birth to six years, such as day nurseries, kindergartens, and pre-schools. Scandinavian countries are considered the forerunners of what contemporary childcare practice should be and Nina Bolgan was more than surprised to discover the lack of use of computer use in the Barnehagen. In 2003 Nina became Project Manager of IBM's KidSmart Early Learning Programme in Norway. This programme targeted children from low-income families, from minority linguistic backgrounds. Fifty computers were donated to the Barnehagen, based on project proposals. Local steering committees were established to oversee and support the projects locally. Due to the lack of national strategies on ICT at the time the members of the KidSmart project had to define a quality approach to the programme and the project organisers all agree that the success is attributed to "integration, not isolation" and Nina Bolgan says that some exemplary practice on how to work with a computer and other digital tools emerged. She says "from my point of view, a creative and playful usage of digital tools will support quality in really learning settings, in particular because staff members have to play an active part". Interestingly the project organisers believed that the digital camera was the most valuable investment and served as a "door-opener". The oldest children were able to connect the camera to the computer. The pictures can be shown on screen and printed out. The pictures can be laminated and used for a variety of purposes. Children can be involved in documentation. They collect pictures, sounds and text. They share their experiences with each other, the staff and their parents. Working with picture, sound and text stimulates children's language. The older children make their own jig-saws and memory plays. According to Bolgan it is only on rare occasions that children are alone on a computer.

Source: Centre for Early Childhood Development and Education (2004) *Questions of Quality: Defining, Assessing and Supporting Quality in Early Childhood Care and Education*

3

The Role of the Practitioner

Current literature, including *Paint, Sand and Computers: A Review of Barnardos' Children and Technology Programme* suggests that the most successful integration of ICT into the learning environment is where practitioners view ICT as just another learning tool and their role as one of "guided interaction". Practitioners must understand the ways in which children learn and how information and communications technology can support this. Staff members who have developed knowledge of individual children and who are sensitive to their needs will be able to intervene and support their learning with ICT. This support may take many forms, including:

Setting the stage by setting up the ICT to encourage exploration and co-operation.

Choosing appropriate software and providing props.

Encouraging turn-taking and being aware of others' needs and choices.

Valuing children's choices and interests.

Talking with children in order to help them to recognise the significant steps in their learning.

Observing, identifying issues and providing encouraging feedback.

Suggesting strategies with children experiencing difficulties, to help them move forward.

Facilitating and encouraging problem solving – simply describing what the children are doing, asking questions and offering suggestions.

Introducing new ICT resources, explaining and demonstrating how to use them.

Helping children to select appropriate levels and challenges based on individual abilities and interests.

Helping children understand menus and instructions.

Planning complementary activities to support the ICT learning.

Celebrating success!!

A less successful approach is where the practitioner views the computer in isolation to the other materials, organises a specified time for each child and keeps track of their length of time on the computer:

A well informed practitioner can use ICT to enhance present learning, support and extend children's development, assist children to generalise concepts and skills and engage children in self-directed learning.

Guided Interaction

It was Daniel's third time to use the computer. He chose a counting game from the display and with a little help from his key-worker Jane got started. Jane sat close by to observe. After about five minutes or so Daniel selected quit in error. Jane intervened. She helped him get the software back up and running and spoke encouragingly to him as he used the mouse to drag objects into position. Jane asked Daniel to count the objects that appeared on the screen and repeat the numbers. He continued and Jane remained close by observing a number of children at work. Most of the time he appeared to be totally absorbed in what he was doing. He turned to Jane occasionally looking very pleased. When another boy approached Daniel Jane encouraged him to join in. In their own time they moved from using the counting software to drawing their own shapes. Once again Jane intervened helping both children use the mouse by placing her hand over the children's hands to guide them. Soon they were showing the other children in their group their new found skill. The shapes were cut out, mounted on card and labelled. The final product was proudly displayed for all to see!

Guided interaction offers assistance and at the same time promotes choice and independence.

The Dos and Don'ts of Integrating Computers into a Play Space

- Technology should be located in the play space, not in computer labs.
- It is important to view the computer as another classroom tool – its use should not be based on reward or punishment, but as an integral part of the curriculum.
- Have at least two chairs placed at the computer to encourage co-operative learning.
- Use technology to enrich the curriculum content and other classroom activities. For example, children might use the computer to make a sign for the "restaurant" in their dramatic play area or they might use a piece of software to make music and play back during some other activity.
- Do not sacrifice the basics such as art materials, blocks, books playdough for ICT.
- Ensure there are enough computers for everyone.
- Computers should facilitate children working in pairs, small groups and one-to-one.
- Technology should be fully accessible to all children.
- Technology should be offered as a choice to children.
- Emphasis should be on independence, problem solving and exploration.
- The environment should be prepared in advance.

The Dos and Don'ts of Running an ICT Programme for Children

The following is based on the participatory training methodology that was developed for Barnardos' *Computer Characters Project*.

- Organise an open day for prospective participants and their families.
- Complete an initial assessment form for each child detailing their knowledge and experience of computers, access to computers and their parents' experience. This should also detail their learning objectives.
- Set the ground rules in relation to appropriate behaviour.
- Facilitate children to set their own personal interests and their objectives.
- Let children take the lead and empower them to use ICT to pursue their personal interests.
- Make the training as relevant as possible to the children.
- Give children the freedom to choose from a selection of software.
- Practitioners should set general objectives in relation to skills development while at the same time satisfying personal interests and curiosity.
- Use child-friendly methods of getting feedback from the children (suggestion boxes, simple evaluation sheets).
- Keep records on each child in relation to their learning, participation and behaviour.
- Trainers should closely monitor and supervise Internet access.
- Parents should be encouraged to participate in the children's learning.
- A general atmosphere of fun and enjoyment should be encouraged.

Building Confidence

M is four years old and is from Croatia. He attended nine of the ten training sessions. M never used a computer before. His parents had used a computer, have ECDL, but do not have access at present. M's learning objectives were to play games, make signs, numbers, letters, colours. Some of the things M learned at the course were: using software, using headphones, printing images, inserting CD's, scanning, using a mouse and keyboard and typing. Some of the software used was Lion King, Rainbow Fish, Little Polar Bear and Wizard of Oz. His parents attended some of the sessions. As the time went on he became more confident about saying what he wanted. He was very fond of the computer and was reluctant to give it up or to finish the class. His parents said he enjoyed the course a lot and talked to them about the games he played.

Computer Characters Evaluation Report, 2004



The Learning Environment – Practical Considerations

- When positioning computers select a low traffic, well-lit area, away from direct sunlight to avoid glare on the screen. Disks and computer chips can be damaged by extremes in temperature.
- Ensure the computer desk can accommodate a wheelchair.
- Place the computer near a wall, near an outlet. Tape wires securely to the floor to avoid accidents.
- Avoid placing the computer desk on a rug, since static electricity can cause problems with software. If the rug is unavoidable then consider using a static control mouse pad.
- Use a surge suppressor to protect the computer from voltage surges which can damage hardware and erase memory.
- Keep software in covered disk holders away from any type of magnetic field (fan, motors, telephone).
- Keep CD-ROMS in their plastic storage cases in a disk box at the computer centre for easy access for children. Avoid storing or using any magnets or magnetic toys near the computer area. Arrange the equipment to allow free air circulation around and into the vents on the monitor and CPU.

Disk Storage

- Store software in a storage box in a safe place.
- Arrange disks by subject or title.
- Arrange documentation in the same manner as the disks.
- Create a catalogue or mini-database for easy retrieval.

Disk Display

- Make selected software available to children to encourage independent choice.
- Provide a holder or hanger with software. Provide visual cues so that children will know which software is available.
- Place software at child level.
- Provide complementary materials in play space if appropriate (e.g. art materials).



Computers, if properly integrated, should not distract children's time and attention from critical childhood activities. Computers cannot replicate concrete experiences, hands-on learning, mentoring by adults and older peers and the exploration of the real physical and natural world.



Section 4

A Guide to Choosing Hardware



A Guide to Choosing Hardware

Many types of information and communications technology can be used effectively with children. The setting, the purpose and the developmental stages of the children involved will help decide the best choices in a particular situation. Proper research will assist in making an informed choice. Practitioners should talk to colleagues and knowledgeable friends, read up on the latest products in computer magazines and check out relevant Internet websites. Services should choose reputable suppliers when purchasing equipment and should determine whether technical support and equipment maintenance is available and at what cost. Other considerations might be the availability of staff development and training from the supplier.

The Workstation

So many options, combinations and applications are available in computers. Also the speed of change in technology, systems, needs and prices means that it would be unwise to give specific information in relation to choosing computer hardware. However in this section we attempt to offer some general advice for practitioners to consider when choosing equipment for their service. For a specific recommendation in relation to any of the areas listed below contact a reputable ICT consultant.

Portable or Desktop?

Both desktop and portable computers are widely used in early childhood services. Consider the advantages of each:

Portable (Laptop/Notebook)

- Highly portable to anywhere in your play space or beyond
- Takes up less space
- Can be used alongside other materials

The Laptop Opens Up Opportunities in Drug Treatment Centre

Children as young as one year old are being introduced to ICT in the playroom in Patrick Street Drugs Treatment Centre in Dublin. The service, run by Barnardos, caters for children from 1 - 3 years. A laptop was set up and a programme called "Jump Ahead Baby" is enjoyed by children who just have to press a button to enable the music and activities in the programme. These young children love to learn from the many games including hide-and-seek, colours, etc.

Sarah Meehan, Project Worker, Dun Laoghaire Family Centre

Desktop

- Less fragile
- Greater hardware up-grade ability
- Wider choice of monitors and screens
- More robust
- May suit little fingers

Microsoft Windows or Macintosh?

Whether you use Microsoft Windows or Macintosh will depend largely on the software you intend running on the computer. The computer's operating system is the software that controls the computer and allows you run applications. For Microsoft Windows and Macintosh there is associated operating system software.

The Computer – Key Parts

The CPU – this is the main processing chip in the machine and is often referred to as the brain of the machine. The faster the chip, the faster your machine will run, so get the fastest you can afford. Computer speed is measured in megahertz (MHz) or gigahertz (GHz). A higher number indicates a higher processor.

The keyboard and mouse – these are the basic input devices that are used input data into the computer.

Memory – Random Access Memory (RAM) is a temporary storage area for data currently in use. The amount of installed RAM affects the computer's speed; the more RAM you have the faster your computer will run. The amount of RAM is measured in gigabytes (GB) and megabytes (MB). Software with large volumes of graphics and movies requires a large amount of RAM to run. Additional memory can be added to most computers if desired later.

CD/DVD Drive – the computer should have a CD drive in order to read, install and run software from CDs.

USB Flash Drive – the computer should incorporate a USB flash drive. This is a small storage device that can store data for quick editing or portability. The device is small enough to fit into a key chain and connects to the computer through a USB port.

The Printer – the resolution (the number of dots per inch) which determines the quality of the print and the speed at which a printing machine can print are two points to consider when purchasing a printer. Laser printers tend to be substantially faster than inkjet models. Colour is available in both inkjet and laser. However inkjet is a much cheaper option and is capable of producing high quality. The consumables associated with printers – toner cartridges, ink cartridges, inkjet paper – should also be considered when reviewing what printers to purchase for your childcare setting.

The Scanner – a scanner is a device that captures images, documents and objects and converts them into digital format. Photographs, text and original artwork can all be scanned. The scanner is an ideal addition to the childcare service. Photographs can be scanned and added to children's personal stories. Children's drawings can be scanned to make a variety of greeting cards and young children can scan their hands in at the beginning and end of the year to measure growth. There are two types of scanners – hand-held and flatbed. The flatbed scanner is generally more suitable for young children. It is robust, accurate and very versatile.

Modem – to connect to the Internet.

The Workstation – Possible Uses

Properly used and with the availability of carefully chosen software and complementary materials the possibilities for development are endless:

- To write and illustrate stories.
- To design simple buildings.
- To play simple learning games.
- To compose music.
- To listen to a story as the computer says the words on the screen.
- To sort shapes on screen.
- To scan in photographs of the class.
- To make signs for the home corner.
- To use software that teaches a whole range of subjects from science and nature to linguistic and visual learning.
- To print cards and banners.

Digital Cameras

A digital camera works in the same way as a conventional camera. The pictures are stored electronically on a small memory card instead of a conventional film. The pictures can be easily transferred onto the computer. Most digital cameras allow photos to be viewed on an LCD screen embedded in the camera. This allows the photos to be previewed immediately after they have been taken and deleted or saved as required. Images captured using the digital camera can be downloaded to a computer for viewing, manipulation, and printing or for use on a web page. They can be displayed on television or video.

Purchasing a Digital Camera

The quality and price of digital cameras can vary greatly.

Pixels

The main deciding factor is the number of pixels (dots) the camera can record for each image. The higher the pixel count the more expensive the camera. The pixel count has an impact on image quality – the higher number of pixels the better the quality.

Zoom Lens

A zoom lens, while adding to cost is certainly recommended for childcare services. There are various types of zoom lens (optical and digital). The advice of an expert should be sought.

Batteries

It is highly recommended to purchase a model that supplies rechargeable batteries and a charger. Digital cameras are very demanding on batteries and with the type of use envisaged in the childcare setting the rechargeable option is essential.

Child-friendly Ergonomics

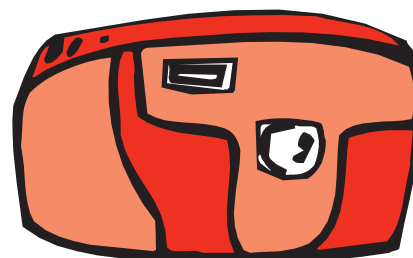
The design features of digital cameras vary greatly. Consider the age and dexterity of the children who will be using the cameras. Consider how the camera is suited to small fingers.

Computer Compatibility

Ensure the digital camera is fully compatible with the computer and the USB cable on the computer.

Digital Camera – Possible Uses

- Therapeutic work – to create life stories in bereavement or separation work
- To create “All about Me” booklets to promote self esteem
- To photograph each other and use these to celebrate difference
- To make personalised birthday cards
- To create a slide show of children’s paintings or other creative work
- To record the result of children’s exploration and discovery – a visit to a park, seashell collecting
- To photograph seasonal changes for discussion
- To capture images of events such as music, role play parents’ nights
- To create children’s own individualised websites.
This is especially attractive for older children.



Making Memories

It is a busy afternoon in Barnardos' Family Support Service. Thomas, a 6 year old boy has been attending the service for a number of years and is preparing, with staff for his transition to a long term foster home in rural Ireland. During his last few days attending the service Thomas uses a digital camera to capture memories of his time at Barnardos. One of his favourites was a picture of a dog outside a neighbouring house which Thomas used to pet each day on his way home. Meantime the Project Worker, in another area of the building is running a 'Family Change Programme' with a focus on building self esteem with a small group of children. This particular session resulted in a set of hand-decorated framed photographs of each one of the children with some positive messages attached – "I like my hair", "I love smiling", "I love my little sister".

Sarah Rush, Barnardos' Cottage Childcare Project, Dun Laoghaire

Digital Video Cameras

The digital video camera enables children to capture, produce, edit and broadcast high quality video. The video images can be stored and reproduced on computer, CD and DVD. Digital video cameras have huge potential for impacting on children's creativity, social interaction and thinking skills.

Purchasing a Digital Video Camera

PC Specifications – a very high specification of PC and video capturing software is required. Check this out thoroughly before purchasing.

The following features should be included at the time of purchase:

- Support for digital IN as well as digital video OUT
- Good optical zoom rating (for example, 10X or 12X)
- Special features for children who may have motor difficulties
- A sturdy tripod with a fluid head
- Video editing software

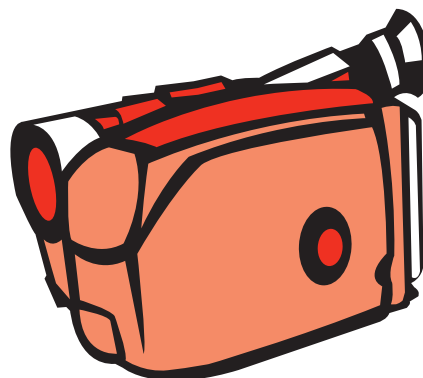
Questions to ask?

- Does the camera take still images on memory cards?
- Are new tapes inserted at the base of the camera? This can cause great difficulty in a childcare setting if filming a role play session where the video is mounted on a tripod and has to be dismantled.
- Does it have an analogue video input connection?

If a digital video recorder is beyond the financial means of the childcare service the more traditional video recorder can be very beneficial also.

Digital Video Recorder – Possible Uses

- Record role play
- Produce video-clips of creative work
- Use in therapeutic work
- Record events from nature and science
- Assist in language development and social skills



Minidisk Recorder/Player

A Minidisk player/recorder is a small portable sound system. Minidisk players/recorders use MiniDisks for storing audio. They are extremely versatile. They are small and have considerable storage capacity. They offer a low cost solution to producing high quality recordings and are an ideal addition to the childcare setting.

Purchasing a Minidisk

MiniDisks come in two forms “pre-recorded or “recordable”. Childcare services should purchase the “recordable” form which has the following features:

- Audio can be recorded in any area of the disk or played in any order
- Audio can be easily erased and re-recorded
- Tracks can be given to a title to make the searching easier
- A recordable Minidisk can be recorded repeatedly
- It is superior to a cassette tape, where the entire tape has to be re-recorded if a change is required
- Its durability far exceeds that of tapes

Considerations when purchasing a Minidisk

- Are the discs compatible with a regular stereo system or do you need to purchase additional accessories?
- Are the discs easily available at a reasonable cost?
- What is the lifespan of the battery?
- Does it connect to a PC and is editing software included in the price?

Minidisk – Possible Uses

- Improving language development
- Recording children's own stories
- Recording musical performances
- In therapeutic work



Other ICT Resources

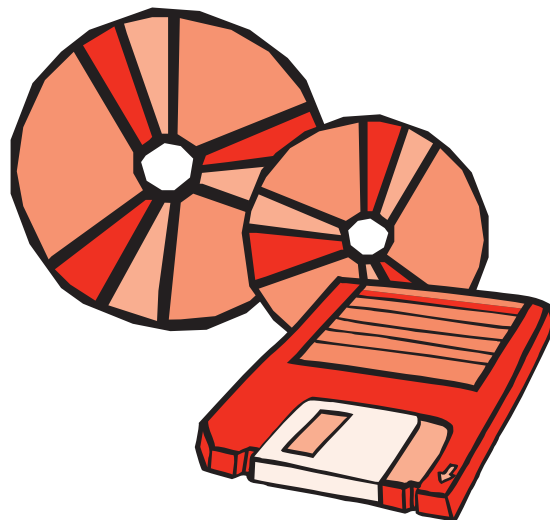
There is a whole variety of other ICT equipment that can be used effectively in the childcare service including overhead projectors, interactive whiteboards (a large, touch-sensitive panel that connects to a digital projector and a computer) programmable & digital toys, musical keyboards, talking toys, electronic activity centres and books that incorporate music and sound. Old second-hand equipment such as mobile phones, cameras, electronic cash registers, barcode scanners and remote controls are an ideal addition to role play.

Security of Hardware and Equipment

ICT equipment is expensive. It is important to establish security procedures to protect the hardware and software held at your premises.

Good Housekeeping

- A designated person should be given responsibility for equipment security
- Develop an inventory of all the ICT equipment and record the serial numbers. The document should be stored in a location away from the equipment
- This list should be checked against the equipment regularly
- Engrave the name of the childcare service in a prominent location on the equipment. Be sure to do this even on small pieces of equipment such as digital cameras
- Store all application software disks in a secure location along with their manuals
- All software licenses should be stored safely in a central location
- ICT should be stored in a secure location when not been used
- The service insurers should be provided with an inventory of all equipment in the service





www.ncte.ie

The National Centre for Technology in Education is an Irish Government agency set up to provide advice, support and information on the use of ICT in education.

www.scoilnet.ie

Aimed at teachers and parents this website provides information and advice on ICT.

An illustration of an open book with a spiral binding, set against a solid blue background. The pages are white with black wavy lines representing text. A mouse cursor is positioned over the bottom right corner of the book. A large pink rectangular box is overlaid on the book, containing the section title and subtitle.

Section 5

A Guide to Choosing Software

A Guide to Choosing Software

The first step in choosing software for children is to consider its purpose and the second is to determine how well the programme succeeds in its goal. The effectiveness of any software will, of course, be influenced by the ability and experience of the child using it. Good quality software can often be recognised by the presence of certain characteristics or features. The headings below will assist the practitioner when choosing appropriate resources.

Tips for Choosing Software

- **Easy to install** – are the instructions clear? Does the programme consistently respond as expected?
- **Age and needs appropriate** – is the content interesting for children? Is it “child friendly”? Software appropriate to pre-schoolers should be easy for them to use by offering simple menus and meaningful icons.
- **Suitability of language** – is the language suitable for the developmental stage of the children?
- **Help provided** – if the software is advertised as a programme children can run themselves can they do this easily? If adult help is needed initially, can a child manage alone after some experience with the software?
- **Opportunities for child development** – does the software contribute to children’s comprehension of the world around them? Does it foster and satisfy curiosity?
- **Open-ended, interactive** – does the software require a high degree of interaction from the children, calling for thoughtful responses and providing options which require children to make choices?
- **Flexibility** – the software should be flexible enough to meet a variety of developmental goals.
- **Writing and drawing software** – is the software open-ended. Can the child control his/her own learning and does it help develop creativity and individualism?
- **Exploratory software** – does it teach concepts with exciting animated graphics where there are no right and wrong answers and children build a sense of achievement and success?
- **Recognition of diversity** – does it celebrate children’s diverse cultures, language and ethnic heritage by portraying positive images of world cultures?
- **Social values** – does it promote non-sexist, non-racist, non-stereotypical and non-violent values?
- **Cost-effective** – is the software designed so that it is likely to be used repeatedly, even by the same child, thus justifying cost?
- **Well designed graphics, colour and sound features** which are intrinsically related to the content also contribute to the quality of the software. Software needs to be motivating and engaging. Children’s ability to follow different paths as a result of choices made while operating a programme increases their interest and allows children the satisfaction of directing the programme themselves.

Structured vs Unstructured Software

Some software is more structured than others with regard to the number and variety of responses they allow children to make. This is where a number of acceptable choices are already pre-programmed in the computer’s memory. Less structured software encourages self-expression or invites children to give creative responses characterised by few pre-set responses. These structured programmes will not always act as a support for learning. Some of these inform children that their answer is incorrect without explaining why. There are other programmes that give the correct word after repeated incorrect answers but do not draw the child’s attention to why this was the correct response. This is unlikely to support active learning.

Practitioners should have opportunities to become more familiar with the software available and be encouraged to be more critical about whether or not the learning model inherent in software matches their own models of learning and the needs of the children for whom they are responsible.

Previewing Software

Realistically, finding copies of software to preview is difficult. Practitioners may follow the guidelines below:

- Read software reviews in computer magazines or on the Internet and make lists
- Ask other practitioners for information, advice and access to their collection!
- Ask for a demonstration of the software from your supplier
- Ask for a specific trial period from your supplier

Software Licensing

All pieces of software should come with a software license. The software license sets out the conditions under which the software can be used and permits the software to be used installed on one machine only, a specified number of machines or a site license gives unlimited use throughout a building, for example, a childcare service. There are also copyright laws that prohibit the copying of software.

Computer Viruses

Computer viruses are a serious threat and should be taken very seriously by practitioners.

Preventing Virus Infection

- Install and regularly update anti-virus software. This, in conjunction with good housekeeping, can greatly reduce the threat caused by computer viruses.
- All computer discs should remain within the confines of the childcare setting. It is not advisable to let children take discs home.
- Incoming files should be scanned immediately by anti-virus software.
- When the sender of an email is not known to the recipient, avoid clicking on attachments.

Purchasing Anti-Virus Software

Commercial Programmes – anti-virus software can be purchased on the Internet or from reputable software retailers.

Shareware or Demos – there are a number of websites that offer anti-virus software for a nominal charge. Demo versions of anti-virus programmes are available free of charge.

Ensure that any anti-virus software obtained includes an anti-virus facility.





Choosing Software:

www.ioe.ac.uk/cdl/datec

This website provides help with evaluating and selecting ICT applications that promote child development

www.teem.org.uk

Teachers Evaluating Educational Multimedia

www.ncte.ie

National Centre for Technology in Education

Free anti-virus downloads

www.grisoft.com

www.safer-networking.org



Section 6

The Internet



The Internet

The Internet is here to stay and despite the potential known and unknown dangers of going “online” this technology can be a very useful tool in developing literacy, cognitive, communication and social skills. Used with care, it can also be a very useful problem solving tool. Practitioners should, however, be aware of the risks and take the necessary steps to keep the children in their care safe.

What is the Internet?

A network is a system whereby computers communicate with one another. The Internet is a network of networks where computers worldwide communicate with one another.

Getting Connected

To get online you can sign up with an Internet Service Provider (ISP) which will provide you with access to the Internet. Most people get online by using a modem to connect their computers to a telephone line but an increasing number of organisations are using high speed broadband connections.

Internet Safety

The Internet is not controlled by any one organisation and as a result it poses risks to those who use it, especially young children.

Risks

Exposure to Inappropriate Material – a child may be exposed in appropriate material that is sexual, hateful, or violent in nature, or encourages activities that are dangerous or illegal.

Physical Molestation – a child might provide information or arrange an encounter that could risk his or her safety or the safety of the family members. In some cases child molesters have used children’s chat areas, email and instant messages to gain a child’s confidence and then arrange a face-to-face meeting.

Harassment and Bullying – a child might encounter messages via chat, email, or their mobile phone that are demeaning, harassing or belligerent. There is clear evidence that cyberbullying where children are targeted and harassed by peers is becoming a worrying problem and children as young as nine or ten are victims of this malicious communication.

Viruses and Hackers – a child could download a file containing a virus that could damage the computer or increase the risk of a hacker gaining remote access to the computer.

Spam

Spam is the term used for unwanted emails and is the most common way for a computer to pick up a virus. Computer users should not open attachments on emails from address that are not recognisable. Practitioners might consider using anti-spam software.

Peter's Story

Peter is eleven and has been attending a family support service in a large town in rural Ireland for a number of years. His mother and father are separated and his father lives in England. He attends a family support service three times per week after school and participates in group and one-to-one counselling. Under the supervision of his family support worker Sinead, Peter has enjoyed a weekly conversation with his father via email which he looks forward to and he treasures this interaction each week. Over a year ago Peter was diagnosed with a severe form of epilepsy which was a severe blow. This was very difficult for someone already very vulnerable. Peter felt isolated and lonely. After a number of months of counselling Sinead sourced an "Epilepsy Discussion Forum" on the Internet. This forum is aimed specifically at young people of Peter's age. Peter has started to link into this group and it has helped him immensely in his ability to deal with his condition.

Reducing the Risks

Location of Computer

If a childcare service is making the Internet accessible to children, the computer should be located in an open space with the monitor clearly visible to the practitioner.

Netiquette

Netiquette refers to Internet etiquette and the appropriate behaviour of Internet users. In the context of a childcare service the supervisors of netiquette are the practitioners who have the role of monitoring, protecting and guiding children during online use.

Parental Permission

It is very important that parents are fully informed about how the Internet is used as a learning tool. If the Internet is available in a childcare service a comprehensive policy for acceptable use should be developed in partnership with parents. This written document should clearly outline the rights and responsibilities of all parties. This code of conduct should be agreed and "signed off" by all appropriate parties. The penalties for breach of the code should be stated clearly to all those involved. A Sample Acceptable Use Policy is available on page 59.

The role of the practitioner includes the following:

- Controlling the sites children have access to – ensuring they are age and stage appropriate.
- Checking the "history files" for suitability of sites and chat rooms.
- Spending time with children online. Ask them to tell you of their favourite online connections.
- Directly supervising chat room use.
- Maintaining access to all email accounts.
- Very close monitoring of sites visited.
- Preventing email attachments from unsolicited or unknown sources being opened.
- Encouraging children to report any incidents of Internet bullying.
- Talking to children about the risks and particularly issues surrounding Internet bullying.
- Creating a list of "favourite sites" which are safe and appropriate.
- Installing appropriate blocking and filtering software. This software is not completely foolproof but helps greatly in reducing the risk of access to undesirable material. It will also help restrict entry to undesirable forums, discussions, and bulletin boards. Ensure this software is up-to-date.
- Prohibiting registration or the signing of visitors' books at websites without permission.

Filtering Software

There are many different filtering systems available and practitioners should research the best to suit their needs. Features of this type of software include:

- The facility to review activity logs and produce activity reports.
- The facility to set up individual accounts for each child and monitor each one.
- Time management features where the time spent online is restricted.
- A block on the transmission of personal information.
- A block on access to applications you don't want children to have access to.
- Restrictive access to certain online activities such as chat rooms, instant messaging, etc.

Setting out a set of rules for the children

- Ensure that children choose passwords that are difficult to identify by third parties.
- Ensure that these passwords are changed regularly.
- Agree with children not to disclose personal information online.
- Agree with children that they never meet an online friend without permission.
- Agree with children never to respond to messages.
- Agree with children to never upload pictures of themselves to unknown sources.
- Agree with children never to respond to messages or bulletin board postings that are suggestive, obscene or harassing.

Social Networking Sites

John, a man in his mid-twenties, was using a very well known social networking site to contact old school friends and was somewhat shocked when he realised he could contact anyone who is registered on the site. "All I had to do was register. I actually got a 12 year old's email address from it. It's scary. From her profile I got her general location and the school she attends. I could also see a photograph of her on the site."

Zach's Story

Eleven year old Zach lives with his parents and his sister Gillian. Zach has mild Asperger's Syndrome. The computer has been a lifeline for him. Because the computer is non-threatening and consistent and gives Zach control it has helped his social and communication skills enormously. Recently Zach signed up to a very well-known "friends" or "social networking" site and has enjoyed the opportunity to talk to friends online. However the dangers associated with this type of website only became apparent when his sister Gillian got a very nasty message supposedly from Zach. It transpires that Zach was using a password that was easily guessed by some of his peers – the name of his dog. Someone else logged onto the website in his name and posted very harmful messages including racist remarks causing untold damage to many young people, including Zach.

Making Your Own Websites – A Word of Warning

- If you are producing a website for your childcare service or if children are producing their own website be very careful not to include any personal information relating to the children in your care – addresses, telephone numbers, etc.
- The inclusion of a portrait style photograph or a small group photograph should be avoided – use large group photographs if necessary.
- Always obtain parental permission for any photographs that appear on the website.

The Value of the Internet

Communication

The Internet can be used to communicate via email, chat rooms, discussion groups and voice and video link. It can be used in a controlled, safe environment:

- To seek information from a range of organisations.
- To communicate with separated family members and friends.
- To discuss with peers topics of interest like an illness or disability.

Email and Chat Rooms

Email is one of the most popular uses of the Internet and it allows users to send messages electronically via the computer. In order to send an email the user must have a special email address. The easiest way to get an email address is through webmail websites such as www.hotmail.com. Chat rooms allow people to chat to one another using special chat programmes such as Yahoo Messenger. Many websites offer chat room forums where people can post up messages and chat about topics of mutual interest.

Information Retrieval

- The World Wide Web is used to find information and learn about every topic under the sun!
- To find out more about leisure and sports interests.
- To support children in homework clubs with project work.

Surfing the Net

This common phrase refers to browsing for information or "surfing over a tide of information". The programme that is used to find your way around the internet is called a browser. The most popular browser used is Microsoft's Internet Explorer.

Search Engines

Search engines are used to surf the net. They resemble a huge phone book containing millions of web addresses that can be accessed by simply typing in the subject of interest. The most common search engines are Google www.google.com and Yahoo www.yahoo.com. Both Google and Yahoo have child-friendly search engines that can be used to filter out adult-orientated material.

The Dangers of Internet Bullying

For one fourteen year school attending a middle class school in Dublin it was a rumour circulated via a chat room that she had contracted SARS while on a trip to Toronto. She returned to school and nobody would sit near her.

For Jenny, an overweight girl, it was photographs taken of her with a mobile phone in the locker room and then circulated via the Internet to many of her peers.

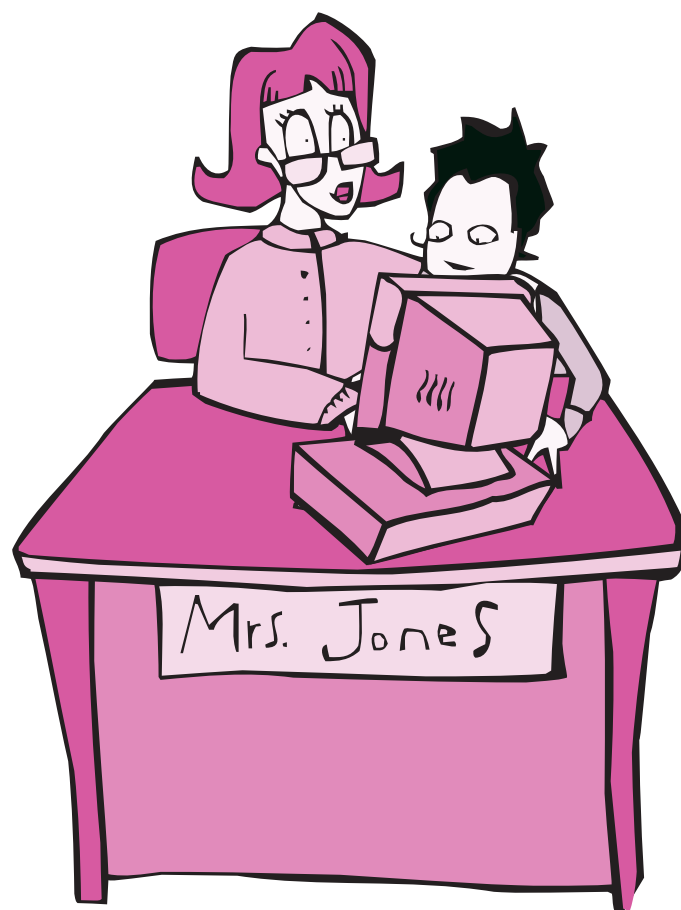
Cyberbullying differs from traditional bullying in that the bullies can hide behind a mask of anonymity if they wish, making them difficult to trace. Also the web allows for unsavoury material to be spread quickly to thousands of people, causing untold damage and misery to the victims.

Evaluating Websites for Children

There are literally millions of websites on the World Wide Web. Practitioners should develop and evaluate the resources to determine their value and suitability for the children in their care:

Is the author of the site stated?

- Is the site out-of-date or has it not been updated for some time?
- How good is the site navigation?
- Is the site badly presented or difficult to use (are spellings incorrect, text poorly written)?
- Is the site heavily populated with advertising (pop-ups, banner ads)?
- Is the site over-commercial?
- What kind of learning is being promoted using the website?





Filtering Software

www.cyberpatrol.com

CyberPatrol

www.netnanny.com

Net Nanny

www.cybersitter.com

Cybersitter

www.icra.org/icraplus/

ICRAplus

Spam Prevention

Anti-spam software is available online from:

www.spamkiller.com

www.qurb.com

Safety Sites

www.chatdanger.com

This site is specifically aimed at children and teenagers and provides safety information regarding the use of chat rooms.

www.cyberangels.com

This website provides information and advice on safety websites for children and teenagers.

www.makeitsecure

This website provides information on how to protect your computer and enjoy the benefits of the Internet.

A graphic consisting of two overlapping arrow shapes pointing to the right. The top arrow is blue and the bottom arrow is green. The word "Signposts" is written in black text across the center of the green arrow.

Signposts

Agencies and Supports

www.iab.ie

Monitors developments relating to harmful and illegal use of the Internet and promotes awareness of potential dangers.

www.hotline.ie

This website can be used to report child pornography.

www.netsecure.ie

This is the official website of the national awareness campaign on computer security.

www.webwise.ie

This is the Irish Safety Awareness website managed by the National Centre for Technology in Education (NCTE). Webwise provides parents, teachers and children with educational resources, advice and information about the potential dangers on the Internet. It provides useful guidance on preventing the risks.

www.dataprotection.ie

The Data Protection Commissioner is responsible for upholding rights of privacy with regard to the processing of personal data.

www.icra.org

The Internet Content Rating Association has developed a system for rating the content on websites.

www.kidsap.org

An initiative under the auspices of UNESCO is dedicated to eradicating child pornography and the activities of child molester/abusers via the internet.

Child-focused Search Engines

www.yahooligans.com

Yahooligans

www.surfmonkey.com

SurfMonkey



Section 7

Staff Training and Project Management



Staff Training and Project Management

As technology becomes increasingly used with young children practitioners will need in-depth training and on-going support in order to be adequately prepared to make decisions about technology and its effective use in the learning environment. The value that ICT can add to young children's overall development will depend on the beliefs and motivation of childcare educators who need to keep up with current practices and trends to provide quality experiences to children. The Barnardos ICT projects showed that practitioner familiarity, confidence and skill in using ICT is dependent on good quality training and practitioners spending the time for self-directed exploration and learning. Much of the research in relation to the effective use of ICT shows that practitioners who regard a computer as an effective personal tool for themselves are more likely to embrace and use technology with young children.

Tips for Managing an ICT Project

Committee/Advisory – for larger agencies the establishment of a committee or advisory group comprising key individuals (internal and external) with relevant expertise and knowledge will be a useful resource to determine policy, develop procedures and drive the project forward. The Computer Characters Project in Galway formed an Advisory Group consisting of representatives of local agencies and groups. This group possessed a considerable knowledge and advised Barnardos on issues such as siting of training groups, ethical issues and other policy issues relating to the project. The Group also reflected on progress and helped shape its ongoing development.

Dedicated Person/Co-ordinator – it is advisable to give one staff member within each service the responsibility for the ICT. Both Barnardos ICT projects suggest that the co-ordinator should have a background of working with children and a good knowledge of ICT. All other staff should be trained and involved in decision making regarding software selection and how the computers will be used.

Clear Goals – clear goals on how the computers will be used to support the existing curriculum or family support work must be established and hardware and software to support these goals acquired.

Operational Guidelines – guidelines and procedures in relation to such issues as adult supervision, times of use, operation, problem solving and security, must also be established and all relevant staff should be fully informed of these procedures.

Tips for Running a Training Programme

Continuous Training

Once-off workshops are an ineffective approach to developing the skills of practitioners. Ongoing continuous training and opportunities to further develop skills and to keep abreast of new developments is essential.

Time to Practise

Time should be provided for practitioners to use and experiment with technology in between training sessions. This was highly recommended by Barnardos staff who participated in the Paint, Sand and Computers Programme who reported that they would have liked more time to practise their new skills in the workplace.

Training Methods

Appropriate methods of developing practitioner skill should be chosen including class workshops, model demonstration classes in which practitioners learn to use technology in context with real children and for real purposes, and networking sessions where practitioners get the opportunity to share their ideas with colleagues from other services. Training should be provided in small groups and in certain circumstances on a one-to-one basis. Because of the wide diversity of abilities and knowledge of the team the group sessions on "technical skills" did not meet the individual needs and one-to-one sessions were organised. The feedback on these one-to-one sessions from all participants was extremely positive.



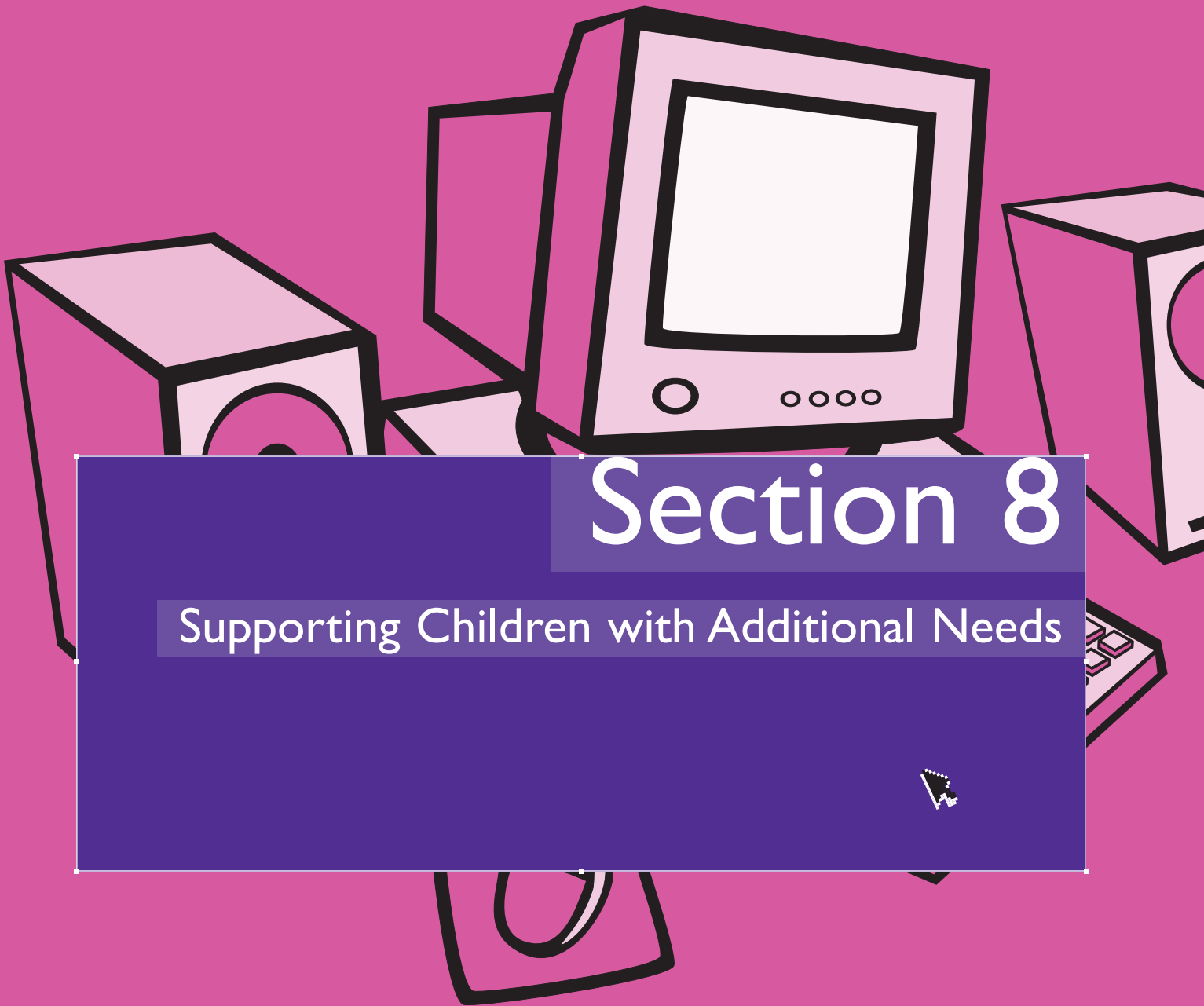
Content

Training should focus on the use of ICT in supporting children's learning and development and its use in supporting curricular goals and should not purely cover the technical skills of how to use the equipment. Barnardos organised an orientation day to ensure there was a clear understanding of how technology should be integrated into the family support setting.

Practitioners should be trained on all the practical aspects of operating ICT from loading software on a computer to operating a digital camera. The following is a list of other topics relevant to the professional development of staff.

- What is ICT?
- Identifying ICT resources within different learning contexts.
- Choosing ICT hardware.
- Evaluating ICT resources – software and websites.
- Learning styles and choosing ICT resources to promote different learning styles and to support the holistic development of the child.
- Interacting with children – the role of the practitioner.
- Promoting inclusion using ICT.
- Keeping children safe- child protection and ergonomics.

The potential of ICT in childcare services is far-reaching and ever changing. There is a risk that adults become complacent, assuming that their current knowledge or experience is adequate. Practitioners must be open to constantly learning about new resources and approaches.



Section 8

Supporting Children with Additional Needs

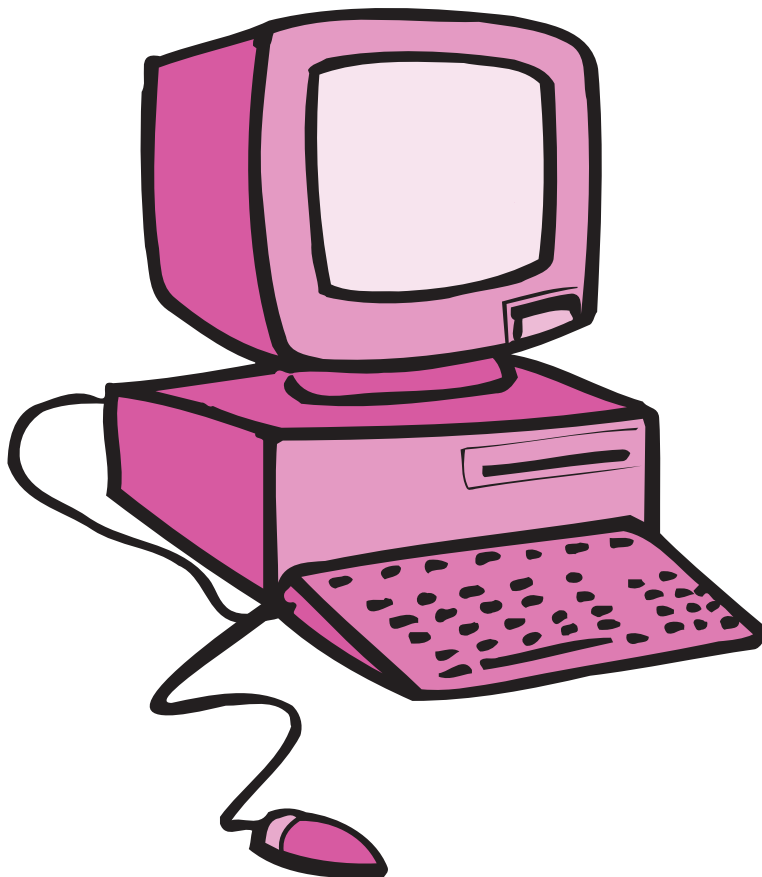


Supporting Children with Additional Needs

One very special benefit of technology is the many ways in which it can level the playing field for children with additional needs by supporting them in their efforts to communicate, explore, play independently or communicate with their peers.

Children with learning differences, hearing or visual impairment, developmental delay or physical challenges might have some difficulty in using the technology but these can be overcome by choosing appropriate software or by using a few adaptive aids. These products range from low-tech toys and simple switches to high-tech systems capable of managing complex environments.

Practitioners must evaluate what kind of adaptive aids are required to meet the needs of the children in their care.



Some Common Aids

The following aids are generally available and used to make computers more accessible to children of all ages:

- Screen magnifiers – to enlarge images.
- Easy-to-use mouse that assists children with poor motor skills and dexterity difficulties.
- Adapted keyboards – an alternative for children who find the conventional keyboard difficult to use.
- Touch Screen, switches and pointing devices – to help children who have difficulty using a mouse or keyboard.
- Text-to-speech tools – enables the computer to read aloud any onscreen text. This feature is available through the website www.readplease.com.
- Talking word processors – help children with literacy issues.
- Talking calculators are also a useful tool for children with literacy difficulties or visual impairment.

While each type of difficulty may require one or more adaptations to make computer use easier, these solutions aren't necessarily complicated or expensive.

Accessibility Options

Practitioners should check out the accessibility options on their computers.

- Both Apple Mac and Microsoft include features that allow the child to regulate the clicking speed of the mouse and increase the size of navigation icons and cursors.
- They also have sound cues that notify the user when a task is completed.
- Some operating systems offer text to speech features which are very helpful for children with visual impairment or learning difficulties.
- Some word processors have “word completion” options. This enables the computer to finish typing words and phrases which greatly speeds up the writing process.

More Specialised Aids for Children with Additional Needs

The above section dealt with some of the more general and common “low-tech” aids that can be used to assist children with additional needs use technology more effectively. There is a large number of “high-tech” hardware and software systems now available to support people with specific needs, some representing a significant investment. If you are considering investing in assistive technology you should take time to plan this investment properly. The following offers a list of questions you should ask yourself to help you choose specialised equipment:

Questions to ask when choosing Specialist Equipment

- What are the specific needs /challenges of the child/children?
- What are the strengths of the child/children?
- How interested or skilled are they now at using technology?
- How easy is it to learn about and operate the technology?
- How reliable is the technology?
- Does it need to work with other technologies?
- Is it compatible with existing technology?
- What technical support is available?
- Is the supplier reputable?

Other Points to Consider

Other points to consider when choosing assistive technology include:

- Always involve the children with special needs as much as possible when selecting assistive technology.
- Consult the professionals – include people who understand the disability – occupational therapists, language therapists, etc.
- Research, network and visit others who may be using similar technology.
- Try out the technology prior to purchasing.
- Introduce the technology on a trial basis.
- Does it represent value for money?
- Consider the funding options.
- Evaluate whether the device/system is effective.
- Is it working and what outcomes are being achieved?

There are many technologies available that can assist and be used by children with learning and physical challenges. However the effective use of this technology requires an understanding of the nature of the disability or difficulty and the particular challenges and barriers. Assistive technology will only assist the child if the tool matches the individual need. These technologies can empower young children, increase their independence and support their inclusion. Assistive technologies will not eliminate particular learning difficulties but can be used very effectively to make the most of strengths and bypass areas of difficulty. Choosing appropriate technology requires time and patience.

Errorless Software to Enhance Self Esteem

When using ICT with young children with additional needs one of the best approaches is to use software that is errorless. That means that no matter what the children do there are no right or wrong answers. Exploration and trial and error are the learning styles that are rewarded, with fun noises, humourous animations, exciting graphics and natural sounding speech. Many of these programmes allow children to make choices and be successful. These programmes are excellent for language development and eye-to-hand co-ordination. Computers can, with carefully chosen software and adaptive aids, give children control, power and success.

How Five Pre-school Children with Autism Responded to Computers

In 1997 the Early Childhood Comprehensive Technology System (ECCTS) carried out a study on “computer use” of children attending the Just Kids Learning Centre in Middle Island, Long Island, New York. The care rooms were integrated with one third of the children with special needs. A wide variety of interactive software was integrated into the curriculum. Children worked alone or in groups during free play and other choice times. During the first year of the study sixteen children with disabilities in five classrooms comprised the study group. At the outset the researchers did not ask for a certain number of children with a particular disability. However, it was clear earlier on that the computer had “a remarkable calming effect on the five children diagnosed with autism”. Once the children recognised that the computers were potential “helping” tools to meet their own individual desires, positive behaviours emerged. In order to utilise the computer effectively, the children had to communicate and socialise. Prior to the computer exposure the boys were likely to scream, fall on the floor, resist adult assistance and throw things. After the boys used the computer in the classroom an entirely different cluster of positive behaviours were observed.

They socialised, shared, communicated and learned at the computer. One child taught himself to spell and read words. Clearly when the boys viewed the technology as interesting and trusted it to respond consistently to their commands then communication became essential to the child. Some of the observations were:

- The five boys first became curious about and unafraid of computers.
- They initially watched other children use the computers from a distance.
- Some boys liked a bit of privacy when they first tried using it on their own.
- The boys were likely to repeat interesting events in single frames. However with patience and encouragement the children did move on, even if it did take a week or two.
- The boys were quick to learn how to use and choose software.
- The boys talked to the computer and then talked to people.
- Over time the boys needed less adult support.
- All five boys demonstrated increased attention span when they were using the computer alone or with others.

The researchers suggest the following reasons for the boys' positive response to the technology:

- A computer running appropriate software is consistent. Autistic children need consistency.
- If the software is appropriate and well chosen it will not deliver unwanted surprises.
- Software can be interesting, responsive, interactive and can appeal to a variety of interests and needs.
- The computer cannot harm them. This may be the reason why they like to watch other children using it before they try it. They want to be sure it is safe.
- The child has complete control over the computer – control is something especially liked by autistic children.

The study concluded that computers are not a cure but if technology is individualised, incorporated into the total curriculum and if it emphasises spontaneous interaction and independent functioning it can make a difference.

The study was conducted by staff of the Early Childhood Comprehensive Technology System (ECCTE), funded by the US Department of Education.



www.assistireland.ie

Provides information on a range of aids and devices available, how to choose and use them.

www.enableireland.ie

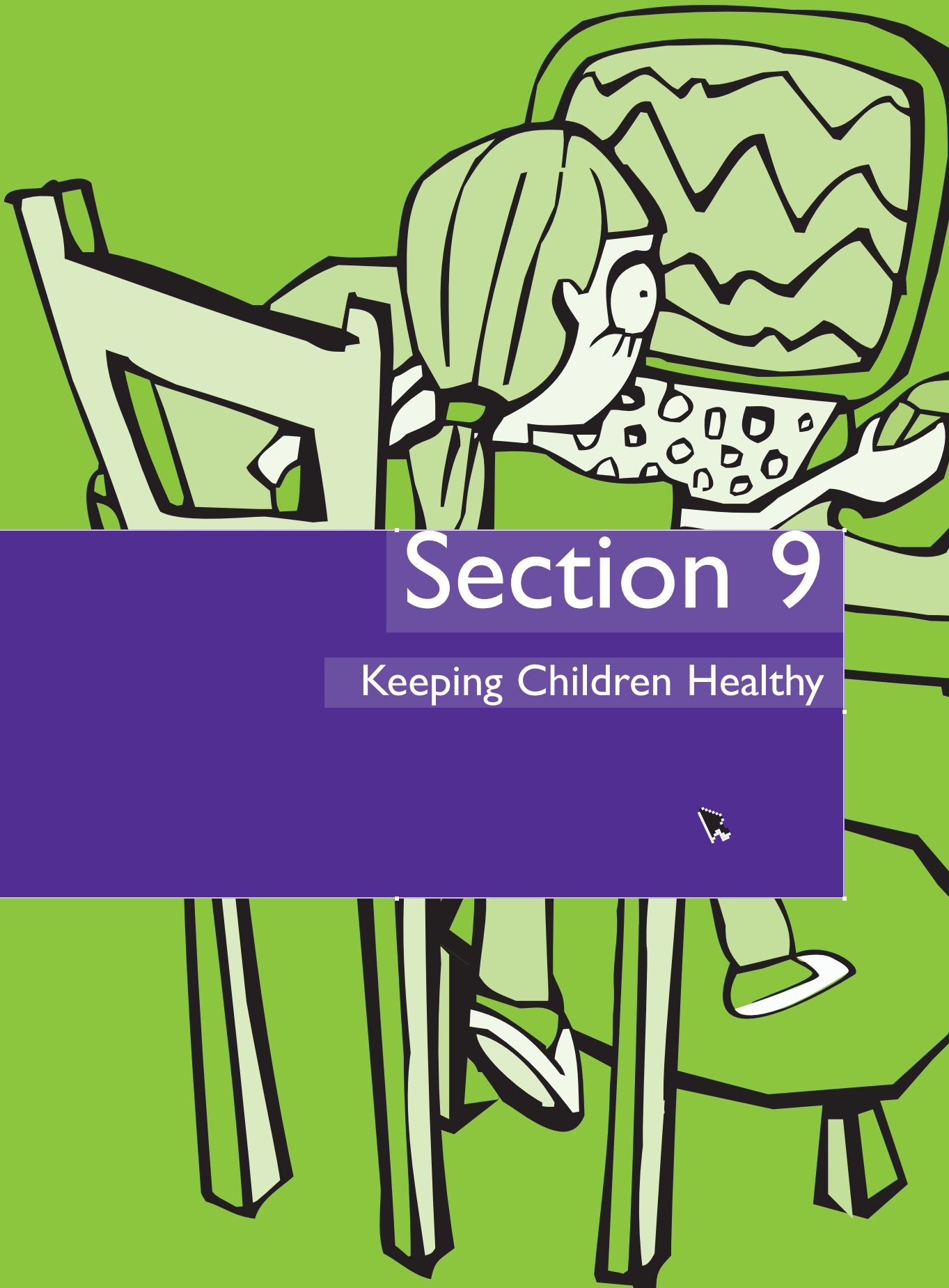
For information and advice on assistive technology.

www.pluk.org

Helps parents and practitioners learn more about assistive technology and how it can help children.

www.lburkhart.com/main

A handout giving guidance on the use of assistive technology with young people.



Section 9

Keeping Children Healthy



Keeping Children Healthy

As technology becomes a bigger part in childcare services, practitioners must consider the health and safety issues associated with ICT. Children need to be taught some basic safety principles when using computers. They should be encouraged to sit at a safe distance from the computer monitor; to take frequent rest breaks and to stand up, stretch and wiggle often. Bad posture can cause a multitude of problems including eye strain, headaches, neck strain, sore wrists and even back pain. Practitioners should have knowledge of computer ergonomics to ensure a healthy and safe environment prevails for the children in their care.

Ergonomic Guidelines

Viewing Distance

The monitor should be at least 2 to 2.5 ft from the child's eyes. To encourage children to maintain this distance make the screen easy to see and read at that distance, taking account of individual children's abilities. A larger font size or magnifier may be helpful. The print may be adjusted for boldness, colour and line spacing to make it easy to read.

The top of the computer monitor should be at forehead height so that the child looks slightly down. The child should not have to lean back or forward to see the work on the screen.

Time at Computer

Children should not be encouraged to spend lots of sedentary time at the computer. They should be encouraged to use their physical energy.

Seat Height and Posture

The child should sit high enough that his/her arms bend at 90 degree angles when typing or using the mouse. If the height of the chair is not adjustable use cushions, foam, rubber or even a phone book on the seat to raise the child up high enough. The chair should be as close as possible to the desk/table. The correct posture for working at a computer is one that provides comfort and circulation to the back, arms, legs and neck. The back should be well supported.

Footrest

If the child sits in a chair and his/her feet do not touch the floor; use a footstool or footrest to prevent feet from dangling and cutting off circulation in the legs. Use cushions, phone books or boxes if footrests are not available.

Mouse, Touch Pads and Rollerballs

Most computer mice are built to fit adult hands, not child-sized hands. Try to find a mouse that fits small hands, and place it within easy reach of the child. Most children do not have highly developed motor skills for using a mouse. Touch pads and rollerballs are great options for young people because they are easier to manipulate.

Keyboards

Child-sized keyboards may be a consideration for the children in your care depending on their age, stage of development and fine motor skills. For very young children the keys should only require light pressure so that keyboarding does not tire their hands and so that they don't get into the bad habit of pounding keys to get them to work.

The KidSmart Model

Between 2000 and 2005 IBM and NCTE have worked together to introduce the IBM KidSmart Early Learning Centre to schools throughout Ireland. A specially designed unit was provided. This piece of furniture was especially designed for children aged three to seven years old. The desktop computer has a monitor built into a desk and a standard mouse and a mini-mouse included. The plastic colourful desk and double seat have a wipe-clean surface and should withstand a lot of usage. The package includes a range of software and additional compatible software can be installed as required.

Many childcare services are not in a position to purchase such specialised equipment and furniture but can do a good job improvising by using appropriate supports and inexpensive accessories like booster seats, foot rests, back pillows, mouse platforms and handmade wrist rests. Time spent resolving ergonomic issues is time well spent.

Other Health and Safety Considerations

Light – avoid reflective glare. Provide natural light if possible. Position monitors at right angles to window, otherwise use blinds. Avoid strong artificial lighting.

Noise – use headphone for software containing audio. Position printers and photocopiers away from the workstation.

Heat – ventilate rooms. Turn off equipment when not in use. Consider air conditioning.

Prevent electrical accidents – leave technical repairs to the experts. Re-route and cover stray leads. Replace frayed leads and damaged plugs. Avoid overloading extension leads. Be aware of coiled cable overheating.

Basic Computer Rules for Children!

Early childhood practitioners should consider establishing some basic ground rules with children when working with computers. These may include the following:

- Wash hands before using.
- Use gentle touches.
- No food and drink by the computer.
- No magnets by the computer.
- No sand by the computer.

A graphic consisting of two overlapping arrow shapes pointing to the right. The top arrow is blue and the bottom arrow is green. The word "Signposts" is written in black text inside the green arrow.

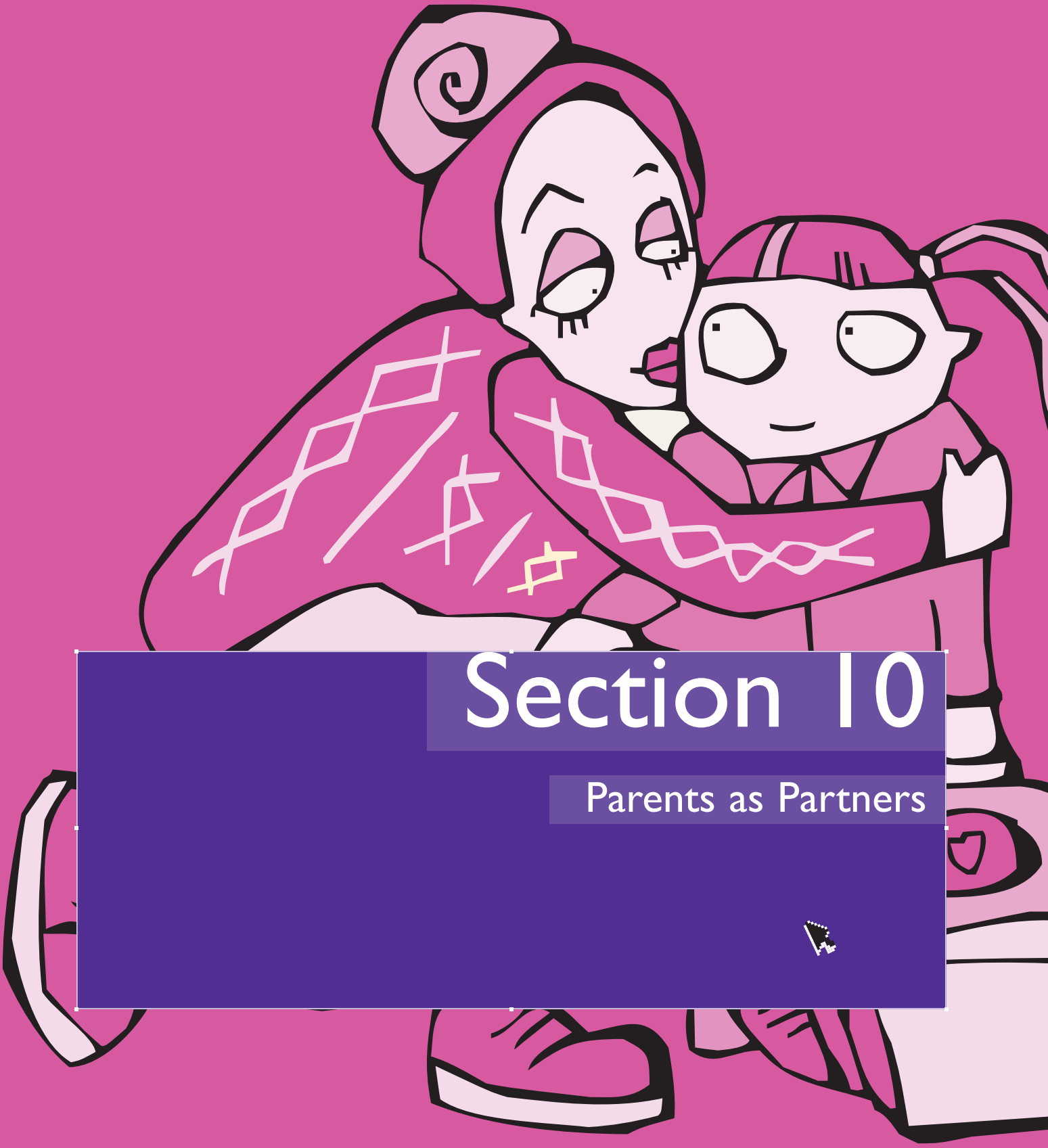
Signposts

www.ergonomics.ie

An article on children's safe use of computers.

www.educationworld.com

Features an article on Workstation Ergonomic Guidelines for Computer Use and Children.



Section 10

Parents as Partners



Parents as Partners

Many studies have shown when parents and practitioners collaborate towards the same goals this can lead to improved outcomes for children. The use of ICT in the early learning setting can offer opportunities to actively involve parents in their children's development.

Guidelines for Working with Parents

Written Communication – Practitioners should produce clear user-friendly documentation explaining the use of ICT in the learning environment. The benefits of ICT to children should be highlighted and explained using practical examples.

Empower – encourage parents who have access to technology to find out more about the benefits of ICT to young children. Provide parents with a list of website resources.

Meetings – a well planned meeting where there is enough time for real dialogue and an opportunity for parents to experience first hand the impact of ICT on their child's development can be hugely beneficial. Such meetings should be arranged to suit the circumstances of parents. Encourage parents to bring friends and other family members. If appropriate, invite other members of staff to answer queries and follow up points. Accessible information might be shared with parents regarding how they can help and encourage their child at home.

Concerns – parents may have a number of concerns regarding the use of ICT with their children, particularly in relation to Internet Safety. These concerns should be discussed in detail at such meetings and dealt with appropriately.

Make it a Positive Experience – show your interest in each and every child and demonstrate the benefits of ICT to their learning. Ask parents for their opinion and ask them to share information with you.

Be Sensitive – be aware of children's home backgrounds and take these into account when choosing ICT resources and planning their use in the learning environment. Families come in all shapes and sizes and there are many varieties of family experience and patterns of family organisation and childcare.

Workshops – run workshops for parents to encourage parents' practical involvement with ICT. There may be opportunities for children and parents to learn together.

Parents as Volunteers – parents may volunteer to the service. Voluntary work can take many forms. A parent could be represented on the advisory group or committee. They may have knowledge of ICT that could be shared in the classroom or they may assist in raising funds for the project.

Celebrate Success – invite parents to view and celebrate the work of their children. A display of end-products or a demonstration of skill by children is hugely motivating and fulfilling for both parties.

The Internet and an Acceptable Use Policy

An Acceptable Use Policy (AUP) addresses all rights, privileges, responsibilities and sanctions associated with the Internet. It should be drawn up by all those involved in the ICT project – committees, staff, parents and children. It identifies service strategy on promoting safe use of the Internet including the parameters of behaviour and in essence is a signed agreement between all parties on how the Internet will be used. The AUP should contain all aspects of Internet usage in the childcare service including browsing the World Wide Web, using search engines, downloading and use of email and chat rooms. It should include a consent or permission form signed by parents/guardians and the child. There are many online samples of AUPs that can be downloaded from the Internet (see Signposts section below). The first template presented at the end of this section has been adapted from the AUP templates available on the NCTE website at www.ncte.ie. The second template is a general child-friendly consent form for use with young children participating in general ICT programmes in childcare services. The template is the one used by Barnardos' *Computer Characters Project*.

The following AUP template should be adjusted depending on the age of the children and the literacy and understanding levels of parents, guardians and children. The detail of the AUP and the language used will also depend on how the Internet is used in individual services. It is important that such a document is accessible and user-friendly to its target audience. Services might like to develop a simplified form using symbols for very young children.

Acceptable Use Policy Template

Childcare Service Name and Address

The aim of this Acceptable Use Policy (AUP) is to ensure that children will benefit from learning opportunities offered by Internet resources in a safe and effective manner. Internet use and access is considered an important resource in this service.

It is envisaged that the childcare service and parent representatives will revise the AUP annually. Before signing, the AUP should be read carefully to ensure that the conditions of use are accepted and understood.

This version of the AUP was created on (date) _____

by _____ (name of parties involved in drawing up the AUP)

Childcare Service Strategy

The service will employ a number of strategies in order to maximise learning opportunities and reduce risks associated with the Internet. These strategies are as follows:

General

- The service will continually monitor children's Internet usage and the screen will always be visible to the practitioner.
- Internet sessions will always be supervised by a practitioner.
- Filtering software and/or equivalent systems will be used in order to minimise the risk of exposure to inappropriate material.
- Children and practitioners will be provided with training in the area of Internet safety.
- Uploading and downloading of non-approved software will not be permitted.
- Virus protection software will be used and updated on a regular basis.
- The use of personal floppy disks or CD-ROMs in the childcare service requires a practitioner's permission.
- Children will observe good "netiquette" (i.e. etiquette on the Internet) at all times and will not undertake any actions that may bring the service into disrepute or endanger the safety of others.

World Wide Web

- Children will not visit Internet sites that contain obscene, illegal, hateful or otherwise objectionable materials.
- Children will use the Internet for learning purposes only.
- Children will be familiar with copyright issues relating to online learning.
- Children will never disclose or publicise personal information.
- Children will be aware that any usage, including distributing or receiving information, will be monitored for unusual activity, security and/or network management reasons.

Email

- Children will use approved class email accounts under supervision by or permission from a practitioner.
- Children will not send or receive any material that is illegal, obscene, defamatory or that is intended to annoy or intimidate another person.
- Children will not reveal their own or other people's personal details, such as addresses or telephone numbers or pictures.
- Children will never arrange a face-to-face meeting with someone they only know through emails or the Internet.
- Children will note that sending and receiving email attachments is subject to permission from their teacher.

Internet Chat

- Children will only have access to chat rooms, discussion forums or other electronic communication forums that have been approved by the school.
- Chat rooms, discussion forums and other electronic communication forums will only be used for educational purposes and will always be supervised.
- Usernames will be used to avoid disclosure of identity.
- Face-to-face meetings with someone organised via Internet chat will be forbidden.

Website

- Children will be given the opportunity to publish projects, artwork or school work on the World Wide Web.
- The publication of student work will be co-ordinated by a practitioner.
- Children's work will appear in an educational context on web pages with a copyright notice prohibiting the copying of such work without express written permission.
- Digital photographs, audio or video clips of individual children will not be published on the website. Instead photographs, audio and video clips will focus on group activities. Video clips may be password protected.
- Personal pupil information including home address and contact details will be omitted from the childcare service web pages.
- Children will continue to own the copyright on any work published.

Legislation

The service will provide information on the following legislation relating to use of the Internet which practitioners, children and parents will have access to:

- Data Protection (Amendment) Act, 2003
- Child Trafficking and Pornography Act, 1998
- Interception Act, 1993
- Video Recordings Act, 1989
- The Data Protection Act, 1988

Support Structures

The service will inform children and parents of key support structures and organisations that deal with illegal material or harmful use of the Internet.

Sanctions

Misuse of the Internet may result in disciplinary action, including written warnings, withdrawal of access privileges and, in extreme cases, suspension or expulsion. The service also reserves the right to report any illegal activities to the appropriate authorities.

Permission Form Template



Please review the attached Internet Acceptable Use Policy and sign and return this permission form to:

Service Name: _____

Name of Child: _____

Group: _____

Child

I agree to follow the service's Acceptable Use Policy on the use of the Internet. I will use the Internet in a responsible way and obey all the rules explained to me by the service.

Pupil's Signature: _____

Date: _____

Parent/Guardian

As the parent or legal guardian of the above pupil, I have read the Acceptable Use Policy and grant permission for my son or daughter or the child in my care to access the Internet. I understand that Internet access is intended for learning purposes. I also understand that every reasonable precaution has been taken by the service to provide for online safety but the service cannot be held responsible if children access unsuitable websites.

I accept the above paragraph I do not accept the above paragraph

(Please tick as appropriate)

In relation to the childcare service website, I accept that, if the service considers it appropriate, my child's creative work may be chosen for inclusion on the website. I understand and accept the terms of the Acceptable Use Policy relating to publishing children's work on the service website.

I accept the above paragraph I do not accept the above paragraph

(Please tick as appropriate)

Signature: _____

Date: _____

Address: _____

Telephone: _____

Consent Form





- Barnardos' Computer Characters Project and how it will be run has been explained to me.
- My opinions are very important and will be listened to and respected by everyone on the Project.
- My input is important and I will be involved in every step of the Project.
- Information on my experience within school may be obtained.
- I am willing to participate in all activities of the Project.
- Some activities may involve travelling to Barnardos office and other services.
- All parties in this Project will treat others with respect.
- Should this respect not be shown, the participation can end at any time.
- I understand I can withdraw from the Project and stop participating at any time.

I wish to be actively involved in Barnardos' Computer Characters Project

Signature of Child: _____

Please circle one below: (for those too young to sign their names)

Signature of Parent/Guardian: _____



Online sample AUPs available from:

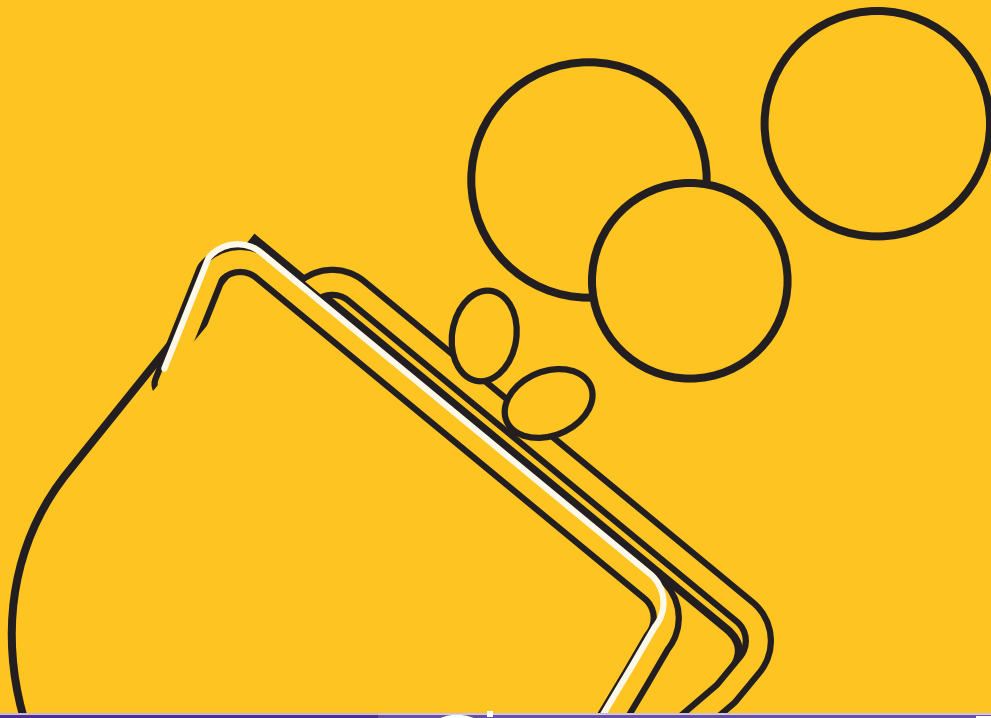
www.ncte.ie

www.kings.k12.ca.us/AcceptableUsePolicy.htm

www.kented.org.uk/ngfl/policy/downloads.html

www.det.vic.gov.au/det/resources/docs/acceptable_use.doc

www.ncsu.edu/logon/au.policy.html



Section II

A Guide to Funding an ICT Project



A Guide to Funding an ICT Project

Implementing an ICT project in a childcare service can be expensive. It involves the purchase of hardware and software, the training of staff members, technical support and promotion. There is no “magic wand” when it comes to funding. In Ireland there is no one obvious source to fund such a project. Acquiring the necessary finance will require proper planning, research, hard work, dedicated attention and some degree of luck!

Many funding applications are unsuccessful not because the funding body does not like the idea, but because the application or funding proposal is incorrectly completed, information is missing or simply it does not meet the stated criteria. Proper research and preparation will eliminate the possibility of this happening. Unfortunately, most funders do not fund ongoing running costs, preferring to put their money into specific start-up projects. It is important to budget for ongoing running costs from your regular income, if external funding is not an option.

The First Step – Finding the Right Funders

The first step for organisations is to equip themselves with as much information as possible about possible funders. The most comprehensive source of such information in Ireland is the Café Fundraising Handbook. It is a detailed guide to funding sources for the voluntary and community sector. It provides information on several hundred funding organisations. The directory is indexed and provides information on private and public sources of funding at regional, national, EU and international levels. It also provides valuable advice on the practice of fundraising.

- Sift through the directory and identify possible funders.
- Get additional information from these organisations – the funding priorities of some agencies change from year to year. There is little advantage in spending long periods of time writing up fundraising proposals to discover the project simply is not eligible. There is no point in trying to squeeze your project into a set of funding criteria that are not really appropriate. A good rule is to match your goals to the funder's and the funding priorities.
- One or more – you might decide to apply to one funder for the whole amount of your costs or a number of funders for different aspects of the project.
- Make sure you have access to the most up-to-date information on funders as guidelines and priorities change regularly.
- Obtain the relevant application forms or literature.

Defining your Project

The Title

To enable not only your stakeholders but your funders to know instantly what your project is about, choose a title which is attractive and relevant. Examples mentioned in this toolkit include “KidSmart” and “Computer Characters”.

Be realistic

It is important that you demonstrate that your ICT project is achievable and measurable. Set clear objectives and show potential funders that you are focused and well organised.

Stay Focused

Make sure you maintain sight of your project plan and your original aims as this will increase your chances of success. Designate someone to co-ordinate the project and ensure that everyone knows who this is. Be sure that you and your colleagues remain clear about:

- Why is the project important?
- How will you specifically use the money to achieve your aims?

Benefits

Remember that funders will be most interested in the benefits to your clientele, the children, than in any other benefits to your organisations. Demonstrating these benefits is vital. Use personal stories, case studies and statistics. Be as specific as possible about why your project is needed at this time.

Project Costs

Work out a breakdown of the costs and be realistic. The budget should clearly match the aims. Resist the temptation to inflate the budget artificially.

Monitoring and Evaluation

The funder will need to be confident that your organisation can competently manage the project and the funds. You will need to prove this in your project proposal. Describe how you propose to evaluate the effectiveness of the project.

Exit Strategy

Most funders will want to see a clear exit strategy and will not want to be tied into funding a project indefinitely. State clearly your intentions when the funding comes to an end.

Plan Ahead

Allow yourself ample time for writing the funding application. Make a note of the deadline for submissions and the “turnaround time” as these can vary greatly between funders.

Follow the Guidelines

If the funder you intend to apply to has a set of guidelines read them more than once. Make sure you are eligible and meet all requirements. Keep the funder’s objectives at the forefront of your mind. Do not be afraid to contact the funder to seek additional information or clarify existing information.

General Pointers

Avoid jargon – most applications are read by people with no knowledge of your organisation so make it sound attractive, not convoluted.

Language – use plain language – never use acronyms and abbreviations.

Do as you’re told – be sure to follow any guidelines carefully. If the form states that you should only type within the boxes or that they don’t want faxed copies, do what they ask!

Get it read – get someone not associated with the project to read the application or proposal when it is finished. Encourage honest feedback.

Type – do not handwrite applications. It looks more professional if you present a typed document.

Don’t rush – a successful funding application takes time and effort. Make sure everything is exactly how you want it to be.

Documents – send all the supporting documents requested (e.g. recent set of accounts).



Completing an Application Form

- Copy it.
- Read the questions twice.
- Answer all the questions asked.
- Use the funder's language.
- Be positive.
- Keep focused.

Writing a Letter of Application

- Never send a standard letter – take time to write a personal letter to the funder.
- Find out who the correct contact is and address the letter accordingly.
- Send the letter on headed paper.
- Keep the letter short – it should never exceed more than 2 A4 pages.
- Use factual information.

Writing an ICT Project Proposal

If the funder does not give you a guideline or if an application form is not being used, the following list of headings for a project proposal might help:

- Project title – think of something attractive and relevant.
- Introduction and brief history of your childcare service.
- A brief summary of your project proposal including cost – no more than one paragraph.
- Project description – Why is it important to introduce ICT into your childcare service? How will it directly benefit children? Use research/personal stories/case studies/statistics to support your proposal.
- How will the project be run? How will it be monitored and evaluated?
- Outcomes - outline the results you expect to achieve.
- Budget – give a breakdown of costs.
- Other funders – give details of any other funders involved.
- Contact – give contact details and your availability.

In Summary

When a funder assesses an ICT application it is looking for evidence that:

- The project is needed.
- The project will be managed effectively.
- The plans have been properly costed.
- The applicant has ways to evaluate the project.

In the End!

- Make a copy of the application.
- Get feedback from unsuccessful bids and learn valuable lessons.

Probably the best source of funding for ICT is through commercial sponsorship. Ireland has a good reputation for corporate giving which is generally localised and personalised and is provided in exchange for some kind of a public relations return. Another possibility for funding is through the National Childcare Investment Programme 2006 – 2010. Under this programme capital grants are available towards the capital cost of developing childcare facilities. Grants are available to both the private and community childcare sectors. It should be noted that these grants are of a capital nature so will cover equipment only.



www.comhairle.ie

Provides information and advice on a wide range of funding sources for the voluntary and community sector. Also gives practical advice on preparing funding applications.

Irish Fundraising Handbook/Café publications.

This is the definitive guide to fundraising in Ireland. For more information or to order a copy email: admin@artsincontext.com



