



Play AT ICT

Northern Ireland

Using Assistive ICT to
Support Pre-school Children
with Learning Difficulties

Funded by



Using Assistive ICT to support pre-school children with Learning Difficulties.

This factsheet will provide basic help and advice to support pre-school children with a range of learning difficulties using Assistive ICT (Information Communication Technology) to access play. It is important to note that each individual child's requirements and needs will vary greatly and this booklet is aimed at providing you with general information around using technology to access play and support for pre-school children with learning difficulties.

This factsheet will look at how pre-school children with Learning Difficulties can physically access toys and a computer. We will also look at some low technology assistive communication aids.

We will look at the hardware and software that we have found to be suitable for pre-school children with learning difficulties and provided some case studies of individuals who have had access to some of the equipment and software that we have highlighted.

If you would like further advice or support please do not hesitate to contact us:

- 0800 269 545 (phone and minicom)
- preschool@abilitynet.org.uk

Hardware

In order to establish whether Assistive ICT would be useful for a child, you need to think what you would like the child to aim to achieve with the possible use of ICT. It is important to be led by the child's needs and not by the technology available.

Accessing a computer

Choosing the right input and output devices is as important as choosing the right software. There are a range of adaptations and alternative devices that may be of use across the spectrum of needs for pre-school children with learning difficulties.

Touch Monitors



Touch Monitors can be really beneficial for children with a learning difficulty. It is the most direct method in getting a response from the computer. For most children pointing at something is a natural way to communicate and when they point and touch the monitor, it creates an immediate response on the screen. For more information on Touch Monitors please refer to our factsheet *“Using Touch Monitors”*.

Touch Monitors can really bring on a child’s development and we have included a case study at the end of this factsheet to highlight how effective they can be.

Switches



Using switches with young children with learning difficulties makes it easier for them to use either a battery operated toy or to access the computer, this is because they only have to press the switch to get a response. To activate some battery operated toys you may need to press the paw on one toy, the foot on another, a button on another, and this can be really confusing for some children. Having one external switch device that you can press that makes the toy work is much easier for the child to use and to help them to build their understanding of cause and effect.

When using an external switch device to operate the computer the child does not have to understand the relationship between the movement of a mouse and the placement of the cursor on the screen as they just need to press the switch to get the response on the screen.

Switches come in a variety of shapes and sizes and can be operated by any controlled movement of the body.

Switches work well with cause and effect software and programs that require simple choices. We will look at the various pieces of software later in this factsheet.

Using switches with battery operated toys



A positive way to introduce young children to understand what a switch does is to connect it to a toy so when they press the switch the reward is that the toy works. You can buy toys that are already adapted to use with a switch. These allow you to just plug in the external switch and play away. However you can also adapt battery operated toys or devices to work with a switch by using a Battery Switch Adaptor. Please refer to the skillsheet on our website “Setting up a switch to use with a battery operated toy”.

Connecting switches to a computer

When you are using switches with a computer the switches will respond as though the keyboard is being pressed (usually ‘space’ or ‘enter’) or mouse clicks. Most switch software will allow you to use the standard keyboard or mouse to operate it as well as switches. This can be very useful if you want to try out the software without connecting switches or to work alongside a child.

To connect a switch to a computer you will need an interface.

Mouse switch interface



These interfaces connect through the mouse port, such as the mouser or a special mouse or roller that has switch sockets built in. You should note that not all switch-accessible software will allow mouse clicks for the switch action, so this solution will not work for all switch access.

Switches connected through a mouse switch interface can be especially useful when first introducing a switch to the child. You can connect the switch and work with the child letting them press the switch, at the same time you have control of the mouse pointer.

Switch interface



The best way to connect a switch to a computer is to use a switch interface that you plug directly into the port. It is important to note that you can still have a separate mouse plugged in at the same time to use with the computer.

Product	Supplier
Various switches and switch interfaces	Inclusive Technology, QED, Maxess Products, Liberator, Abilitynet
Switch adapted toys	QED, Inclusive Technology, Liberator, Abilitynet
Battery Switch Adaptors	QED, Inclusive Technology, Liberator, Abilitynet

Pointing Devices

Some children with learning difficulties find it difficult to understand the concept of using a standard mouse. They find it hard to relate the movement of their hand on the mouse to the movement of the cursor on the screen. In these instances it may be beneficial for them to try an alternative pointing device like a trackball or a joystick as they are easier to use.

A trackball or joystick is basically an upturned standard mouse. Rather than rolling the mouse on the table top it is now a static device where the ball or the joystick is on the top and is moved using fingers, thumbs and palms. Larger trackball devices are often suitable for use by feet too.

In our experience we have found that two devices have been really beneficial for ALL pre-school children of all abilities. These are the BIGtrack and the Inclusive KidTrac.

BIGtrack



This device was originally designed for children as the big trackball has many features that make it ideal for children who don't have the fine motor skills required by a mouse. It doesn't require finger control and is even ideal if it needs to be operated by a child's feet or elbow.

The large three inch ball has two large left and right mouse buttons which really helps prevent unwanted clicks when using the ball.

The BIG track is designed for rough handling and can withstand the buttons being thumped and the ball being swiped.

However this device could be difficult for some children because the left and right buttons are both blue and it may be difficult to know which one to press. But this can easily be resolved by using stickers on the buttons to show the difference.

Inclusive KidTrac



This device is a three button trackball. There is a blue and red button for right and left clicks and a green button that when pressed allows you to click lock and drag until you press to release.

The buttons are really helpful when using the device with a child learning to use the mouse you can tell them to “press the blue button” instead of having to say “press the right click”. The large buttons are easy to use and the device also has switch sockets built in so that there is an option to use the roller ball to position the mouse pointer and then to use a switch to mouse click.

Single Button Mouse



This mouse is ideal for those children who can move a standard mouse but have problems distinguishing between a left or right mouse click, as it only has the one button across the top.

Slowing the mouse pointer speed

It will also be beneficial to slow the mouse pointer speed down on screen so that it is easier to control. For further information on alternative mice and changing the mouse settings on your computer please refer to the following factsheets:

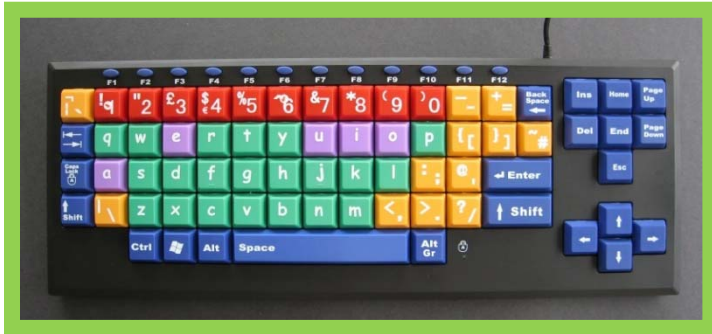
- Keyboard and Mouse Alternatives
- Slowing the Mouse Speed Down

Product	Supplier
BIGtrack	Maxess, Inclusive Technology, Keytools, Abilitynet
Inclusive KidTrac	Maxess, Inclusive Technology, Keytools, Abilitynet
Single Button Mouse	Maxess, Inclusive Technology, Keytools, Abilitynet

Keyboards

A standard keyboard has over 100 keys and this can appear confusing, intimidating or can be an invitation to fiddle. The keys are fairly small and close together, usually in black and white/beige, with upper case letters. However you can get simplified keyboards that have larger keys, lower case letters or colour coding.

Jumbo XL Keyboard



This keyboard has all the functions of a standard keyboard except that it has no number pad.

It is available with the option of having lower case letters, that are on 1 inch square keys, these can help all early years children not just those with learning difficulties to select letters on the keyboard and to press the keys more easily.

The keys are also colour coded, numbers are red; vowels are purple; consonants are green; punctuation is yellow and everything else is blue. This can really make a difference when learning the layout of a keyboard as referring to colours to help you find the letter or number is much easier. The colours also make it very appealing to young children being faced with a keyboard for the first time.

Intellikeys



This is a touch sensitive keyboard that comes with a range of overlays and software to make your own overlays. Overlays can be customised to have larger keys, less clutter, bigger gaps between keys and exclude unnecessary keys. This means they can be set up to whatever the user needs.

In addition to just letters, overlay keyboards can also work with pictures and symbols which can be beneficial for children with a learning difficulty.

There are many other alternatives to the standard keyboard and if you would like further information please refer to our “Keyboard and Mouse Alternatives” factsheet.

Lower case keyboard stickers



If you are just looking to adapt your existing keyboard to have lower case letters, Keyboard stickers are a cheap, simple way to convert a standard layout keyboard into a lower case keyboard.

Product	Supplier
Jumbo XL Keyboard – lower case letters	Maxess, Inclusive Technology, Keytools, Abilitynet
Intellikeys Keyboard	Maxess, Inclusive Technology, Keytools, Abilitynet
Keyboard Stickers	Maxess, Inclusive Technology, Keytools, Abilitynet

Cause and Effect Software

The following selection of software programs are examples of activities to help children develop their understanding of cause and effect using a computer. They all have options to use them with a variety of input devices including touchscreen, switches, mouse and keyboard.

Software needs to be stimulating and motivating to hold the user's attention. Colours, pictures, animation, large text, sounds and speech can all help. It is recommended that software is chosen by people working with the individual such as family, carers and early years professionals. A good approach is to have a look through the catalogues of the suppliers of the specialist technology, usually available through their websites, as these tend to provide comprehensive clear descriptions of the software.

Target and Touch series



This series of software can really help a child develop their understanding of cause and effect when using a touchscreen monitor.

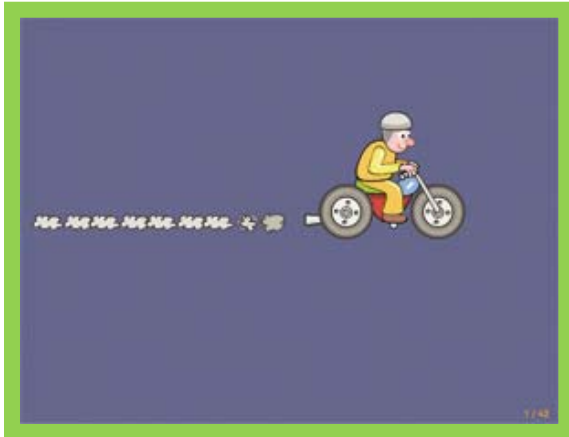
The activities include introducing the touch monitor by touching anywhere on the screen and make something happen, to more advanced activities of building the images on screen to get the main reward. It is also particularly good for building visual tracking skills, as the images that appear on screen can be set to appear from left to right.

Touch Balloons



This program develops hand-eye coordination by popping balloons. You can change the look of the large pointer, choose the direction the balloons travel, adjust the speed and the number of balloons and change the colour of the balloons and the background colour.

Big Bang



This program has a range of simple images, stimulating movement and good sound effects on a clear uncluttered background. The activities are intended to maintain the child's attention and to encourage interaction with the computer. It helps particularly to develop visual skills associated with "finding something on the screen" and "following movement".

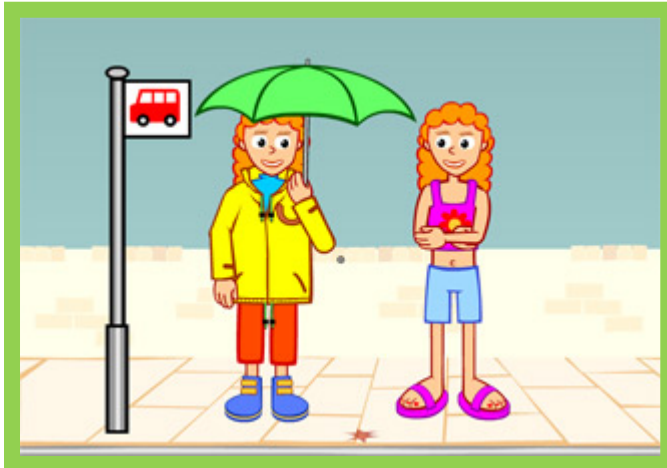
Switch Skills 1



This is a program that provides all the motivation needed to help children to develop a more purposeful touch, switch, mouse click, and helps to determine that the user understands cause and effect, (Refer to Child A case study).

The activity can also encourage speaking and listening skills and help develop concentration skills. The bright clear graphics and lots of sound and music mean that it is also very suitable for children who rely on auditory clues.

SwitchIt! Series



This software range has a number of titles with a variety of themes, and they all provide progression and age appropriate activities to develop cause and effect understanding and beyond with their story activities.

SwitchIt! Maker 2



This software is very easy to use and allows you to build your own activities and create talking books. You have the option to create activities using the supplied pictures, symbols, photographs and a short video clip that comes with the software or you can use your own digital photos and videos which can help some pre-school children to develop their understanding of the world around them.

Product	Supplier
Cause and Effect software	Inclusive Technology, Semerc, PRI Liberator.

Output

Effective output from the computer is often important for pre-school children with learning difficulties. Bright, colourful and active screens can be helpful, although care needs to be taken not to make them too cluttered. Excessive use of colours can often cause confusion to some children, for example some children with Autism may have better interaction with software that has simple line drawings.

The sound facilities on computers can be utilised so that the full, speech, sounds and music are part of the software that we have referred to in this information booklet, and heighten the “cause and effect” experience, as the sounds are in response to the user’s actions. Having the speakers as close to the monitor as possible will help concentrate the child’s attention to one area and reduce possible distraction. However it is important to point out that for some children having sound can be distracting and also some children with particular learning difficulties are very sensitive to noise and may not like the loud noises that the software programs can make.

Case Study

Child A is 3 years old and has autism with developmental delay.

She communicates with sounds, and movements to make her needs known and she has limited eye contact. Her nursery introduced her to the following technology with one to one support.

Touchscreen monitor with 3 pieces of software:

Touch Balloons (hand eye coordination and direct targeting skills).

Big Bang (Builds – waiting, responding to music).

SwitchSkills – Racing Car Activity (waiting and timing activity and Soccer Shoot (timing and horizontal tracking activity)).

Target 1 - To reach out with her hand to touch/choose using the Touch screen with Touch Balloons and Big Bang software.

Target 2 - To learn to anticipate, wait and touch the screen at the appropriate time.

Outcome

Child A over 3 to 6 months developed from using random touch anywhere on the screen to actual screen touching of the object that made the effect. She also demonstrated that she understood that touching the screen was creating a reaction.

Using the switch skills software she initially began by using the software by touching anywhere on the screen. But after 3 months she was demonstrated that she sat with her hands resting and lifting to press at the correct time, showing that she was anticipating, waiting and interacting with the software. This was something that Child A was not demonstrating in any other play activities. It really engaged and focused her and she was also playing the activity with another child who had behavioural difficulties.

It helped child A to interact with her peers who she was not doing previously and at the same time the child with behavioural difficulties was demonstrating patience and interaction by helping Child A to use the computer.

Early Communicators



Single message communicators are the first step in introducing technology as a way to communicate. The single communicator device that we have been using in the Play at IT project is called the **Big Mack**.

It has a big round switch target area that comes in a variety of colours and a volume control and on/off switch. It has a record button that allows 75 seconds of recording. This device can help a number of children in different ways, children with learning difficulties, children with no learning difficulties with a physical difficulty that stops them from being able to speak and children with English as a second language.

The main purpose of a single message communicator is to enable children with no speech to begin to have a voice. For example, it will give some individuals the power to attract attention and make requests. They are also helpful for children who have speech development delays to assist them in building their language skills, by hearing the recorded message on the device it helps them to try to say the words they hear.

Through the Play At IT project, we have also found that they have been successful in helping children with English as a second language to increase their understanding and building their English language vocabulary.

Depending on the cognitive ability of an individual child they can then progress from single message communicators to multiple message devices that allow them to make choices. Some individual can then move forward to more sophisticated equipment that allows a user to communicate in a more complex way.



IDEA.....

A fun way of using a **BigMack** in a play activity is to record a line of a nursery rhyme or story e.g. The Three Little Pigs *“I’ll huff and I’ll puff and I’ll blow your house down”*. So when the story is read and the children join in with that particular phrase, the child using the BIGmack device can press it and join in with the other children.

Scarlett is four years old and has a severe learning difficulty that includes no communication. She is currently on an “Early Years Action Plus” and currently has one to one support at her Playgroup.

Scarlett uses the BigMack device throughout the day; someone records the different messages on the device to reflect the activity she is involved with. To use the device Scarlett bangs the big switch for the message to be heard. Beginning with registration, which includes responding to her name being called out from the register by pressing the switch on the BigMack the recording is heard “Morning Miss Brown”. Scarlett also uses it to interact at circle time and to have the opportunity to say hello and goodbye to people she meets.

This provides Scarlett with the opportunity to become part of play activities throughout the day and not just there as an observer.

Product	Supplier
Early Communication devices	Inclusive Technology, QED, Liberator

Web resources

Free downloadable switch access software & websites offering free games and activities for children with learning difficulties.

We have listed below the website addresses where you can obtain free software and we have also listed some websites that have free games and activities that are switch accessible so that you can share the information with colleagues, other nurseries, children centres and families you work with.

Web Site	Description
www.shinylearning.co.uk/freegames/index.shtml	free switch-accessible games. Play the games online in your browser or download stand-alone versions for Windows.
www.tuxpaint.org/	Free noisy painting program
www.procreo.jp/labo/flower_garden.swf	Only one program but great for making a flower garden with a mouse or touch screen.
www.northerngrid.org/ngflwebsite/sennew/sen_software.html	SEN Switcher
www.oneswitch.org.uk/	A resource with some great arcade style switch games.
www.helpkidzlearn.com	free games and activities from Inclusive Technology
www.inclusive.co.uk/downloads/downloads.shtml	Music Games, Talking Faces and SEN Switcher
http://priorywoods.middlesbrough.sch.uk/resources/restop.htm	Fun switch games designed by pupils with SEN. Also includes a Big Book Template to create your own talking books.
http://www.bbc.co.uk/cbeebies/grownups/about/specialneeds/	Including switch games and mouse & keyboard games to build skills.
www.allkids.co.uk/kids_pages/childrens_free_fun_sites.shtml	A site packed with lots of information surrounding children and PLAY including links to online stories and games.
http://rjcooper.com	A site that has a range of switch, mouse and keyboard activities that allows you to download and use FREE up to 7 times.

Useful Contacts

ACE Centre (Aiding Communication in Education)

Specialist in the needs of children with physical and communication difficulties. Offer assessments and a range of other services.

ACE Centre
92 Windmill Road
Headington, Oxford OX3 7DR
Tel: 01865 759800
Web: www.ace-centre.org.uk

ACE Centre North
Broadbent Road
Watersheddings, Oldham OL1 4HU
Tel: 0161 627 1358
Web: www.ace-north.org.uk

Aidis Trust

Assesses individuals with disabilities, helping to determine the right computer communications equipment

Aidis

Tel: 0845120 3719 (9.30am to 5.00pm, Monday – Friday)

Email: info@aidis.org

Web: www.aidis.org/index.php

BILD (British Institute of Learning Disabilities)

BILD is a charity that provides information, publications and training and consultancy services about learning disabilities for organisations and individuals.

BILD

Wolverhampton Road
Kidderminster, Worcestershire DY10 3PP
Tel: 01562 723010
Web: www.bild.org.uk

CEREBRA

Cerebra is a charity that funds research on Brain conditions and provides support to Parents, carers and professionals.

Cerebra

Second Floor Offices

The Lyric Building, King Street

Carmarthen, SA31 1BD, Wales

Tel: 01267 244200 Parents support helpline: 0800 328 1159

Web: www.cerebra.org.uk

Children Today Charitable Trust

Children Today give grants for a wide range of equipment for children and young people with disabilities, that are not funded through the NHS

Children Today Charitable Trust

The Moorings

Rowton Bridge, Christleton

Chester CH3 7AE

Tel: 01244 335622

Email: info@childrentoday.org.uk

Web: www.children-today.org.uk

NASEN (National Association for Special Educational Needs)

This organisation promotes the education, training, advancement and development of people with special educational needs.

NASEN

4-5 Amber Business Village, Amber Close,

Amington, Tamworth,

Staffordshire B77 4RP

Tel: 01827 311 500

Web: www.nasen.org.uk

Newlife Foundation for Disabled Children (formerly BDF Newlife)

Providing equipment to help individual children, nurse led support services, pioneering medical research, awareness and campaigning

Newlife Foundation for Disabled Children

Newlife Centre

Hemlock Way, Cannock, Staffs, WS11 7GF

Tel: 01543 462777

Email: info@newlifecharity.co.uk

Web: www.newlifecharity.co.uk

STEPS Charity

Covering the whole of the UK, Steps provides a FREE Developmental Toy and Switch Lending Library service to individual children and hospices. We also run a subscription service for organisations. We have amassed a huge stock of unique battery-operated toys, external switches, expertise in adaptation techniques and in the matching of toys and switches to the needs of the disabled child.

STEPS Charity

First Floor

50-52 Torwood Street

Torquay, Devon TQ1 1DT

Tel: 01803 214124

Email: info@stepscharity.org/

Web: www.stepscharity.org/

The National Autistic Society

The National Autistic Society champion the rights and interests of all people with autism and aim to provide individuals with autism and their families with help, support and services that they can access, trust and rely upon and which can make a positive difference to their lives.

The National Autistic Society

Helpline: 0845 070 4004 (open 10am-4.00pm, Monday-Friday)

Web: www.nas.org.uk

Suppliers

These supplier details are designed to be read in conjunction with our factsheets. Supplier details are for information purposes only. No endorsement or approval on the part of AbilityNet should be inferred.

Inclusive Technology

Gatehead Business Park, Delph New Road, Delph, Oldham OL3 5BX

Tel: 01457 819790

Web: www.inclusive.co.uk

Keytools Ltd

Tel: 023 8029 4500

Web: www.keytools.co.uk/

Liberator Ltd

Minerva Business Park, Lynch Wood Peterborough PE2 6FT

Tel: 0845 226 1144

Web: www.pri-liberator.com

Maxess Products Ltd

The Chinestone, Dancers Hill, Charlbury, Oxfordshire, OX7 3RZ

Tel: 01608 811909

Email: sales@maxessproducts.co.uk

Web: www.maxesssite.co.uk/

QED

1 Prince Alfred Street, Gosport, Hampshire PO12 1QH

Tel: 0870 787 8850

Web: www.qedltd.com

SEMERC

Angel House, Sherston, Malmesbury, Wiltshire, SN16 0LH

Tel:

Web: www.semerc.com